2023

Diagnostic Report

Book 1

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STAY SAFE PROTECT SOUTH AFRICA
TOGETHER WE CAN BEAT THE CORONAVIRUS

CONTENTS – PART 1

FOREWORD

The Grade 12 learners who sat for the National Senior Certificate (NSC) examinations in 2023, deliver a testimony of how dedication and resilience ultimately culminate in the dream of holding a credible school-leaving certificate. Notwithstanding a myriad of challenges, these young individuals have crossed the threshold into the next chapter of their lives. The Class of 2023 was subjected to unusual and adverse learning conditions during their Grade 9 and Grade 10 academic years in 2020 and 2021 respectively. The cumulative effect of Covid-19 and the resultant learning losses and disengagement from education had a significant impact on this cohort. The swift and collaborative response of the Department of Basic Education (DBE), teachers, parents, our partners in education and South Africans at large responded swiftly to devise a holistic recovery plan that has to a large degree mitigated the negative impact of compromises to the key learning milestones.

The father of our great nation, Nelson Rolihlahla Mandela, believed that 'Educating all our children must be one of our most urgent priorities. We all know that education, more than anything else, improves your chances of building better lives'. These words were affirmed in the 2023 State of the Nation Address when the President of the Republic of South Africa, the Honourable Cyril Matamela Ramaphosa, highlighted that 'the performance of learners from poorer schools is steadily improving, confirming the value of the support that government provides to them'. The President coined the improvement in Grade 12 results as 'a silent revolution taking place in our schools'.

Government has made education its apex priority precisely because it is a means of promoting good citizenship and of preparing our people for the needs of a modern economy and a democratic society. Various programmes are already underway to achieve this goal. The three-streams model which will allow learners to choose a vocational or an occupational stream in the Further Education and Training band is making progress. Implementing the General Education Certificate (GEC) will assist in moving our focus from the National Senior Certificate to the General Education and Training (GET) band. Systemic Evaluation, which is an assessment of learners and the system more broadly, targeting Grades 3, 6 and 9, will provide a more in-depth and comprehensive report on the performance of the system. The institutionalisation of the Early Learning National Assessment (ELNA), will allow us to assess the readiness of learners for Grade 1 so that the deficits can be identified at this early stage and remediated. By embracing innovation

while staying true to the fundamentals, of basic education, we can provide our learners with a comprehensive and future-proof education that prepares them for the challenges and opportunities of the ever-changing modern world.

In reflecting on our journey as the DBE, we have also made commendable strides in addressing the educational needs of persons with disabilities and learners who experience barriers to learning. We celebrate the adoption of the Constitution Eighteenth Amendment Bill, that amended Section 6 of the Constitution of the Republic of South Africa, that made the South African Sign Language (SASL) the 12th official language of the country. During the 2023 academic year, the DBE engaged with a wide array of stakeholders to provide support strategies to teachers and learners who offer South African Sign Language Home Language (SASL HL). The success of the ongoing support and engagements is reflected in the remarkable improvement in the results for subject.

The Class of 2023, despite the odds, had several success stories. The overall pass rate increased by 2,8% compared to 2022, four thousand and eighty (4 080) more candidates have obtained admission to Bachelor studies, 546 more schools obtained an overall pass rate above 80% and 501 of these schools are from quintiles 1, 2 and 3. One of the most significant improvements is the improvement in the performance in Mathematics from 55% in 2022 to 63,5%. This confirms that the DBE drive to increase the number of learners that can enter the fields of Science and Technology is bearing fruit.

The quality of the achievements of the Class of 2023 can be attributed to the relentless efforts of our school principals, teachers and parents, who united in the common understanding that we, as South Africans, have the power to transform the lives of millions of children, equipping them with the tools they need to succeed and positively impact the world.

We must work without ceasing to support learners who did not satisfy the requirements of the NSC the first time around. These learners may register for the Second Chance Matric Programme. We must make passing Grade 12 a national endeavour and help our young people to reach their full potential.

I am pleased to release the *2023 National Diagnostic Report on Learner Performance*. This report is in its thirteenth year of publication and serves as a comprehensive analysis of candidates' performance in the NSC Examinations.

This Diagnostic Report provides teachers, subject advisors, curriculum planners and social partners with insight into learners' performance. The pivotal purpose of the diagnostic report is to serve as a catalyst to improve the quality of teaching and learning through reflection and remediation at all levels of the system. The data and accompanying analyses prepared, post the writing of the 2023 NSC examinations have been used to identify strengths and weaknesses in candidates' knowledge and skills.

The Grade 12 Class of 2024 is reminded that the class of 2023 has set a high standard to emulate, and their good performance will serve as a lighthouse to future generations. Together we rise.

MRS AM MOTSHEKGA, MP
MINISTER OF BASIC EDUCATION
18 JANUARY 2024

1.1 INTRODUCTION, SCOPE AND PURPOSE

The 2023 Diagnostic Report explores in detail the observations in learner performance, and it serves as a supporting resource for teaching and learning in the 10 high enrolment subjects, Afrikaans First Additional Language, English First Additional Language, the 12 official home languages, the technologies, technical subjects and Engineering Graphics and Design. This report needs to be used in conjunction with the 2021 and 2022 diagnostic reports. These reports illuminate subject didactic principles and content matter that can be used effectively in the classroom in 2024.

Like previous reports, this report presents an evaluation of learner performance in the selected subjects and home languages by highlighting the areas of weakness in each of the subjects/languages and articulating the remedial measures to be adopted at school level to improve performance in these subjects/languages. The findings and recommendations are based on qualitative data taken from the subject reports compiled by the chief markers, internal moderators and subject specialists post the marking process. In the 10 key subjects, quantitative data was also gathered from the analysis of 100 scripts per paper, per subject, randomly selected from each province.

As a result, this *National Diagnostic Report on Learner Performance* provides teachers, subject advisors, curriculum planners and curriculum implementers with a picture of learner performance in each of the key subjects. The Diagnostic Report in each subject/language, commences by presenting comparative data on the performance trends observed over a five-year period in the subject/language. In the 10 key subjects, it also provides an overall performance of candidates per question, in the respective question papers for each subject. Common errors, misinterpretations and misconceptions identified during marking and suggestions for improvement are also provided. The poor quality of answers provided by some candidates in certain subjects continues to suggest gaps in the scope of content coverage, teaching methodology and the content knowledge of some of our teachers.

In Part 1, attempts have been made to track progress made in the subject and in content areas which were highlighted as problematic in previous years. Progress or lack thereof, in the said areas, should determine the extent to which further interventions are necessary in 2024.

It is envisaged that subject-based diagnostic analysis will be institutionalised within the pedagogical practice not only at national level, but also at provincial, district and school levels.

The DBE and Provincial Education Departments (PEDs) will monitor the distribution and utilisation of this report and feedback from teachers and subject advisors on the usefulness of these reports. Recommendations on how they could be improved will be solicited from all stakeholders.

1.2 METHODOLOGY

Each subject's diagnostic report commences by presenting comparative data on the performance trends observed over a five-year period in the subject, from 2019 to 2023.

The 2023 diagnostic report is formulated based on qualitative reports compiled by chief markers, internal moderators, and subject specialists post NSC marking. In the 10 key subjects and English First Additional Language, quantitative data was gathered from the analysis of 100 scripts per question paper, per subject, randomly selected from each province. This qualitative and quantitative data highlight the areas of weakness in each of the identified subjects and articulate the remedial measures to be adopted at school level to improve performance in these subjects.

As a result, this *National Diagnostic Report on Learner Performance* provides teachers, subject advisors, curriculum planners and curriculum implementers with a picture of learner performance in each of the key subjects. Based on the analyses, a detailed explanation is provided per question/subquestion under the following three main titles:

Section 1: Performance Trends (2019–2023)

A comparative analysis of the performance of learners over the last five years, in terms of the number of learners who wrote, the number and percentage of learners who achieved at 30% and above, and the number and percentage of learners who achieved at 40% and above, is presented in this section. The information is represented by tables and graphs to enable easier interpretation of any trends, especially of changes in the medium term, as well as changes from year to year.

Performance distribution curves are also provided to graphically present the distribution of learner scores in the last three examinations. Any improvement or decline in the performance can be observed from the position of the 2022 graph, relative to previous years. If the 2023 graph lies to the right of the two previous graphs, this suggests an improvement in performance, while a slant to the left indicates a decline in performance.

Section 2: Overview of Learner Performance

This section delves into the performance of learners in the question paper. The overview makes reference to generic areas of good performance or weakness and the possible reasons for these observations.

Section 3: Diagnostic Question Analysis

This includes the following:

- A graphical representation of the average percentage marks obtained per question;
- An analysis of the performance of learners in each specific question, stating whether the question was well answered or poorly answered (and the reason);
- Common errors and misconceptions that were identified in candidates' responses;
- Suggestions for improvement in relation to teaching and learning, content and methodology, subject advisory support and provision, and utilisation of LTSM.

The internal moderators' reports from all nine provinces for each question paper, per subject were consolidated and the findings are summarised in this report. It is recommended that this report be read in conjunction with the November 2023 NSC question papers since references are made to specific questions, in the respective question paper, in each subject. This will enable teachers to establish a baseline for the new cohort of Grade 12 learners in 2024; develop strategies for differentiated learning and provide a frame of reference for the development and design of school-based assessment during the year.

1.3 LIMITATIONS

The focus of this report is more qualitative than quantitative. The quantitative aspects are limited to the performance trends in each subject and the average performance per question in the 2023 question papers.

While further quantitative data would have been useful in providing feedback for the purpose of test development, this is not the intention of this report.

The diagnostic analysis of learner performance in this publication is limited only to the 10 subjects with high Grade 12 enrolments, Afrikaans First Additional Language, English First Additional Language and the 12 official home languages, the technologies and technical subjects. The remaining subjects will be covered in reports compiled by the provincial chief markers and internal moderators during the marking process. The DBE will endeavour to broaden the scope of the subject coverage in future.

It needs to be noted that areas of weakness could be unique to each district and each school. This report therefore provides a national summary of the general areas of weakness. However, district subject specialists are encouraged to develop a district diagnostic report. Ultimately, there should also be a school diagnostic report, which focuses specifically on the areas of weakness at school level.

1.4 OBSERVATIONS IN LEARNER PERFORMANCE

The 2023 diagnostic reports for the 10 key subjects covered in this publication (Part 1), indicate that the pass rate has improved in eight of the key subjects at the 30% level. However, the pass rate has declined at the 30% level in Mathematical Literacy and History. The pass rate for English First Additional Language increased at both the 30% and 40% levels. In the home languages (Part 2) the pass rate improved to varying degrees in Afrikaans, isiXhosa, isiZulu, Sepedi, Sesotho, Setswana, South African Sign Language Home Language, Siswati and Xitsonga, remained the same in Tshivenda and declined slightly in isiNdebele. The most notable decline in the pass rate at 40% was observed in English Home Language.

1.5 AREAS OF CONCERN

The following areas of concern were identified in candidates' responses during the marking processes in 2023.

- A topical issue affecting examinations and education in general is that of reading skills. Much has been written recently about the underperformance of learners who lack the skill of reading with meaning.

Markers noticed that weak learners might tend to focus selectively on a word(s) in a question that are easily recognisable and then attempt to provide a response that does not fit the context of the question. Other learners might tend to repeat or paraphrase questions or scenarios in their responses while some attempt to repeat answers from previous questions which would often be futile in earning marks.

- Instilling critical thinking skills is a key part of teaching, learning and assessment. It was evident from some candidates' responses that they lacked the skill to analyse and evaluate information critically, leading to superficial responses rather than demonstrating a deep understanding of the material. In the same vein, difficulty in applying theoretical knowledge to solve practical problems can be a challenge for candidates, indicating a need for more emphasis on real-world application in education. Teachers are encouraged to expose learners to a wide array of exercises that also include questions that assess higher order thinking skills.
- Poor time management skills can result in incomplete examinations or rushed responses, affecting the overall quality of the answers. It was observed that candidates spent a considerable amount of time on introductory questions, which resulted in them not responding well to the latter parts of question papers.
- Effective communication is key in responding adequately to questions. Expressing ideas clearly and concisely is crucial, and it was noted that many candidates lack the ability to communicate effectively in writing. It is important that candidates pay attention to detail when analysing and responding to questions. A lack of attention to detail can result in errors in calculations, misinterpretation of questions, or oversight of important information.
- Research skills play a pivotal role in candidates' ability to synthesise information. In 2023, it was apparent that a large percentage of candidates were unable to locate and use relevant information effectively in their responses. This highlights the need for improved research and information retrieval skills.
- One of the cornerstones of a good quality question paper is that it should not be predictable. The 2023 question papers included novel images, scenarios, and texts. In this year, more than in past years, it was noted that many candidates found it challenging to link the known/familiar subject matter to unfamiliar and abstract contexts. It is imperative that candidates do not merely rely on rote-learning, but that they also need to focus on understanding concepts deeply rather than memorising information. Learners must engage in active learning methods, such as discussing topics, teaching one another, and applying knowledge to real-life situations.
- Numeracy skills across the curriculum is an indispensable part of teaching and learning. In subjects requiring mathematical proficiency, it was noted that some candidates lack basic numeracy skills,

affecting their ability to solve mathematical problems accurately. The decline in the performance in Mathematical Literacy is primarily due to candidates' lack of understanding fundamental numerical concepts and principles.

Understanding these skill gaps allows teachers to tailor instructional strategies, incorporate skill-building activities, and provide targeted support to help learners develop a well-rounded set of competencies for successful examination performance.

1.6 KEY RECOMMENDATIONS

1.6.1 Teach reading for meaning in examinations

Teachers need to address learners' lack of reading for meaning at every available opportunity. The specific strategies for learners would include points that have been noted in previous Diagnostic Reports. These include:

- Underlining key words in a question;
- Identifying command words such as 'define', 'explain', 'compare', 'discuss' or 'analyse';
- Using evidence to substantiate explanations;
- Being alert to variations or 'tweaks' in different questions on similar topics;
- Appreciating the bigger context of the topic within the larger subject or topic;
- Learners being prepared to express their own opinions creatively in open-ended questions; and
- Learners being required to verbalise requirements or responses individually and in groups.

Teachers may focus on the following strategies to teach reading for meaning specifically in examinations,

- **Skimming and Scanning:** Train learners to skim quickly through a text for main ideas and scan for specific details relevant to the questions posed in the examination.
- **Understanding Question Types:** Familiarise learners with different question types (e.g. multiple choice, short answer, paragraph, essay) and teach them how to approach each. Guide learners to draw a clear link between the mark allocation and the required responses.

- **Annotation Skills:** Encourage learners to underline key points, circle keywords, and make brief notes in the margins to aid comprehension.
- **Prioritising Information:** Teach learners to identify and prioritise essential information, focusing on what directly addresses the question.
- **Practice with Past Question Papers:** Past examination papers can be used to simulate the examination environment and build familiarity with question formats.
- **Answering in Own Words:** Emphasise the importance of expressing understanding in their own words when answering questions.
- **Eliminating Distractions:** Teach techniques to ignore irrelevant details and concentrate on the core information required for each question. Emphasise the importance of reading questions thoroughly to avoid misinterpretations and to capture nuances. Advise learners to jot down key words or organise their thoughts as 'planning' in an answer book. The 'planning' needs to be marked as such in the answer book and ruled through.
- **Feedback and Review:** Provide feedback to learners on all assessment tasks and examinations. Emphasise areas for improvement and encourage regular review of mistakes.

1.6.2 Cognitive levels

It is imperative that teachers and learners are familiar with Bloom's Taxonomy and Barrett's Taxonomy. These taxonomies categorise cognitive skills from lower to higher order. This includes remembering, understanding, applying, analysing, evaluating, and creating.

In 2023, it was observed that candidates did not respond appropriately to higher-order questions. The following strategies can be employed to familiarise candidates with the expectations of higher-order questions.

Model Thinking Strategies: Teachers can demonstrate to learners how to approach higher-order questions. Show learners your thought processes by breaking down complex problems into manageable steps. Model critical thinking, analysis and synthesis.

Encourage Discussion: Foster a classroom environment that values open discussion. Encourage learners to express their thoughts and challenge each other's ideas. This helps them to develop reasoning and communication skills.

Provide Scaffolding: Offer support as learners work through higher-order questions. Start with simpler questions and gradually increase complexity. Provide relevant resources and guidance, allowing them to build confidence.

Use Real-World Examples: Connect learning to real-world scenarios. Present problems that mimic situations they might encounter outside the classroom. This helps learners see the practical application of higher-order thinking.

Ask Open-Ended Questions: Design questions that do not have straightforward answers. Encourage learners to think critically, consider multiple perspectives, and justify their responses.

Promote Metacognition: Teach learners to reflect on their own thinking processes. Encourage them to ask themselves how they arrived at a particular answer and if there are alternative approaches.

Diverse Assessment Methods: Evaluate understanding through various methods like projects, presentations, and essays. This allows learners to showcase higher-order thinking skills in different contexts.

Integrate Technology: Use educational technology to enhance learning experiences. Platforms that support collaborative problem-solving or simulations can engage learners in higher-order thinking.

1.6.3 Integrated support strategies

(i) Electronic platforms for learning

Teachers can explore a plethora of online and virtual platforms for teaching and learning, to facilitate revision activities and for examination preparations. Platforms such as Microsoft Teams, Zoom, Google Classroom and YouTube are effective e-learning tools.

Learners and teachers can gain access to online learning platforms such as YouTube that offer visual presentations and explanations of challenging topics. Teachers and subject specialists can source video clips and incorporate these in their lessons to give learners a clear understanding of subject matter.

(ii) Teacher and learner collaboration

Teachers from different schools in each circuit or district could collaborate to support one another in mediating challenging topics to learners. In view of this, different schools can build an item bank of higher-order questions and this bank can be used as a resource for revision purposes.

Challenging topics must be revisited regularly during the academic year through extension activities and they should form the basis of all extra classes. Teachers need to foster a supportive learning environment by promoting peer mentoring and group study sessions, enhancing collaborative learning. Stronger learners can be paired with weaker candidates to complete assignments on challenging topics.

(iii) Regular informal assessment

Teachers need to implement frequent quizzes and practice examinations to allow learners to gauge their progress and identify their areas of improvement. Regular feedback after each assessment task is imperative.

(iv) Artificial Intelligence (AI) as support strategies

Artificial Intelligence is here to stay. Although teachers, in general, have an aversion towards AI, AI-powered tutoring systems that offer real-time feedback, identify areas of weakness, and provide targeted guidance to help learners improve, can be beneficial to the teaching and learning space.

Furthermore, teachers can integrate AI chatbots to provide instant answers to common queries, offering additional support and resources outside regular classroom hours to learners.

AI-driven Virtual Reality (VR) Simulations can also be created for practical subjects, offering immersive learning experiences that enhance understanding and retention. The following platforms can be explored in this regard: *Unity3D, Unreal Engine, Aframe, Cospaces Edu, Google Expeditions, AltspaceVR, ClassVR, ThingLink VR, Engage* and *Minecraft Education Edition.*

Many a teacher has embraced the AI revolution and explored the effective use of platforms such as ChatGPT in teaching and learning. When incorporating ChatGPT, it is important to monitor and guide the interactions to ensure they align with educational goals. Emphasise the tool's supportive role, encouraging students to critically assess the generated content. Additionally, consider privacy and ethical considerations when implementing AI tools in the classroom.

Integrating ChatGPT into the classroom can be done in various ways to enhance the learning experiences and prepare learners effectively for assessment tasks and examinations. These include:

- **Q&A Sessions:** Use ChatGPT for interactive Q&A sessions, allowing students to ask questions related to the lesson content or clarification on specific topics.
- **Writing Assistance:** Incorporate ChatGPT to assist students with writing tasks, providing suggestions for improving structure, grammar, or generating creative ideas.
- **Language Learning:** Employ ChatGPT to facilitate language learning exercises, allowing students to practice conversations, write essays, or engage in language-related activities.
- **Debates and Discussions:** Use ChatGPT to stimulate debates or discussions by generating prompts or responses, encouraging critical thinking and argumentation skills.

1.7 RESPONSIBILITIES

Provincial Education Departments:

Given that the target audience of this report includes the teacher and learner, this report must be cascaded from the provincial to the district level and finally to the school.

Subject Advisors and District Officials:

- Subject specialists should initiate a baseline assessment of the 2023 Grade 12 cohort, to establish candidates' understanding of Grade 10 and Grade 11 topics that serve as a foundation for Grade 12 topics.
- Subject advisors are encouraged to convene meetings/workshops that aim to mediate this diagnostic report. It is further suggested that the use of this diagnostic report must be encouraged during on-site support visits.
- The improvement plans of teachers need to be monitored, looking specifically for the inclusion of recommendations emanating from the individual subject reports.
- District officials should closely monitor curriculum coverage to ensure that all the topics in a subject have been covered according to the Revised Annual Teaching Plan (ATP). This would ensure that all topics receive due attention, allowing candidates to be better prepared for the examination.
- The monitoring process also needs to focus on the standard and quality of the assessment tasks used for SBA, as these tasks prepare learners for the NSC examinations. They also provide an opportunity for the teaching and learning interventions to gain traction well before the NSC examinations.
- Subject advisors should direct teachers to websites that will enhance teaching and learning.

Teachers:

- Teachers should ensure that learners are provided with adequate resources to facilitate self-regulated learning. Learners must be able to study independently.
- To develop learners' holistic understanding and applied competence, teachers must prepare learners adequately by creating learning opportunities to reflect, analyse and evaluate the content.
- Teachers should ensure coverage of the curriculum and the full range of cognitive levels in their teaching and assessment strategies. The mere recall of procedures or specific content on the part of learners will not enable them to respond fully to the demands of the question paper.

CHAPTER 2

ACCOUNTING

The following report should be read in conjunction with the Accounting Paper 1 and Paper 2 final examination papers for the NSC November 2022 examinations.

The Accounting examination focuses on two Accounting disciplines:

- Paper 1: Financial Reporting and Evaluation
- Paper 2: Managerial Accounting, Internal Auditing and Control

2.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Accounting examination in 2023 decreased by 3 824 compared to that of 2022.

The table below indicates stability in the pass rate at 30% (Level 2) and at 40% (Level 3), particularly over the past three years.

There was a marginal improvement in the pass rate this year. Candidates who passed at the 30% (Level 2) improved from 75,4% in 2022 to 76,8% in 2023. There was a corresponding improvement in the pass rate at the 40% (Level 3) over the past two years from 51,8% to 52%.

The percentage of distinctions over 80% (Level 7) remained stable at approximately 5,6%. Given the lower number of candidates in 2023, this converts into a total of 5 654 distinctions compared to 5 764 distinctions in the previous year.

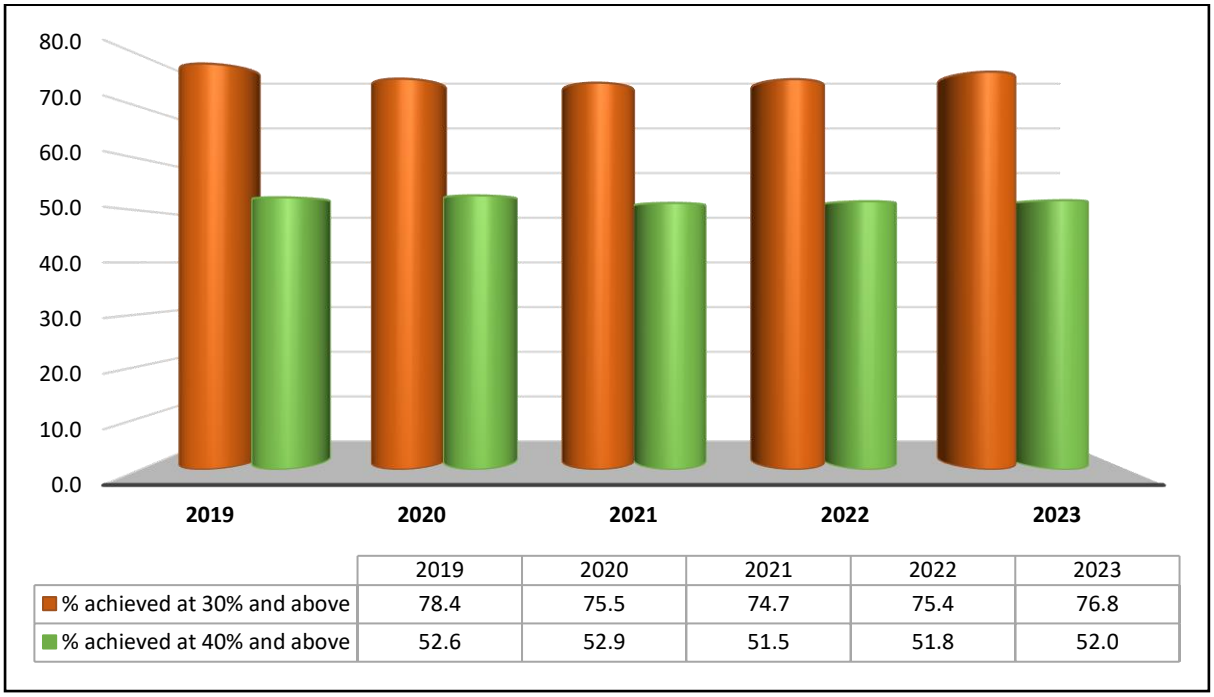
Despite the slight decline in the number of distinctions, the results achieved by this cohort are commendable. Strategic intervention programmes at all levels (National, Provincial, Districts and Schools) ensured that learners were adequately prepared. The diligence and perseverance of the above-average candidates also contributed to the favourable overall performance.

Table 2.1.1 Overall achievement rates in Accounting

975

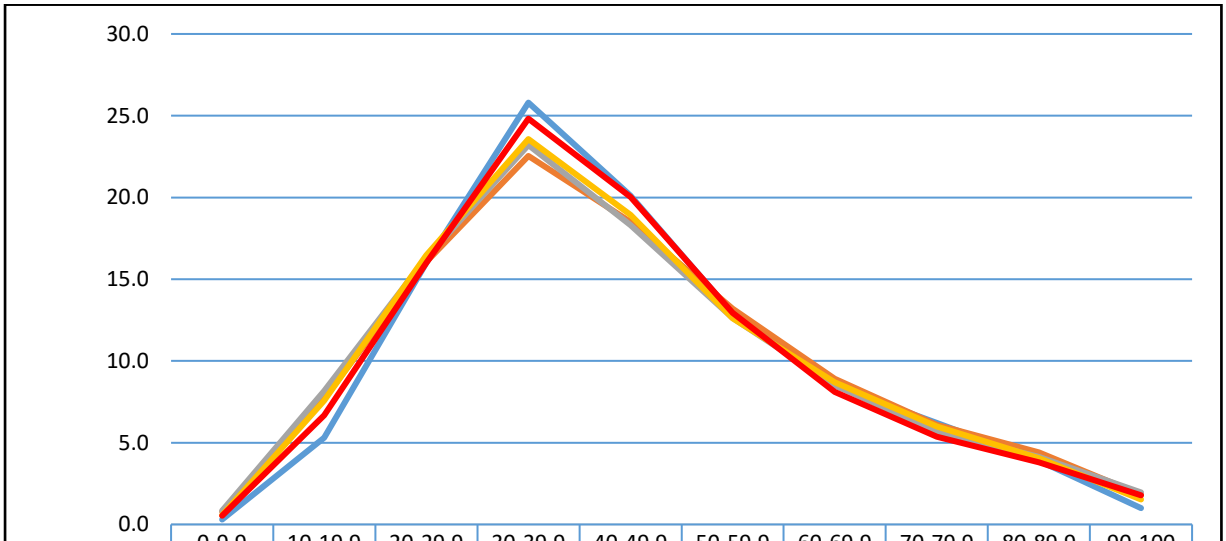
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	80 110	62 796	78,4	42 113	52,6
2020	92 767	70 014	75,5	49 103	52,9
2021	105 894	79 093	74,7	54 518	51,5
2022	104 798	78 993	75,4	54 291	51,8
2023	100 974	77 572	76,8	52 509	52,0

Graph 2.1.1 Overall achievement rates in Accounting (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	78.4	75.5	74.7	75.4	76.8
% achieved at 40% and above	52.6	52.9	51.5	51.8	52.0

Graph 2.1.2 Performance distribution curves in Accounting (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.3	5.3	16.0	25.8	20.1	12.9	8.5	6.2	3.9	1.0
2020	0.8	7.7	16.1	22.5	18.5	13.2	8.9	6.1	4.4	1.8
2021	0.8	8.2	16.3	23.2	18.3	12.6	8.5	5.7	4.1	2.0
2022	0.6	7.6	16.5	23.6	18.9	12.6	8.7	6.0	4.0	1.5
2023	0.5	6.7	16.0	24.8	20.0	12.9	8.1	5.4	3.8	1.8

2.2 OVERVIEW OF CANDIDATES' PERFORMANCE: PAPERS 1 AND 2

The overall performance of the 2023 Accounting cohort was similar to that of the previous cohort. Consistency of performance across the two papers was also evident and it appeared that candidates from most centres were generally well prepared. This had a pleasingly positive effect on the pass rate.

One of the most noticeable improvements was that the vast majority of candidates attempted to answer all parts of both papers. Below-average achievers were also generally able to manage the examination time efficiently.

Teachers must be well informed on current trends in the discipline of Accounting as these do have an influence on NSC papers. Accounting is a dynamic subject that supports a wide variety of careers and serves as a valuable life skill for citizens in general. The subject therefore has to reflect the real world.

A prime recent example is the development in the topic of *Corporate Governance* with its focus on business ethics. After tentative steps over the past few years, teachers and candidates seem to be coming to terms with the demands of this contemporary and topical issue which allows candidates to express their opinions creatively and logically. The improvement in candidates' performance in Paper 1 Q4 reflected in Graphs 2.3.1 and 2.3.2 is encouraging, and there is room for further progress.

The Accounting curriculum has also been strengthened in other areas in recent years, such as the repurchase of shares in line with changes to the Companies Act, and digitisation and modernisation of banking processes and reconciliations. The competence and insight of well-prepared candidates in these and other areas provide indications that teachers in most centres are properly applying the advice provided in *Diagnostic Reports* and the *Examination Guidelines* to the benefit of their learners.

However, wide variations in the general quality of responses in the various subquestions still exist. This will need attention in several centres as complacency and shortcomings persist. The factors that significantly limit the quality of the performance of weaker candidates in the Accounting NSC Examinations are listed below:

- Inability of weaker candidates to deal effectively with lower- and middle-order questions;
- Ineffective formative assessment and feedback;
- Lack of meaningful revision of relevant Grade 10 and 11 content;
- Poor mathematical and arithmetical ability;
- Language barriers linked to poor comprehension skills;
- Inability to identify relevant information to answer specific subquestions;
- Poor interpretation of questions and identifying relevant evidence;
- Inability to formulate explanations that address questions;
- Inefficient use of the structured answer book;
- Ineffective time management.

Addressing these issues would obviously greatly improve results as well as candidates' future prospects.

The issue of reading skills significantly affects Accounting and education in general. Much has been written recently about the underperformance of learners who lack the skill of reading with meaning. Accounting markers and moderators have noticed that weak learners tend to selectively focus on a word(s) in a question that are easily recognisable and then attempt to provide a response that does not fit the context of the question. Other learners tend to simply repeat or paraphrase questions or scenarios in their responses, while some attempt to repeat answers from previous exam questions which would often not earn any marks.

It is clear that teachers have to address these major shortcomings at every available opportunity.

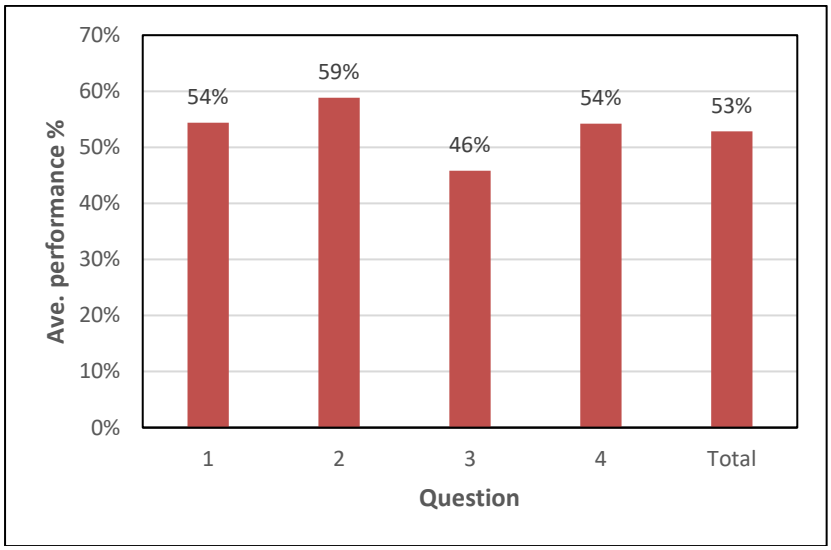
The specific strategies for learners would include points that have been noted in previous *Diagnostic Reports*, e.g.

- Underlining key words in a question;
- Identifying command words such as 'define', 'explain', 'compare', or 'analyse';
- Using evidence to substantiate explanations;
- Being alert to variations or 'tweaks' in different questions on similar topics;
- Appreciating the wider context of the topic within the larger subject or topic;
- Being prepared to express their own opinions creatively in open-ended questions;
- Being required to verbalise requirements or responses individually and in groups;

2.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

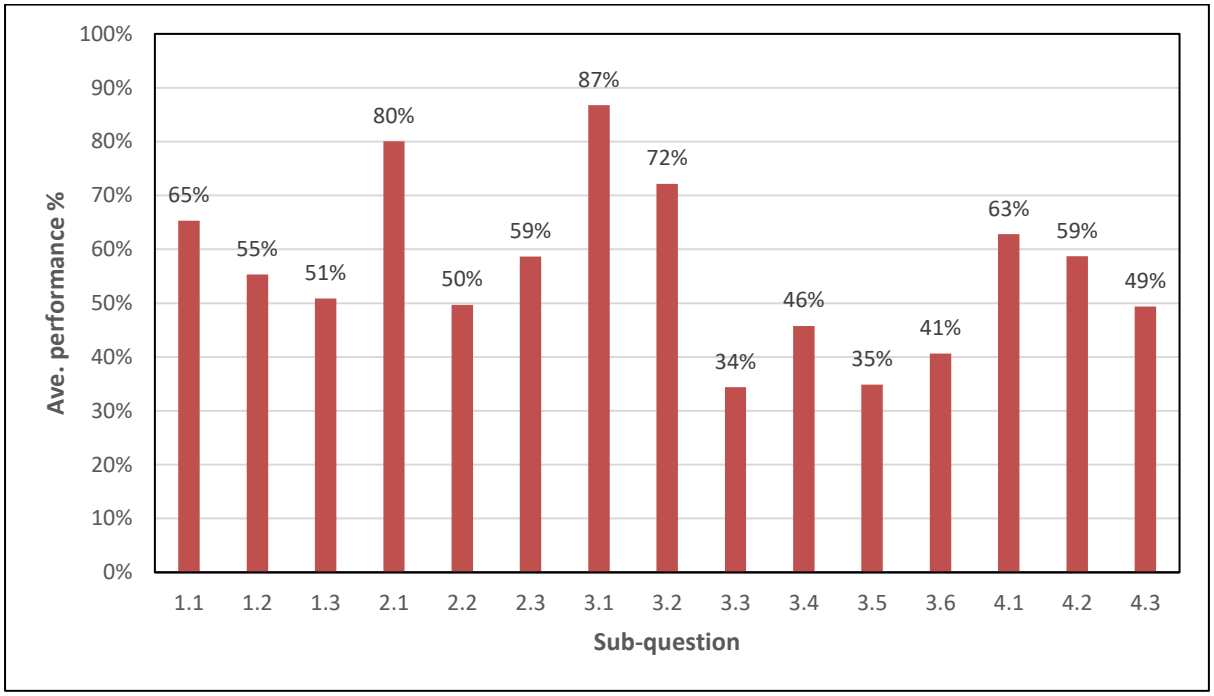
The graphs presented below are based on data from a random sample of candidates' scripts in the different provinces. They provide a clear picture of the general performance in each topic (Graph 2.3.1). This is useful in assessing the relative degrees of challenge of each question as experienced by candidates (Graph 2.3.2).

Graph 2.3.1 Average performance per question in Paper 1



Q	Topics
1	Company financial statements
2	Cash flow statement and financial indicators
3	Interpretation of financial information
4	Corporate governance

Graph 2.3.2 Average performance per subquestion in Paper 1



Sub-Q	Topic	Sub-Q	Topic
1.1	Calculate: Value of Closing Stock	3.3	Financing Strategies & Gearing
1.2	Statement of Comprehensive Income (SOCI)	3.4	Dividends, Earnings & Returns
1.3	Statement of Financial Position (SOFP)	3.5	Shareholding of a CEO
2.1	Ordinary Share Capital Note	3.6	Directorship & Share Prices
2.2	Cash Flow of Operating & Financing Activities	4.1	Auditing: Internal & External
2.3	Calculate: Financial Indicators	4.2	Whistle Blowers (Informants)
3.1	Concepts: Financial Statements	4.3	Concerns & Opinions of Shareholders
3.2	Liquidity		

Paper 1 Q1 reflected a departure from the traditional trend of alternating the focus on the *Statement of Comprehensive Income* (SOCI) and the *Statement of Financial Position* (SOFP). On this occasion, there was equal focus across both statements. Well-prepared candidates were able to deal admirably with this innovation. Weaker candidates tended to struggle due to the lack of understanding of the interrelationship between the SOCI and the SOFP, but were able to earn part-marks and method-marks.

Q2 and Q3 represented the standard type of questions covering financial indicators and cash flow statements (Q2) and Interpretation of financial information of two companies (Q3). The decline in performance in Q2 was disappointing with weaker candidates underperforming on the lower-order and easy calculations. Q3 remains a challenge for many candidates. This question once again reflected the lowest average in the paper despite the inclusion of short theoretical questions that should have been manageable for all candidates.

The improvement in Q4 on Corporate Governance was very pleasing, with a majority of candidates attempting it, thereby taking advantage of marks on offer for the open-ended nature of the question.

2.4 ANALYSIS OF LEARNER PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: STATEMENT OF COMPREHENSIVE INCOME (SOCI) AND STATEMENT OF FINANCIAL POSITION (SOFP)

The *Statement of Comprehensive Income* (SOCI) and the *Statement of Financial Position* (SOFP) form the basis of the high school Accounting curriculum. Questions on these topics include concepts, reporting processes, year-end adjustments and entries affecting both statements.

Capable candidates generally perform well in such questions due to their understanding of the logic of the expanded Accounting equation and double-entry system studied from Grades 10 to 12.

There is no doubt that Accounting teachers repeatedly reinforce these procedures in classroom-based tasks and tests over several months in each of the three years of the FET phase. It is, therefore, very disappointing that a large number of candidates are still not able to master even the most basic entries required in constructing these statements.

This question also integrated a section on stock valuation which applies to both Paper 1 (in the context of reporting) and Paper 2 (in the context of internal control procedures).

It also focused on the four basic year-end adjustments covered in Grades 10–12 in the context of sole traders, partnerships and companies. The remaining items related to year-end 'balance sheet' adjustments of a company.

Perennial problems revealed by weaker candidates included an inability to process simple or moderately difficult calculations and an inability to understand the logic of how to process increases and decreases to income, expenses, assets, liabilities and equity in either the SOCI or SOFP. However, these candidates were, at times, able to earn part marks for pre-adjustment figures, and method marks for post-adjustment and balancing figures in the financial statements.

Common errors and misconceptions

(a) Details for Q1.1 (6 marks) were reflected in ***Adjustment/Information (ii)***. Candidates from some centres presented inappropriate and illogical methods to calculate the closing-stock figure using the FIFO (first-in first-out) method. This subquestion was regarded as a regular and simple confidence-boosting calculation, using unit costs.

However, complex methods using cost of sales figures severely disadvantaged certain candidates due to the time taken to complete these calculations, and the tendency for unnecessary errors to creep into their convoluted calculations. It was also inappropriate to use such methods as the opening stock value was not provided in this question. Furthermore, such candidates did not seem to understand that when the FIFO method is used, the units of stock on hand at the end of a year would naturally comprise the last-in, last-out items.

Many candidates also neglected to subtract the stock value from the pre-adjustment figure in the pre-adjustment figures in order to reflect the stock loss as an expense in the SOCI. This is a point which was also specifically mentioned in last year's *Diagnostic Report*.

(b) The structure of the SOCI in Q1.2 and the SOFP Q1.3 required candidates to identify or calculate certain missing figures which impacted on one or both statements.

Capable candidates coped well with this task as they were able to use their good understanding of the expanded Accounting Equation. Weaker candidates were able to earn part-marks by calculating and processing some of the adjustments, but generally were not able to take full advantage of the easier components of the question. Many candidates did not handle calculations well and appeared to be confused particularly by those items that affected both statements simultaneously.

(c) ***Adjustment/Information (i):*** Most candidates were able to earn at least part-marks in the calculation of *Cost of Sales* and *Gross Profit* taking into account the mark-up % and the trade discount granted. Although this might have been a difficult calculation for some candidates, many candidates noticed an alternative method of calculating gross profit and cost of sales, using the figures provided for Gross Operating Income, Other Income and Sales. These figures could have been used to complete the first three lines of the SOCI.

(d) The errors by candidates identified in processing ***Adjustment (iii)*** to ***Adjustment (vi)*** indicated severe shortcomings with regard to accruals and prepayments which are taught and revised in all three grades in the FET phase.

(e) ***Adjustment (iii)*** related to the Commission Income and ***Adjustment (v)*** to the Rent Expense. Commission Income was undoubtedly the easiest adjustment to handle as candidates simply had to add the amount owed to the pre-adjustment figure in the SOCI without any further calculation.

Traditionally the correct Rent Expense has been calculated according to monthly amounts charged for rental, but on this occasion the floor size and rental per square metres were supplied in the question. This additional yet simple dimension to the adjustment inexplicably seemed to create challenges for weaker candidates.

It was surprising that many candidates deducted the amount owed from Commission Income instead of increasing the amount in the SOCI. Although most of these candidates earned part-marks in the SOCI, they were unable to earn additional method marks in the SOFP by placing the amount owed for Rent or the amount for Commission Income received in advance in the appropriate place under Trade & other payables in the SOFP.

(f) Many candidates were unable to calculate the correct figures in the SOCI for ***Adjustment (iv)*** and ***Adjustment (vi)*** for Fee income and Directors' fees respectively. Some incorrectly assumed that the Fee income was earned equally throughout the year, while others could not take into account the 13th month and the 5% increase. Some candidates were also not able to apply basic mathematical procedures to identify the Directors' fees owed.

Although most of these candidates earned part-marks in the SOCI, they were unable to earn method marks in the SOFP by placing the amounts owed or received in advance in the appropriate place under Trade & other payables in the SOFP. This was despite these entries and calculations being taught from Grade 10.

(g) The remaining adjustments to the SOFP covered straight-forward 'balance sheet' items without the need for much calculation. In ***Adjustment (xi)*** most candidates used the debt-equity ratio correctly to calculate Ordinary Shareholders' Equity and Retained Income. However, it was again disappointing to notice the basic errors presented by candidates in the other adjustments:

- ***Adjustment (vii):*** Some candidates did not appreciate that the transfer of a debtors' debit balance required a reduction to debtors and a deduction to offset the credit balance of the debtor.
- ***Adjustment (viii):*** The splitting of the fixed deposit into two portions (i.e. current and non-current) was poorly done by many candidates.
- ***Adjustment (ix):*** Many candidates did not appear to understand that, while the full amount of taxation appears as a deduction in the SOCI, only the unpaid portion would be reflected as a current liability in the SOFP. They neglected to deduct the provisional tax payments from the total amount of taxation for the year.
- ***Adjustment (x):*** Weaker candidates also incorrectly reflected the full amount of dividends in non-current liabilities instead of only the unpaid final dividends due.

Suggestions for improvement

(a) The Marking Guideline for the calculation of final stock (Q1.1; 6 marks), SOCI (Q1.2; 24 marks) and the SOFP (Q1.3; 25 marks) reflects 9 marks for entering pre-adjustment figures and 20 method marks for reflecting post-adjustment figures and sub-totals.

This indicates that 52% of the total of 55 marks on these sub-questions are available to weak candidates who experienced difficulty in calculating any of the adjustments correctly.

The 9 calculations in Q1 cover 25 marks in total. These ranged in challenge from Easy (9 marks) to Moderate (7 marks) to Difficult (4 marks). Most of these calculations involve working with fractions, areas, ratios, percentages or solving for x in an equation. Apart from practising these skills in Accounting classes, learners should recognise that prior knowledge from subjects such as Mathematical Literacy or Mathematics is also relevant.

It was therefore disappointing that weak candidates were not able to achieve even the majority of the easy marks available, particularly as the less demanding calculations consist of basic arithmetical sums. A strategy to overcome this problem might be for teachers to focus solely on calculations in class from time to time to ensure that learners adopt sound approaches in reading the questions and in arriving at logical answers.

(b) It was expected that the topic covered in Q1.1 (*stock valuation*) would provide realistic opportunities for relatively high marks to be achieved by the entire 2023 Accounting cohort. However, it was clear that candidates in some centres had not recognised a similar question in the 2022 NSC Paper 1 in the context of the weighted average method.

Teachers are urged to impress upon learners that the short-form method should be used as it is considerably more efficient and leads to fewer errors in the calculations. In the context of the FIFO method, this calculation would involve the number of units still on hand at the end of the year with their respective unit costs i.e.

Stock value = (No. of units x Unit price 1) + (No. of units x Unit price 2).

The lengthy method using cost of sales figures could also be covered in class as verification of the stock value calculated using the short-form method. This exercise should enhance understanding of both methods.

(c) The lack of ability of weaker candidates to deal with aspects of Q1.2 and Q1.3 appears to be the result of poor understanding of the expanded Accounting Equation and its

double-entry effect on both the SOCI and the SOFP. Teachers are advised to refer to the explanation contained in the *2022 Diagnostic Report* regarding the need for learners to verbalise the six concepts in the Accounting Equation and consequently the financial statements, i.e.

Assets + **E**xpenses + **D**rawings (dividends) = **O**wner's Equity + **I**ncome + **L**iabilities

(d) A major reason for underperformance in a question of this nature might be the lack of practice by learners in processing entries that affect both the SOCI and SOFP. It might well be the case that many questions on financial statements in past papers, textbooks and tests focus on only one of these statements to the exclusion of the other.

Teachers are therefore advised to develop formative or summative tasks in Grades 10–12 that are similar in style to Q1 in this paper. Shaded areas in the answer templates would serve to make these tasks manageable for a single class period. Learners would consequently benefit from opportunities to recognise links between double-entries that impact on both the SOCI and SOFP in the context of all forms of business ownership in the curriculum.

(e) With regard to the errors relating to the 'balance sheet' items as in Adjustments (vii) to (xi), teachers are advised to assist weaker learners by reinforcing the logical layout of the SOCI and SOFP. Linking this to the concepts in the expanded Accounting Equation in (c) above should also enhance understanding of these items.

(f) Advice provided in the *2022 Diagnostic Report* regarding examination technique remains relevant:

- To ensure that weaker learners take advantage of method marks on offer, when revising the SOCI and SOFP, teachers may find it productive to provide learners with the correct figures for each adjustment and then require them to simply enter the figures in the appropriate places. In this way, weaker learners might well appreciate that easy marks in placing figures in appropriate places on the financial statements are within their reach.
- Another overarching problem is that of poor interpretation of the information given for each adjustment, particularly in the case of learners who are writing Accounting examinations in a second language. Teachers will have to devote time, at regular intervals, to the skill of breaking down or analysing the specifics of the information given to boost the confidence of such learners.

QUESTION 2: CASH FLOW STATEMENT (CFS) & FINANCIAL INDICATORS

The question integrated the Ordinary Share Capital (OSC) note. This was intended as a confidence-booster subquestion in which candidates performed relatively well (refer to Graph 2.3.1 Q2.1 above). However, in 2023 there was a noticeable decline in the quality of responses to the subquestions on the CFS and the calculation of financial indicators.

Common errors and misconceptions

(a) In Q2.1 the vast majority of candidates were generally able to correctly structure the OSC note and calculate the correct number of shares at the year-end. Although the treatment of shares repurchased had been well answered in previous years, this was not the case in 2023. The calculation of the average share price presented an unexpected challenge for many candidates who did not recognise that this would be identified by dividing the closing balance on the OSC account by the number of shares they had calculated at the year-end. Some candidates inappropriately used the

opening balance in arriving at an incorrect value of R6,00. Others also incorrectly factored the excess of 80 cents into this note, apparently unaware that this amount would affect Retained Income and not the OSC account. Although capable candidates found this question to be straight-forward, weaker candidates were only able to earn part-marks using their incorrect calculations.

(b) In Q2.2 under Operating activities, although most candidates were able to correctly calculate the Income Tax paid using the standard formula, the treatment of Dividends paid was poorly treated by many candidates. This topic has been covered repeatedly in previous Diagnostic Reports, but it appears that the concept of dividends is still not well understood by many candidates. The amount for total dividends paid during the financial year amount could have been calculated simply by adding final dividends paid at the year-end in February 2022 to the interim dividends paid in August 2022. The obvious factor that increased the degree of challenge was that the interim and final dividends per share had to be multiplied by the appropriate number of shares applicable on each date. This was not recognised by many candidates. There were, however, alternative valid methods of calculating this amount.

(c) All three aspects of the Financing activities in Q2.2 were poorly answered by weaker candidates. Despite this, most were able to earn part-marks. The reasons for the poor performance are listed below:

- Several candidates did not recognise that the proceeds of shares issued could simply be obtained from the note they had compiled in Q2.1.
- Many candidates could not identify the funds used to repurchase shares appropriately. They appeared to be unaware that the value of the shares issued in Q2.1 had to be supplemented by the excess over the average share price, i.e. the 80 cents per share which was provided in the question.
- When this topic was initially introduced into the curriculum, it was obvious that teachers had generally placed heavy focus on this item as even the weakest candidates were able to record it correctly. However, it appears that complacency might have crept in over the past few years.
- The simplest way of identifying the Loan repayments was to reconstruct the Loan statement received from the bank. However, weaker candidates provided a number of inappropriate calculations which indicated that they do not understand the basic logic of a loan statement.
- A further deficiency in answering this question was that weaker candidates also did not use brackets appropriately to indicate outflows of cash. Brackets were essential for outflows in this subquestion as candidates were required to complete sections of the CFS, and not simply provide calculations.

(d) In Q2.3 it was expected that even the weakest candidates would have been able to achieve full marks in calculating at least two of the financial indicators correctly, given the support of the formula sheet. Capable candidates achieved extremely well, while weaker candidates had to settle for part marks. The following common problems were noticed:

- **Net asset value:** Some candidates used OSC as the numerator instead of OSHE, or appeared to be unable to identify the correct formula for the NAV.
- **Dividend payout rate:** This could have been calculated using dividends per share (DPS) or total dividends. Many candidates were able to identify the interim and total dividends per share but failed to identify the final dividends per share which was vital to the calculation.
- **% Return on average OSHE:** Although weaker candidates were able to earn the mark on the numerator (net profit after tax) and a method mark on the answer,

many neglected to calculate the denominator correctly. Some did not use the average OSHE, while others incorrectly used OSC in the calculation.

Suggestions for improvement

(a) The topic of share repurchases is a regular feature in all Accounting papers and the only way in which learners will be able to master these calculations is through consistent practice. Teachers must impress upon learners:

- That the average share price is identified by the figures in the OSC account or note;
- That the excess paid for the shares is adjusted through the Retained Income account or note; and
- That the amount paid for the shares repurchased is a combination of these two aspects which appears in the CFS.

Component:	Average share price (ASP)	Excess paid above ASP	Amount paid for shares repurchased
Indicated in:	Ordinary share capital note or account	Retained income note or account	Cash Flow Statement or Cash Payments Journal or Bank account

Teachers should appreciate that weaker learners will require further practice in the repurchase of shares through short formative tasks covering all three of these aspects, i.e. OSC, Retained Income and the CFS.

(b) Although the CFS is arguably the most difficult statement to construct, it does form the link between the SOCI (which covers income and expenditure for a year) and the SOFP (which classifies assets, liabilities and equity at the end of a year). In short, the CFS summarises the three types of activities (operating, financing and investing) which lead to the increase or decrease in cash resources over a financial year.

While exams or tests will tend to focus on selected aspects of the CFS, it is important for learners to understand the components of the complete CFS to appreciate the full context of the financial statements.

Mastering the CFS also depends on the quality of revision done by learners and their understanding of the types of transactions that would impact on *Operating*, *Financing* and *Investing* activities. Teachers are therefore advised to devote time to discussions in class to develop learners' understanding of these concepts.

(c) With regard to the calculation of financial indicators, errors are usually the result of learners' poor understanding of the purpose of the indicators. Teachers must bear in mind that the use of the formula sheet cannot be relied upon to guarantee correct calculations if learners do not understand the logic in calculating the indicators.

For example:

- If learners truly understand that liquidity indicates the ability to settle current debts, they should be capable of reasoning that current assets and current liabilities would be used in this calculation.
- If learners understand that 'net assets' at a year-end comprise all assets less all liabilities, they should appreciate that this is represented by the figure for OSHE (i.e. OSC plus retained income), and that the denominator for the NAV would be the number of shares in issue at the date of the year-end.

(d) Teachers are also reminded to refer to previous years' Diagnostic Reports in dealing with dividends, which seem to be a significant challenge for weaker learners particularly when there is a change in the number of issued shares during a financial period. Some of the calculations in Q2 could be solved through alternative methods. Teachers are advised to explain these alternatives to their classes as opportunities arise during the course of the Grade 12 year to develop better understanding. Examples in this paper were the calculation of dividends paid (Q2.2) and the dividend payout rate (Q2.3). Both calculations could have been done using dividends per share or total dividends paid.

QUESTION 3: INTERPRETATION OF FINANCIAL INFORMATION

This question covered evaluation of financial information of two companies.

Capable candidates achieved well in this question although some of them tended to provide lengthy explanations on certain subquestions that exceeded the requirements of the question. This tendency could have placed some of these candidates under time constraints, but it is to their credit that they were able to complete the paper.

However, the performance of the average and weaker candidates reflected a general decline in comparison to that of the previous cohort. Although they coped satisfactorily in Q3.1 and Q3.2, the graphs above indicate that their results for Q3.3 to Q3.6 revealed a distinct decline in quality. It is a concern that many of these candidates presented completely inappropriate responses to certain subquestions which indicated a lack of preparation and, at times, misinterpretation of the requirements. This is despite the fact that most of the subquestions had been covered in past papers.

A new dimension to this question was the integration of four subquestions (11 marks) covering basic theoretical scenarios which should not have been challenging for average or weaker learners. These topics were:

- Q3.1 (3 marks): Basic concepts
- Q3.5 Part (iii) (4 marks): Reasons for the repurchase of shares being irresponsible
- Q3.6 Part (i) (2 marks): Influence of the Chief Financial Officer (CFO)
- Q3.6 Part (iii) (2 marks): The offer of the CFO position to an unsuitable applicant.

The other subquestions in Q3 (34 marks) cover evaluation of financial information through the interpretation of financial indicators. This skill relates to the ultimate purpose of the subject of Accounting, i.e. communicating financial information so that appropriate financial decisions are made. It would be misleading to regard that these topics merely comprise theory.

Common errors and misconceptions

(a) Q3.1 (3 marks) was an easy confidence-boosting question involving matching. The three terms in column A were disparate and well known to all candidates while the four explanations in column B reflected obvious answers. However, completely incongruous responses were a serious concern. It was therefore not surprising that a large number of such candidates were not able to cope with other more challenging parts of the paper.

(b) Candidates should not have found the theory topics difficult. However, it was clear that candidates in certain centres might not have been exposed to these concepts. This disadvantaged candidates in those centres who did not appreciate the organisation of companies. These items are covered in textbooks, the *Examination Guidelines*, past papers and circulars. For example, in Q3.6 (2 marks) candidates should know that

companies have a CEO, CFO, internal auditors and committees. This would ensure that they appreciate the context in which companies are managed and controlled.

(c) Refer to point (c) in the previous section for comments regarding candidates' understanding of the logic of financial indicators. These considerations apply equally to the ability of candidates to comment on the financial indicators. Candidates who were not able to rationalise the logic of calculating the financial indicators would also find it challenging to evaluate the financial indicators in Q3 appropriately.

(d) In Q3.2 (5 marks), candidates were expected to identify *Guardian Ltd* as the company that is managing its working capital well. This is a standard question which is regarded as easy as it has been covered in each grade from Grade 10. Although only two indicators out of the possible four were required, weaker learners, however, chose the wrong company (*Navarra Ltd*) in which case they received part marks only for naming the appropriate indicators. Others quoted irrelevant indicators.

(e) Whereas most candidates might have been able to calculate the debt-equity ratio, in Q3.3 Part (i) for 4 marks, many weaker candidates were unable to translate this into an explanation. This was yet another example of candidates being able to cope with an application question, yet failing to explain that the decrease in the ratio was due to the increase in the shares exceeding the increase in the loan.

Q3.3. Part (ii) for 4 marks was a standard question on the topic of risk and gearing which had been asked in most past papers. There should have been no valid excuse for underperformance on this subquestion. Many candidates quoted the % Return on capital employed, but neglected to compare this to the interest rate on the loan, while others neglected to mention whether the company was positively or negatively geared.

(f) In Q3.4 Part (i) for 3 marks most candidates were able to quote and comment on the Dividend payout rate but did not provide a complete explanation on how the high payout rate would deplete reserves or negatively affect the sustainability of Navarra Ltd.

Another standard subquestion which is regularly examined was that of Q3.4 Part (ii) for 6 marks, which required evaluation of the earnings and returns of the company. Capable candidates earned full marks by explaining the Earnings per share and the % Return on average shareholders' equity.

However, some candidates, instead of mentioning the % Return, incorrectly mentioned Dividends, a topic which had already been covered in Q3.4 Part (i). This was ruled out as a valid option as the question required a comment on the returns 'of the company' and not 'of the shareholders'. A further shortcoming is that many candidates simply stated 'shareholders will not be satisfied' without any comparison to the 9% return on outside investments. This explanation earned only one part mark for an incomplete answer.

A further interesting variation to this question was that some candidates mentioned the Earnings Yield % instead of the % Return on equity. This was accepted as a valid alternative, despite the fact that this indicator is not currently listed in the curriculum. It was, nevertheless, encouraging that some teachers had decided to extend their top learners beyond the curriculum.

(g) In Q3.5 candidates coped well in Part (i) for 2 marks in correctly calculating the change in the % shareholding of the CFO of *Navarro Ltd* from 55,2% to 40,2% but many did not mention the obvious point that he had consequently lost the majority shareholding.

In Part (ii) for 4 marks most candidates earned part marks for identifying that the increase in the loan by R3,5m was an element in financing the repurchased shares but many did not recognise that the increase in the bank overdraft by R3,2m enabled the company to cover the full cost of the repurchase.

It was encouraging that in Part (iii) for 4 marks, weaker candidates were able to earn part marks for providing a valid reason for the repurchase of the shares being irresponsible, while the capable learners earned full marks for providing a second valid reason.

(h) Q3.6 Part (ii) for 6 marks covered evaluation of the share prices of each company. However, weaker candidates simply referred only to the market prices of the shares of the two companies thereby earning part marks if they quoted the correct prices. Capable candidates, however, understood that the market price of the shares had to be compared to the Net Asset Value (NAV), and that a comment was required on whether the shares of each company were in demand or not, or why the shareholders would be satisfied or not.

The theory topics for 2 marks each in Q3.6 Part (i) on the influence of a CFO and in Part (iii) on the offer of a vacant CFO post to an unsuitable applicant, provided further opportunities for all candidates to earn at least part marks.

Suggestions for improvement

(a) As the subquestions on evaluating financial information and financial indicators generally reflect the weakest performance in Paper 1, teachers must endeavour to use definite strategies to solve this problem. A first step would be to refer to the points in the previous Diagnostic Report for ideas on how to develop the confidence of learners in reading and answering these questions.

(b) This question contains a preface that where comments or explanations are required, candidates should quote the relevant financial indicators and trends with figures; and should give a reason or an explanation for the financial indicators quoted. Reference is also made to this instruction in the answer booklet to assist candidates.

Capable candidates generally follow this instruction well. As weaker candidates do not appear to comply, teachers must remind them that a comment such as 'the debt-equity ratio increased' might earn only one mark unless figures of the indicator are quoted, a trend is mentioned (improved or not) and there is a further explanation covering risk or gearing.

(c) Apart from the smaller subquestions focusing on understanding of the basic theoretical topics referred to above, most of the subquestions in Q3 cover higher-order analytical, evaluative and creative problem-solving skills. Despite this, learners should appreciate that the higher-order nature of these topics does not imply that all the subquestions are difficult.

Three of the five categories of financial indicators i.e. liquidity, solvency and profitability (operating efficiency) are repeated without changes over the three years in the FET phase.

These three categories are first taught in Grade 10 in the context of sole traders, and the formulae do not change in the contexts of partnerships in Grade 11 and companies in Grade 12. Liquidity was covered Q3.2 in the 2023 paper, and learners should

appreciate that all the indicators in this category are generally not difficult to understand and apply. This point also applies to indicators in the solvency and profitability categories.

With regard to the category on returns, the calculation of the % return on equity also remains consistent from one year to the next except for the change in the number of owners or shareholders. This indicator was covered in Q3.4 Part (ii) and again learners should not regard this indicator as difficult.

It therefore remains that only the indicators affecting earnings and dividends per share, net asset value, debt-equity and gearing need to be mastered to achieve good marks in evaluating financial indicators.

This task should be manageable if learners adopt a positive approach in comparing/evaluating the indicators from one year to another, or from one company to another. Teachers should play a major role in reassuring learners that this type of question is within the realms of their ability.

(d) Group work and discussions form important strategies to support learners in becoming familiar with the curriculum content. It is only through verbalising the results and effects of the indicators that learners will internalise the substance of the questions. Teachers should consequently endeavour to provide opportunities for these sessions to occur in class and in revision programs.

(e) A point from the previous Diagnostic Report that needs further reinforcement is that it must be made clear to learners that, unless they comply with each of the requirements listed below, they will be limiting themselves in achieving full marks in a subquestion.

The question paper, answer book and marking guide stress the following points:

- Provide figures, trends, financial indicators or calculations to support your comments and explanations.
- Most of the subquestions on this topic stipulate the word 'explain' in both the question paper and the answer book e.g. 'Explain why …' or 'Explain whether …'.
- The answer book reflects reminders to candidates to 'Explain…' and 'Quote figures and trends'.
- The marking guide for each subquestion states: 'Part-marks for incomplete/ partial/unclear response'.

(f) In covering all the financial indicators in the curriculum, teachers are advised to classify these into the five main questions that could be asked of a business, i.e. liquidity, solvency, profitability (operating efficiency), returns and risk. This is a process that should be gradually and continuously developed from Grades 10–12.

(g) It is also important for learners to understand possible valid reasons for the repurchase of shares being incorporated into the current Companies Act, e.g. to allow for downsizing of a company to improve efficiency; to improve % returns and dividends; to reimburse shareholders who wish to withdraw from the company or to compensate deceased estates. However, it should be noted that repurchase of shares is not intended to place a company under further stress which might affect liquidity or solvency.

QUESTION 4: CORPORATE GOVERNANCE

The improvement in performance of candidates in this question this year was most encouraging. Graphs 2.3.1 and 2.3.2 revealed an increase in average of approximately 10% points in comparison to the previous year. It appears that teachers and candidates have generally acknowledged the advice given on this topic in the Diagnostic Reports of the past few years.

Although this question carried only 15 marks, the status of Corporate Governance as a topic in the curriculum, with its focus on ethical and moral conduct in the business world, is of the utmost importance to the prospects of sustainable economic development and societal well-being in any country.

This topic, being integrated into all aspects of the Accounting curriculum, should generate awareness and debate amongst high school learners to ensure that future participants and leaders in the economy embody the moral protocols that the constitution of the country requires and desires.

Q4.1 (4 marks) covered the need for internal and external auditing, while Q4.2 (2 marks) covered the topic of whistleblowing which has been asked in previous NSC papers.

Q4.3 (9 marks) required candidates to comment on shareholders' attitudes to a scenario affecting a whistle-blower. This is intended as a higher-order and open-ended question within the ability of most candidates, and it required a common-sense and moral approach in identifying and solving problems in a business setting.

Many candidates, including those achieving below-average marks, were able to provide three valid concerns about the actions of a questionable board of directors based on the scenario provided.

Common errors and misconceptions

(a) In Q4.1 (4 marks) a number of candidates stated incorrectly that the internal or external auditors were responsible for drawing up the financial statements.

(b) In Q4.2 (2 marks), some candidates appeared to be unfamiliar with the terms 'whistle-blower' or 'informant' despite this topic having been asked in previous NSC papers.

(c) In Q4.3 (9 marks) two marks were allocated to each of the three concerns provided, and one mark was awarded to each reason provided. Whereas many candidates revealed a variety of creative concerns or reasons relevant to the extract, weaker candidates could not provide reasons that supported their concerns, while others simply repeated sentences from the scenario that did not address the context of the question, or simply paraphrased the same points.

(d) It was also evident that some candidates misinterpreted certain sentences from the extract or failed to identify obvious shortcomings or defects on the part of the board, e.g. the nepotism, the dismissal of a successful CFO or the apparently unfair investigation of the whistle-blowers.

Suggestions for improvement

(a) Teachers should remain aware that learners generally enjoy expressing their own opinions. Corporate Governance is a most appropriate topic in order to facilitate this skill. Teachers are advised to refer to previous Diagnostic Reports in this regard.

(b) Teachers should also emphasise the roles and duties of internal and independent auditors. The wide internal control function of internal auditors and the expression of unbiased opinions on financial statements by independent auditors need to be reinforced at regular intervals. The separation of ownership of companies (by shareholders) from management and control (by directors) is also relevant in this case.

(c) Teachers are encouraged to expose learners to regular reading of and short discussions on news articles. It is apparent that learners who are exposed to this process tend to present creative, valid responses to the different scenarios.

(d) It is imperative for teachers to motivate all learners to engage with open-ended questions such as Q4.3. Learners will need some idea of the context of how companies are managed, including shareholders, directors, committees and auditors, disciplinary hearings and AGMs. This has been well covered in textbooks and past NSC papers. Teachers should mention these issues on a regular basis when opportunities arise. The annual project on financial reports of a company is also useful in exposing learners to corporate systems.

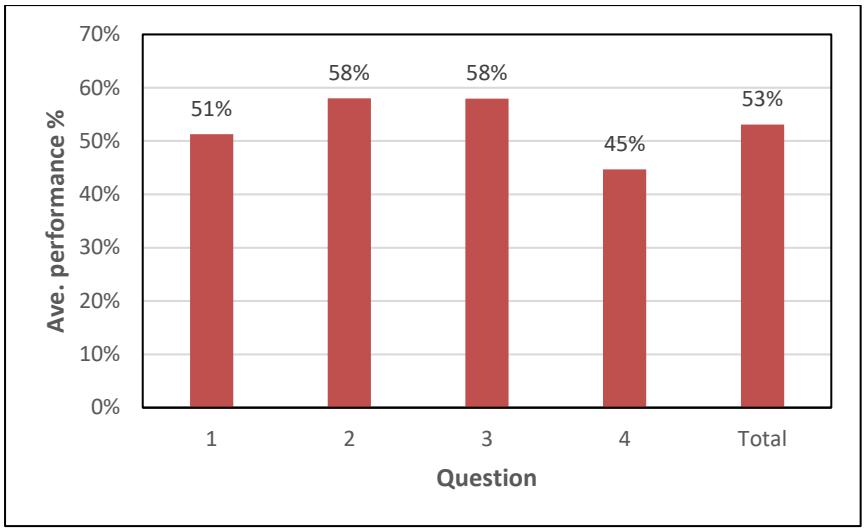
(e) Currently there are several examples of questions and scenarios specifically devoted to Corporate Governance in past NSC Paper 1 examinations since November 2020. Teachers are advised to make good use of these questions in communicating reading skills, analysing the structure of questions, and ways of addressing the requirements of questions. Group discussions and verbalising of questions and possible responses are vital in developing learners' confidence as well as their ability to think creatively and critically. Teachers must continue to make a point of including SBA open-ended questions or tasks to expose learners to the possibilities of being credited for valid opinions.

(f) Teachers should also aim to further develop awareness on Corporate Governance by requiring learners to express why good Corporate Governance is imperative for the future of a country and its citizens. Examples of their responses could include the following: job creation and stability, building trust with investors, fraud prevention, responsible management and directorship of companies, complying with laws, adopting a risk management approach and ensuring that the country can display economic growth in competing with businesses in the rest of the world.

2.5 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

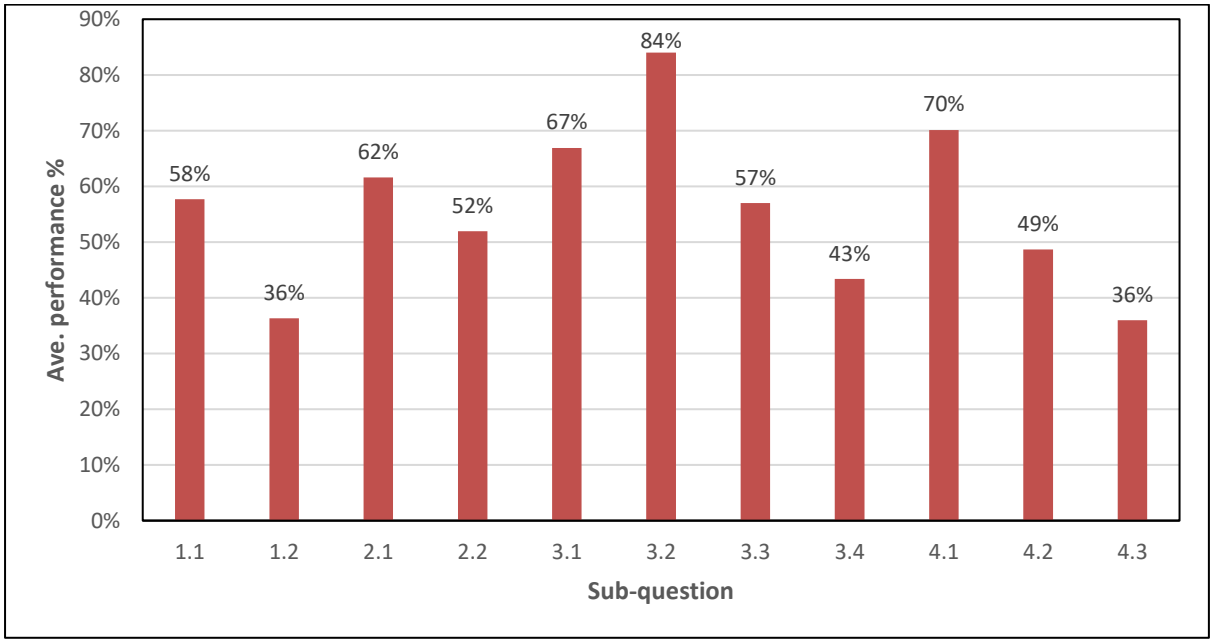
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degree of challenge of each question as experienced by candidates.

Graph 2.5.1 Average performance per question in Paper 2



Q	Topics
1	Reconciliations
2	Cost Accounting
3	Budgeting
4	Stock valuation and Fixed Assets

Graph 2.5.2 Average performance per sub-question in Paper 2



Sub-Q	Topic	Sub-Q	Topic
1.1	Bank Reconciliation	3.3	Budgeting – calculations
1.2	Creditors Reconciliation	3.4	Budgeting – salary and commission
2.1	Cost Accounting – Production costs	4.1	Stock valuation – concepts
2.2	Break-even and cost analysis	4.2	Stock valuation – specific identification
3.1	Budget vs Projected Statement of Comprehensive Income items	4.3	Fixed assets – calculations and interpretation
3.2	Budgeting – Debtors collection schedule		

Candidates who had prepared well for the examination managed well across all questions while weaker candidates were able to take advantage of the lower- and middle-order subquestions. This is testament to the initiatives of teachers to adequately address the specific topics and the extensive revision programmes at all levels.

Poor performances were noticed especially in the interpretative or evaluative questions in various topics. Candidates continued to show weaknesses in reading and understanding, and often provided inappropriate and irrelevant clichés from previous marking guidelines in response to these subquestions. It is evident that candidates prefer using predictable questions, as presented in past papers, in preparation for the examinations.

2.6 ANALYSIS OF LEARNER PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: RECONCILIATIONS

This question tested Bank and Creditors' Reconciliation and was pitched as the easy to moderate challenge, comprising basic application relevant to the Grade 11 curriculum. Bank reconciliation was re-introduced in 2022 after the content was adjusted to introduce EFTs and the increase in the use of online/internet banking.

Common errors and misconceptions

(a) A small percentage of candidates continued to experience difficulty in placing the relevant figures in the correct Cash Journals (Q1.1.1; 12 marks). They had difficulty in analysing the outstanding deposits and EFTs from the previous reconciliation and errors in recording cash entries. Some candidates were also penalised for inserting/introducing foreign entries due to additional irrelevant amounts placed in the journals.

(b) Calculating the correct bank account balance was well answered, although a fair percentage of candidates could not determine whether this was a debit or credit balance when they transferred this figure to the reconciliation. The marking guideline made provision for alternative methods of calculations, including a ledger account format.

(c) Q1.1.2 (8 marks) was effectively managed by a large percentage of candidates. The answer book made provision for the two-column and the one-column methods and candidates had to choose an option. The two-column method was the preferred method of the majority; weaker candidates, however, could not appreciate the difference, showing a clear lack of understanding reconciliations.

(d) It was clear that some candidates did not understand that the balancing figure in the Reconciliation Statement was determined by ensuring that the totals of the debits and credits were equal. This indicated that they did not have a clear understanding of the basic logic of the reconciliation process.

(e) Q1.1.3 (4 marks) required candidates to suggest strategies to address the problem of missing cash. It was disappointing to note the poor responses and inappropriate clichés that continue to be used to answer these questions.

(f) In preparing the creditors' reconciliation (Q1.2.1; 9 marks), weaker candidates did not indicate the increase or decrease next to each amount. They also placed amounts incorrectly in both columns and were penalised for superfluous entries.

(g) The relatively poorer response of candidates in the creditors' reconciliation indicated a lack of emphasis placed on revision of Grade 11 content.

Suggestions for Improvement

(a) The basic application processes on reconciliation are covered in Grade 11. It is important that the relevant procedures or steps be emphasised and reinforced in Grade 12 before addressing the interpretative aspects relevant to the Grade 12 curriculum. Teachers are expected to source and adapt material to suit their needs as changes in the banking sector will render the older material irrelevant.

(b) The internal control benefits of reconciliations must be continually highlighted by teachers. Clear steps that involve identifying differences and taking corrective action to address errors and omissions must be emphasised. Practical examples using external documents (i.e. bank statements and creditors' statements) should be the first logical step. More complex examples must follow once learners acquire the skills of determining where the errors are made, and how they should be treated.

(c) It may be necessary to reflect on source documents introduced in Grade 10 to illustrate the effect of cash transactions on the *Accounting Equation.* A comparison between such documents and the information on bank statements will also assist in highlighting errors and possible mismanagement or fraud.

(d) Teachers must ensure that in-depth revision of all forms of reconciliations (including debtors and creditors) are included in their teaching plans. *Debtors' reconciliation* will generally focus on a comparison of the control account with a list of debtors, while *creditors' reconciliation* will also include a comparison of individual creditors ledger accounts with statements received from the creditors. Teachers must adapt activities to include all possible differences that may arise between two sets of records. Understanding the logic behind such differences makes the correction thereof more meaningful.

(e) This question concentrated mainly on the processes of reconciliation. Teachers and subject advisors are encouraged to source and adapt a variety of activities from past examination papers as well as study guides so that learners become familiar with the different ways in which this topic can be assessed.

(f) Informal assessment programmes that support the formal assessment tasks must include short, formative class tests that can be easily self- or peer-marked. These will serve as confidence boosters when addressing more complex activities.

(g) Subject advisors must ensure that teachers keep up with current trends by providing on-going support in the form of mini-workshops and resource material. As the economy moves towards the electronic age, learners are being exposed to the media and are familiar with the internet. Changes must therefore be incorporated into the teaching and learning process.

(h) Learners must be given opportunities to express themselves and class discussions must be open to differing views. It may be time consuming, but teachers need to look beyond the textbooks and prepared material to acquire relevant material for discussion. Newspaper articles and other business publications are good starting points.

QUESTION 2: COST ACCOUNTING (MANUFACTURING)

This question once again proved to be well managed by the majority of candidates. Many candidates were able to take advantage of the easier marks linked to basic calculations that have been tested regularly over the past few years. Subtle changes in questioning styles lifted the challenge in some subquestions. Well-prepared candidates appear to manage these with ease while the weaker candidates continued to experience difficulty interpreting the requirements of such questions.

Common errors and misconceptions

(a) Calculating the direct material cost in Q2.1.1 (4 marks) required candidates to use the weighted average price per metre. This was generally well answered; however, a few candidates attempted to calculate the closing stock figure using a long method to arrive at the correct answer. They wasted valuable time in the process.

(b) Q2.1.2 (7 marks) required candidates to correct the factory overhead cost amount by making the necessary adjustments to the given incorrect total. A fair percentage of candidates were able to calculate the correct figures but failed to use the appropriate sign (+ or -) to indicate either an increase or decrease. They lost the method mark on the final total for this error. Some candidates also did not show the workings for which marks were allocated.

(c) Completing the *Production Cost Statement* in Q2.1.3 (5 marks) was well answered by the majority, as they simply had to ensure that their calculations in Q2.1.1 and Q2.1.2 were correctly transferred to the statement. A small percentage of candidates were confused about the fact that there was no 'work-in-progress' at the beginning of the year and, therefore, did not subtract the closing balance in arriving at the final cost of production.

(d) Q2.1.4 (4 marks) required the calculation of the cost of the raw material wasted. Many candidates were able to determine the number of metres wasted but neglected to multiply this by the weighted average. Some candidates used lengthy calculation methods, either calculating the number of shirts before converting this to metres or using the direct material cost and then using the cost of manufacturing 15 000 shirts. This is a clear indication that such candidates were not exposed to this type of questioning in their revision programmes, although these were tested in previous years.

(e) The question on strategies to reduce wastage in Q2.1.5 (2 marks) received the usual responses used in many past marking guidelines. There were, however, instances of poor understanding when inappropriate clichés that did not answer the question were simply stated.

(f) With regard to identifying the variable cost that might have contributed to an increase in the cost of production, a large percentage of candidates did not relate the question to production costs and provided selling and distribution as an answer. This was a common mistake because in previous years, a similar question would ask for the costs that were not well controlled. This is another instance of candidates failing to read the entire question before providing a response.

(g) Q2.2.3 (4 marks) was poorly answered by the majority. The general assumption was that a comparison of the BEP with the level of production would have been sufficient. This, however, only accounted for some of the marks. Candidates were expected to

compare the results of a newly introduced product against the results of an existing product. This required deeper analysis and insight.

Suggestions for improvement

(a) A recent trend to counter the predictable nature of this question has seen the introduction of more innovative questioning styles to extend the challenge and to maintain relevance in this topic. It is therefore imperative that teachers use a variety of examples to expose learners to different questioning styles. It may be necessary to adapt questions and create scenarios to enhance the level of understanding of operations within a manufacturing environment.

(b) Learners must be made aware that each section within this topic can be taught and tested independently in a piecemeal approach. This will create a clearer picture of the operations within the manufacturing environment.

(c) Certain aspects of the topic lend themselves to integration across other topics. Stock valuation has been effectively included in testing of *Cost Accounting*. Teachers are encouraged to use the examples provided in past NSC papers and also to ensure that the other valuation methods be given equal attention. Teachers must be creative and develop examples where these two topics are integrated while teaching *Cost Accounting* in Grade 12.

(d) Calculations of the cost items relevant to the Production Cost Statement are the standard opening questions to this topic. It is therefore important that teachers invest time and effort in developing the mathematical skills of learners to enable them to calculate these cost items, especially the direct material cost, direct labour cost and the factory overhead cost.

(e) Activities must be designed to focus on improving arithmetical and interpretative skills, particularly for weaker learners. The calculation of the factory overhead cost has become more analytical in recent papers. Formative tests on specific aspects must be used to reinforce the content covered in previous grades, before moving to more complex examples.

(f) Interpretation of unit costs and understanding the difference between fixed and variable costs is the basis of effective commenting on changes. This must be clarified at an early stage and learners must be encouraged to convert changes to percentages so that their comments are meaningful. It is also important that each cost item is related to other aspects such as the level of production, break-even analysis and profitability. Past examination papers have provided a variety of examples over the years. Teachers must use these as short class tests that can be easily peer-marked. Time must also be set aside to encourage discussion.

(g) The deep problem-solving potential of this topic has been more prevalent in recent NSC papers. This paper focused on an introduction of an additional product. The technique of making meaningful comparisons can only be mastered by providing focused activities and ensuring that class discussions follow. Identifying and commenting on irrelevant costs can be attributed to learners being unaware of the difference between production costs and other costs. Such scenarios are normally considered as higher-order but they are accessible to all learners.

(h) Calculating the direct material cost has taken on a different approach with the introduction of stock valuation methods. Activities must be designed to incorporate the extended problem of wastage and theft of material. Learners must be made to perform

calculations of actual loss as well as provide suggestions to improve internal control processes. Internal control should be integrated into teaching this topic. This will include identifying measures that must be put in place to reduce wastage and providing solutions for maintaining costs at reasonable levels.

(i) Teachers must also provide for differentiated support. Average and below-average learners may appreciate more practical or visual stimuli since they are familiar with manufacturing concepts and calculations introduced in Grade 10. Teachers could make use of a variety of resources available on educational websites. This may be time consuming but may be a necessary step to encourage the weaker learners.

QUESTION 3: BUDGETING

This question proved to be well managed in this examination with an average of 58% as per the Rasch Analysis. The general trend persists of candidates being more proficient in performing basic calculations while finding the analysis and interpretation more challenging. While candidates were able to take full advantage of the marks on offer for basic calculations, the inappropriate responses to the interpretative subquestions indicate that this aspect of the topic is still not given enough attention during class time or revision.

Common errors and misconceptions

(a) Q3.1 (4 marks) was well answered by the majority of candidates although it is a matter of concern that a fair percentage of candidates still show a lack of understanding of the differences between a cash budget and a projected statement of comprehensive income.

(b) Many candidates were able to score part-marks for calculations in Q3.3 (i) and (ii). These were pitched as the more complex calculations and offered a variety of alternative methods to derive the final answers.

(c) Q3.4.1 (9 marks) focused on the decision of the owner to introduce a commission in addition to a reduced fixed salary. Although this was obvious, the follow-up questions were based on the premise that candidates recognised this decision. A large percentage of candidates only focused on the reduced salary and they were, therefore, not able to provide a complete explanation of why salespersons were not satisfied.

(d) Calculating the net effect of the purchase of land and buildings (Q3.4.2; 5 marks) was intended to be a more challenging, higher-order question, but the different interpretations of the question allowed for a variety of alternative answers. Weaker candidates were able to score at least 3 of the 5 marks on offer, for simply quoting figures given in the question.

Suggestions for improvement

(a) Much of the budgeting content is covered in Grade 11, while the Grade 12 curriculum is expected to focus more on analysis and interpretation. Teachers are encouraged to thoroughly assess prior knowledge which includes basic concepts and calculations, before addressing the more complex calculations and interpretation of the Grade 12 curriculum. Short formative and summative activities and informal class tests can be used in this regard. Such activities must be designed in order to identify weaker learners who require further assistance so that appropriate support material can be provided.

(b) The easy part of the budget question will include basic calculations covered in Grade 11. The results show that this is generally well managed, although weaker candidates did not take advantage of all the easier calculations that appear on a regular basis. At times, different calculations are introduced to increase the challenge. These may include the calculation of loan amounts, interest on loan or discount allowed. Short activities on the different types of calculations must be designed and used on an on-going basis.

(c) The interpretative subquestion on budgeting will always focus on specific scenarios. A common trend in recent times is to analyse budgeted vs actual figures. This is the deep analysis portion that required insight and understanding. Specific terminology must be clearly explained so that comments are relevant and appropriate. Past examination papers provide a range of such examples.

QUESTION 4: INVENTORY VALUATION AND FIXED ASSETS

The specific identification method was assessed in this question. Due to the integration of this topic across different topics, a comprehensive question on stock valuation is significantly reduced to avoid double testing. Calculations were therefore confined to the calculation of the closing stock amount and the stockholding period. The majority of candidates generally achieved well on the predictable calculations but struggled to provide meaningful comments to the interpretative aspect.

It was, however, disappointing to note the poor performance in the subquestion on fixed assets. The basics of this topic are introduced in Grade 10 and should be reinforced in Grades 11 and 12 fundamentally because of the widespread integration across every other topic in the syllabus.

Common errors and misconceptions

(a) A fair percentage of candidates struggled to correctly identify the closing number of units for both models in Q4.2.1 (6 marks). Some also incorrectly used the selling prices given instead of the cost per unit. They were able to score part marks in such cases.

(b) Although many candidates correctly used closing stock calculated in Q4.2.1, in calculating the holding period in Q4.2.2 (4 marks), a few candidates persisted in using the average stock value. This is clearly an indication of rote learning, as the alternative formulae are provided on the formula sheet.

(c) Candidates who were not able to get the correct stockholding period in Q4.2.2. were challenged in responding appropriately to the follow-up subquestion in Q4.2.3 (6 marks) They were, however, credited for their comments based on the incorrect answer calculated.

(d) In calculating the trade-in value received in Q4.3.1(b) (5 marks), many candidates reconstructed the asset disposal account and were able to score part marks. The challenging aspect of this subquestion appeared to be the calculation of the total accumulated depreciation as the profit figure was given in the question. Well-prepared candidates were able to effectively use the information on the asset register, while weaker candidates could not determine the correct time periods relevant to the calculations.

(e) Q4.3.2 (4 marks) was poorly answered by the majority. Candidates were expected to identify the error in the method of calculation by the bookkeeper, instead they

interpreted this as the method of depreciation. They did not notice that this was a fully depreciated asset and that the R1,00 carrying value needed to be applied in this case.

Suggestions for improvement

(a) Stock valuation calculations are generally predictable. The distinguishing factor of each method is the calculation of the closing stock. As such, more emphasis must be placed on clearly explaining the calculation process for each of the three valuation methods. It is also recommended that the commonly used steps, used in most textbooks and study guides, be followed. In addition to being more practical, they also provide the logic behind the use of each method.

(b) A clear understanding of the *perpetual* and *periodic inventory systems* must form the basis of this topic, and must be reiterated. Teachers must make it very clear that the value of the closing stock, under the periodic system is determined by a physical count, and that stock losses will only be noticed after valuing the closing stock. It must also be stressed that the specific identification method would basically follow the perpetual inventory system as the actual cost is assigned to individual items that are still in stock.

(c) The types of products are generally given in a stock valuation question as this is the vital information needed when answering questions on stockholding periods or shelf-life of products. Teachers must ensure that the practice of identifying and discussing the nature of products will enhance learners' understanding of the concepts of durability, popularity, perishability and obsolescence. They will then be better equipped to respond appropriately to interpretative questions on stockholding.

(d) Past NSC papers are a reliable resource of revision activities as they illustrate different ways in which this topic can be tested. Learners must also be made aware that stock valuation is being integrated with other topics, especially Financial Statements (in Paper 1) and Cost Accounting (Paper 2) to value raw material cost. Such integration provides the opportunity to test all stock methods, during the course of the year.

(e) Innovative problem-solving questions will always feature in a balanced Grade 12 examination paper. An over-reliance on past papers will therefore not suffice. Informal class tests and class discussions must be encouraged as this will sharpen insight on internal control and ethical issues relevant to current times. Learners must be encouraged to express themselves clearly and to communicate in the language of assessment during class discussions and in revision programmes.

CHAPTER 3

AGRICULTURAL SCIENCES

The following report should be read in conjunction with the Agricultural Sciences Paper 1 and Paper 2 question papers for the NSC November 2023 examinations.

3.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Agricultural Sciences examinations in 2023 decreased by 9 459 compared to that of 2022.

There was a significant improvement in the pass rate this year. Candidates who passed at the 30% level improved from 75,8% in 2022 to 80,5% in 2023. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 52,1% to 57,1%.

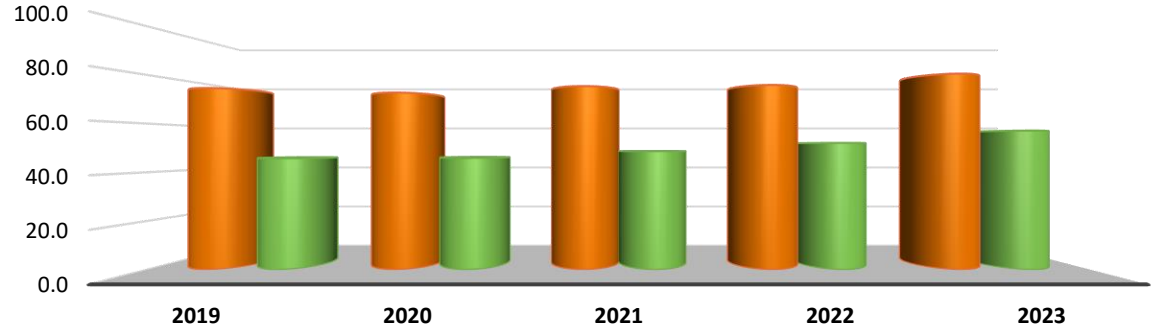
The percentage of distinctions over 80% improved from 2,1% in 2022 to 2,5% in 2023. Given the decrease in the size of the 2023 cohort, this converts into an increase in the total number of distinctions from 2 632 to 2 897.

The various commendable intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 3.1.1 Overall achievement rates in Agricultural Sciences

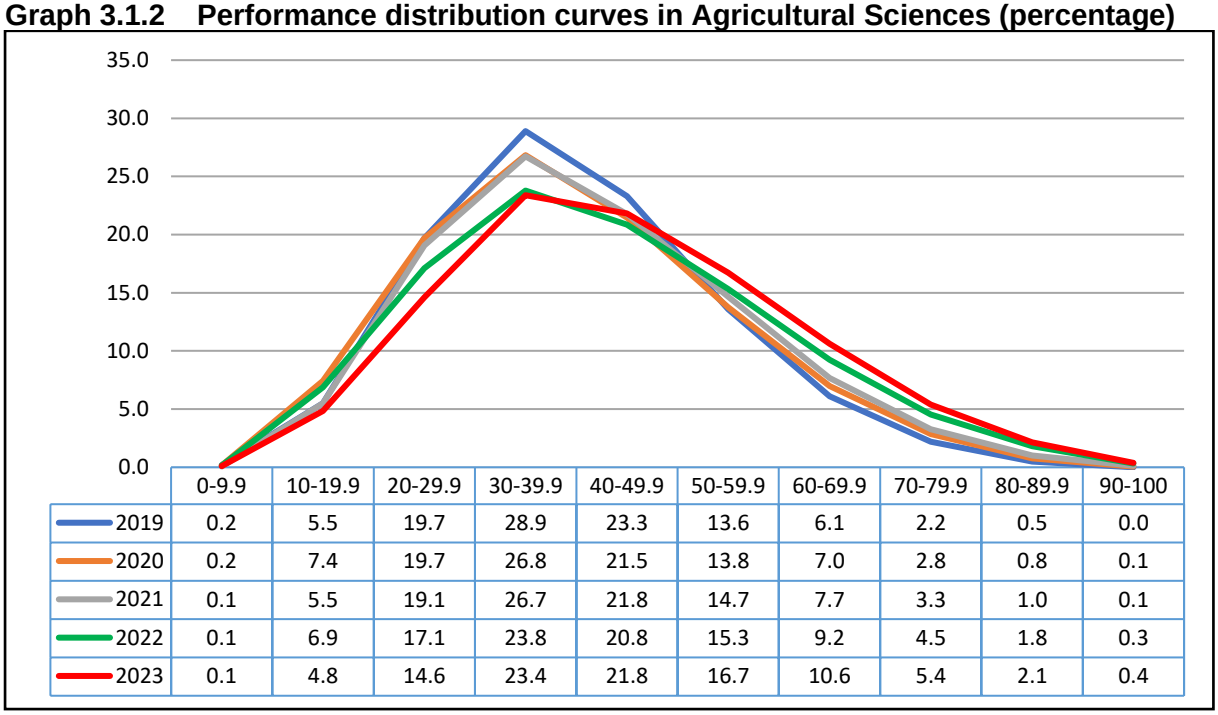
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	92 680	69132	74,6	42 385	45,7
2020	96 155	69 916	72,7	44 114	45,9
2021	123 990	93 447	75,4	60 308	48,6
2022	125 353	95 070	75,8	65 251	52,1
2023	115 894	93,279	80,5	66,175	57,1

Graph 3.1.1 Overall achievement rates in Agricultural Sciences (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	74.6	72.7	75.4	75.8	80.5
% achieved at 40% and above	45.7	45.9	48.6	52.1	57.1

Graph 3.1.2 Performance distribution curves in Agricultural Sciences (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.2	5.5	19.7	28.9	23.3	13.6	6.1	2.2	0.5	0.0
2020	0.2	7.4	19.7	26.8	21.5	13.8	7.0	2.8	0.8	0.1
2021	0.1	5.5	19.1	26.7	21.8	14.7	7.7	3.3	1.0	0.1
2022	0.1	6.9	17.1	23.8	20.8	15.3	9.2	4.5	1.8	0.3
2023	0.1	4.8	14.6	23.4	21.8	16.7	10.6	5.4	2.1	0.4

3.2 OVERVIEW OF CANDIDATE PERFORMANCE: PAPERS 1 AND 2

General comments

Continuous content delivery was compromised by disruptions, unavoidable curriculum adjustments and a reduced assessment programme. The plight of the current cohort must be recognised, in that they only sat for a formal examination in Grade 11. Despite these challenges a fair percentage of candidates were proficient in addressing the requirements of all subquestions.

It should be noted that weaker candidates were still challenged to deal effectively with even the less challenging parts of questions in Q1.3 and Q1.4 which required the basic subject terminology. They also had language barriers and were poorly prepared; these weaknesses were linked to their poor comprehension skills.

Poor spelling continued to challenge most candidates where they tended to give responses that had no meaning and were far removed from the correct concept. Sometimes they wrote words that have different meanings, for example *importance* instead of *impotence, genetically modified organism* instead of *genetic modification.*

Despite the subject-specific language used in Agricultural Sciences, weaker candidates continued to experience difficulty in understanding the requirements of questions. They tended to provide incomplete or unclear responses to questions requiring explanations or comments, and often relied on the commonly used responses offered in previous marking guidelines, and used them inappropriately in different contexts.

Candidates were unable to analyse the relevant information provided in answering specific subquestions. This was especially relevant in the Calculations in Animal Nutrition, Capital and Genetics sections of the papers, where only the more capable candidates were able to extract and respond to the relevant information. Weaker candidates found this process challenging, as they were often unable to comprehend and to respond as expected.

There was a slight improvement in candidates' ability to draw different graphs, which was evident in both Paper 1 and Paper 2, because most candidates could score at least four marks by successfully identifying the independent and dependent variables, the units and the heading in both papers.

General suggestions for improvement

Despite the improvement noticed in the results, there are several factors that need to be improved in both papers in 2024:

(a) **Basic concepts and terminology:** Learners need to be exposed to the basics of each topic for them to engage effectively with the content in that topic. The process of conceptualising and understanding these concepts is more than mere rote-learning of the definitions. Terminology should form an integral part of teaching and learning and needs to be emphasised on a regular basis. Teachers are advised to make the teaching of terminology interesting by engaging learners in the identification of key concepts for each topic. The learners should then be taught to formulate shorter definitions, based on the context. Teachers can also make use of short question tests on these terms using previous examination papers.

Teachers are advised to use the following strategies to improve the teaching of basic concepts and terminology:

- Engage learners in the identification of new terms and then find an explanation from the textbooks.
- Use new concepts and terms in sentences and in short scenarios to illustrate their understanding.
- Learners should be directed to first identify the new concepts for each topic and then to compile a glossary of terms in their notebooks on completion of the topic, with a brief but clear definition for each term or concept. A separate notebook for this purpose may also be kept. By the end of the year, all learners should have a comprehensive glossary of all the relevant terms and concepts pertaining to each topic.
- Agricultural Sciences terminology should be assessed frequently using different forms of informal activities.
- Challenging or confusing terminology could be explained by using illustrations and/or posters. These posters can be pinned on notice boards in the classroom so that learners are exposed to them on a regular basis.
- Spelling tests and word cards can be utilised to train learners on how to spell complicated terms.

(b) **The importance of formative and topic testing:** Tests should assess learning after every topic has been covered to provide remedial measures where necessary. Self-assessment and peer assessment, with immediate feedback on errors, provides learners with an opportunity to increase their understanding of the problem. They also become exposed to valid alternative responses and different, easier approaches to solving problems.

(c) **Enhancing learners' skills in accurately interpreting specific subquestions and using information that is relevant:** It is essential that learners have a good understanding of the instructional verbs as emphasised in the *Examination Guidelines*. Teachers must explain the context in which key verbs such as 'deduce', 'justify', 'explain' and 'suggest' are used and the expected depth required by each question. The marking guidelines of past examination papers can be used to show how the responses to similar questions can differ because of the key verb used in the question.

A variety of instructional verbs must be used in both informal and formal assessment tasks. It is recommended that these informal tasks lean mostly towards developing conceptual skills, as this will enable learners to develop a better understanding of the requirements of each question.

(d) **Skills to be assessed:** Assessment should be of such a nature that it challenges the learners' ability to think beyond what is presented in the textbooks or by the teacher. Learners need to be guided on how to process data presented in different forms, such as tables, graphs, calculations or scenarios. These areas have proven to be challenging for the learners. Teachers need to sharpen their learners' analytical skills by exposing them to challenging informal and formal tasks.

(e) **Real-life scenarios:** Learners show serious deficiencies in the processing of application questions and this is an indication of a lack in the depth in the practical side of the subject. Learners need to be exposed to more real-life agricultural situations through visits to sites of practice. Where a practical demonstration is not possible, the use of videos that simulate the actual practice is recommended to enhance intensive learning.

Teachers are advised to include sources such as pictures, scenarios, case studies and short statements in their informal and formal assessment tasks, and to demonstrate to learners how to approach such questions. These tasks should test the application of theoretical knowledge into real farming practices. This could be done by first reading and/or analysing the source, guiding learners on how to find clues and thereafter associate the key information discovered, before finally attempting to answer the actual questions. In some instances, learners can be requested to formulate their own questions based on the source. This practice will allow learners to analyse the source critically. Teachers can then develop follow-up questions to extend learners' understanding of the content.

(f) **Enhancing the interpretation of calculated values:** Examination papers for Agricultural Sciences contain some simple mathematical processes, e.g. drawing of graphs, calculating percentages, conversion of values, expression into relevant units, use of formulae and substitution of values. Learners seem to lack understanding of giving the correct formulae and substituting using the formula. They mostly seem uncertain when they are to subtract a bigger value from a small value which is usually to show a deficit. They are also uncertain when to divide or multiply when showing magnitude of values, or percentages.

Teachers are advised to give regular informal tasks on calculations incorporating the different versions. Teachers should not assume that learners have successfully engaged with these skills in other subjects or can successfully transfer these skills from other subjects to the study of Agricultural Sciences. Teachers are advised to first indicate to learners the importance of the various calculations in farming before showing them the actual skill of performing the calculations by applying the information that is given. Moreover, teachers are also advised to mark such calculations accurately emphasising the conversions, units, substitutions of values and formulae.

(g) **Use of past NSC papers:** Learners must have access to past examination papers, but they should also be alerted to the limitations of past papers. It should be noted that although questions in past papers may cover the same content, they may have different foci, e.g. a question which asks for a *comment* requires a different response to a question which asks for *a justification* or *suggestion*. Teachers are advised not to engage in whole question paper revision; it is better to consolidate questions from various papers into a bank of questions for each topic and then engage with question

revision.

(h) **Reference to the *CAPS*, *Examination Guidelines* and previous Diagnostic Reports:** Teaching and assessment must be informed by the content prescribed in the *CAPS* and the approach outlined in the *Examination Guidelines*. A holistic understanding of all topics is essential. It is also important that teachers use a variety of the prescribed textbooks to source information and then consolidate it for learners. It is also imperative that teachers take cognisance of comments and recommendations made in previous diagnostic reports.

3.3 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

(a) There was a slight increase in the candidates' performance in Paper 1 compared to 2022. The increase is due to general improvement in all four questions.

(b) Some candidates experienced challenges in following the instructional verbs in questions. In Q1.4 some candidates wrote TRUE/FALSE when they were expected to replace the incorrect underlined word with the correct word, and in Q2.2.2 they presented their response in bullet form instead of explaining why the *protein quality* of feeds in ruminant animals is of less importance.

(c) Q2 was the best answered question, followed by Q3. Q1 was the most poorly answered question even though there was an improvement of 2% when compared to 2022.

(d) The following challenges were still persistent: writing of the correct formula for the *digestibility co-efficient* where candidates did not write the formula in full. In addition to this problem, some candidates failed to realise that the calculation did not require the subtraction of moisture content. They failed to interpret that the moisture content was already subtracted as the question presented the feed as dry matter intake.

(e) Analysis and application questions were still a problem, for example, in the case of interpretation of the parts representing *soya bean oilcake meal* and *oatmeal* in Q2.5.1, some candidates failed to realise that FEED A represented a carbohydrate-rich concentrate and FEED B represented a protein-rich concentrate respectively. These candidates failed to realise that the norm for mixing feeds to get the required protein lies on the smaller figure representing a protein and the bigger one being a carbohydrate, which in this case meant that the 6 parts were for *soya bean oilcake meal* and 29 parts were for *oatmeal*

(f) Like in 2021 and 2022, the majority of candidates appeared to have mastered the drawing of the graph but were still challenged by the criteria to be followed in drawing a graph. For example, they struggled to provide both variables in the heading and the correct calibration of the Y-axis. Others could not distinguish between the dependent and the independent variable.

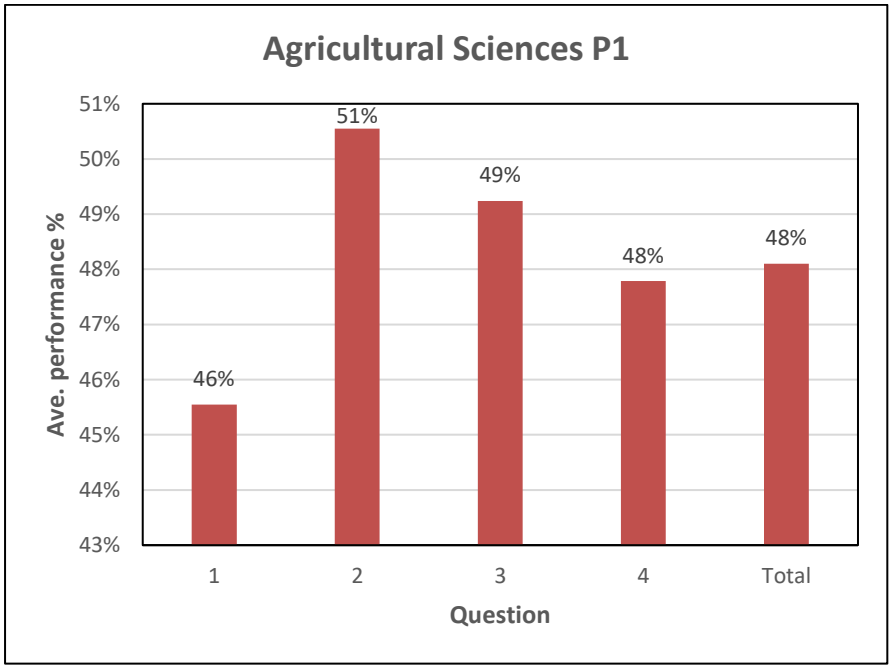
(g) As was the case in previous years, questions requiring reasoning, motivation or justification were still poorly answered by most candidates. This is an indication that candidates had not been sufficiently exposed to these types of questions in the classroom.

(h) The language of learning and teaching remains a challenge for most candidates. They were not able to respond appropriately to the instructional verbs used in questions. They also experienced difficulty with the spelling of terms or concepts.

3.4 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

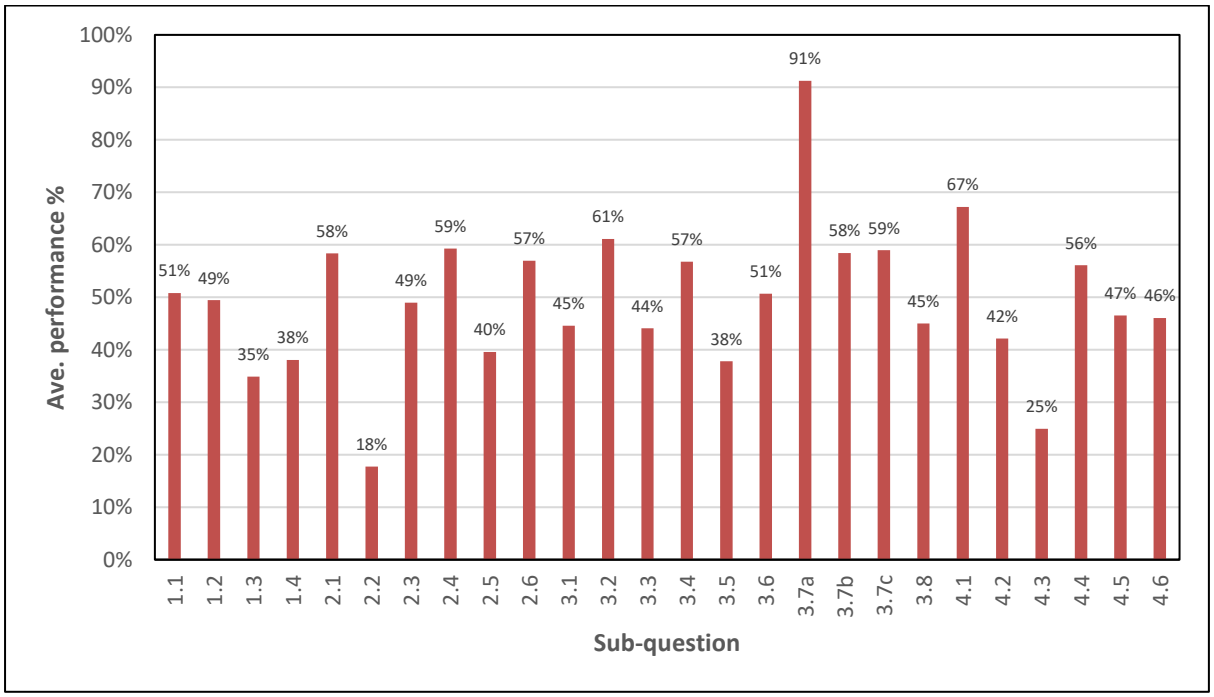
The following graph is based on data from a random sample of candidates. While this graph might not accurately reflect national averages, it is useful in assessing the relative degree of challenge of each question as experienced by candidates.

Graph 3.4.1 Average performance per question in Paper 1



Q	Topic
1	Short Questions
2	Animal Nutrition
3	Animal Production, Protection & Control
4	Animal Reproduction

Graph 3.4.2 Average performance per subquestion in Paper 1



Sub-Q	Topic	Sub-Q	Topic
1.1	Multiple Choice	3.3	Animal handling
1.2	Match Columns	3.4	Basic requirements for transporting animals
1.3	Terminology	3.5	Animal diseases
1.4	Replace incorrect words	3.6	Life cycle of an external parasite (tick)
2.1	Alimentary canal of sheep	3.7	Internal parasites affecting farm animals
2.2	Biological value of protein	3.8	Basic principle of good health
2.3	Digestibility co-efficiency	4.1	Male and female reproductive organs
2.4	Components of a feed	4.2	The process of mating
2.5	Pearson square	4.3	Cloning
2.6	Fodder flow programme	4.4	Spermatogenesis and oogenesis
3.1	Production systems	4.5	Stages of mating
3.2	Animal behaviour	4.6	The udder of a cow

3.5 ANALYSIS OF CANDIDATE PERFORMANCE IN INDIVIDUAL QUESTIONS IN PAPER 1

QUESTION 1: SHORT QUESTIONS (ANIMAL SCIENCES)

Common errors and misconceptions

(a) In Q1.1.2 most candidates were not able to recognise that *carcass meal* is the most appropriate option for a protein-rich concentrate. Candidates' basic understanding of types of feeds was lacking, hence they provided random responses. These candidates did not even realise that the other three options were all carbohydrate-rich.

(b) In Q1.1.3 many candidates did not seem to understand that the question required them to provide a gland that secretes *succus intericus*. The term *tubular indentations* appeared to have created a problem for candidates to understand the gland that was required.

(c) In Q1.1.4 many candidates did not seem to understand the implication of a given nutritive ratio. In their response, they included the option of comparing carbohydrates to proteins which does not address a nutritive ratio.

(d) In Q1.1.5, option B, which was a nomadic farmer, was a popular answer for the farmer producing to generate profit. This was an indication that knowledge of farming systems had not been mastered.

(e) In Q1.1.10 many candidates could not pick *metritis* as a factor causing infertility in cows. Castration and cryptorchidism were provided as answers. These candidates did not realise that the question was not about bulls.

(f) In Q1.2.4 the majority of candidates provided both A and B as an answer. These candidates erroneously concluded that both plants are poisonous.

(g) In Q1.2.5 many candidates wrote either A only or B only, instead of both. This is an indication that they did not have a deeper understanding of hormones involved in *synchronisation of oestrus*.

(h) In Q1.3.2 most candidates displayed lack of knowledge, understanding and exposure to *intensive production system*. A *feedlot* could not be provided as an answer for a small area where sheep are kept and fed for maximum production.

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(i) In Q1.3.4 the majority of candidates were not able to provide *repeat breeder* as a term that describes cows that need to mate several times before conceiving. *Sterility* and *infertility* were popular responses and both were incorrect.

(j) In Q1.3.5 many candidates confused *impotence* with *lack of libido*. Some candidates wrote *importance* instead of *impotence.*

(k) In Q1.4.2 some candidates wrote *mechanical* instead of *biological* thus showing a lack of understanding of different methods to control parasite infestation.

(l) Q1.4.4 proved beyond doubt that many candidates could not differentiate the stages of the oestrus cycle. Different stages were randomly provided as an answer.

(m) In Q1.4.5 most candidates failed to realise that the question expected the response to be *dry or rest period* as the time between two lactations. This was an indication that the lactation curve was not properly revised.

Suggestions for improvement

(a) Teachers need to compile a list of the terms that are relevant to each topic. They should then engage and guide learners on how to identify these terms. This list will form a 'road map' that will help learners gauge the extent of their knowledge and understanding of a topic.

(b) Teachers should encourage learners to study and understand the glossary of terms. Regular assessment on terms will improve the learners' performance.

(c) The use of interesting games, word puzzles and PowerPoint presentations for the teaching of key concepts and improving the spelling of these concepts should be prioritised. Spelling tests on concepts that are not easy to pronounce or write out should be incorporated in weekly activities.

(d) Integrating electronic technology, such as smart boards, internet and visual aids will be handy to improve learners' enthusiasm for the subject. It is hoped that this will stimulate learners to explore other material pertaining to the subject.

(e) Different graphs should be used with a view to showing how each hormone influences each phase of the oestrus cycle and how cows respond to each phase in terms of behaviour.

(f) Learners must be trained on how to answer questions by guiding them on what responses are required to meet the demands of the question.

(g) As in previous years, teachers are advised to realign the content and integrate related content. This will allow the learners to draw parallels between similar/related topics.

(h) Teaching should be guided by the *CAPS* more than by textbooks. However, textbooks and other resources may be used for enrichment.

(i) Teachers are encouraged to do more in-depth research on various aspects in the *CAPS* so that they can further elaborate on the content on current developments and practices in the subject.

(j) The use of various sources when preparing lessons is highly recommended to consolidate information.

(k) Teachers should form a cohesive unit in their clusters. They can support one another by addressing challenging topics and by suggesting different strategies/methodologies to make such topics more interesting. These cluster units could also set common assessment tasks collectively.

(l) Provincial coordinators, together with subject advisors and teachers, need to prepare revision packs that cover all the topics. Teachers should use activities from these packs as informal tasks, in class revision sessions and as a mock examination.

QUESTION 2: ANIMAL NUTRITION

Common errors and misconceptions

(a) In Q2.1.1(a) some candidates wrote the letter F for *omasum* instead of C for *reticulum* as the part where *microbial fermentation* occurs. Candidates concentrated on the size instead of the position of the part of the ruminant stomach. Others wrote the letter C instead of F in Q2.1.1(b). This showed that they lacked understanding of the parts and linking them to the functions of different parts of the ruminant stomach.

(b) In Q2.1.3 candidates were expected to compare the structure of the oesophagus of sheep with that of fowl. Many candidates only indicated that fowl have a crop and nothing was said about sheep. This showed that they lacked the skill of comparing.

(c) In Q2.2.1 many candidates struggled to provide a collective name for amino acids that cannot be produced in the animal body. They provided *ideal protein* and *biological value* instead of *essential amino acids*.

(d) In Q2.2.2 most candidates wrote about the presence of *rumen microbes* without stating their function. This rendered the explanation incomplete. In explaining why the protein quality in ruminant animals is less important, these candidates did not respond as demanded by the question. The response was incomplete, hence they could not be awarded the full complement of the allocated marks.

(e) In Q2.3 some candidates lost a mark for formula because they multiplied by 100% instead of 100. Multiplying by 100% is as much as multiplying by 1, hence the formula becomes incorrect. Others lost a mark for not putting a correct unit after the answer.

(f) In Q2.4.1 some candidates gave examples of *organic components* of a feed instead of *inorganic components* as a correct answer for label A. This was an indication that they could not interpret the schematic representation on components of feed.

(g) In Q2.4.2 few candidates provided general functions of water. The question was on animal nutrition. Functions expected were those in animal nutrition and not any other general function. They failed to recognise that Q2 examined animal nutrition.

(h) Q2.4.3 required candidates to write the letter representing a feed component suitable for growth. Many candidates wrote any other letter in the schematic representation

instead of B which represented a protein. Proteins are suitable for growth and these candidates could not link that function with proteins.

(i) In Q2.5.1 some candidates struggled to indicate that 6 parts are for *soya bean oilcake meal* and 29 parts are for *oatmeal*. They failed to interpret the protein content of both feed A and feed B. Feed A represented a carbohydrate-rich and feed B represented a protein-rich concentrate. This could have helped to indicate the parts appropriately.

(j) In Q2.5.2 many candidates used parts for *soya bean oilcake meal* instead of *oatmeal* to calculate the percentage of oatmeal in the mixture. Others failed to indicate the unit of the percentage for oatmeal. Most candidates who calculated correctly forgot to show all calculations. They forgot to show the calculation of the denominator; as a result, a mark was lost.

(k) In Q2.6.1 most candidates were able to calculate as expected but failed to show a conversion into kg. Others could not work out the first step of the total feed required.

(l) In Q2.6.2 the majority of candidates provided the reasons for fodder flow planning instead of reasons for calculating the energy value of a feed. This is an indication that they could not distinguish between the two.

(m) In Q2.6.3 an inability to follow instructions in drawing a graph was a common problem for those who failed to score the total marks. Common errors were the following:
- Not including both variables in the heading (feed requirements and lucerne production).
- Incorrect labelling and calibration of the axes.
- Twisting of independent and dependent variables on the axes.
- Graph without a zero baseline.
- Absence of a unit (tons) on the Y- axis.

Suggestions for improvement

(a) Videos indicating the parts of the alimentary canals of different animals as well as their functions could be useful teaching tools to enhance understanding of functions of the parts of the alimentary canals. In addition, diagrams of the alimentary canals alongside the parts and functions would give learners the opportunity to associate parts of the alimentary canals with their functions.

(b) Practical work such as dissection of a fowl, purchase of a full ruminant alimentary canal from an abattoir and identification of the digestive systems including that of a piglet can enhance the understanding of the anatomies of different alimentary canals.

(c) Various resources and the dissection of real animals for observation of the parts could be used to familiarise learners with the roles of each part in digestion.

(d) Carefully planned practical investigations and questionnaires will assist learners in developing an in-depth understanding of the content.

(e) Excursions to nearby farms will provide learners with an opportunity to interact with the reasons for planning a *fodder flow programme* and reasons why the programme is important.

(f) Exposing leaners to more assessments with different scenarios is imperative to make them aware of how to respond to questions.

(g) Teachers are encouraged to conduct regular informal assessments on calculations, providing guidance on the use of correct formulae and following the correct steps when substituting the formula with values. This will develop the learners' ability to use correct formulae in calculations.

(h) The criteria to be followed in drawing graphs should be explained to learners. This will enable them to have a better understanding of how to draw a graph.

QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

Common errors and misconceptions

(a) In Q3.1.1(b) some candidates were not able to identify a *free-range system* as illustrated in the picture. Instead, they provided *extensive production system* as an answer. Candidates were expected to indicate an example of a *production system* and not the actual *production system.*

(b) In Q3.1.3 many candidates gave reasons for shelter instead of the reasons for housing pigs in a *furrowing pen.* Others wrote the results of pigs kept in a *furrowing pen*. These candidates misinterpreted the question.

(c) In Q3.1.4 most candidates did not deduce the factors that increase production, instead they gave irrelevant responses like temperature, technology, more space for animals to move, machinery and production of many piglets.

(d) In Q3.2 some candidates lost all the marks because they wrote statements instead of letters as was required; it was clear that instructions were not followed by the candidates.

(e) In Q3.3.1(b) was completely clear in the picture, although some candidates wrote *head clamp* instead of *head gate*. The responses provided by candidates showed that most of them were unfamiliar with the handling facilities used in agriculture.

(f) In Q3.3.2 some candidates provided the management practices that are performed in the facility represented instead of the purpose of the facility.

(g) In Q3.5.1 the majority of candidates did not score a mark. Candidates wrote *mosquito borne viral disease* instead of *Rift Valley fever.* This indicated that they had extracted their response directly from the scenario.

(h) In Q3.5.2(a) most candidates wrote *mosquito borne viral disease* instead of *mosquito;* it seemed candidates were unable to distinguish between a disease and a vector.

(i) In Q3.5.2(b) candidates wrote *viral disease* instead of *virus*; again, candidates were unable to differentiate between a disease and a pathogen.

(j) In Q3.5.4 candidates gave incorrect responses such as *contagious, viral*, and *infection*, instead of *zoonotic*. This was indicative of the fact that they had a serious lack of vocabulary in animal health.

(k) In Q3.5.5 some candidates provided the general economic implications of animal diseases, while the question required specific economic implications of animal diseases to the farmer. Others wrote *loss of jobs*, *loss of economy* and a few candidates wrote *vaccination* only without qualifying it.

Suggestions for improvement

(a) Teachers need to plan excursions to nearby farms and research stations to expose learners to production systems. This will enhance their understanding and ability to differentiate between these production systems. Furthermore, learners will be able to distinguish between different examples of intensive production systems.

(b) Teachers could play videos that would spark debates on recent trends and future prospects of intensive production systems.

(c) Learners should be encouraged to use other relevant resources to access information about the tools, equipment and facilities used in different farming enterprises.

(d) Videos, pictures and illustrations on animal handling facilities are widely available on the internet and could be used to enhance learner understanding of the content.

(e) PowerPoint slides with pictures and videos of the facilities and tools could be prepared and used in the classroom, to arouse the interest of the learners. This will assist learners with their understanding of the reasons for handling animals using the facilities.

(f) Collaboration with local extension officers from the Department of Agriculture could be useful in trying to mitigate the gap teachers and learners might have on various aspects of the content.

(g) Charts and videos should be used to enhance understanding of animal diseases and parasites. This will also help learners to comprehend basic principles of good health that can be applied to control parasites.

(h) Planned visits to research stations and institutions should be undertaken to assist learners in classifying parasites according to their life cycles.

(i) Examples of parasite infestation could be brought into the class by way of videos and pictures that must be accompanied by practical ways to control such parasites.

(j) Intensive revision of work using charts, scenarios and tables on diseases and parasites is necessary as the information is vast and likely to cause confusion.

QUESTION 4: ANIMAL REPRODUCTION

Common errors and misconceptions

(a) In Q4.2.1 many candidates failed to identify *mating* as the reproductive process as illustrated. Instead they provided *mounting* which is not a process but a stage in the process of *mating*. This was an indication that they could not differentiate between a reproductive process and a reproductive stage.

(b) In Q4.2.2 a number of candidates' responses indicated that they were unable to interpret the picture. They indicated the stage of the process as *dismounting* instead of *mounting* even though both legs of the bull were still resting on the cow's back.

(c) In Q4.2.3 some candidates provided signs of a cow in oestrus instead of sexual behavioral signs that are displayed by bulls before mating. They failed to realise that the question was not about cows but bulls.

(d) In Q4.2.4 some candidates lost marks unnecessary. They wrote irrelevant responses, like *lack of libido, ejaculation, signs of oestrus* instead of factors that regulate mating behaviour in bulls.

(e) In Q4.3.1 the majority of candidates were unable to provide the reproductive technique represented in the schematic representation. They gave *embryo transfer, cloning, embryo flushing* as answers instead of *reproductive cloning* and *therapeutic cloning*. This seemed to be a difficult question for most candidates as they failed to analyse and interpret the data-based question.

(f) An inability by the majority of candidates to identify the reproductive techniques in Q4.3.1 resulted in their failing to indicate the purpose of each type of reproductive technique in Q4.3.2.

(g) Most candidates lost marks in Q4.3.3 because they gave the disadvantages of *artificial insemination* or *synchronization of oestrus*. Popular responses were *time consuming* and *labour intensive* instead of giving the disadvantages of *cloning*.

(h) In Q4.4.2 some candidates only scored 1 mark out of 3 marks. When labelling A, candidates wrote *haploid chromosome*, *sperm cell* or *spermatocyte* without qualifying that the spermatocyte was a secondary spermatocyte. When labelling C, candidates wrote *diploid egg cell*, *diploid ovum*, *ovary* and *primary eggs* instead of *primary oocyte* or *diploid oocyte*.

(i) In Q4.5.3 many candidates wrote responses like *injuries*, *vaginal tear*, *stress* and *poison* instead of providing the factors that cause retention of the placenta.

(j) In Q4.6.3 some candidates lost all the marks because they twisted the responses although they should have known the hormones that were asked. There were a few candidates who wrote any hormone that they were familiar with like *progesterone, FSH* and *oestrogen* instead of *prolactin* and *oxytocin*.

Suggestions for improvement

(a) Teachers are encouraged to contact institutions where the various reproductive processes are practised so that learners can observe them to enhance their understanding of these reproductive processes.

(b) Teachers need to make illustrations and videos to assist learners to differentiate between *reproductive process* and reproductive stages.

(c) In presenting the various processes such as *mating, cloning, artificial insemination, stages of pregnancy, embryo transfer, parturition* and other reproductive processes, teachers should use flow diagrams, schematic representations, projections and videos to indicate the characteristics and the effects of various hormones in the different processes.

(d) Teachers are advised to source and play videos about the two reproductive techniques of *cloning*. This will assist learners to note the differences and the importance of each.

(e) It is also suggested that teachers cover all the reproductive processes simultaneously in order to show the synergy between the processes. This will assist learners to understand these processes better.

(f) Enrichment and enhancement material should be sourced from various resources such as the slides from the ASAAE software.

(g) Quality-assured formal and informal tasks should be prepared, with the aim of raising the level of questioning in order to prepare the learners for questions that require analysis and reasoning.

(h) The importance of learning the subject terminology must be emphasised and learners must practise the correct spelling, for example, *dystocia*, *parturition, cryptorchidism, metritis, etc.*

(i) Schematic representation and diagrams should be used by teachers to expose learners to questions that require interpretation of data.

(j) Learners need to be taught the different reproductive techniques and the processes involved in each technique.

3.6 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

General comments

(a) Generally, candidates' performance in this paper has improved when compared to 2022.

(b) In 2023 candidates' responses indicated that most of them still struggled with questions that required application of knowledge, as well as questions based on sources.

(c) Questions on basic genetics were still a challenge for the 2023 cohort.

General suggestions for improvement

The following suggestions for improvement are proposed to address the quality of performance of candidates:

(a) Teachers are encouraged to use various resources such as agricultural magazines or the internet to develop a comprehensive understanding of subject terminology.

(b) Teachers should expose learners to regular and consistent informal assessment tasks or activities that will improve their confidence in dealing with the subject content.

(c) Setting of quality-assured common tasks on more data response questions, such as graphs and case studies to enhance interpretation and application, is recommended.

(d) Expose learners to simple mathematical calculations involving percentages of offspring resulting from monohybrid and dihybrid crossing, profit/loss, working out the polygenes, etc. It is recommended that all calculations commence with the correct formula/formulae, then the correct substitution should be done, followed by the actual calculation and ultimately the correct answer.

(e) Although learners might have access to only one textbook, teachers should acquaint themselves with and use several available textbooks in their lesson preparation. Teachers and learners will thus be exposed to a wide range of possible activities.

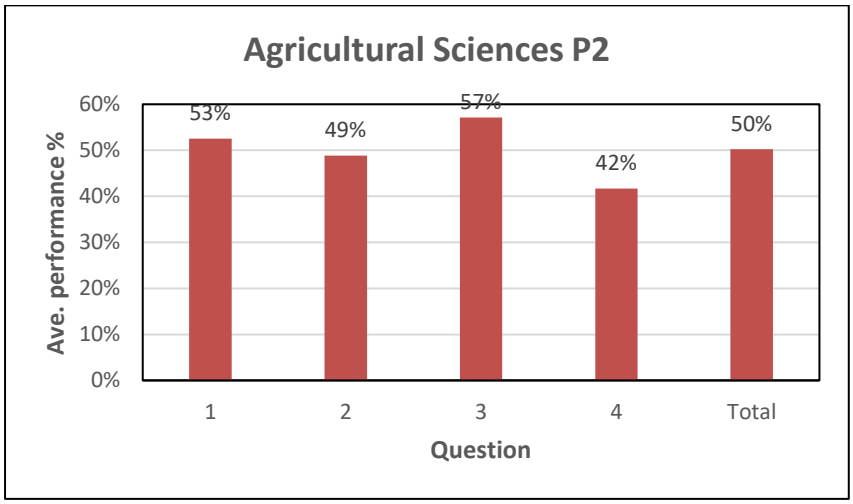
(f) Teachers need to broaden their knowledge and practical experience in certain areas of the curriculum so that they are able to expose learners to practical situations; for example, *agricultural marketing*, and *genetic crossing in particular breeding systems*.

(g) Responses to short questions show that many learners still lack basic conceptual knowledge and teachers should use various approaches to expose and explain terminology and concepts to learners. Teachers must ensure that learners are exposed to the language in which they will be writing the examination, as many learners struggle with reading, understanding and interpreting questions. Such learners also find it challenging to express their responses correctly.

3.7 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

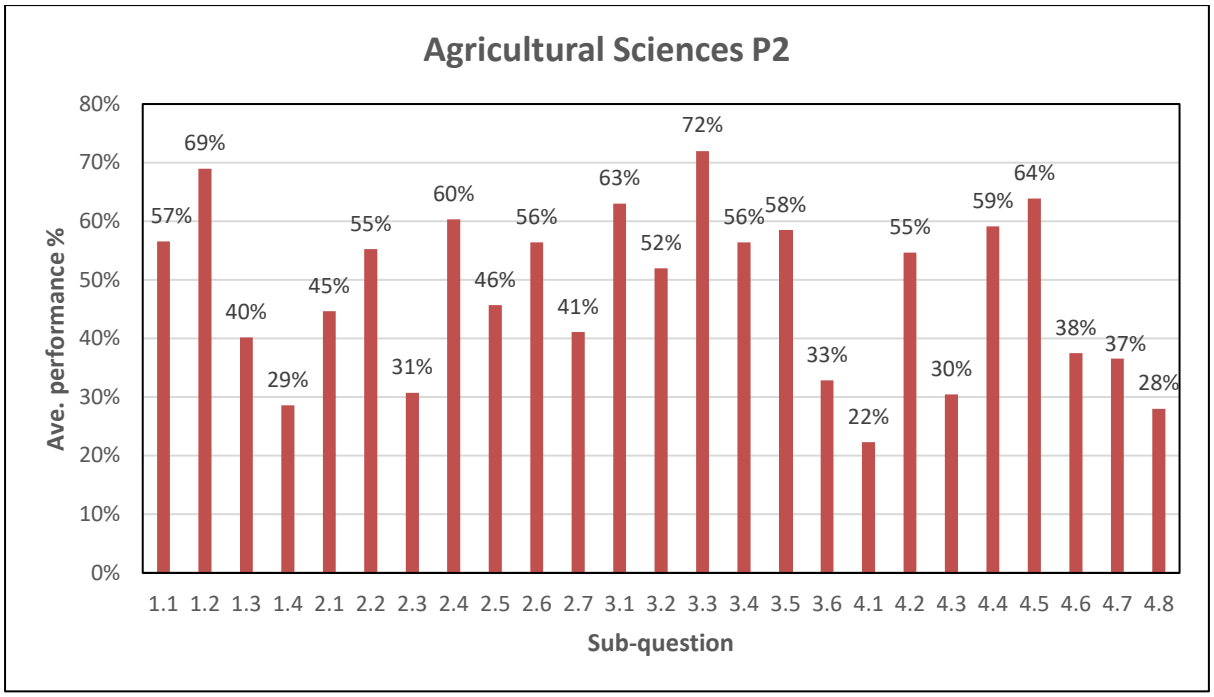
The following graph is based on data from a random sample of candidates. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 3.7.1 Average performance per question in Paper 2



Q	Topic(s)
1	Short questions
2	Agricultural Management & Marketing
3	Production Factors
4	Agricultural Genetics

Graph 3.7.2 Average performance per sub-question in Paper 2



Sub-Q	Topic	Sub-Q	Topic
1.1	Multiple choice	3.3	Labour legislation
1.2	Match columns	3.4	Types of capital
1.3	Terminology	3.5	Cash-flow statement
1.4	Replacement of incorrect words	3.6	Management principles ; internal and external forces affecting farming business
2.1	Marketing systems	4.1	Law of Segregation & Independent Assortment
2.2	Supply and demand	4.2	Monohybrid crossing
2.3	Role of legislation in marketing	4.3	Polygenic inheritance
2.4	Marketing functions	4.4	Sex-linked characteristics
2.5	Entrepreneurship	4.5	Pedigree diagram
2.6	SWOT analysis	4.6	Variation
2.7	Business plan	4.7	Breeding systems
3.1	Land as a production factor	4.8	Genetic modification
3.2	Types of labour		

3.8 ANALYSIS OF CANDIDATES' PERFORMANCE IN INDIVIDUAL QUESTIONS IN PAPER 2

QUESTION 1: SHORT QUESTIONS (AGRICULTURAL MANAGEMENT AND GENETICS)

Common errors and misconceptions

(a) Q1.1.4 was a combination question based on *price fixing*. Most candidates struggled to choose the statements which related to *price fixing*. They opted for the statement referring to price fixing as allowing for bargaining which was not applicable.

(b) In Q1.3.1 most candidates confused *market research* with *market intelligence.*

(c) In Q1.3.2 most candidates incorrectly referred to a financial document as an *income statement* instead of a *balance sheet.*

(d) In Q1.3.3 candidates were required to indicate the type of cell division leading to the production of haploid sex cells. They wrote *mitosis* instead of *meiosis:* this showed a lack of understanding of the intentions of the two cell divisions.

(e) Some candidates in Q1.3.5 gave *GMO* (an organism) as the answer instead of *GM* (a technique). It showed a lack of insight in differentiating between the two.

(f) In Q1.4.3 most candidates provided incomplete terminology, *agrobacterium* for the technique instead of *agrobacterium tumefaciens*.

(g) Many candidates in Q1.4.4 still confused *heritability* with *heredity*. This showed that they could not distinguish between the two concepts despite this question not being new.

(h) In Q1.4.5 candidates were required to indicate a pattern of inheritance where characteristics of both parents are expressed in the phenotype of an offspring. They wrote *complete dominance* instead of *co-dominance*.

Suggestions for improvement

(a) Teachers should compile a list of concepts based on the *CAPS* document and present these concepts first whenever introducing a new topic.

(b) Teacher must encourage learners to compile a list of concepts and their meanings, applicable to the topic being taught, and must assess them on a regular basis.

(c) The use of word puzzles, word banks and other terminology exercises can improve spelling and reinforce concept comprehension; this should be followed by spelling exercises.

(d) Teachers should guide learners on how to answer Q1.4 on a regular basis, so that learners get used to the skill of replacing the underlined word instead of writing ‘true’ or ‘false’.

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

(a) In Q2.1.1 some candidates could not correctly identify the marketing systems in the illustration. Some referred to *controlled marketing* as *government marketing* and others mentioned *channels of free marketing* while others referred to *marketing approaches*. This had an impact on subsequent questions (Q2.1.2 to Q2.1.4) as they were dependent on the correct identification of the marketing systems.

(b) Some candidates confused principles of *cooperative marketing* in Q2.1.2 with benefits of *cooperative marketing* which was asked in Q2.1.4. This was an indication that they were unable to differentiate between principles and benefits of a *cooperative marketing*.

(c) In Q2.1.3 a few candidates provided advantages of a *free-marketing* system instead of disadvantages. The common answer provided by candidates was, ‘The seller can sell

the products anywhere' which is an advantage.

(d) In Q2.2.1 some candidates confused a *demand curve* with *supply curve* and vice versa.

(e) In Q2.2.2 a few candidates referred to *equilibrium price* instead of *market equilibrium* and some mentioned irrelevant terms like, 'punctuated equilibrium', 'break-even point' and 'chemical equilibrium'.

(f) Most candidates could not identify the situation in **D** (*surplus*) and in **E** (*shortage*) in Q2.2.3. They incorrectly referred to the situation as *price elasticity*. Some referred to the situation in **D** (*surplus*) as *ceiling price* and in **E** (*shortage*) as a *floor price*.

(g) Q2.2.4 was problematic for most candidates as they could not explain the relationship between price, supply and demand. They explained the *law of supply* or the *law of demand* and some explained the relationship between *demand* and *supply* only, excluding the price.

(h) In Q2.3.2 many candidates were unable to state the roles of legislation for the effective marketing of agricultural products. They wrote the acts and not the roles, for example, Meat and Safety Act.

(i) Some candidates wrote *price fluctuation* instead of *seasonal fluctuation* as the factor that hampers the marketing of agricultural products in Q2.3.2.

(j) Many candidates were unable to explain the distinction between *entrepreneur* and *entrepreneurship* in Q2.5.1.

(k) In Q2.5.2 some candidates could not link the statements given to the correct success factor.

(l) Incorrect spelling of threats (component of a SWOT analysis) in Q2.6.2 made some candidates lose a mark. They wrote 'thread' or 'treat' which gave a different meaning.

(m) In Q2.7.1 a few candidates confused components of a business plan with the reasons for drawing up a business plan.

Suggestions for improvement

(a) Teachers need to give learners practical exposure to marketing systems practised by local farmers, hawkers around their localities and to visit agricultural cooperatives to see how they operate. They can also be encouraged to sell so that they understand a free-marketing system and its advantages and disadvantages.

(b) Learners must be allowed to draw a graph showing a demand, and a supply curve and to determine the *equilibrium price*, *equilibrium point*, *shortage* and *surplus*. They must also be made to understand that a relationship between *supply*, *demand* and *price* always begins with the price.

(c) The role of legislation in the effective marketing of agricultural products should be thoroughly addressed making reference to relevant acts and their importance.

(d) Teachers should align the content with real-life situations so as to bring more understanding of the topics in marketing.

(e) Understanding of the components of the SWOT analysis can be reinforced by using examples from their environment (school).

QUESTION 3: PRODUCTION FACTORS

Common errors and misconceptions

(a) Some candidates failed to obtain full marks for drawing the graph in Q3.1.1 The common errors identified were:

- Incorrect type of a graph (drawing a bar graph instead of a line graph).
- Incorrect placement of variables on appropriate axis.
- Omitting units.
- Incorrect calibration.

(b) In Q3.1.2 most candidates failed to identify the economic characteristics of land depicted in the table which was *law of diminishing returns*. They mentioned other economic characteristics not applicable to the table, like 'Soil varies with different production potential'.

(c) In Q3.1.3 many candidates mentioned the function of land not applicable to the table.

(d) Q3.1.4 assessed methods to increase soil productivity other than fertilisers which was given in the table. Most candidates wrote 'application of fertilisers' even though the question specified that the method should be other than the one depicted in the table. This showed that they did not read the question in full.

(e) Fewer candidates in Q3.2.1 failed to link the type of labour to the task provided.

(f) In Q3.2.2 many candidates did not realise that the question required ways to improve the *living conditions* of farm labourers. They provided *working* and *economic conditions* instead of *living conditions.*

(g) In Q3.3.1 many candidates provided statements even though the question required them to respond to the question by writing letters.

(h) Some candidates in Q3.3.2 referred to *labour contract* as *'agreement document'.*

(i) Many candidates in Q3.4.1 confused *types of capital* with *types of credit*, like medium-term capital and long-term capital instead of *movable* and *fixed capital*.

(j) In Q3.5.1 most candidates incorrectly identified the financial record as *income statement* or *balance sheet* instead of a *cash-flow statement*

(k) Some candidates in Q3.5.3 could not write the formula correctly as they omitted profit/loss. In some instances, the formula for profit/loss was expressed in reverse (Profit/loss = Total expenditure – Total income), because they realised that the value for the expenditure was more than the value for the income. Some incorrectly wrote the formula for a net worth.

(l) In Q3.6.1 many candidates could not link the statements to the correct management principles.

(m) Q3.6.2 required candidates to give an example of the external and internal forces affecting a farming business. Some candidates confused the forces that are internal with those that are external and vice versa.

Suggestions for improvement

(a) Learners must be taught to identify the dependent and independent variables when drawing a graph and placement of the variables on the correct axis. They must also be exposed to a marking rubric so that they see how marks are allocated.

(b) Learners should be exposed to questions that require interpretation of data from a table, graph, etc. so that they are able to make correct deductions.

(c) Teachers need to guide learners on how to identify the key words in the question so that they are able to meet the demands of the question.

(d) Regular informal assessment on calculations and how to write a correct formula is key to understanding and getting full marks in the questions based on calculations.

(e) Case studies, diagrams and scenarios need to be included in assessment tasks at regular intervals during the school year, with the aim of exposing learners to activities that will improve their skills in answering these types of questions. Such interventions could assist learners by improving their reading and understanding skills, the application of knowledge and an awareness of how to follow instructions.

(f) Content knowledge is vital. Teachers should enrich themselves by working together with other teachers handling related subjects like Accounting when addressing the topic on financial records so that they are also able to assist learners to differentiate between *income statements*, *balance sheets*, *cash-flow statements* and other relevant financial documents.

QUESTION 4: BASIC AGRICULTURAL GENETICS

Common errors and misconceptions

(a) Q4.1.1 required candidates to give a term for the genetic makeup; some candidates incorrectly wrote *phenotype* instead of *genotype*. This was an indication that they were unable to differentiate between *genotype* and *phenotype*.

(b) In Q4.1.2 most candidates failed to comprehend the information given and align it to *Mendel's Law of segregation;* instead they aligned it to *Mendel's Law of independent assortment* which was incorrect.

(c) In Q4.1.3 many candidates were unable to explain *Mendel's Law of independent assortment*. They displayed a lack of understanding that *Mendel's Law of independent assortment* involves pairs of genes separating independently of the members of other pairs. Some gave an incomplete definition while others extracted their response from the paragraph provided which was talking to *Mendel's Law of segregation*.

(d) Some candidates in Q4.2.1 wrote incorrect gametes for the parents resulting in the incorrect gametes for the offspring and gave an incorrect answer for Q4.2.2 which required the calculation of the percentage of homozygous red offspring. Some candidates made a *dihybrid* square.

(e) In Q4.2.2 some candidates did not show the calculation but only came up with an answer and, as a result, lost a mark.

(f) In Q4.3 most candidates displayed a lack of understanding of the concept '*polygenetic inheritance*' where the characteristic is determined using the values of the base and the additive allele. In Q4.3.1 most candidates failed to calculate the height of a plant with the genotype given.

(g) Q4.3.2(b) required candidates to determine the phenotype of the shortest plant. Most candidates responded to the phenotype as 'short' instead of '40 cm'. This displayed a lack of understanding that, in a polygenic inheritance, the phenotype for a quantitative characteristic can be expressed as a number.

(h) In Q4.4.1 many candidates responded by writing *X-chromosome* instead of *X-linked inheritance* when the question asked them to indicate whether the characteristic was *X-linked* or *Y-linked inheritance*.

(i) Q4.4.2 asked for a term for characteristics located on the *X*- and *Y-chromosomes.* Most candidates wrote 'gonosomes' while others wrote 'sex chromosomes' instead of *sex-linked characteristics*. This showed that they confused *sex chromosomes* with *sex-linked characteristics*.

(j) Many candidates in Q4.5 were unable to interpret the pedigree diagram. They had a challenge specifically with Q4.5.2 and Q4.5.4 which required the correct interpretation of the diagram and genotypes of the parents. In Q4.5.2 they could not come up with the genotype of individual 5 as it was dependent on correct determination of the genotype of parents. Some wrote the genotype (ii) instead of (ll) which is small l. In Q4.5.4 most candidates wrote *homozygous* instead of *heterozygous* for individual 8.

(k) In Q4.6.1 some candidates were able to provide the first part of the definition of *variation* (the difference). In the latter part of the definition, they were not sure whether the difference occurs amongst individuals of the same species or of different species and as such, they lost a mark when they mentioned different species.

(l) Many candidates in Q4.6.2 could not differentiate between the *cause* and *types* of *variation.* They wrote the *types of variation* instead of *causes of variation*.

(m) In Q4.6.3 some candidates confused types of mutagen with examples of mutagen. They gave answers like 'X-rays' instead of 'physical mutagen' and some wrote 'gene mutation' which was an incorrect response.

(n) In Q4.7.1(b) many candidates incorrectly referred to the breeding system which involved the crossing of Holstein (bull 1) with Holstein (heifer 2) as *inbreeding* instead of *line breeding*. They could not see that Holstein (heifer 2) was from Holstein (bull 2) which is another family of the same ancestral line and when crossed with Holstein (bull 1) it becomes a *line breeding*.

(o) In Q4.7.3 a few candidates provided advantages of *inbreeding* instead of disadvantages.

(p) In Q4.8.1 most candidates wrote about benefits related to the environment even though the question limited them to health benefits.

(q) Responses by most candidates in Q4.8.2 reflected that they could not separate the aims of genetic modification in plants and in animals as they wrote 'increased food

security, resistance to pest' and yet the question was based on aims of genetic modification in animals.

Suggestions for improvement

(a) Teachers should allow more time to train learners on basic crossing, use of Punnet square and placement of gametes for a *monohybrid* and a *dihybrid cross*. This will assist learners to draw the appropriate number of blocks in a square for these crosses. Teachers should also emphasise that only letters of the alphabet are used to represent gametes that form the alleles.

(b) Understanding of terminology is key to understanding basic genetics and learners should be able to describe the genetic concepts.

(c) Teaching genetics should be reinforced by practical examples within their learning environment such as plants, flowers and livestock.

(d) Polygenic inheritance and its application seems to be problematic, so teachers need to expose learners to different questions on the concept using previous question papers.

(e) Learners should be trained on how to analyse a pedigree diagram so that they are able to determine genotype and phenotype of individuals used in the pedigree diagram. Teachers can design various pedigree diagrams and allow learners to answer questions on them.

(f) When teaching breeding systems, learners should be taught examples of crossings resulting in different breeding systems and the advantages and disadvantages of each. Schematic representations of animal breeding systems should be used to illustrate basic types of breeding methods.

(g) Responses to questions on genetics suggest that there could be an underlying content gap amongst teachers. Subject advisers should conduct workshops to address the shortcomings in content knowledge in this regard.

(h) There should also be integration with Life Sciences, as genetics is taught comprehensively in Life Sciences.

CHAPTER 4

BUSINESS STUDIES

The following report should be read in conjunction with the Business Studies Paper 1 and Paper 2 question papers for the NSC November 2023 examinations.

The year 2023 marked the fourth year since the move to 2 two-hour papers of 150 marks each. Each paper aims to assess separate and distinct disciplines as outlined in the *2021 Examination Guidelines*, as follows:

	MAIN TOPICS	SUBTOPICS
PAPER 1	Business Environments	Macro environment: Impact of legislation Macro environment: Business strategies Business sectors and their environments
	Business Operations	Human Resources function Quality of performance
PAPER 2	Business Ventures	Management and leadership Investment: Securities/opportunities Investment: Insurance Forms of ownership Presentation and data response
	Business Roles	Ethics and professionalism Creative thinking and problem solving Social responsibility (CSR/CSI) Human rights, inclusivity, and environment Team performance; conflict management

4.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Business Studies examination in 2023 decreased by 14 357 compared to that of 2022.

There was a pleasing improvement in the pass rate this year. Candidates who passed at the 30% level improved from 76,7% in 2022 to 81,8% in 2023. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 56,3% to 62,2%.

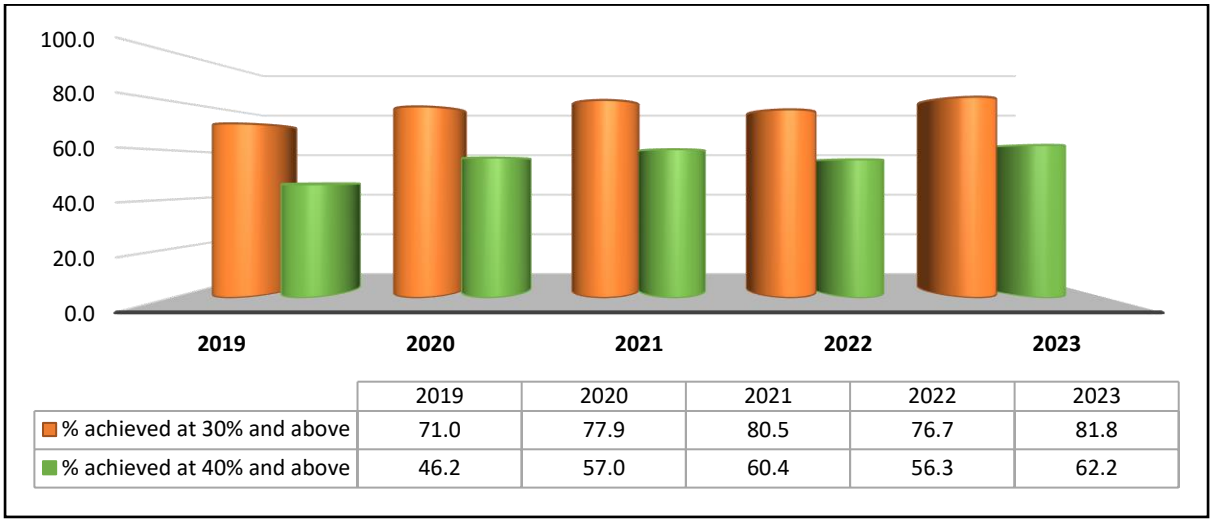
The percentage of distinctions over 80% improved from 6,0% in 2022 to 6,5% in 2023. Given the decrease in the size of the 2023 cohort, this converts into an increase in the total number of distinctions from 14 519 to 14 796.

The various commendable intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 4.1.1 Overall achievement rates in Business Studies

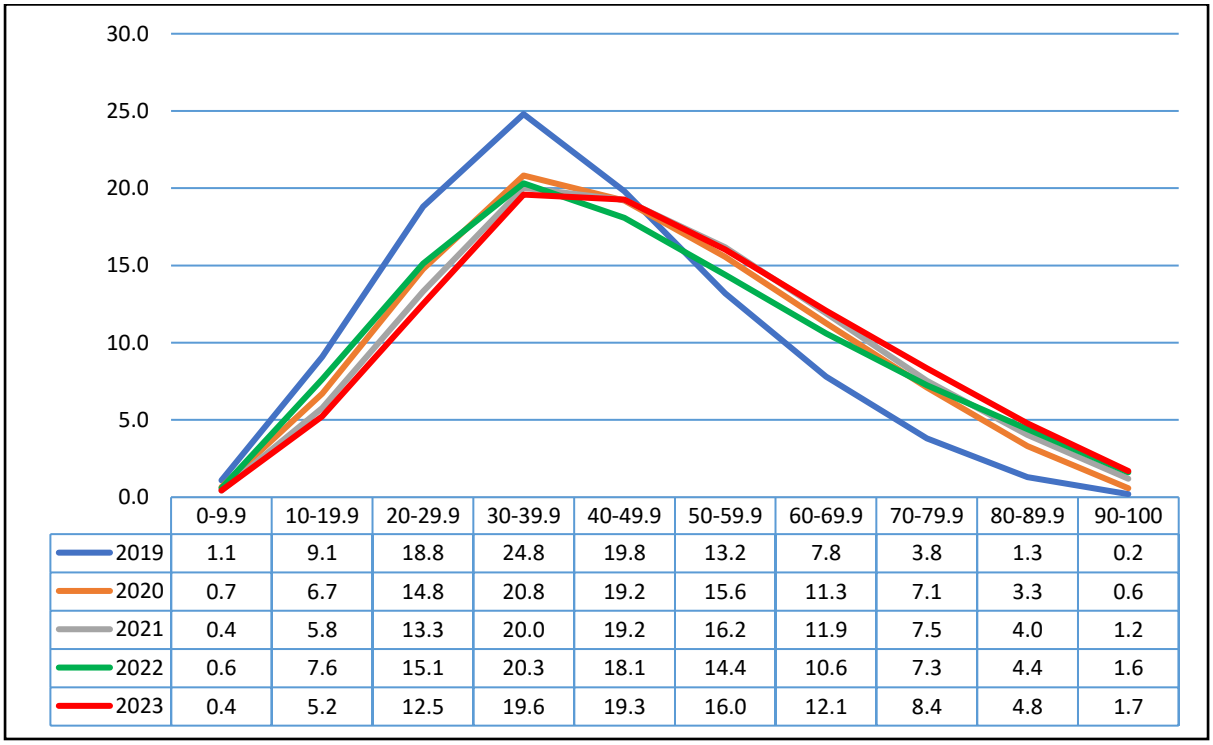
Year	No. wrote	No. achieved at 30% and above	% Achieved at 30% and above	No. achieved at 40% and above	% Achieved at 40% and above
2019	186 840	132 571	71,0	86 242	46,2
2020	207 045	161 224	77,9	118 100	57,0
2021	243 843	196 233	80,5	147 398	60,4
2022	241 989	185 503	76,7	136 330	56,3
2023	227 632	186 191	81,8	141 604	62,2

Graph 4.1.1 Overall achievement rates in Business Studies (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	71.0	77.9	80.5	76.7	81.8
% achieved at 40% and above	46.2	57.0	60.4	56.3	62.2

Graph 4.1.2 Performance distribution curves in Business Studies (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	1.1	9.1	18.8	24.8	19.8	13.2	7.8	3.8	1.3	0.2
2020	0.7	6.7	14.8	20.8	19.2	15.6	11.3	7.1	3.3	0.6
2021	0.4	5.8	13.3	20.0	19.2	16.2	11.9	7.5	4.0	1.2
2022	0.6	7.6	15.1	20.3	18.1	14.4	10.6	7.3	4.4	1.6
2023	0.4	5.2	12.5	19.6	19.3	16.0	12.1	8.4	4.8	1.7

4.2 OVERVIEW OF CANDIDATES' PERFORMANCE: PAPERS 1 AND 2

General comments

(a) The general performance of candidates declined in Paper 2 when compared to Paper 1. Candidates appeared to experience difficulties in the topic *Business Ventures* which was assessed in Sections B and C. Based on the results of the 2022 cohort, the candidates of the 2023 cohort were expected to perform well on this topic.

(b) It has been noted that candidates' performance improved in Section A in Paper 1 but declined in Paper 2 even though some of the subquestions in this Section have appeared many times in the NSC November examinations.

(c) Candidates performed well in Q3 in Paper 2 which consisted of questions covering the topic *Business Roles,* but their performance declined in Q6 on the same topic in Paper 2. It is evident that there was a lack of preparation and practice by many candidates on the stages of *team development*, as well as *team dynamic theories*, which were topics assessed in this question.

(d) Candidates quoted in lieu of actual responses, which cost them up to three marks. They were, however, able to respond appropriately to questions requiring concept identification from given scenarios. Furthermore, others were able to respond in full sentences to middle and higher order questions.

(e) Linguistic barriers continue to limit candidates' responses to certain middle- and higher-order questions. Such shortcomings were granted part-marks where necessary. The language proficiency barrier was also noted in the 2022 National Diagnostic Report.

(f) It has been noted that a few candidates were able to provide relevant and valid examples of the latest developments in Business Studies to support their responses in Q5 and Q6, and subsequently obtained two marks allocated for originality in essay questions. However, many candidates still experienced difficulty in providing recent and valid examples from reliable sources. This is a persistent challenge, despite the recommendations made in the 2022 National Diagnostic Report on learner performance.

General suggestions for improvement

(a) The topic *Business Ventures* must be adequately taught and assessed during the academic year through direct and indirect questions. Learners must be requested to conduct research on all subtopics covered under this topic. They must refrain from only focusing on the topic *Business Roles* as this contributes to poor performance in Paper 2. Subject advisors must ensure that all five subtopics covered under *Business Ventures* are adequately taught and assessed in Grades 10 and 11 in preparation for Grade 12. Furthermore, Grades 10–12 Business Studies teachers should work collectively in planning informal and formal assessment tasks and ensuring that they are of a good quality and standard to prepare learners for the NSC examination.

(b) Teachers are advised to develop question banks consisting of a variety of Section A direct and indirect subquestions, including the identification of concepts, terminology, and application of knowledge. These questions must form part of informal and formal assessment tasks covering all Paper 1 and 2 topics that were taught during the academic year.

(c) Learners must be conversant with all five subtopics covered under *Business Roles* including an in-depth understanding of the content, including headings and subheadings. Teachers should consider using role playing, simulations and videos to enhance the quality of teaching and learning in the classroom.

(d) Teachers are advised to include distractors in questions when learners are expected to quote from scenarios. The distractors must be close to the required answer as this will encourage learners to master the content.

(e) Learners should be exposed to 'Note to Markers', found in the marking guidelines, so that they are aware of how questions are being marked. They should also be given the opportunity to mark their own informal assessment tasks so that they can understand the importance of writing in full sentences.

(f) Teachers should allow learners to use *Google Scholar*, and any other reliable sources on recent developments in the subject, to generate relevant and current examples on content being taught.

(g) All subtopics for both Papers 1 and 2 must be adequately taught and assessed during the academic year. It is important to guard against predicting potential contextual and essay questions as this practice might lower performance in the future.

(h) It is highly recommended that teachers construct a 5-year report using the National Diagnostic Reports on learner performance from 2019–2023. It is necessary to bring together all misconceptions, errors, and recommendations for each topic in the two papers. Learners must be aware of these errors to avoid repeating them. This recommendation was made in the 2022 National Diagnostic Report as well.

(i) Subject advisors and teachers are advised to go through Paper 1 and Paper 2 addendums from 2019 to 2023 and take note of facts that have been revised in the November NSC marking guidelines. Such revisions should also be made across all resource material used by teachers and learners to prevent learners from losing marks for writing incorrect information. It must be noted that all revised facts have also been reported in the past National Diagnostic Reports.

(j) Greater emphasis should be placed on the learning of appropriate terminology related to the various topics. Teachers are advised to include the following strategies:

- Introduce new terms in every lesson, elaborate on the meaning and context of each, and create a glossary.
- Illustrate the meaning of new terms by using them in context, in sentences and in short scenarios.
- Encourage learners to spot new terms and to find their meanings using a dictionary, a textbook or Google during lessons. This may form the basis of an informal class 'competition'.
- Always strive to include subject-specific terminology in all informal assessment tasks, as well as during teaching.
- The meanings and expectations of instructional verbs that are commonly used in Business Studies should be pasted in learners' books.
- Copies of the *2021 Examination Guidelines* with specific reference to 'elaborated content' must be given to the learners. They must also be advised on the requirements or expectations of key verbs in each subtopic.

4.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

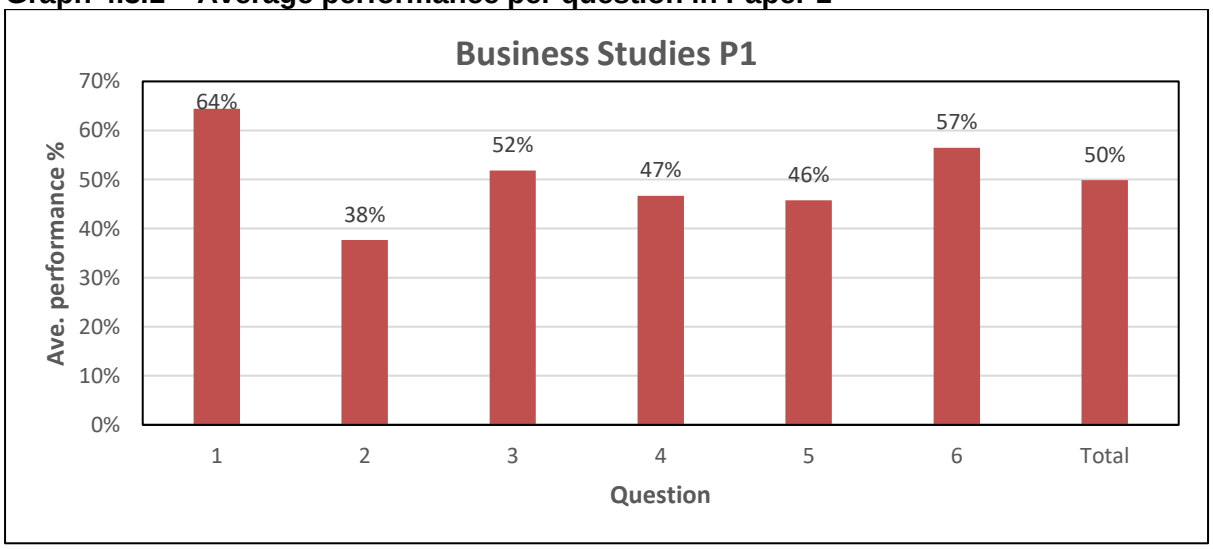
The graphs presented below are based on data from a random sample of candidates in the different provinces. Although these graphs may not accurately reflect national averages, they are helpful in determining the relative degree of challenge of each question, as experienced by candidates.

Paper 1 consists of five subtopics that assess *Business Environments* and *Business Operations*. There was an improvement in the performance of the 2023 cohort in Q1 as the average performance is 64% when compared to 62% achieved in 2022.

Many candidates still did not perform as expected in Q2 on *Business Environments,* however, when compared to the 2022 cohort, an improvement is noted. The average percentage in Q2 (Section B) was 38% in 2023 compared to 35% achieved in 2022. There was a decline in the performance in Q4 which consists of subquestions covering *Business Environments* and *Business Operations.* The average was 47% in 2023 compared to 51% achieved in 2022. The fact that this question included three subquestions on *legislation* related to *Business Environments* as a main topic may be the reason for poor performance. Candidates were expected to perform well since all questions covering the subtopic *Legislation* appeared in past NSC examinations. However, a great improvement was noted in Q5 which was an essay question on *Business Strategies,* also covered under *Business Environments*. The performance of the 2023 cohort in this question was 46% compared to 30% achieved in 2022. It appears that many candidates find the subtopic of *Business Strategies* less challenging than *Legislation* which was assessed as an essay question in 2022.

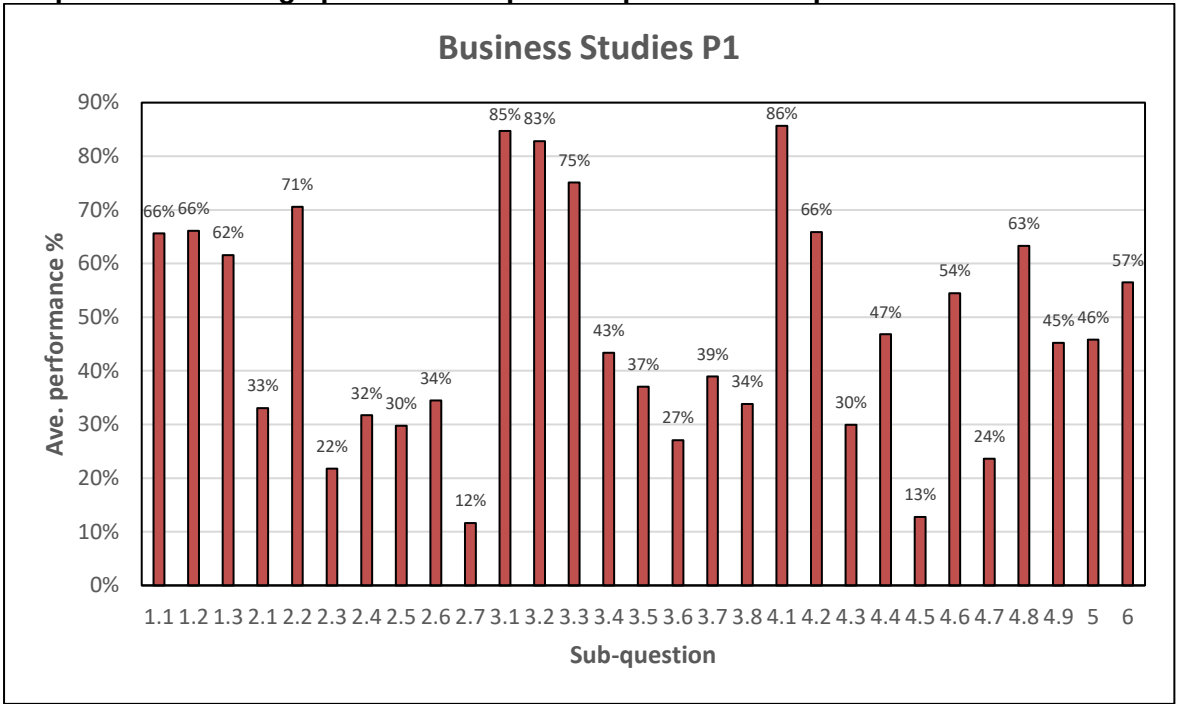
Candidates' performance in Q3 and Q6, which assessed the topic *Business Operations*, improved in 2023 compared to the 2022 cohort. The average performance in Q3 and Q6 was 52% and 56% in 2023 respectively, and 50% and 54% in 2022. It is evident that candidates were well prepared for *Quality of Performance* since it was also assessed in 2022, even though the subquestions were not the same as in the 2023 November examination. This is encouraging as more candidates previously struggled to respond to questions on the subtopic of *Quality of Performance* than on the subtopic of *Human Resources* Function, which also forms part of Business Operations.

Graph 4.3.1 Average performance per question in Paper 1



Q	Topic
1	Short Questions
2	Business Environments
3	Business Operations
4	Miscellaneous Topics
5	Business Environment: Business Strategies
6	Business Operations: Quality of Performance

Graph 4.3.2 Average performance per subquestion in Paper 1



Sub-Q	Topic	Sub-Q	Topic
1.1–1.3	Short questions	3.6	Bus Opn: Quality in the production function
2.1	Bus Env: Consumer rights in CPA	3.7	Bus Opn: TQM elements
2.2	Bus Env: Business environment & extent of control	3.8	Bus Opn: Quality circles
2.3	Bus Env: Rights of employers in LRA	4.1	Bus Env: Business sectors
2.4	Bus Env: Purpose of the EEA	4.2	Bus Env: Leave provision in BCEA
2.5	Bus Env: Type of defensive strategy & strategy evaluation	4.3	Bus Env: Funding of SETA
2.6	Bus Env: Implications of BBBBEE pillars	4.4	Bus Env: Types of Integration strategies
2.7	Bus Env: Dealing with challenges posed by the economic factors of the PESTLE analysis	4.5	Bus Env: Compliance to NCA
3.1	Bus Opn: Aspects included in an employment contract	4.6	Bus Opn: Purpose of induction
3.2	Bus Opn: Salary determination methods	4.7	Bus Opn: Placement procedure
3.3	Bus Opn: Role of interviewee during the interview	4.8	Bus Opn: Quality management system
3.4	Bus Opn: Impact of fringe benefits	4.9	Bus Opn: Reduce the cost of quality by TQM
3.5	Bus Opn: Quality control	5	Bus Env: Strategies
		6	Bus Opn: Quality of Performance

4.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN INDIVIDUAL QUESTIONS IN PAPER 1

SECTION A: MULTIPLE-CHOICE/SHORT ANSWER QUESTIONS

QUESTION 1: COMPULSORY (MULTIPLE-CHOICE, CHOOSING CORRECT WORDS AND MATCHING ITEMS)

Many candidates performed well in two out of three subquestions when compared to the 2022 cohort. In Q1.1 the average performance of the 2023 cohort was 66% compared to 60% attained in 2022. Additionally, the 2023 cohort performed well in Q1.2 with an average of 66% compared to 63% achieved in 2022. However, there was a decline in Q1.3 with an average performance of 62% in 2023 as opposed to 64% achieved in 2022. Candidates were expected to perform well in this question as all the subquestions asked have appeared in past NSC examinations.

Common errors and misconceptions

(a) Some candidates confused the meaning of the *Employment Equity Act* (EEA) with the *Basic Conditions of Employment Act* (BCEA) in Q1.1.1. This challenge is persistent despite the recommendations made in the past National Diagnostic Report on learner performance.

(b) In Q1.1.3, candidates did not perform well as they confused challenges posed by social factors with technological factors as PESTLE analysis. Candidates did not choose a social factor as a PESTLE analysis posing a challenge to a business, instead this was confused with a technological factor, indicating a lack of insight into the challenges posed by the PESTLE analysis. They were expected to perform well in this question as it was assessed in Section B of the 2022 November NSC examination.

(c) Only a few candidates could identify the correct answer in Q1.1.5, which was based on the application of continuous skills development as a TQM element in large businesses. This question was expected to yield better results as it appeared in past NSC examination papers.

(d) Some candidates identified *internships* instead of *learnership* in Q1.2.1, despite the recommendations made in the 2020 National Diagnostic Report on learner performance. Additionally, candidates were expected to do well because the words 'training opportunities' were included in the sentence indicating that learnership was a required response.

(e) In Q1.2.2. some candidates confused the word *'weakness'* with *'threat'*. Here, candidates lost an opportunity to score marks as a SWOT analysis was also covered in Grade 10 as a requirement for writing a business plan.

(f) Candidates struggled to differentiate between the *BEE* and *BBBEE Acts* as many responses were based on the latter instead of BEE in Q1.2.3. This was a missed opportunity for candidates to score marks as this content has matured and has been assessed numerous times in past NSC November examinations.

(g) Many candidates confused the meaning of the *human resources development strategy with* the *National Skills Development Strategy* in Q1.3. This challenge is persistent despite the recommendations made in the past National Diagnostic Report on learner performance.

(h) In Q1.3.3 many candidates were not clear on the meaning of *conglomerate diversification* as this was confused with the meaning of *concentric diversification*. Candidates were expected to have mastered the basic knowledge about different types of diversification strategies as they have appeared in many past NSC November examinations.

Suggestions for improvement

(a) Teachers should emphasise that the BCEA deals with the employment contract and other basic conditions of employment, while the EEA focuses on fair appointment processes and equal representation of all population groups in the workplace. A brief description of the rationale behind each Act may assist learners to gain a conceptual understanding of all Acts listed in the *2021 Examination Guidelines*.

(b) Teachers must understand and relay how each factor of the PESTLE analysis poses challenges to businesses, using practical examples. They should compile a list of challenges posed by each PESTLE factor and request learners to classify them according to the relevant factor. Learners must also be able to suggest ways in which businesses can deal with the challenges posed by each PESTLE analysis factor.

(c) It must be noted that businesses implement TQM to satisfy customers beyond their expectations and that this can only be done through the implementation of the five TQM elements outlined in the *2021 Examination Guidelines*, including continuous skills development which focuses on upskilling their employees. Learners must be exposed to source-based and direct questions on this content. They could be requested to share newspaper articles on large businesses that have successfully implemented the TQM elements.

(d) Teachers are advised to unpack the meaning of *learnerships* when teaching the impact of the Skills Development Act (SDA), as this concept first appears on this content followed by compliance with the Act, as well as the role of SETAs in supporting the SDA. Learners should conduct research on learnerships offered by various businesses for better understanding of the meaning of this concept.

(e) It is necessary for teachers to conduct a baseline assessment on the application of a SWOT analysis to identify and close content gaps. Learners should be given a scenario on this content and be requested to compile a SWOT analysis and justify the reason for their responses.

(f) Learners should know that BEE is a policy which was implemented before the introduction of the BBBEE Act, hence it only consisted of three pillars and that it only benefited a few individuals. On the other hand, the BBBEE Act is aimed at spreading wealth more broadly across all population groups, therefore it consists of seven pillars.

(g) The content on the differences between the *National Skills Development Strategy* and the *Human Resources Development Strategy* should not be neglected. Subject advisors are advised to conduct workshops on how this content should be taught and assessed in the classroom. It is imperative that learners understand the link between these concepts and the Skills Development Act.

(h) All types of diversification strategies must be taught in detail and key words could be highlighted as a starting point to allow learners to differentiate between each strategy. Furthermore, learners must know that all diversification strategies are growth strategies

that involve adding new products that are either related or unrelated to existing products.

SECTION B: LONGER AND PARAGRAPH QUESTIONS, USING CASE STUDIES AND INFORMATION

QUESTION 2: BUSINESS ENVIRONMENTS

Poor performance has been noted in this question and it was chosen by only a few candidates. The reason for poor performance could be that this question consisted of four out of seven subquestions that assessed *legislation* as one of the subtopics under *Business Environments*. It has been already noted above that this topic remains a challenge despite the recommendations made in the past National Diagnostic Reports on learner performance.

Common errors and misconceptions

(a) Poor performance was noted in Q2.1 as some candidates had difficulty in naming the consumer rights as stipulated in the Consumer Protection Act (CPA). Instead, they provided an explanation of each right. Other responses were based on the consumer rights in terms of the NCA and on human rights covered in Paper 2.

(b) Candidates performed well in Q2.2.1, however, a few candidates could not identify the challenges faced by a business from the given scenario. The expectation was for candidates to obtain full marks for this question as they had to quote three challenges presented in the scenario. A similar question was asked in the 2020 and 2021 NSC November examinations.

(c) In Q2.2.2 some candidates simply listed the three Business Environments without classifying them according to the relevant challenge. Not focussing on the crux of the question cost candidates three marks.

(d) Candidates performed well in Q2.2.3 even though some could not state the extent of control businesses have over each business environment. They were expected to perform well in this question since it is also covered in the Grade 11 content.

(e) Poor performance was recorded in Q2.3 as many candidates provided vague and incomplete responses on the rights of employers in terms of the Labour Relations Act. Some candidates confused this content with the rights of employees in terms of this Act which was asked in the 2022 NSC November examination. Additionally, recommendations were made in the *2022 National Diagnostic Report* on how to differentiate between the rights of employers and employees in terms of the LRA.

(f) Q2.4 was poorly answered as many candidates' responses were based on either the impact of the EEA or the purpose of LRA and BCEA, instead of the purpose of the EEA. This challenge is persistent despite the recommendations made in the past National Diagnostic Report on learner performance.

(g) Some candidates confused *divestiture* with *liquidation* as the type of defensive strategy from the given scenario in Q2.5.1. They forfeited marks for the motivation as their motivation was consequently based on the incorrect concept. Candidates were expected to perform well in this question as teaching and assessment methods on this content were mediated with teachers during the National Curriculum Subject meeting in 2023.

(h) Poor performance was noted in Q2.5.2 as some candidates confused the steps in strategy evaluation with either the problem-solving steps covered in Paper 2 or the strategic management process. Others provided incomplete responses and they were consequently awarded one instead of two marks. The same question had been asked in Section B of the 2022 NSC November examination and the recommendations for improvement were made in the *2022 National Diagnostic Report* on learner performance.

(i) Many candidates could only name the pillars of the Broad-Based Black Economic Empowerment Act (BBBEE), but they could not explain the implications of each pillar on businesses. It appears that candidates did not understand the meaning of the word 'implications' in this context.

(j) Many candidates did not perform well in Q2.7 as they provided general responses on dealing with the challenges posed by any PESTLE factor, instead of the economic factor as required by the question. Others explained the challenges posed by economic factors of the PESTLE factors instead of recommendations.

Suggestions for improvement

(a) Learners must be able to name and explain the consumer rights as stipulated in the Consumer Protection Act (CPA) 2008 (Act 68 of 2008). They must also know that the CPA focuses on information about the product in relation to the NCA which focuses on consumer rights in terms of 'granting credit'. It must be noted that the 'right to information about products and agreements' will no longer be accepted as an alternative to 'right to disclosure and information' in future marking processes.

(b) Teachers should conduct a baseline assessment on the elements of each Business Environment so that learners may use them to identify the challenges posed by each and be able to classify them according to the relevant business environment. Furthermore, learners must be exposed to a variety of scenarios and statements on this content. It should be noted that 'can influence' will no longer be accepted as extent of control businesses has over the market environment in future marking processes.

(c) The reason for the extent of control over each Business Environment must be explained to enable learners to gain insight into this content. Learners must know that the extent of control must be linked to the relevant Business Environment to avoid forfeiting marks. Furthermore, subject advisors should ensure that this content is adequately taught and assessed in Grade 11.

(d) Learners must know that the main aim of the LRA is to promote fair labour practices between the employers and employees, therefore both parties must exercise their rights in the workplace. Teachers should explain the meaning of concepts such as 'employer organisations' and 'bargaining council' to assist learners in understanding the rights of the employer in terms of the LRA. Furthermore, continuous assessment should be done on this content during the academic year. Teachers and subject advisors must note that the following fact was elaborated on during the 2023 marking guideline standardisation meeting:
- The right to form employer organisations to represent them in labour related matters.

Teachers are advised to revise this fact in the DBE notes, textbook and other credible resource materials to enable learners to obtain a full mark.

(e) The purpose of the EEA focuses on how this Act promotes equity and protects employees in the workplace. Teachers must ensure that learners develop an

understanding of this content as it serves as a foundation for comprehending other aspects covered under the EEA. It must be noted that the following statement was inappropriately placed in the DBE textbook as part of the purpose of the EEA, 'Provides the possibility for workers to refer unresolved issues to the CCMA'. This fact pertains to the LRA and therefore will no longer be awarded marks in future marking processes under the purpose of the EEA. Teachers are advised to remove this fact from the DBE textbook.

(f) The meaning of *defensive* should be unpacked so that learners will understand the reason why businesses implement this strategy. Additionally, it is advisable to explain the different types of defensive strategies in the order in which they appear in the DBE notes and credible resources so that learners can understand that businesses use *'liquidation'* as the last resort after implementing other types of defensive strategies. It must be noted that the term *divestment* will no longer be accepted as an alternative response to *divestiture*.

(g) The steps in strategy evaluation should be taught immediately after explaining the strategic management process so that learners can understand the reason why business must evaluate the chosen strategy. Learners must know that strategy evaluation is aimed at developing new ways of doing business rather than solving a business problem. It must be noted that the following fact has been elaborated on during the 2023 marking standardisation meeting:

- Decide on the desired outcome as envisaged when strategies were implemented.

Teachers are advised to correct this fact in the DBE notes and other credible resource materials.

(h) Leaners must know that the implications of the BBBEE pillars on businesses focus on what the business must do to apply these pillars and barriers that prevent them from implementing them. They must also be advised to write the full name of each pillar as listed in the *2021 Examination Guidelines*.

(i) A baseline assessment on the challenges posed by each PESTLE analysis factor and ways in which businesses can deal with each factor should be conducted as this content forms part of the Grade 10 content. Teachers must identify and close content gaps using the DBE notes and other credible resources. Subject advisors must ensure that this content is adequately taught and assessed in Grades 10 and 12. The Grade 12 teachers must establish Professional Learning Committees (PLCs) and support the Grade 10 teachers on various teaching and assessment methods on all subtopics that progress to Grade 12.

QUESTION 3: BUSINESS OPERATIONS

Candidates performed well in this question with an average of 52% in 2023 compared to 50% attained in 2022. This was also evident in subquestions that assessed *Human Resources* and certain aspects of *Quality of Performance*. This may be due to good revision of such questions that appeared in the 2021 and 2022 NSC November examinations.

Common errors and misconceptions

(a) Many candidates performed exceptionally well in Q3.1 although a few candidates confused the aspects that should be included in an employment contract either with the legal requirements of an employment contract or aspects that must be included in the induction programme.

(b) In Q3.2, many candidates were able to outline the difference between *piecemeal* and *time-related salary determination methods.* Other candidates obtained two instead of four marks for writing vague and incomplete responses.

(c) Q3.3.1 was satisfactorily answered by many candidates, even though some incorrectly identified external as internal recruitment from the given scenario. It appears that candidates were not conversant with the sources of external recruitment required for the correct identification of this concept.

(d) Good performance was noted in Q3.2.2 as many candidates were able to explain the role of the interviewee during the interview. Some responses were based on the role of the interviewer during the interview which was asked in the 2022 November examination. This challenge is persistent despite the recommendations made in past diagnostic reports.

(e) Q3.4 was satisfactorily answered by many candidates even though a few candidates responded with examples of fringe benefits and others explained the impact of internal recruitment on businesses. Candidates were expected to perform well in this question since they had to give either the advantages and/or disadvantages of fringe benefits and the fact that this question has been asked in the past NSC November examinations.

(f) In Q3.5 some candidates had difficulty in providing a detailed explanation of the meaning of *quality control* even though this question had been asked in Section C of the 2022 NSC examination and in other past national examinations. Additionally, the recommendations for improvements were mediated during the National Curriculum Subject meeting in 2023.

(g) Poor performance was recorded in Q3.6 as many candidates provided a definition of the *production function* instead of explaining how quality of performance of the production function contributes to the success of the business. Other responses were based on the quality indicators of the purchasing function which was not a required response.

(h) In Q3.7 many candidates could not identify adequate financing and capacity and total client/customer satisfaction as total quality management (TQM) elements from the given scenario. They subsequently forfeited two marks for the motivation as this depended on the correct identification of the TQM elements. They were expected to perform well in this question since the same TQM elements appeared in the 2022 NSC November examination as direct questions.

(i) Poor performance was recorded in Q3.8 as candidates did not have an in-depth knowledge of the roles of quality circles as part of continuous improvement to processes and systems. Some responses were based on ways in which TQM can reduce the cost of quality which were assessed in Q4.9 in this examination. Others did not read the entire question as their responses focused on the impact of continuous improvement to processes and systems as a TQM element. The same question had been asked in Section C of the 2022 NSC Nov examination and areas for improvement were noted in the *2022 National Diagnostic Report* on learner performance.

Suggestions for improvement

(a) A sample of an employment contract could be used to explain the meaning and the contents of the contract. Learners should know that the latter forms part of the legal requirement of an employment contract hence these aspects must appear in the

contract. Teachers could share a sample of the employment contract and request learners to quote the aspect of the employment contract from the sample.

(b) The salary determination methods should be explained in the context of the different methods of payment that workers could be receiving. Practical examples and scenarios could be used to explain the differences between *piecemeal* and *time-related salary determination methods*.

(c) Learners must know the meaning and examples of the sources of both internal and external recruitment, to enable them to identify the methods of recruitment from given scenarios and statements. Source-based questions should be included in both formal and informal assessment tasks on this content.

(d) Teachers may use the three columns approach where they outline the roles of the interviewer before and during the interview and emphasise that the role of the interviewee is only during the interview. Teachers should first ensure that learners understand the difference between an *interviewer* and an *interviewee* before explaining the role of each party. Additionally, role playing, and demonstrations could be used to enhance the quality of teaching and learning in the classroom. It must be noted for future reference that the following fact was elaborated on during the 2023 marking standardisation meeting.
- Ask clarity-seeking questions about the job/position offered.

Teachers are advised to correct this fact in the DBE notes, textbook and other credible resource materials to enable learners to obtain two instead of one mark for the above-mentioned fact.

(e) Learners must understand that fringe benefits are offered to employees to benefit the business. Teachers should stimulate debates on the impact of fringe benefits on businesses and learners should be requested to share success stories on businesses that enjoy the benefits of offering fringe benefits to their employees. On the other hand, it must be noted there are many facts on the disadvantages of fringe benefits and that learners must be advised to seek to understand and recall simple facts first.

(f) The quality concepts must be clearly distinguished to avoid confusing these terms. Although teachers should focus on the essence when explaining these terms, learners should be cautioned against studying incomplete facts. Learners must know that quality control forms the fundamental basis for the effective implementation of other quality concepts listed in the 2021 Examination Guidelines.

Furthermore, learners' responses should not only focus on one fact when explaining the meaning of this concept. Video clips on how businesses implement quality control and quality assurance could be used to enable learners to gain a conceptual understanding of these concepts.

(g) Learners should know that the Grade 12 content focuses on success factors of the quality indicators of each business function. Teachers must ensure that learners focus on how each business function contributes to the success of the business. Subject advisors should ensure that this content is adequately taught and assessed from Grades 10 to12.

(h) All TQM elements that are outlined in the *2021 Examination Guidelines* should be adequately taught using practical examples and video clips on how large businesses implement each TQM element. Learners could be requested to conduct research on businesses that have implemented these elements successfully. They must also be reminded that TQM is also aimed at getting the product right the first time, therefore

businesses strive to implement these elements to achieve this goal.

(i) Teachers should ensure that the leaners are aware of the meaning of *quality circles* to allow for better understanding of their role in improving the quality of products. They must also know that quality circles do not only solve problems related to quality, but they also ensure that employers and employees have a healthy working relationship. It must be noted that the following fact was revised during the 2023 November Marking Standardisation meeting:
- Increase employees' morale/motivation to boost the team spirit in achieving organisational goals.

Teachers are advised to correct this fact in the DBE notes and other credible resource materials. They should also remove the following fact from this content as it is also captured under ways in which total quality management/TQM can reduce the cost of quality:
- Discuss ways of improving the quality of work/workmanship.

QUESTION 4: MISCELLANEOUS TOPICS

Candidates' performance in Q4 declined from 51% in 2022 to 47% in 2023. This question assessed both main topics, namely *Business Environments* and *Business Operations* consisting of 20 marks each. Many candidates struggled with subquestions on *Legislation,* one of the subtopics of *Business Environments* which consisted of three out of five subquestions under *Business Environments*.

Common errors and misconceptions

(a) Many candidates performed exceptionally well in Q4.1 as they were able to name the business sectors. A few candidates provided incorrect responses such as the *public and private sectors* and *formal and informal sectors*.

(b) Good performance was noted in Q4.2.1 even though some candidates confused *family responsibility leave* with *annual leave*. Others used incorrect terms such as 'family crisis' and 'family emergency leave'. The *2022 National Diagnostic Report* on learner performance has recommendations on teaching and assessment methods for this content, therefore candidates were expected to do well on this question.

(c) Candidates did not perform well in Q4.3 on how the Sector Education and Training Authorities (SETAs) are funded. Others confused this question with the contribution made by the employer and employees towards the Unemployment Insurance Fund (UIF). Based on performance in this question, it appears that candidates only used the 2021 and 2022 NSC November examinations as resource material to revise this content.

(d) Most candidates could only list the types of integration strategies in Q4.4 but could not provide an explanation of each type of integration strategy. They were expected to perform well in this question since it was asked in the past NSC November examinations.

(e) Poor performance was noted in Q4.5 as many candidates had difficulty in responding to ways in which businesses could comply with the National Credit Act (NCA). Other responses were based on other aspects of the NCA which was not a required response. This challenge persists despite the recommendations made in the past National Diagnostic Report on learner performance.

(f) Although good performance was noted in Q4.6 on the purpose of induction, some candidates' responses focused on either the benefits of induction or aspects that should

be included in the induction programme. Others provided vague and incomplete responses. They were expected to perform well in this question as a similar question had been asked in Section B of the 2022 NSC November examination.

(g) Poor performance was recorded in Q4.7 as many candidates could not explain the placement procedure as a human resources activity. Others confused this content with the selection procedure. This question was also asked in Section B of the 2020 NSC November examination. Therefore, this content appears to pose challenges for many candidates despite the recommendations made in the past *National Diagnostic Report*s on how to improve on the teaching methods.

(h) Many candidates were able to quote the benefits of a good quality management system from the given scenario in Q4.8.1 and explained other benefits of a good quality management system in Q4.8.2. Some candidates quoted the distractor instead of the required answer and forfeited one mark for committing this error in Q4.8.1. Others forfeited marks for repeating the statements that used in the scenario in Q4.8.2.

(i) Poor performance was recorded in Q4.9 as many candidates confused ways in which TQM can reduce the cost of quality with the roles of quality circles. Other responses were based on the impact of TQM if poorly implemented. Good performance was expected for this question as it appeared in the 2020 and 2022 NSC November examinations.

Suggestions for improvement

(a) Teachers should only focus on primary, secondary and tertiary as business sectors covered in the Grade 12 content. Learners must be aware that other business sectors that were also covered in Grades 10 and 11 could be used as distractors for this question. Additionally, they should also know the examples of the primary, secondary and tertiary sectors to enable them to identify these sectors from given statements and scenarios.

(b) In addressing the content based on leave, teachers are advised to provide a detailed description of each type of leave as per the amended BCEA and the DBE notes. Opportunities exist for this topic to be assessed in both direct and indirect questions, including essay-type questions, and teachers must exercise some creativity in questioning styles. This recommendation was made in the *2022 National Diagnostic Report* on learner performance and mediated during the National Curriculum Subject meeting in 2023.

(c) Learners must know that the effectiveness of SETAs depends on proper funding, therefore, they should be able to explain how SETAs are funded. Teachers can explain this content in terms of the contribution made by various stakeholders such as the government, businesses, employees, and donors. Additionally, this content should be adequately assessed through direct and indirect questions during the academic year.

(d) The meaning of *integration* in a business context should be unpacked before teaching various types of integration strategies. Learners must also know the meaning of *suppliers* and *distributors* to be able to identify backward and forward integration strategies from given scenarios. Furthermore, it is advisable to include direct and indirect questions when assessing all types of business strategies and corrections must be done to avoid learners repeating the same error. The following facts on different types of integration strategies will be marked as one fact from 2024 going forward:

Forward vertical integration	Backward vertical integration	Horizontal integration
A business combines with or takes over its distributors down the supply chain/production chain. /The business merges with businesses that were once their customers, while still maintaining control of the initial/primary business activity	The business combines with/merges/takes over its suppliers up the supply chain/production chain. /The business expands its role to fulfil activities/tasks that were formerly/ previously completed by suppliers.	A business takes control of/incorporates other businesses in the same industry/which produce/ sell the same/similar goods/services./It is the acquisition/takeover of a related business that operates at the same level of the supply chain in the industry

The above-mentioned facts have the same meaning although differently expressed, therefore they have been combined in the 2023 November marking guidelines. Teachers are advised to correct this fact in the DBE notes, textbook and other credible resource materials.

(e) Learners must first have an in-depth knowledge of the purpose and the impact of NCA on businesses to enable them to understand ways in which business should comply with this Act. Teachers are advised to give learners fifteen facts consisting of the purpose, impact, and compliance with the NCA and allow them to classify these facts according to relevant subheadings.

(f) A table could be used when teaching all content covered under the subtopic *Induction* to enable learners to have a clear understanding of the differences between the purpose and benefits of induction. Furthermore, learners must know that the purpose of induction is to plan on the activities that will be conducted by businesses to induct new employees. On the other hand, the benefits of induction are the results of the planned activities that were done during the actual induction process.

(g) It should be emphasised that the placement procedure takes place after the recruitment selection and induction procedures have been conducted by businesses. Learners must know that the correct placement of new employees may maximise productivity hence it is done immediately after the induction process.

(h) Learners should be aware that there will always be a distractor which is close to the required answer in questions requiring them to quote directly from scenarios. They must be given the opportunity to practice answering such questions.

(i) Attention must be drawn to the main reason why businesses implement TQM elements – which is to reduce the cost of quality. Learners could be asked to identify the link between the implementation of the five TQM elements with some facts on ways in which TQM can reduce the cost of quality.

SECTION C: ESSAY QUESTIONS

QUESTION 5: BUSINESS ENVIRONMENT: BUSINESS STRATEGIES

This question was not a popular choice in Section C. It assessed the subtopic *Business Strategies* covered under the topic *Business Environments*. However, good performance was noted with an average of 46% in 2023 compared to 30% achieved in 2022. It is worth noting

that all subquestions that were asked in this question have appeared in the past NSC November examinations.

Common errors and misconceptions

(a) Many candidates had difficulty writing a meaningful introduction and conclusion pertaining to the four subquestions, while some copied the preamble in the question paper. This challenge persists although it had also been reported in previous *National Diagnostic Report* on learner performance.

(b) In Q5.2 candidates confused the *strategic management process* with either the steps in strategy evaluation or the problem-solving steps. Some candidates repeated facts on option 1 and option 2 on the *strategic management process*.

(c) Poor performance was recorded as candidates had difficulty with the application of *power of buyers* and *power of competitors* as forces of the Porter's Five Forces Model in Q5.3. Some provided a brief description of each force without explaining how businesses should apply these forces. Other responses were based on how businesses should overcome competition in the market, which was not a required response. This content continues to pose challenges to candidates despite the recommendations made in past *National Diagnostic Reports*.

(d) Q5.4 was satisfactorily answered by many candidates even though some only listed and did not explain the three types of intensive strategies. Some either explained the different types of diversification strategies or integration strategies. Others swopped the meaning of market development and product development.

(e) Poor performance was noted in Q5.5 as some candidates forfeited marks for incomplete responses while others explained the advantages of intensive strategies instead of diversification strategies. Other responses were based on the types of diversification strategies which did not form part of the required responses.

(f) Many candidates were not able to provide recent information or current trends and developments to be awarded marks for originality. Some examples were also not relevant to the four subquestions.

Suggestions for improvement

(a) Learners should know that the introduction and conclusion should be relevant facts to the four subquestions in the question. They should not repeat the preamble of the question as an introduction and conclusion. Teachers must advise learners to conduct research on the content taught to enable them to develop insight and come up with good facts for the introduction.

(b) Teachers should advise learners to only focus on option 1 or 2 and use the chosen option when responding to a question on the strategic management process. Learners must know that they may lose marks for duplication of facts if they use both options when responding to this question. Additionally, they must master this content very well as it serves as a foundation for other Business Strategies subtopics.

(c) Learners must be made aware that the application of the Porter's Five Forces model refers to analysing the business position in the market. Focus should be on what drives the prices to go up or down. They should also know that businesses owners apply this model to position themselves in the market environment. Practical examples on how

businesses apply the Porter's Five Forces model should be used to enhance understanding.

(d) It should be noted that businesses apply the intensive strategies for business growth and sustainability in the market. The focus should be how new and existing products penetrate the markets and reach targeted customers. Learners must be exposed to direct and indirect questions on this content.

(e) Teachers must ensure that learners first have an in-depth knowledge of the three types of diversification strategies so that they can understand the advantages of these strategies. They should be requested to give examples of local businesses that have diversified their products to gain conceptual understanding of this content. The following fact has been elaborated on during the 2023 Marking Standardisation Meeting:
- Reduces the risk of relying only on one product for sales/revenue/income.

Teachers are advised to correct this fact in the DBE notes textbook and other credible resource materials to enable learners to obtain a full mark for the above-mentioned fact.

(f) On a weekly basis, learners, with the assistance of their teachers, should develop possible examples of current trends and developments on the content being taught in the classroom. They should know that they will only be awarded one mark for originality if two recent examples are used in one of the four subquestions.

QUESTION 6: BUSINESS OPERATIONS: QUALITY OF PERFORMANCE

Candidates performed well in this question as the average performance increased from 54% in 2022 to 57% in 2023. It is pleasing to note that there has been a continuous improvement of learners' performance on the subtopic *Quality of Performance* – this was also reported in the *2022 National Diagnostic Report* on learner performance.

Common errors and misconceptions

(a) In Q6.1 some candidates responses were based on the broad topic in the introduction rather than focusing on the four subquestions asked in this question. Others copied sentences that were in the preamble as their introduction. This challenge is persistent despite the recommendations made during the mediation of the *2022 National Diagnostic Report* on learner performance which was conducted by the DBE subject specialist in collaboration with the DBE Business Studies internal moderator.

(b) Poor performance was recorded in Q6.2 as some candidates responded with an explanation of *quality control* and *quality assurance* instead of *quality management* and *quality performance*. Others struggled to express themselves and only responded with vague incomplete sentences. It was evident that they had not prepared for this question even though it appeared in the past NSC November examinations.

(c) In Q6.3, some candidates could not explain how businesses can apply the *PDCA model/steps* to improve the quality of their products even though this question was asked in Section B of the 2022 November examination. Candidates could only write the meaning of the acronym (PDCA) and forfeited a total of 8 marks for not writing the explanation of each model/step.

(d) Candidates confused Q6.4 with the role of quality circles asked in Q3.8 of this paper. Some changed the advantages of any TQM element to the impact of TQM if poorly implemented by businesses. Others confused this question with either ways in which TQM reduce the cost of quality or the benefits of a good quality system. A good performance was expected in this question as it appeared in Section B of the 2021 NSC November examination.

(e) Many candidates did not perform well in Q6.5 as they confused the quality indicators of the marketing function and administration function with other business functions that were not asked in this question. Others confused the marketing function with the public relations function. This remains a challenge even though this content is also covered in Grade 10.

Suggestions for improvement

(a) Teachers should explain the layout of the essay and make learners aware that in the introduction and conclusion the focus should be on the four questions asked and not on the general broader topic and to avoid copying their responses from the preamble given.

(b) Teachers should make a clear distinction between the quality concepts stated in the *2021 Examination Guidelines* and ensure that learners know that quality management must always be compared with quality performance. Teachers must highlight key words that can be linked to quality management such as tools and techniques, accountability, consistency and likewise for quality performance words such as each department measured, departments working together, output of processes. These key words may be used to remind learners of the differences between these concepts. Additionally, learners must know that quality performance depends on the quality management as managers need to give guidance on work operations.

(c) Learners should know how businesses apply the PDCA model to improve the quality of their products. They must know that the PDCA cycle is aimed at implementing processes and systems that will improve quality the quality of the products hence it is covered under continuous improvement to processes and systems as a TQM element. The following facts on each model/step was elaborated on during the 2023 marking standardisation meeting:

Plan	**Do**	**Check/Analyse**	**Act**
- The business should identify the problem and develop a plan for improvement to processes and systems. - Plan the new method and approach to improve the quality of their products	Implement the processes and systems as planned.	Determine whether it made a difference and what needs to be improved	Institutionalise the improvement to meet the needs of the business.

Some of the above-mentioned facts complement each other and are treated as such in the marking guideline and others have been elaborated on during the 2023 Marking

Standardisation Meeting. Teachers are advised to amend the facts of the PDCA model in the DBE notes, textbook and other credible resource materials to enable learners to obtain full marks for each fact mentioned above.

(d) Learners must know that poor implementation of the TQM elements will have a negative impact on businesses. They must know that only negative responses are expected in this content. Teachers must allow learners to link this content to the TQM element that was not implemented for enrichment purpose and conceptualisation of this content.

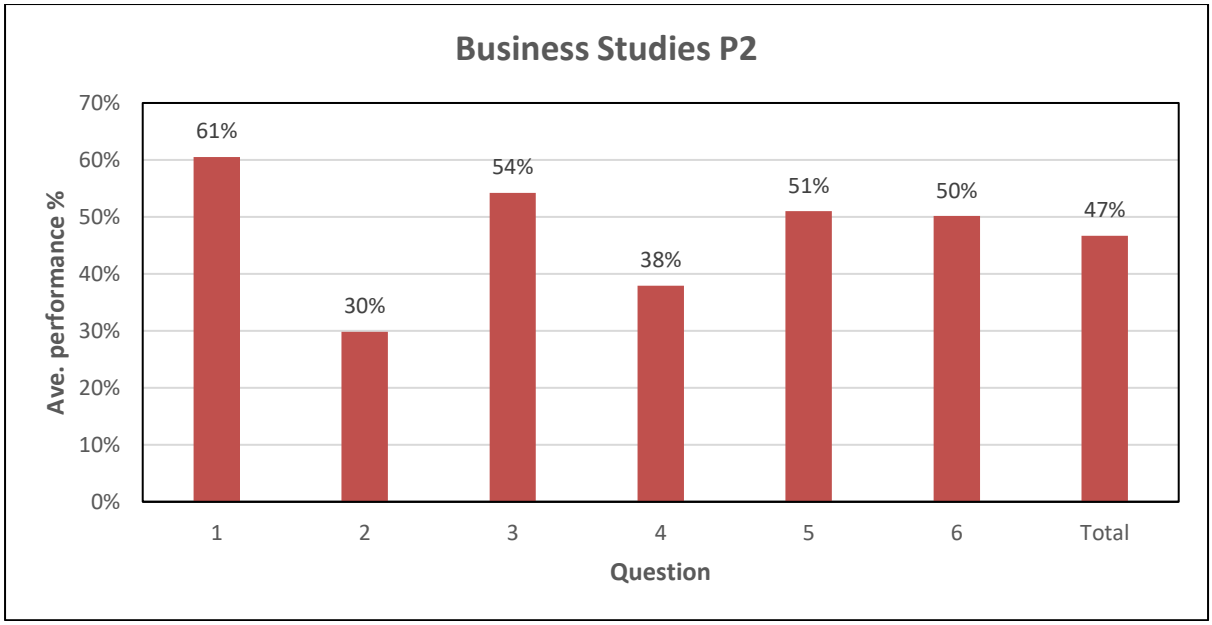
(e) The subject advisors should ensure that the quality indicators of each business function are adequately taught and assessed in Grade 10 as this content progresses to Grade 12. Furthermore, newspaper clippings on this content may be used to enhance the quality of teaching and learning in the classroom.

4.5 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

The graphs presented below are based on data from a random sample of candidates in the different provinces.

The performance of the 2023 cohort has declined in Q1 as the average performance is 61% compared to 65% in 2022. This question consisted of ten subquestions that assessed *Business Ventures* and *Business Roles* and consisted of subquestions which appeared in past NSC Examinations. It is disappointing to note that the performance of the 2023 cohort also declined on the topic of *Business Ventures* which were assessed in Q2 and Q5 when compared to the 2022 cohort. The average percentage in Q2 (Section B) is 30% compared to 51% attained in 2022. Candidates' performance in Q5 (Section C) is 51% compared to 58% attained in 2022. They were expected to perform well since all subquestions covering the topic *Business Ventures* have appeared in the past NSC examinations.

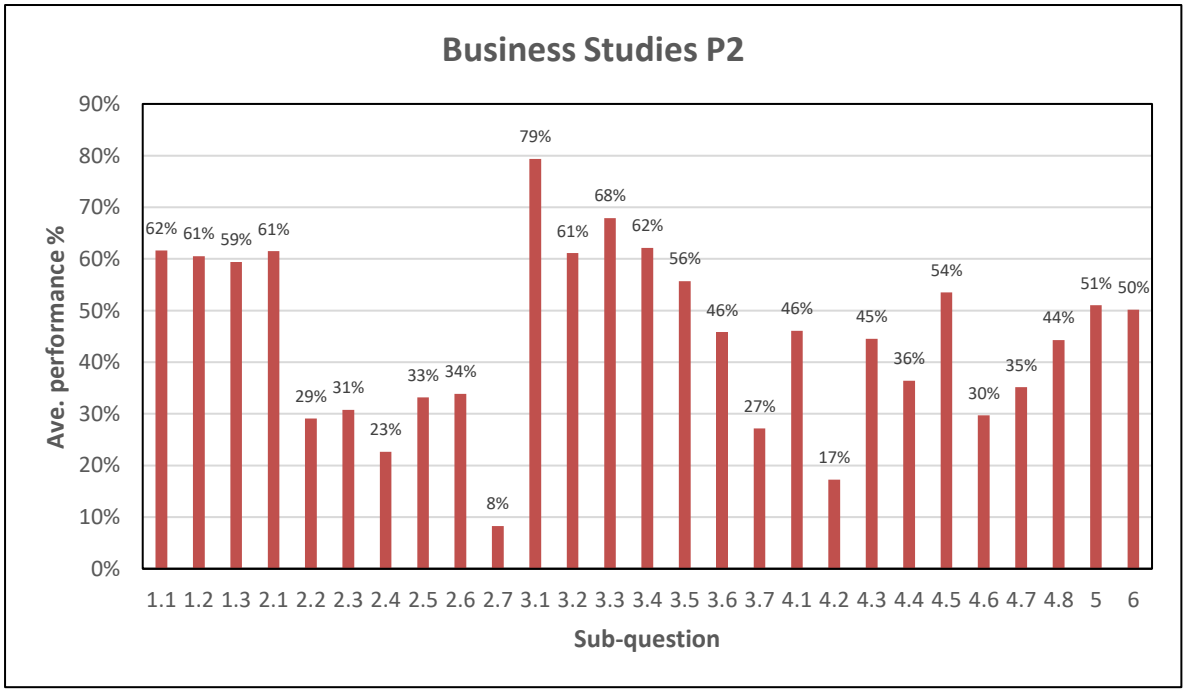
However, candidates' performance improved in Q3 (Section B) which assessed the topic *Business Roles* but declined in Q6 (Section C) which assessed the same topic. It appears that candidates did not anticipate two of the four subquestions that were asked in the essay question even though all these questions appeared previously in the NSC Examinations either as Section B or C.



Graph 4.5.1 Average performance per question in Paper 2

Q	Topic
1	Compulsory
2	Business Ventures
3	Business Roles
4	Miscellaneous Topics
5	Business Ventures (Presentation and data response)
6	Business Roles (Team performance assessment and conflict management)

Graph 4.5.2 Average performance per subquestion in Paper 2



Sub-Q	Topic	Sub-Q	Topic
1.1-1.3	Short questions	3.7	Bus Roles: Dealing with pricing of goods in rural areas
2.1	Bus Vent: Non-verbal presentations.	4.1	Bus Vent: Types of preference shares
2.2	Bus Vent: Role of personal attitude in successful leadership	4.2	Bus Vent: Advantages of a non-profit company
2.3	Bus Vent: Leadership style	4.3	Bus Vent: Insurable risks & advantages of insurance
2.4	Bus Vent: RSA Retail Savings Bonds	4.4	Bus Vent: Functions of the JSE
2.5	Bus Vent: Investment decisions & opportunity	4.5	Bus Roles: Economic rights of employees
2.6.	Bus Vent: Unemployment Insurance Fund	4.6	Bus Roles: Problem solving technique
2.7	Bus Vent: Public company	4.7	Bus Roles: Impact CSR on communities
3.1	Bus Roles: Problem-solving steps	4.8	Bus Roles: Roles of health and safety representatives
3.2	Bus Roles: Causes of conflict in the workplace.	5	Bus Vent: Presentation and data response
3.3	Bus Roles: Diversity issues	6	Bus Roles: Team performance assessment and Conflict management
3.4	Bus Roles: Creative thinking		
3.5	Bus Roles: Dealing with the well-being of employees		
3.6	Bus Roles: King Code principles		

4.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: COMPULSORY (MULTIPLE CHOICE, CHOOSING CORRECT WORDS AND MATCHING ITEMS)

The performance of candidates in this question declined. The average performance was 62% in Q1.1 in 2023 compared to 69% achieved in 2022. They also did not perform well in Q1.2 achieving an average of 61% compared to 63% in 2022. The average performance in Q1.3 was 59% in 2023 compared to 63% attained in 2022. These subquestions consisted of multiple-choice questions, completion of statements and matching column A and B. A total of four out of the three subquestions included indirect subquestions that required application of knowledge.

Common errors and misconceptions

(a) Candidates confused the application of the *transformational leadership theory* with the *transactional leadership style* in Q1.1.1. They were expected to perform well in this question since it had been asked in Section C of the 2022 NSC Examination.

(b) Q1.1.2 was poorly answered by many candidates as they confused the meaning of a *personal liability company* with the meaning of a *private company*.

(c) Some candidates confused *unauthorised use of workplace funds and resources* with *abuse of work time* as a type of unprofessional business practice in Q1.1.4, even though this question has appeared many times in the past NSC examination papers.

(d) Many candidates did not know that the average clause is only applied when assets are under-insured as many chose the word 'over-insured' from the given choices in Q1.2.1.

(e) Some candidates confused the meaning of planet with people as a triple bottom line in Q1.2.3. They were expected to perform well in this question as it has appeared many times in the past NSC November examinations.

(f) Many candidates did not perform well in Q1.2.5 as they confused *a strategy for dealing with an expert* with the *strategy to deal with a complainer*. Candidates were expected to perform well in this question since this content was asked in the 2022 NSC November examination.

(f) Q3.1.1 was poorly answered by many candidates as they lacked understanding of the meaning of *bonus shares*. Many responses were based on *founders' shares* even though this question had been asked in Section A of the 2022 NSC November examination.

(h) In Q1.3.5, some candidates chose an incorrect description of *shared values* as one of the criteria for successful team performance. Good performance was expected for this question as it had been asked in Section A of the 2022 NSC November examination and recommendations for improvement were made in the *2022 National Diagnostic Report* on learner performance.

Suggestions for improvement

(a) Teachers should assist learners in defining the word *transform* so that they can have a conceptual understanding of the meaning of a transformational leadership theory. Learners could be requested to conduct research on this theory and present their findings in the classroom through open discussions.
Practical examples of the meaning of *the transformational leadership theory* and the *transactional leadership style* should be given enhance conceptual understanding of these concepts.

(b) The meaning of *personal liability company* should be unpacked with specific reference to the directors' responsible for the debts of the business. Learners must also know the difference between this form of ownership and that of the private company.

(c) Learners should know the examples of each type of unprofessional business practice and how each poses challenges to the business. They must be requested to share newspaper clippings on this content to enhance understanding.

(d) The description of the *average clause* must be integrated when explaining the meaning of *under-insurance* so that learners can comprehend why this clause is only applicable to under-insurance.

(e) Teachers must emphasise what businesses should do on each triple bottom line element to fulfil their social responsibilities. Learners must know that *planet* as one of triple line element focuses on minimising environmental pollution and preserving resources.

(f) Teaching and learning must focus on a brief overview of each type of difficult personality and provide demonstrations on how businesses can deal with each type. Throughout the academic year, learners should be exposed to both direct and indirect questions on this topic.

(g) Emphasis must be placed on the meaning of each type of share in terms of dividends paid to the shareholders. Additionally, learners need to understand the rationale for the issuance of each type of share.

(h) Learners must know the meaning of each criterion for successful team performance as well as the activities involved in each. They should also be aware of the competencies and abilities that each team member is expected to have in order to meet the requirement of each criterion.

SECTION B: LONGER AND PARAGRAPH QUESTIONS, USING CASE STUDIES AND INFORMATION (THREE QUESTIONS TO BE ANSWERED)

QUESTION 2: BUSINESS VENTURES

Poor performance was noted in this question even though all subquestions were assessed in past NSC papers. It appears that candidates only revised questions that had been asked in the 2022 NSC November examination and that they may have overlooked other past NSC papers. Candidates were expected to perform well in this question as it only consisted of two simple indirect questions with a low level of difficulty.

Common errors and misconceptions

(a) Poor performance was noted in Q2.1 as many candidates repeated alternative answers to graphs and illustrations. Some candidates gave examples of visual aids such as data projectors and smartboards instead of the types of non-verbal presentation. It must be noted that the flyers/pamphlets/brochures/posters will no longer be accepted as alternative responses for pictures/photographs/scenarios/model since the former is covered in the Grade 11 content.

(b) In Q2.2, some candidates still mentioned that bad attitude can lead to the failure of the business even though it was reported in the *2022 National Diagnostic Report* that this fact will no longer be accepted as the focus is on the leaders 'positive attitude in successful leadership.

(c) In Q2.3.1 some candidates were able to identify the democratic leadership style from the given scenario even though some confused the application with the impact of this leadership style in Q.2.3.2, which was a follow-on question.

(d) Poor performance was noted In Q2.4 as many candidates provided vague and incomplete responses on the impact of Government/RSA Retail Savings Bonds as a form of investment. Some candidates' responses were based on the impact of other forms of investment which did not form part of the required response.

(e) Candidates quoted two sentences from the scenario instead of naming two factors that must be considered when making an investment decision, thereby forfeiting marks in Q2.5.1. Others repeated the statement on *venture capital* from the scenario instead of explaining the meaning of this concept in Q2.5.2, which was also a follow-on question. It must be noted that this question was asked for the first time in Section B of the NSC examination.

(f) Poor performance was noted in Q2.6 as some candidates provided incomplete responses on the contribution of the employer and the employee towards the Unemployment Insurance Fund (UIF) as a type of compulsory insurance. Other responses were based on the benefits of UIF which was not a requirement in this question.

(g) Many candidates did not perform well in Q2.7 as responses were vague and general regarding the various forms of ownerships and not specific to the public company. Some responses only related to 'profits can be divided' but not to other success and/or failure factors. They were expected to perform well in this question since this content is also covered in Grade 11.

Suggestions for improvement

(a) Teachers should emphasise that alternative responses to graphs are seen as one fact. The same applies to illustrations. Learners must be able to make a clear distinction between verbal and non-verbal presentations using appropriate examples.

(b) Class discussions should focus on the word *positive attitude* when teaching the role of personal attitude in successful leadership. The focus should be on how a positive attitude contributes to a successful leadership. Teachers should be conversant with the recommendations made in past *National Diagnostic Reports* and also use updated resources such as updated national marking guidelines and addendum. Subject advisors must mediate these documents during subject meetings and onsite visits.

(c) The meaning and application of each leadership style should be explained using practical examples and demonstrations. Learners should first know how leaders must apply each leadership style in the workplace before unpacking the impact each has on business. They must be exposed to various source-based questions and scenarios on this content. Teachers are advised to focus on the leadership styles outlined on page 17 of the *2021 Exam Guidelines*.

(d) Learners should be exposed to newspaper clippings on the impact of Government/RSA Retail Savings Bonds as a form of investment to ensure that they do not confuse the types of investment opportunities with the forms of investments as categorised in the *2021 Exam Guidelines*. It should be noted that the following facts have been elaborated for future marking:

Positives

- Interest can be received twice a year, making it a viable investment option.

Negatives

- The amount to be invested has been revised to R500 according to the latest government gazette on RSA Retail Savings Bonds.

Teachers are advised to correct the above-mentioned facts in the DBE notes, textbook and other credible resource materials to ensure that learners obtain full marks for these facts.

(e) Learners must know when to quote and name concepts from given scenarios. The identification of key points such as 'expand', 'economic conditions' and 'existing business' should be done when explaining the meaning of venture capital. Learners must be requested to conduct research on successful venture capital. Furthermore, all other types of investment opportunities that are outlined in the *2021 Examination Guidelines* should be adequately taught and assessed during the academic year.

(g) Learners must know the meaning of *UIF*, and the contributions made by the employer and employees towards the fund. They should also know the implications of not contributing towards UIF on businesses.

(g) A recap of different forms of ownership on characteristics, advantages and disadvantages should first be done so that learners can understand the success/or failure factors of each form of ownership. Intensified informal assessment should be administered on this content.

QUESTION 3: BUSINESS ROLES

The candidates' performance improved in this question as the average is 54% in 2023 compared to 48% attained in 2022. It must be noted that all subtopics that were assessed in this question appeared in past NSC November examinations. Moreover, this question only consisted of one follow-on question.

Common errors and misconceptions

(a) Good performance was recorded in Q3.1 as many candidates were able to name the problem-solving steps, even though some confused these steps with either the problem-solving techniques or conflict resolution steps.

(b) Candidates performed well in Q3.2 even though some listed the causes of conflict in the workplace instead of providing a full explanation of each cause. Others confused this question with the examples of a grievance.

(c) Good performance was noted in Q3.3 even though some candidates could not identify diversity issues from the given scenario and therefore, they forfeited marks for the motivations as they first had to provide the correct identification of concepts to obtain marks on motivations.

(d) In Q3.4 some candidates confused the advantages of creative thinking in the workplace with ways in which businesses can create an environment which stimulate creative thinking in the workplace, while other responses were based on the benefits of diversity in the workplace. This challenge is persisting despite the recommendations made in the past *National Diagnostic Reports* and mediation during the National Curriculum Subject meeting in 2023.

(e) Good performance was recorded in Q3.5.1 as many candidates were able to provide correct quotes on the wellbeing of employees from the given scenario. However, few candidates quoted the distractor instead of the required sentence from the scenario and consequently forfeited one mark.

(f) Some candidates provided vague responses on other ways in which businesses could contribute time and effort to improving the well-being of employees in Q3.5.2. Other responses were based either on ways in which businesses can improve the wellbeing of communities, examples of CSI projects or strategies that businesses may use to protect the environment and human health in the workplace which were not required in this question.

(h) In Q3.6 some candidates swopped answers for *transparency* and *accountability* as King Code principles for good corporate governance. Some candidate's responses were based on how employees should behave in the workplace.

(h) The majority of candidates had difficulty to respond to Q3.7. They provided general and vague responses such as selling cheap products on ways in which businesses could deal with pricing of goods in rural areas as a type of unethical business practice. Some responses were based on the challenges posed by pricing in rural areas. Candidates were expected to perform well in this question as it had been asked many times in the NSC November examinations.

Suggestions for improvement

(a) Practical examples of how businesses solve their business problem using the problem-solving steps should be provided. Learners should know that the application of these steps enables businesses to come up with a solution to solve their problems. The following facts will no longer be accepted as they are inappropriately placed under the problem-solving steps as they form part of the strategic management process covered in Paper 1.
- Formulate a strategy
- Monitor the implementation of the strategy
- Evaluate a strategy

Teachers are advised to remove the above-mentioned facts from the DBE textbook and any other credible source where applicable.

(b) A clear distinction must be made between the causes of conflict and examples of a grievance. The former occurs when two people in the workplace have different opinions. The latter only involves one person who wants to lodge a grievance in the workplace. Teachers are advised to remove the causes of conflict that are listed in the DBE notes and other credible resources as the focus is on the explanation of this content.

(c) A brief description of each diversity issue listed in the *2021 Examination Guidelines* and an explanation of how businesses can deal with each issue in the workplace should be provided. Learners should know that they may lose marks for using alternative terms for diversity issues. They must be exposed to source based and direct questions on this content.

(d) The advantages of creative thinking should not be confused with the benefits of diversity in the workplace. The latter focuses on the advantages of implementing innovative ideas for businesses while the former focuses on benefits of implementing positive ideas from diverse employees. Teachers should focus on how new ideas benefit businesses and employees when explaining the advantages of creative thinking in the workplace. The following fact has been elaborated in the DBE textbook as follows:
- Managers/Employees may keep up with fast changing technology which may lead to an increased market share.

It should be noted that only the newly elaborated version will be allocated two (2) marks in future marking processes.

(e) Teachers are advised to include one distractor in each scenario as part of formal and informal assessment tasks during the academic year. The distractor must be close to the required answer to encourage learners to gain insight of the content that is assessed.

(f) Learners should know the rationale behind the well-being of employees in terms of reducing staff turnover and creating a conducive working environment. Teachers are advised to re-categorise facts on this content and group them as follows:
- Finance
- Health
- Programmes

The following fact has been elaborated on for future reference during the 2023 marking standardisation meeting:
- Provide employees with recreational facilities to socialise and strengthen work relations.

Teachers must note that only the newly elaborated version will be allocated two (2) marks in future marking processes.

(g) An in-depth analysis of challenges posed by each type of unethical business practice should be done so that learners may be able to recommend ways in which businesses could deal with each type of unethical business practice. The focus should be on positive strategies that will benefit both the business and customers living in rural areas.

QUESTION 4: MISCELLANEOUS TOPICS

This question assessed the two main topics of this paper consisting of direct short questions of 20 marks per main topic. Poor performance has been noted on questions consisting of the topic *Business Ventures* as many candidates did not attempt to answer Q4.1-Q4.4 which assessed content on this main topic. This challenge has persisted despite recommendations made in the 2022 National Diagnostic Report on learner performance.

Common errors and misconceptions

(a) Some candidates' responses included different types of shares instead of types of preference shares in Q4.1. They were expected to perform well in this question as it had been asked in the past NSC examinations either in Section B or Section C.

(b) Poor performance was noted in Q4.2 as many candidates could not outline the advantages of a *non-profit company*. Some responses were based on the meaning of this form of ownership and the examples of CSI projects.
Most candidates forfeited marks as they were only awarded part marks for incomplete responses such as 'limited liability' and 'tax free'. Others confused the advantages of a non-profit company with the advantages of either the state-owned company or the public company.

(c) In Q4.3.1 some candidates quoted the full sentence from the given scenario instead of naming the two insurable risks, therefore, they forfeited one mark for including the distractor which was part of the sentence.

(d) Good performance was noted in Q4.3.2 even though some candidates provided incomplete answers on the advantages of insurance for businesses. Others wrote the definition of insurance instead of advantages. Some responses were based on the meanings of *reinstatement* and *indemnification*, while others confused this question with COIDA as a compulsory insurance.

(e) Candidates' performance was average in Q.4.4 as some responses were vague and incomplete despite this question appearing many times in the past NSC November examinations.

(f) Many candidates performed well in Q4.5 even though some confused this question with dealing with human rights and/or social rights in the workplace.

(g) Poor performance was recorded in Q4.6.1 as many candidates confused the application of a *nominal group technique* with *brainstorming*. This affected their responses in Q4.6.2 as they explained the application of brainstorming instead of the nominal group technique. Some responses were repeated from the scenario. Others only wrote *nominal technique,* and they forfeited one mark.

(h) Many candidates wrote the examples of *Corporate Social Responsibility* (CSR) programmes instead of the impact of SCR on communities in Q4.7. While others confused this question with the impact of CSR on businesses. They were expected to perform well in this question since it had been asked in the 2022 November NSC examination and the areas for improvement were suggested in the *National Diagnostic Report* for the 2022 cohort.

(i) Candidates' performance was satisfactory in Q4.8 even though some candidates still confused the roles of health and safety representatives in protecting the workplace environment with either the responsibility of employer or employees in protecting human health and environment in the workplace. Others provided a response such as 'provide protective clothing to all workers' which was not part of the required response.

Suggestions for improvement

(a) Teachers should encourage learners to draw a table on the different types of preferences shares and explain the meaning of each focusing on how dividends are issued. Learners must know that preference shares forms part of the four main types of shares and that they consist of many marks due to high volume of content on this topic.

(b) Learners must be made aware that a non-profit company is by nature not a profit-making company as the primary goal is to maintain its sustainability rather than to earn a profit. Learners must be requested to conduct research on the characteristics and advantages of non-profit companies to enhance understanding. It is, therefore, imperative that teachers recap and revise the latter before teaching the advantages in each form of ownership.

(c) Teachers should use a table to explain the differences between *insurable* and *non-insurable* risks using practical examples. They must focus on the word 'risks' not 'assets' so that learners do not confuse the insurable and non-insurable risks with the types of assets that should be insured. Learners must be exposed to direct and indirect questions on this content.

(d) Teachers should focus on the advantages of insurance for businesses rather than on individuals. Learners must be advised that the key word 'protect' appears four times in this content and the word 'transfers' appears twice but in different contexts. The above-mentioned key words may assist learners to formulate statements on the advantages of insurance for businesses. Learners must be advised that they will only be awarded part marks for vague and incomplete responses.

(e) Learners must be advised to write full sentences on the functions of the Johannesburg Stock Exchange (JSE) to be awarded full marks. Recent marking guidelines, DBE notes, textbooks and other credible resource material must be used as reference to teach this content. The following fact has been revised with a more detailed response that indicates/explains how the JSE facilitates trading:

- Channels financial resources into productive economic activities

The old version of the fact mentioned above will not be accepted as an alternative response in future marking processes.

(f) Teachers must categorise different types of rights to enable learners to distinguish between human, social and economic rights. Learners must understand that economic rights entail measures that are put in place to cater for the economic welfare of employees.

(g) Learners should know the application of the nominal-group technique in terms of the role an individual plays in saliently generating new ideas and sharing them with the group. They must also know that this technique is limited to small groups so that each member can generate many ideas to solve a business problem. Subject advisors must ensure that this content is adequately taught and assessed in Grade 11 as it progresses to Grade 12.

(h) Learners must be given a project-based learning task to conduct research on the impact of CSR on communities and present their findings in the classroom. Teachers should stimulate debates to enable learners to have a conceptual understanding on this content.

(i) The roles of health and safety representatives should be clearly distinguished from those of the employer and employees. Learners must be advised that the latter serve as ombudsmen for their members and that they do not provide anything for employees, instead they ensure that the employer complies with safety measures. The following fact has been elaborated on for future reference during the 2023 marking standardisation meeting:
- Identify potential dangers that could be harmful to their employees.

Teachers must note that only the above newly elaborated version will be allocated two (2) marks in future marking processes.

SECTION C: ESSAY QUESTIONS

QUESTION 5: BUSINESS VENTURES: PRESENTATION AND DATA RESPONSE

Candidates' performance declined in 2023 as the average was 51% in 2023 compared to 58% achieved in 2022. This question consisted of four subquestions that were assessed in either Section B or C in the past NSC November examinations. Those who answered this question performed well in three out of four subquestions asked.

Common errors and misconceptions

(a) Many candidates repeated the statement that was used in the question paper as their introduction to an essay in Q5.1. Some candidates' responses were not relevant to any of the four subquestions that were asked in this question. This challenge persists as it was also reported in the *2022 National Diagnostic Report*.

(b) Poor performance was noted in Q5.2 as many candidates confused aspects that should be considered when designing a multimedia presentation with factors to be considered when preparing for a presentation. They provided incomplete responses and forfeited one mark for each fact. Candidates were expected to perform well in this question as the *2022 National Diagnostic Report* was mediated during the National Curriculum Subject meeting in 2023.

(c) Good performance was noted in Q5.3 even though some candidates' responses were based on the factors that should be considered when preparing for a presentation instead of while presenting. They were expected to perform well in this question as it has appeared many times in the past NSC November examinations.

(d) Poor performance was observed in Q5.4 as many candidates provided incomplete and vague responses on the impact of handouts and flip charts. Some provided the advantages of a projector which was not a required response.

(e) Good performance was noted in Q5.5 even though some candidates still confuse factors that must be considered when handling feedback in a non-aggressive and professional manner with areas for improvement in the next presentation. They were expected to perform well in this question as it has appeared many times in the November NSC Examination.

(f) Candidates forfeited marks for the conclusion as they repeated facts mentioned either in the introduction and/or body in Q5.6. Other responses were vague and incomplete.

Suggestions for improvement

(a) Learners must know that an introduction should reflect any one or two subquestions of the questions that were asked in the paper. They must be advised to refrain from repeating statements that were used in the question paper. Instead, they should be encouraged to write creative responses that will not be repeated either in the body or conclusion.

(b) Teachers should showcase the aspects that should be considered when designing a multimedia presentation using smartboards as a visual aid, where available. They should use a new PowerPoint page and demonstrate each aspect so that learners may have a conceptual understanding of this content.

(c) Teachers should explain the relationship between factors that must be considered when preparing a presentation and when presenting. Learners must be engaged in role play of these factors and then provide feedback on areas for improvement. It should be noted that presenters prepare for a presentation alone (at home) without the audience. These factors will enable them to conduct a good presentation. Key words, such as introduce yourself, be audible and make eye-contact, must be used so that learners remember facts with more clarity.

(d) The impact of visual aids such as hand-outs and flip charts should be thoroughly taught and assessed during the academic year. Learners should be requested to prepare handouts and flipcharts using credible sources as guidelines. They must be given the opportunity to do a presentation using these visual aids and reflect on the impact of each. Furthermore, pictures of different types of visual aids should form an integral part of teaching and learning to provide a deeper understanding of this topic.

(e) Learners should know that the presenter is still with the audience when handling feedback in a non-aggressive and professional manner. Teachers must conduct a presentation on a particular topic in the classroom and encourage learners to ask questions at the end of his/her presentation to assess their understanding of this content.

(f) Teachers should assist learners on how to write a proper introduction and essay, without repeating statements contained in the preamble.

QUESTION 6: BUSINESS ROLES: TEAM PERFORMANCE ASSESSMENT AND CONFLICT MANAGEMENT

Candidates' performance declined in this question as the average was 50% in 2023 compared to 54% achieved in 2022. They were expected to perform exceptionally well in this question as all four subquestions have been asked in the past NSC papers, either as contextual or essay questions.

Common errors and misconceptions

(a) Candidates forfeited marks in Q6.2 because they repeated facts used in the introduction when explaining the differences between *grievance* and *conflict*.

(b) Good performance was noted in Q6.3 as many candidates were able to explain the correct procedure to deal with grievances in the workplace. However, a few candidates confused this content with either the conflict resolution techniques or the problem-solving steps. Others were unable to obtain a maximum of 16 marks as some facts on the grievance procedure were repeated.

(c) Q6.4 was fairly answered by many candidates even though some candidates swopped facts for norming and storming as team development stages. Others did not provide complete responses and forfeited one mark for each fact.

(d) Poor performance was noted in Q6.5 as many candidates provided incorrect responses on the importance of team dynamic theories in improving team performance. Other responses were based on the characteristics of a successful team or the criteria for successful team performance.

(e) Some candidates repeated the preamble in the conclusion and forfeited marks for committing this error in Q6.6. Candidates also lost marks for originality since they struggled to incorporate practical examples on the discussion of facts in the body of an essay.

Suggestions for improvement

(a) A clear distinction should be made between the meaning of a *conflict* and a *grievance* using examples taken from the 2023 November marking guidelines. Learners must know that grievance and conflict in the workplace usually receive immediate attention hence both concepts involve processes that must be followed. Businesses that do not deal with grievance and conflict in the workplace may suffer negative publicity which may hamper business growth and profitability.

(b) The grievance procedure can be regarded as a formal process applied to create harmony and healthy work relations. Learners should take note that the reporting of the grievance takes place 'three times' to different levels of management within the business.

(c) Role playing and demonstrations could be done when teaching the stages of team performance. The focus should be on the activities that take place in each stage. Learners must be requested to reflect on the role they played in teamwork and measures that were put in place to overcome each stage. Subject advisors must ensure that this content is adequately taught and assessed in Grade 11 using source-based and direct questions as it is also covered in Grade 12. Teachers must note that the following facts are inappropriately placed under the 'norming stage instead of the performing stage' in the DBE textbook:

- The processes involved in achieving the goals are adhered to and team members appreciate the contributions of fellow team members.
- Individual team members collectively work towards the goals of the team.

Teachers are advised that the above-mentioned facts will no longer be accepted in the future NSC marking processes and that they are required to use recent marking guidelines and correct the above-mentioned facts in the DBE textbook.

(d) It must be noted that that team dynamic theories provide guidelines on how businesses can allocate tasks to team members and avoid unnecessary conflict among team members. Theories assist team leaders to understand the personality types of team members so that tasks are assigned more effectively.

(e) Learners must be taught on how to write a conclusion based on any of the four subquestions asked in the essay question. This can be done through continuous assessment and research on topics that forms part of essay questions. They should also be advised to refrain from repeating facts that were stated in the preamble, introduction, body, and conclusion.

CHAPTER 5

ECONOMICS

The following report should be read in conjunction with the Economics Paper 1 and Paper 2 question papers for the NSC November 2023 examinations.

5.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Economics examination in 2023 decreased by 13 996 compared to that of 2022.

There was a pleasing improvement in the pass rate this year. Candidates who passed at the 30% level improved from 71,5% in 2022 to 74,5% in 2023. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 46,9% to 49,3%.

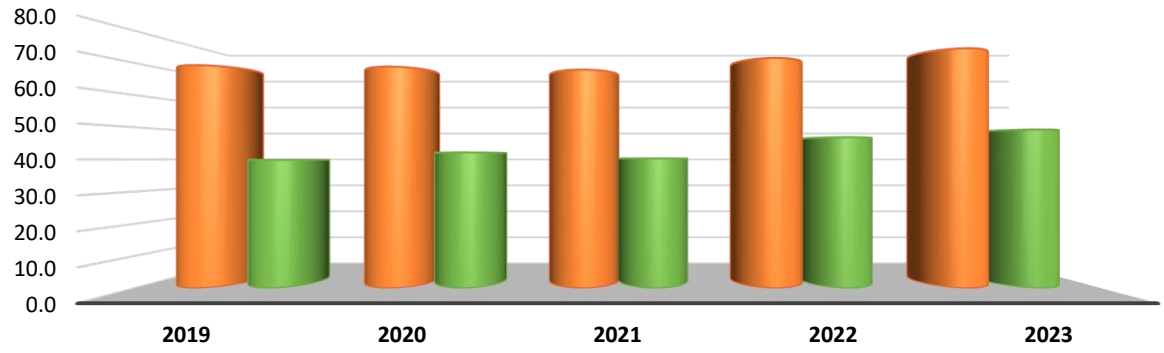
The percentage of distinctions over 80% improved from 2,0% in 2022 to 2,2% in 2023. Given the decrease in the size of the 2023 cohort, this converts into a decrease in the total number of distinctions from 2 753 to 2 721.

The various commendable intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 5.1.1 Overall achievement rates in Economics

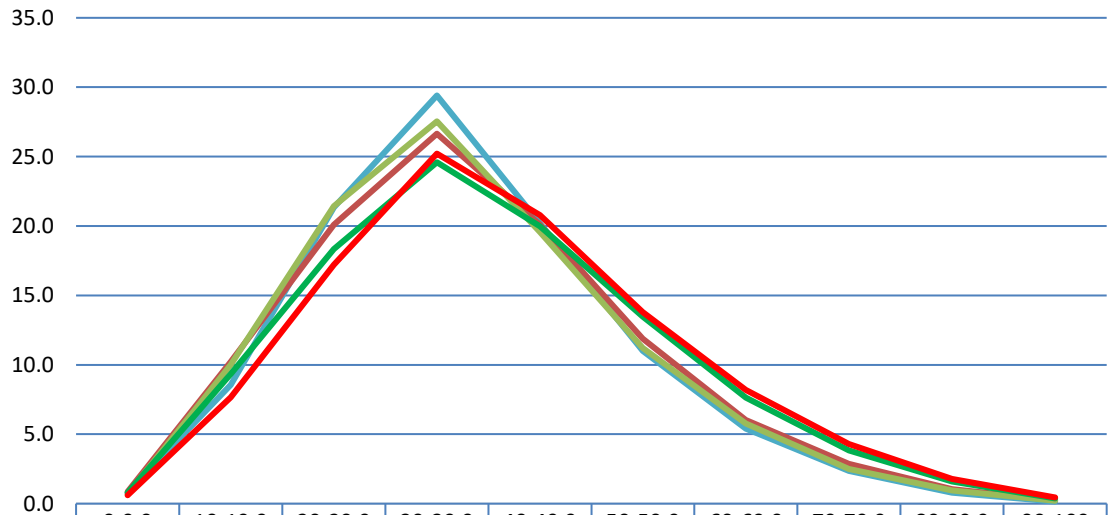
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	107 940	74 796	69,3	43 054	39,9
2020	118 484	81 536	68,8	49 958	42,2
2021	139 191	94 479	67,9	56 145	40,3
2022	137 657	98 414	71,5	64 559	46,9
2023	123 661	92 140	74,5	60 957	49,3

Graph 5.1.1 Overall achievement rates in Economics (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	69.3	68.8	67.9	71.5	74.5
% achieved at 40% and above	39.9	42.2	40.3	46.9	49.3

Graph 5.1.2 Performance distribution curves in Economics (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.8	8.6	21.3	29.4	20.2	11.0	5.4	2.4	0.8	0.2
2020	0.9	10.2	20.1	26.7	20.1	11.9	6.0	2.9	1.0	0.2
2021	0.7	10.0	21.4	27.5	19.6	11.2	5.8	2.5	0.9	0.2
2022	0.8	9.4	18.4	24.6	20.0	13.5	7.6	3.8	1.6	0.4
2023	0.6	7.7	17.2	25.2	20.8	13.8	8.2	4.3	1.8	0.4

5.2 OVERVIEW OF CANDIDATE PERFORMANCE: PAPERS 1 AND 2

General comments

There has been a general improvement in the writing of essays in recent years. While there has been a marginal improvement in the 8-mark higher-order questions, the candidates were still challenged by the additional part of the essay and the drawing of graphs. The results will only improve in a meaningful and sustainable way if these areas are addressed.

A thorough understanding of concepts in all topics will greatly enhance performance in both papers, as they form the basis of understanding subquestions pitched at various cognitive levels. This has a direct impact on Section A, Section B (where concepts are tested as definitions and also applied in a particular context), and Section C (where concepts form part of the introduction for the essays.) An excellent knowledge of Economics terminology will result in correct interpretation and answering of indirect questions in Sections B and C. Teachers need to reinforce concepts through regular assessment in class.

It is imperative that the content of all topics be covered adequately and timeously to ensure sufficient opportunity for revision. When teachers fall behind in content coverage, topics under *Economic Pursuits* and/or *Contemporary Economic Issues* tend not to be taught thoroughly. Candidates who attempt questions on these topics perform poorly, in comparison to questions about other topics. Teachers should structure assignments, projects and case studies in Grades 10 and 11 in a manner that will develop learners' writing skills, thus preparing them to cope with the Grade 12 content. This is also an area in which teachers must be supported by subject advisors.

In Grade 10 and Grade 11, learners' knowledge of topics/content should be extended wherever possible so that a strong foundation is set to cope with the demands of the Grade 12 curriculum. Grade 10 topics such as the *Circular Flow and Quantitative Elements, Budget, Government Intervention, Business Cycles,* and Grade 11 topics such as *Calculation of the GDP, Market Structures, Cost and Revenue Curves, Income Inequalities, Indicators, North/South Divide, Globalisation and Environmental Sustainability* have strong links to Grade 12 topics and should be emphasised and tested.

While there has been a general improvement in the drawing of graphs over the years, the technical aspects need to be reinforced. Teachers must ensure that learners have a thorough understanding of drawing and interpretation of graphs as this aspect is regularly tested in *Microeconomics.* These skills must be regularly reinforced in Grade 10 and Grade 11. With regard to *Perfect Markets and Imperfect Markets*, teachers need to address graphs with learners by drawing the cost and revenue curves step by step. As each step is done, it needs to be explained. After the teacher draws each step, learners should do likewise in their workbooks. This would include the correct shape, positioning and labelling of cost and revenue curves. Emphasis must be placed on the average cost curve (i.e., *smile*) which must always be drawn before the marginal cost curve (i.e. *tick*). This will ensure that the MC always intersects the AC at its minimum point. It is extremely important that teachers recognise the integration of topics from Grade 10 to Grade 12. Graphs relating to cost and revenue curves must be dealt with thoroughly in Grade 11 as this is the foundation for the more complex graphs in Grade 12. Candidates still lack the skill of explaining a graph even though it may be correctly drawn.

Simple calculations and formulae need to be reinforced and assessed regularly as these skills are tested frequently in the NSC examination papers, e.g. *national account aggregates, moving averages, tax burden, the multiplier, BoP, exchange rates, profit and loss, production cost, CBA, percentage changes* and the *inflation rate.*

Specific findings

(a) A good understanding of tables, extracts, news articles, figures and graphs enabled many candidates to perform well.

(b) Although candidates were able to complete each paper within the allocated time, it seemed that they had limited time to review and check their work as evidenced by some subquestions in Sections A and B being omitted.

(c) The main reasons for underperformance were the following:

- **Skills:** Poor language skills made it difficult for candidates to understand the requirements of questions and to express themselves clearly, especially in paragraph-type questions which formed a large part of the question paper. Most candidates were unable to solve problems, give their own opinions or evaluate data connected to their study material. Candidates also lacked basic knowledge of the general economic issues of the day.
- **Content coverage**: It is evident from the poor performance of many candidates that their teachers had not covered some of the topics. Basic Economics concepts/terminology seemed to be lacking among many candidates and there was also a lack of knowledge on current economic issues, notably in the following subquestions:
  - Paper 1 Q3.2.5 Explain the challenges in the implementation of Broad-Based Black Economic Empowerment (BBBEE)
  - Paper 2 Q3.5 Evaluate the impact of climate change in the economy.
  - Paper 2 Q6 Additional Part: How can South Africa's tourism profile be used promote tourism in South Africa?
- **Exposure to different types of questions:** Many candidates were unable to answer questions with different instruction verbs and lacked the ability to unlock the knowledge in different ways.
  - Paper 1: In response to Q5, the additional part, 'Evaluate the impact privatisation of state-owned enterprises (parastatals) on the South African economy', many candidates just explained what parastatals were instead of discussing the positive and negative impact of privatising parastatals.
  - Paper 2: In response to Q5, the additional part, 'Compare and contrast market structures of monopolistic competition with an oligopoly in detail', some candidates responded with the incorrect market structure than the ones required.

  Skilled candidates were better able to write essays and paragraphs and offer their opinions with confidence. Such candidates were able to focus on the information that was relevant to the answering of each question.
- **Problem-solving skills:** Candidates lacked the ability to apply their knowledge of how to solve everyday problems experienced in their own communities to the answering of some questions e.g.:
  - Paper 1 Q2.2.5 How can The South African Reserve Bank reduce a balance of payment deficits?
  - Paper 1 Q3.2.4 How can the government use taxation to promote business efficiency?
  - Paper 2 Q2.1.2 How would the levying of taxes on demerit goods influence their consumption?
  - Paper 2 Q4.3.5 How can environmental subsidies be used to ensure environmental subsidies?
- **Language ability:** Proficiency in the language of assessment is still a drawback for many second-language candidates, however, some centres in deep rural areas produced good results compared to others in similar circumstances

General suggestions for improvement

Teachers are advised to build the following practices into their work plan for the year:

(a) **Use of past NSC and *CAPS*-aligned exam papers:** In preparation for the 2024 NSC examinations, all learners should have access to and make use of past NSC papers, which should include the final examination papers (2017–2023) and the supplementary examination papers (2018–2024) for clear guidance on style, format and different questioning techniques. Furthermore, teachers should refer to the *2021 Examination Guidelines* as a guide when it comes to the scope and depth of content and on how to assess learners' understanding of the specific content matter. Previous question papers and marking guidelines should be used as revision tools, but not as teaching tools, as this will encourage spotting of questions for the exams. It is critical that teaching focuses on the interpretation of questions and a clear understanding of the different instructional words.

(b) **Basic concepts:** Teachers should ensure that learners understand basic concepts and terminology before engaging in in-depth applications. More time should be spent on improving the reading skills of all learners – especially of those whose mother tongue is not the language of teaching and learning. Learners' understanding of terminology should be assessed on a continuous basis. *A glossary* of all concepts should be compiled for each topic. Quiz bowls, crosswords or team challenges are recommended as useful tools to assess knowledge of economic concepts. Regular classwork or homework based on definitions will ensure that learners familiarise themselves with these basic concepts.

(c) **Requirements of questions:** Teachers should ensure that learners understand the requirements of questions that might appear in NSC examination papers. For example, if a question requires the drawing or analysis of a well-labelled graph, this must be done effectively to earn the relevant marks, e.g. Paper 1, Q4.2.5: 'Explain the effect of demand-side policies and supply-side policies on general price level and real output, with reference to the graph above', and in Paper 2, Q.4: 'With the aid of a well labelled graph, explain profit maximisation using total revenue (TR) and total cost (TC) curves'.

Teachers should ensure that their learners understand the phrasing of questions, e.g. the *what*, *why* and *how* type of higher-order questions. However, the misconception that if a question begins with *How* then it constitutes a higher-order question, must be clarified. The following example illustrates this point:

Paper 2 - Q3.1.2 How does air pollution affect the environment? (2)

This is a middle-order cognitive level and an easy question. Learners should be guided by the mark allocation in terms of the depth of the answer required.

With regard to higher-order questions (especially Q2.5, Q3.5, Q4.5 and the additional part of the essay questions), candidates need to read the question carefully and highlight the key points required. Furthermore, it must be noted that answers to these questions are not necessarily found in textbooks but will require an application of content studied within a particular context. Reading the question more than once will ensure greater accuracy in the candidates' responses. The question should be checked constantly to ensure the response logically suits it.

Learners should be given practice in answering higher-order questions as they place advanced cognitive demands on learners and encourage them to think beyond literal answers to questions. These questions promote critical thinking skills where learners are

expected to apply, analyse, synthesise, and evaluate information instead of simply recalling facts. Higher-order questions require learners to make inferences, draw relevant and insightful conclusions and use their knowledge in new situations. It also requires them to apply their thinking to other situations and to their own background knowledge. Issues from the real world can be used to either support or refute a point of view. Learners should be encouraged to take the time to understand the question clearly before attempting to answer it.

Teachers need to realise that there are more interesting and creative ways to teach than by simply promoting rote learning. Techniques should include teaching for understanding, decision-making, problem-solving, connecting a part to a whole, detail-to-concept, and concept- to-concept. There is also inference, prediction, analysis for bias and learning for transfer. Each of these techniques and processes requires some form of critical thinking. Opportunities for learners to develop critical thinking processes will not be found in classrooms dominated by the regurgitation of factual content. They are found in classrooms where active learning is an essential component.

(d) **Comments and explanations:** Teachers should equip learners with the relevant skills needed to express themselves clearly where comments or explanations are required. Learners need guidance on how to express opinions that are relevant to the context of especially higher-order questions, e.g.:

- Paper 1: Q2.5 'How can business cycles influence the use of fiscal policy in the economy?'
- Paper 2: Q2.5: 'How would the provision of subsidies to producers positively influence the economy?'

(e) **The importance of formative testing:** Teachers should build the confidence of learners by using short, informal formative tests and tasks. These tasks should be used to ascertain whether learners are able to apply their knowledge, placing emphasis on their own opinion and understanding. This will encourage learners to take ownership of the learning process.

(f) **The structure of the paper:**

- **SECTIONS A AND B:** The demands of these sections should be explained to learners to enable them to organise their answers properly. Leaving lines between subsections, using the correct numbering system, and not omitting question numbers are examples of techniques that make assessment more effective.

  Section A Q1.1 requires candidates to write the letter of their choice (A, B, C or D) next to question numbers. However, if they decide to write the statements/option, then this would have to be the complete statement, as per the question paper. It is suggested that learners first attempt to determine the correct answer to multiple-choice questions before analysing the given options. Learners must be made aware that no marks will be awarded when they provide more than one answer to a short question. It is important that they cancel an incorrect letter in Q1.1 and Q1.2 and write the correct one next to it, instead of writing over the incorrect letter chosen. In Q1.3 teachers must stress the importance of reading the instruction, as acronyms and abbreviations will be marked incorrect as these are not accepted as per instruction.

  In Section B, there is a misconception that answers to 1-mark questions in the *Data Response* items must come directly from the data. A question may require an application of knowledge when the answer appears in the data, or it may be a simple question related to the data.

- **SECTION C (Essay):** The importance of the layout of the essay should be emphasised, i.e. introduction, body (main and additional part) and conclusion. There should be a clear distinction between the various sections with line spacing between them. Using subheadings is crucial as these earn marks and provide structure to the response. Learners should structure the essay according to the outline provided in the question paper. Learners must be made aware that no marks will be earned if any part of the introduction or body is repeated in the conclusion. Instead, the conclusion should include the learner's own opinion/an alternative viewpoint/any fact to support the body or a summary of the discussion. Teachers must encourage learners to pay attention to the essay structure guideline given in the question paper as this will enhance the layout and quality of their essay writing.

  Learners should be given the opportunity to practise the answering of essay questions at the end of a topic or chapter, either in the form of a test or as homework. If given as homework, the essay can be assessed in terms of the following important aspects (detailed assessment is not necessary):
  - Relevant introduction
  - Subheadings in the main part
  - The appropriateness of the additional part
  - Relevant conclusion

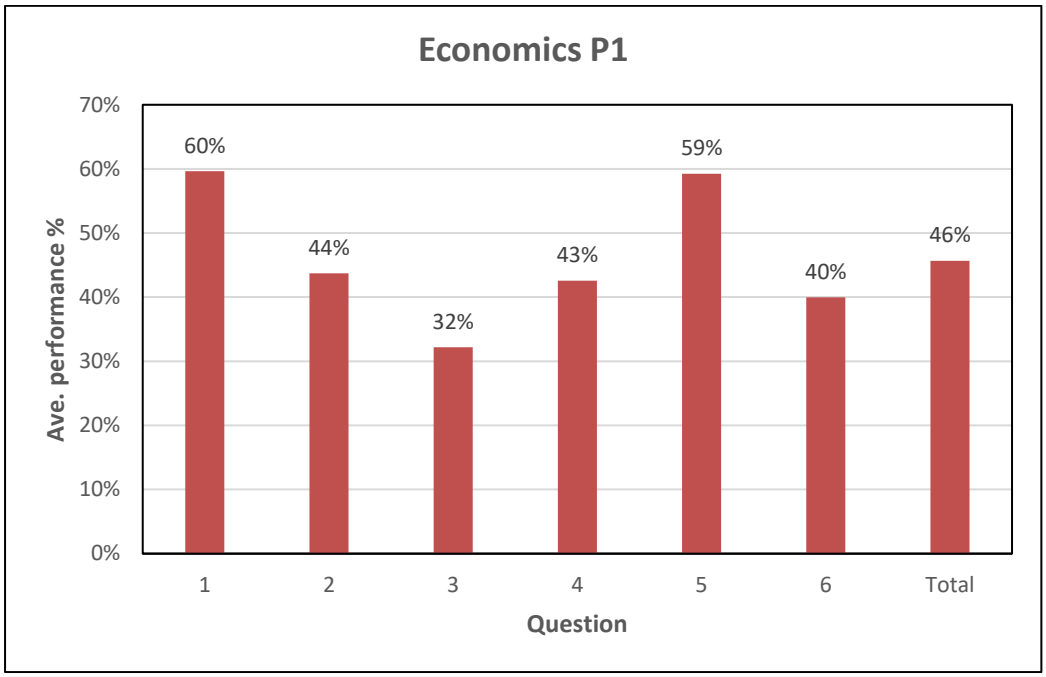
- Most resources are outdated and have not been revised recently, although there have been amendments to the *Examination Guideline*s. Teachers must be encouraged to identify content gaps in their sources when interrogating the *2021 Examination Guideline*s and network with other schools, the cluster, or the subject advisor in obtaining the relevant content to supplement their resources.
- Topics earmarked as possible essays in the *2021 Examination Guidelines* should be used to prepare thoroughly for the examination. Spotting of questions underprepares candidates and leads to poor performance. In both Paper 1 and Paper 2, the content of various essay topics was covered in lower-order, middle-order and higher-order questions,
  - Paper 1 reflected a total of 57 marks of these questions (see Q1.1.6, Q1.1.8, Q1.2.3, Q1.3.2, Q1.3.6, Q2.1.2, Q2.5, Q3.3.5, Q3.4, Q4.2, Q4.3 and Q4.4).
  - Paper 2 reflected 68 marks of these questions (see Q1.2.2, Q1.2.3, Q1.2.4, Q1.3.1, Q1.3.3, Q1.3.6, Q2.1.1, Q2.1.2, Q2.2, Q2.3, Q2.5, Q3.3, Q3.4, Q3.5 and Q4.3).

5.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

The performance in Section A increased slightly when compared to that of 2021. There was a decrease in performance in Q1.1 and an increase in Q1.2 and Q1.3. In Section B, candidates performed better in Q2. In Section C, while Q5 showed an improvement, there was a significant drop in Q6.

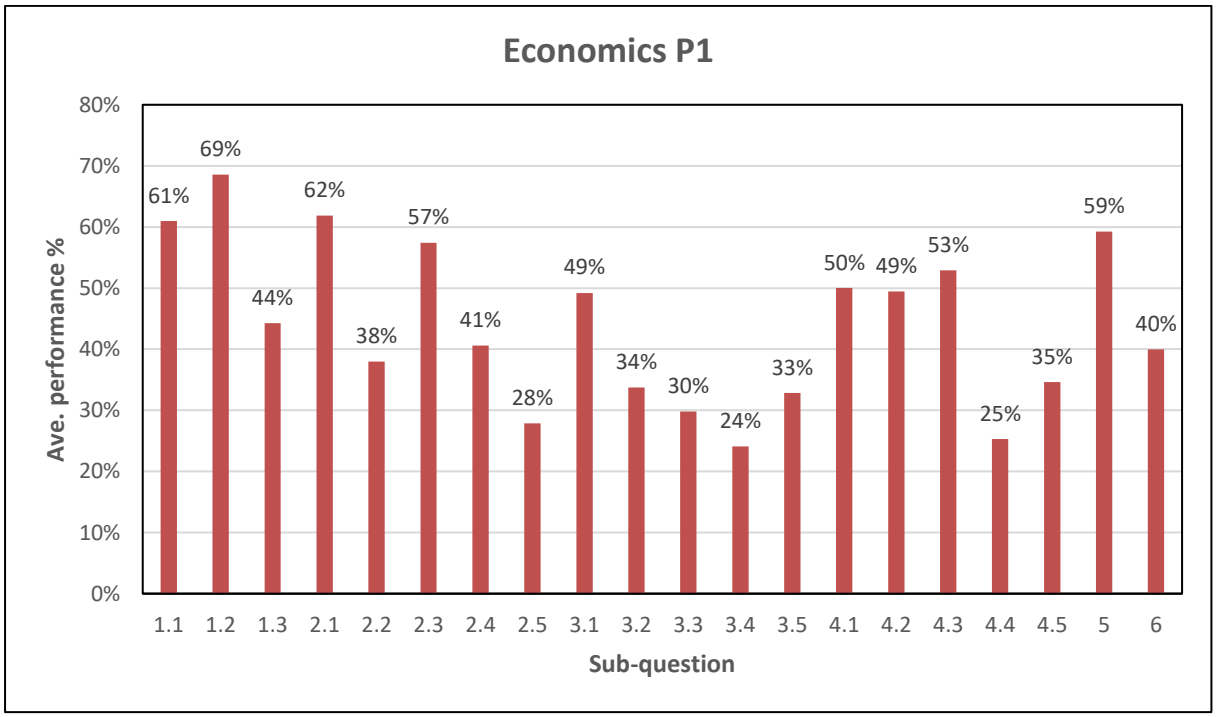
The following graph is based on data from a random sample of candidates' scripts. While this graph may not reflect national averages accurately, it is useful to assess the relative degrees of challenge of each question as experienced by candidates.

Graph 5.3.1 Average performance per question in Paper 1



Q	Topics
1	Objective questions
2	Macroeconomics
3	Economic pursuits
4	Macro and pursuits
5	Macroeconomics
6	Economic pursuits

Graph 5.3.2 Average performance per sub-question in Paper 1



Sub-Q	Topic	Sub-Q	Topic
1.1	Multiple choice	3.3	Incentives to encourage industrial development
1.2	Matching	3.4	Economic Indicators
1.3	Give a term	3.5	Economic Growth and development
2.1	Factors of Production & Business Cycles	4.1	North and South Divide
2.2	Balance of payments	4.2	Business Cycles
2.3	National Account Aggregates	4.3	Economic Indicators
2.4	International Trade	4.4	South Africa's endeavours
2.5	Business Cycles	4.5	Circular Flow
3.1	Public Sector and Industrial Development	5	Public Sector
3.2	Industrial Development	6	Export Promotion

5.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: MACROECONOMICS AND ECONOMIC PURSUITS

Most candidates achieved moderate results in Q1. The performance of candidates ranged from excellent to poor. Some candidates attained full marks, while others did not even attempt to answer some of the questions, despite the fact that Q1 is a compulsory question.

Common errors and misconceptions

(a) In Q1.1 a lack of content knowledge led to many candidates being unable to choose the correct alternative. Poor performance was recorded in Q1.1.1, Q1.1.2, Q1.1.5 and Q1.1.6.

(b) The majority of candidates performed well in Q1.2 and there were candidates who managed to obtain full marks for this question. The implication is that candidates perform better if they are provided with few concepts from which they may choose. However, poor performance was recorded for Q1.2.2 which required knowledge of the *monetarist theory* and Q1.2.5 which required knowledge of both *monetary* and *fiscal policies*.

(c) In Q1.3 most candidates performed poorly compared to Q1.1 and Q1.2. Candidates performed poorly in most of the items, hence an average of 44%.
Lack of understanding of economic terminology and concepts led to poor performance in this question.

Suggestions for improvement

(a) Short formative tests on basic concepts are recommended to ensure that learners become familiar with economics terms and concepts.
Assessment on short questions should cover a class test, or any type of assessment such as a quiz or a word puzzle. This would assist learners to memorise concepts. Teachers may also randomly ask questions during the lesson as this will ensure that learners are engaged and participate in the lesson.

(b) Commence each lesson by testing concepts that were taught in the previous lesson. Continuous and constant revision of concepts and terminology is strongly advised. Learners should attempt to answer all items in Q1.1 and Q1.2 where the options are provided. Learners should also concentrate on more detailed preparation in respect of concepts and terminology to ensure that they attain higher marks for Q1.3.

(c) Learners should be encouraged to create their own glossary for each chapter. They may keep a separate book/document containing all the terms they have to study. Use informal concept tests to reinforce these concepts. Make use of flashcards, '30-seconds game' for Economics, etc.

(d) Subject advisors should monitor the teaching of Economics concepts by checking activities in learners' books during their school visits.

QUESTION 2: MACROECONOMICS

Common errors and misconceptions

(a) Q2.1.2 The candidates' performance in this question was below 50%. The word, 'Why' was misinterpreted by the candidates. They explained *inflation* and *business cycle* independently without showing the correlation between the two.

(b) Most candidates performed poorly in Q2.2.2, Q2.2.3 and Q2.2.5 that were based on *Balance of Payments*.

(c) Poor performance was observed in Q2.3.3, based on *subsidy on production*, highlighting a fundamental misunderstanding of economic concepts.

(d) In Q2.3.4 candidates misinterpreted the word 'Why' and as a result, low performance was registered in the question.

(e) Candidates' responses in Q2.3.5 showed a lack of knowledge of how to calculate *GVA* at basic prices.

(f) A fair percentage of the candidates misinterpreted Q2. They were unable to distinguish between *specialisation* from *Mass production*, hence they struggled to discuss its effects on international trade. Most candidates simply discussed reasons for international trade.

(g) Candidates failed to link *cyclical changes* (upswing and downswing) with *fiscal policy* which is one policy used to smooth out cyclical patterns in the business cycle. Responses predominantly focused on describing fiscal policy rather than addressing its adaptation to varying economic conditions. Some wrote about government increasing or decreasing tax without linking it to the period in the business cycle.

Suggestions for improvement

(a) Teachers need to use the *2021 Examination Guidelines* when preparing lessons to cover all aspects that are required for a topic. The information on tax tables and calculations is available in the *StatsSA* publication and must be used in class for practical purposes.

(b) Teachers should teach learners the importance of *National Accounts Aggregates* when teaching different methods used to calculate GDP.

(c) A variety of tables should be discussed during class time. Team teaching, outsourcing and workshops should be encouraged.

(d) Learners need to be guided on how to interpret and respond to the cognitive demands of a question, especially higher-order questions.

(e) Subject advisors need to support teachers by developing content-based documents that

address challenging topics. Workshops based on content knowledge should be organised for newly appointed teachers and for those with content knowledge gaps.

(f) The use of print media and current economic issues should be linked to content to develop a better understanding and appreciation of the content. Topics such as *budgets*, *public sector*, *business cycles* can easily be linked to current economic conditions to enhance teaching and learning.

QUESTION 3: ECONOMIC PURSUITS

Common errors and misconceptions

(a) In Q3.1.2 candidates performed poorly as they lacked content knowledge on the topic *Integrated Manufacturing System (IMS)* and as a result, failed to explain how it related to the promotion of industries in South Africa.

(b) Candidates failed to give a measure to improve efficiency in the market in Q3.2.2. Some incorrectly mentioned different market structures such as *Perfect Market and Monopoly*

(c) Q3.2.3 many candidates demonstrated poor performance, which indicated a lack of understanding of the concept *economic development.*

(d) A fair percentage of candidates performed poorly in Q3.2.4, highlighting a challenge in understanding the role of taxation in promoting business efficiency. In addition, the use of taxation by government to promote business efficiency was a challenge.

(e) A significant number of candidates failed to name the financial incentive provided by the government in Q3.3.2. Candidates mentioned incentives and subsidies as responses, hence poor performance in the question.

(f) In Q3.3.4, candidates struggled to explain the importance of the manufacturing sector to the economy, which reflected little understanding of the role of the manufacturing sector in the economy.

(g) The question was poorly answered because candidates mentioned successes as opposed to failures(negatives) in Q3.3.5

(h) Candidates were unable to analyse the impact of low economic growth on the South African economy in Q3.5.

Suggestions for improvement

(a) *Economic Pursuit* should be taught and assessed thoroughly. This will assist and instil confidence in learners when responding to the question. Practical and real-life situations (current economic issues) should form part of teaching to make lessons more meaningful to learners.

(b) Learners should be guided on the interpretation of questions. In-depth content knowledge by the subject teacher is important. This will assist learners to analyse, synthesise, make their own judgements and build confidence in responding to higher-order questions.

(c) Additional learning material should be given to learners during the academic year. Data provided in data-response questions should be analysed thoroughly before learners attempt to answer any questions set.

(d) More case-study questions should be discussed in class and given as homework activities. Debates and presentations of certain topics should be conducted regularly. Teachers must endeavour to include the *why* and *how* types of questions to enable learners to think beyond typical textbook knowledge.

(e) Subject advisors need to support teachers by developing content-based documents that address challenging topics. Data-response activities that can be used as formative assessment in the classroom should be collated.

QUESTION 4: MACROECONOMICS AND ECONOMIC PURSUITS

Common errors and misconceptions

(a) Many candidates misinterpreted Q4.1.1 where characteristics of countries in the north were mentioned as opposed to those in the south. Names of countries like Botswana, Lesotho, Swaziland were given as responses hence candidates lost marks. This led to poor performance in the question.

(b) Poor performance was also evident in Q4.2.4 as candidates failed to explain the specific ways in which competitive forces encourage firms in stimulating *aggregate supply*. Candidates wrote about consumers having wider choices in the market.

(c) In Q4.2.5 most candidates wrote the answer by referring to the shifts from AD-to-AD^1 and AS to AS^1. They did not mention price increases. They did not realise that this referred to the *economic paradigm*. Some candidates drew the graph from the question paper instead of explaining it.

(d) Q4.3.4 proved to be a challenge for candidates as they explained the concept *malnutrition* in general terms and struggled to explain its impact on child mortality rate.

(e) Many candidates were unable to provide a response to the importance of the size of population to business or government in Q4.3.5. Responses related to an increase in demand for goods without specific reference to the participants as per the requirement of the question.

(f) The candidates performed poorly in Q4.5 because they were unable to analyse the relationship between the financial sector and other participants in the circular-flow model. Answers were merely listed and most of them did not even attempt to answer this question.

Suggestions for improvement

(a) Content mapping must be done at school to identify the concepts that are across Grades 10–12 so that these concepts can be covered in detail.

(b) Teachers should use a variety of resource materials to prepare learners adequately for the examination. Current economic issues should be used as examples to illustrate the subject in context. Economics in the classroom should be linked to Economics in real life

by exposing learners to actual data, graphs and statistics. Print media and video clips can be used to clarify content

(c) Teachers should ensure that learners understand what is expected of them when instruction verbs such as *argue*, *analyse*, *evaluate* or *differentiate* are used in a question.

(d) Application of knowledge should form part of daily teaching. Learners should be taught to make their own judgements based on particular content. Different forms of discussion from debate to case study may be used during lessons to argue and make opinion-based decisions.

(e) Learners should be guided on the process of selecting questions from both Section B and Section C as part of exam-answering techniques. It is noted that often all the questions in Section B are answered; this is a clear indication of poor planning and a waste of valuable time. Instructions need to be explained and reinforced to learners during their revision sessions so that they are clear about the requirements.

QUESTION 5: MACROECONOMICS

Common errors and misconceptions

(a) In response to the essay, some candidates misinterpreted the question and wrote on the reasons for public sector failure instead of on the objectives of the public sector.

(b) The writing of the introduction and the conclusion seem to be a challenge to some candidates as they leave blank spaces or write irrelevant information.

(c) Mere listing of facts was also noted in most candidates' responses which deprived them of marks. Candidates confused *price stability* with *exchange rate stability* in their discussion.

(d) The additional part of the essay is of a higher cognitive demand ~~order~~ and allocated 10 marks. Some candidates failed to obtain the maximum of 10 marks because they could not evaluate the impact of privatisation of state-owned enterprises on the South African Economy. Candidates mentioned reasons for privatisation of state-owned enterprises. Some gave examples such as ESKOM and SABC. The instructional verb 'evaluate' was misinterpreted hence poor performance in this section of essay.

Suggestions for improvement

(a) It is important that subject advisors supplement content on this topic through teacher development workshops to address gaps in teachers' content knowledge.

(b) The use of the *2021 Examination Guidelines* is highly encouraged as it serves as a fundamental document for teachers to thoroughly prepare learners for essays that might appear in the question paper. In teaching this topic some elements of real-life situations should form part of the lesson to create meaningful classroom discussions.

(c) Teachers must give attention to guiding learners in the writing of introductions, bodies and conclusions, when dealing with essay questions

(d) Teachers should expose learners to past question papers to enable wider awareness of different types of questions. Learners should be exposed to questions on all levels of difficulty during class activities, tests and internal examinations.

QUESTION 6: ECONOMIC PURSUITS

Common errors and misconceptions

(a) Some candidates included reasons for international trade which was irrelevant. Candidates tend to repeat data from the from the main part of the essay without answering the question.

(b) Candidates confused *export promotion* and *import substitution* in the main part of the essay.

(c) Mere listing of facts and irrelevant information was noted in the discussion.

(d) Most candidates performed poorly in the additional part of the question as they could not explain how South Africa could benefit from being part of other trade protocols. The linking of two variables within a question seemed to provide a challenge for most candidates.

Suggestions for improvement

(a) Teaching of these topics should be done holistically. Learners should be guided in discussing each fact in detail. This will ensure that they do not omit any crucial aspect of the answer. More time should be used to teach areas that prove to be challenging for learners.

(b) When teaching the essays, teachers should highlight the importance of mentioning subheadings as marks can be awarded for such, including examples (1 mark per subheading or example).

(c) Different methods of teaching, such as case studies, classroom discussions and debates may be used to make discussions more meaningful in relation to policies. Teachers should have full knowledge about recent economic information and discuss this regularly in class.

(d) Teachers are urged to use the *2021 Examination Guidelines* which clearly indicates all possible essay questions for the next three years. These essays should be prepared in advance to ensure excellent marks in the introduction and main parts of the essays.

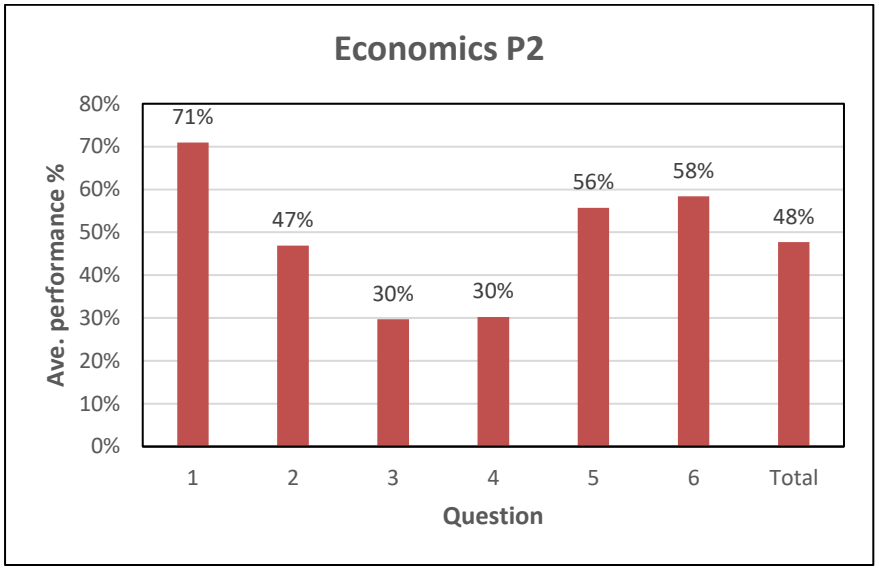
(e) Subject advisors need to monitor that assessment tasks contain a balance of all the cognitive levels. Workshops on cognitive levels and levels of difficulty should form part of content workshops conducted during the year.

5.5 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

The performance in Section A showed a substantial improvement when compared to that of 2022. In Section B, candidates performed marginally better in Q2. However, there was a decline in the candidates' performance in Q3 and Q4. In Section C, there was a marginal decline in Q5 when compared to 2022. There was a satisfactory improvement in Q6. The performance in *Microeconomics* over the years has generally been poor to average.

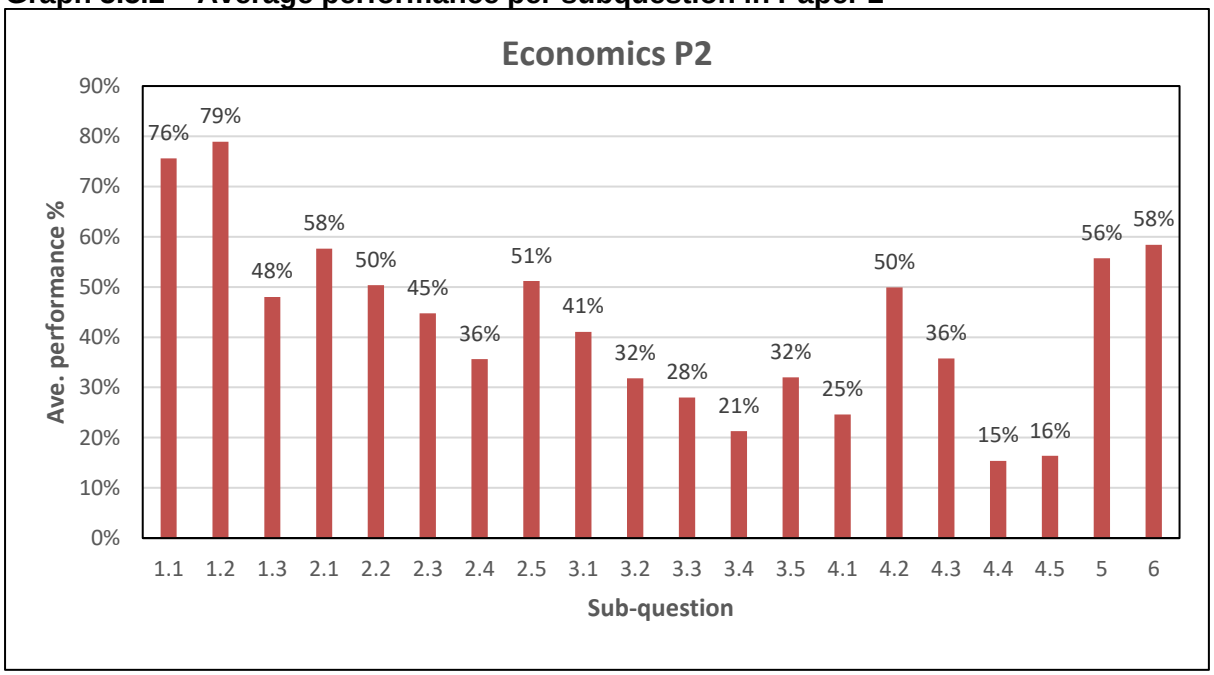
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 5.5.1 Average performance per question in Paper 2



Q	Topic/s
1	Objective questions
2	Microeconomics
3	Contemporary economic issues
4	Microeconomics and contemporary economic issues
5	Microeconomics
6	Contemporary economic issues

Graph 5.5.2 Average performance per subquestion in Paper 2



Sub-Q	Topic	Sub-Q	Topic
1.1	Multiple choice	3.3	Environmental problems
1.2	Matching	3.4	Consequences of inflation
1.3	Concepts	3.5	Impact of climate change
2.1	Non-price competition/Demerit goods	4.1	Redress methods to redistribute wealth
2.2	Perfect market equilibrium positions	4.2	Cost Benefit Analysis
2.3	Minimum Wages	4.3	Environment Sustainability
2.4	Institutions promoting competition	4.4	Profit Maximisation- graph & explanation
2.5	Producer subsidies	4.5	Evaluate success of Inflation targeting
3.1	Core inflation/air pollution	5	Compare and contrast monopolistic competition with an oligopoly
3.2	Inflation	6	Effects of tourism

5.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: MICROECONOMICS AND CONTEMPORARY ECONOMIC ISSUES

Most candidates performed well in Q1, especially in the multiple-choice and matching questions. In Q1.3 it was evident that candidates still struggled with concepts and often confused related concepts. Overall, there was an increase from the previous year. The performance of candidates ranged from excellent to poor. Some candidates attained full marks, while a few did not even attempt to answer some of the questions.

Common errors and misconceptions

(a) In Q1.1 many candidates omitted some answers, which resulted in incorrect numbering. In some cases, more than one answer was provided.

(b) Poor performance can be attributed to the misunderstanding between *producer price index* and *weighted index* in Q1.2.5 and 1.2.6 respectively as candidates switched the matching statements for these two questions.

(c) Confusion between concepts in Q1.3.3 was evident as many candidates gave *minimum price,* instead of *maximum price* as the answer.

(d) In Q1.3.4 a fair percentage of candidates wrote the abbreviation *IKS* instead of *Indigenous Knowledge Systems.* This could be attributed to candidates not reading the instructions to the question.

(e) Instead of writing *marketable permit* in Q1.3.6, some candidates wrote *market permit/permit* which means something different to *marketable permits.*

Suggestions for improvement

(a) Emphasis on distinguishing between the related concepts such as *minimum prices and maximum prices* is essential in avoiding confusion. There is also some confusion among candidates who use 'lowest' price to describe maximum prices
Maximum price is a limit or cap on a price set by a government or an organisation – it is the highest price that can be set by producers. A price below the maximum is acceptable, and no intervention would follow.

Similar to *minimum prices*, it is the lowest price set by a government or an organisation. Maximum prices are called *price ceilings*, the highest price at which a producer could sell, and minimum prices are called *price floors*, the lowest price at which a producer could sell.

(b) Definitions and concepts should be emphasised. The use of a glossary should form the basis of the teaching and learning of Economics.

(c) Teachers are encouraged to spend time reading the instructions to the learners, especially those in Q 1.1.3.

(d) Revision by means of short, regular formative tests on basic concepts is strongly recommended. Learners should be encouraged to make a list of the key concepts of each topic, especially in Microeconomics.

QUESTION 2: MICROECONOMICS

Common errors and misconceptions

(a) In Q2.1.2 many candidates failed to interpret the question fully as they discussed *taxes on demerit goods* without relating it to *consumption*.

(b) A fair percentage of candidates were unable to describe the term *marginal revenue* as it was confused with *marginal cost* in Q2.2.3*.*

(c) Answers to Q2.2.4 suggested that candidates did not fully understand the concept *shut-down point.* It was described as though the business was making a loss, which is incorrect. Candidates' answers failed to include any reference to *average variable cost* which is crucial to explaining why a business will shut down.

(d) Most candidates misunderstood the requirements of Q2.2.5. They calculated *economic profit* instead of *total revenue* only.

(e) In Q2.3.3 many candidates described *public sector failure* instead of *market failure* as their answers related to the government failing.

(f) Most candidates had great difficulty in interpreting Q2.3.4. Candidates explained what *imperfect competition* was, instead of providing reasons why government should prevent *imperfect competition*.

(g) Conceptual confusion and question interpretation was evident in Q2.3.5. Candidates' responses leaned towards employees instead of employers. *Minimum wages* were interpreted as low wages which disadvantaged workers and advantaged employers. The converse is true.

(h) In Q2.4 candidates confused the roles of the different institutions which promote competition. Incorrect responses included *objectives of the competition policy*.

Suggestions for improvement

(a) Misinterpretations of questions seem too common among candidates. Attempting past papers and unpacking a question in terms of what is required would help learners to write what is relevant to the question, especially for the 2-mark, 4-mark and 8-mark questions. Key words within the question should be underlined so that learners can respond to the requirements of the question

(b) A clear distinction must be made between similar or related concepts such as *marginal revenue* and *marginal cost, average revenue* and *average cost*, *market failure* and *public sector* failure, *production* and *productivity.* Knowledge of these concepts will enhance question interpretation.

(c) Terminology related to cost and revenue must be emphasised from as early as Grade 11.

(d) While the practice of drawing and labelling graphs is essential to learners' understanding of various concepts and content related to a topic, teachers should also encourage learners to provide explanations of given graphs on a regular basis. Credit must be given to explanations related to the graph.

(e) Subject advisors, through teacher development, should develop more material on *market structures* and *market failures*. It is evident from candidates' responses that teachers need support in this section.

QUESTION 3: CONTEMPORARY ECONOMIC ISSUES

Common errors and misconceptions

(a) In Q3.1.1 candidates were unable to provide goods that were excluded in the calculation of core inflation. Responses included merit goods, demerit goods and bread.

(b) Many candidates performed poorly in Q3.2.2. While they demonstrated knowledge of the different monetary policy instruments, candidates failed to link the correct instrument to the selling of government bonds. Some responses referred to the *cash reserve requirements*.

(c) In Q3.2.~~3~~ many candidates explained *administered price inflations* as prices set by the government without reference to the inflation part of the concept.

(d) A fair percentage of candidates in Q3.2.4 discussed the impact of an oversupply of money in a positive sense instead of a negative sense. Responses were illogical. Some responses referred to benefits to creditors instead of debtors.

(e) In Q3.3.2 many candidates confused *Stockholm Protocol* with *Kyoto Protocol* and ignored the phrase 'one other international measure' in the question. Some candidates confused international measures with international conferences on climate change as their responses included COP17 and the Johannesburg summit.

(f) Q3.3.5 was poorly answered as it was evident that the question was misunderstood. Responses included actions by individuals and businesses that were harmful to the environment instead of focusing why international measures had failed.

(g) Many candidates described taxpayers and industrial peace in Q3.4, without relating them to the consequences of inflation. Some did not respond to the consequence on industrial peace at all.

(h) While Q3.5 was satisfactorily answered, many candidates failed to interpret the verb 'evaluate' as responses were all negative.

Suggestions for improvement

(a) The teaching of contemporary economic issues is imperative and basic concepts need to be emphasised. Sometimes these topics may not be covered in some centres, possibly due to poor time management. Teachers should cover *Environmental Deterioration* thoroughly in Grade 11 as a large part of the content overlaps with the Grade 12 topic, *Environmental Sustainability*. Assessment should also be comprehensive to give learners a head-start in Grade 12. This will allow for more time to teach other topics which are sometimes neglected.

(b) Learners must be exposed to more data-response questions, i.e. 4-mark questions that require application skills. A thorough understanding of key concepts is necessary to interpret such subquestions. These questions should be discussed in class with the emphasis on using the relevant data to address the requirements of the question. Logical reasoning would enable learners to earn marks, especially if they can show an understanding of the question. Data-response questions should not merely require learners to re-produce answers from the given data. Learners should be able to apply the data in the appropriate context.

(c) The importance of infusing current economic issues in lessons cannot be over-emphasised, especially where content can be linked to real-life issues. Issues relating to *sustainability* and *climate change* can be easily linked to COP discussions such as COP28 that took place in Dubai (December 2023). Countries have committed to reduce their reliance on fossil fuels and move towards a *climate neutral energy system*.

(d) In teaching Economics, a crucial element is to motivate learners to think laterally about the topic. Where possible, teachers must relate the different topics to real-world issues. This will help learners prepare for higher-order questions. Learners must gain practice in evaluating, assessing or critiquing issues/topics whenever possible. Teachers are encouraged to set their own higher-order questions, to extend the engagement and knowledge acquisition of the learners in their respective classes. They should realise that textbooks are not adequate in providing all relevant and current responses to questions. Teachers are encouraged to use other relevant resources that will give more information to supplement textbook information.

(e) Sufficient informal activities on high-order questions are crucial in preparing learners for subsequent formal assessment tasks. These cognitive verbs must be unpacked with learners to improve and understand the requirements of a question.

QUESTION 4: MICROECONOMIC/CONTEMPORARY ECONOMIC ISSUES

Common errors and misconceptions

(a) In Q4.1.1 many candidates confused *traditional* methods with *redress* methods to redistribute wealth. Responses included *taxation* and *public services* instead of *affirmative action*, *land restitution* and *Broad Based Black Economic Empowerment*.

(b) A fair percentage of candidates could not describe the term *social cost* in Q4.2.3. They confused it with *external cost* or *negative externality* as responses related to the cost to third parties who are not involved in production.

(c) Candidates' responses in Q4.2.5 indicated confusion in the application of the *Benefit Cost Ratio* formula as many candidates calculated the cost to benefit ratio instead of benefit to cost ratio. In addition, rounding off to one decimal place seemed a challenge for some learners.

(d) In Q4.3.5 most candidates explained what *environmental subsidies* were. They were not able to explain how *environmental subsidies* ensure *environmental sustainability*.

(e) Some candidates labelled the *Total Revenue* curve and *Total Cost* curve incorrectly in Q4.4, although the shape of the curves was correct. This compromised the interpretation of *profit maximisation* correctly.

(f) In Q4.5 many candidates were unable to evaluate the success of *inflation targeting*. They were only able to discuss *inflation targeting* and the use of monetary and fiscal policy in combating inflation.

Suggestions for improvement

(a) A major contributing factor to poor performance is the incorrect interpretation of the question due to a lack of thorough understanding of a particular concept. This negatively influences its application in a context that is relevant to the question and compromises logical reasoning. Teachers should refrain from providing marking guidelines to learners before they attempt challenging questions, as this prevents them from thinking critically about the question themselves.

(b) A clear distinction between *private cost, external cost* and *social cost* (which is the sum of *private cost* and *external cost)* must be emphasised to avoid confusion. The same applies to *private benefit, external benefit* and *social benefit*. These concepts can be consolidated further by explaining them in relation to the *externality* graphs.

(c) Teachers should focus on the formula and its application thereof to avoid confusion. If the answer is greater than 'one' then the benefits are greater and if the answer is smaller than 'one' then the costs are greater.

(d) Teachers must expose learners to adequate practice in the drawing of graphs and the correct labelling of curves, as this will aid in the correct explanation of the graph.

(e) Learners must be trained to analyse questions. A fundamental problem in misinterpreting questions is a lack of understanding of the terminology contained within the question. This compromises the learners' ability to apply the information within a given context.

(f) Teachers must spend time explaining the instructional verbs in the *2021 Examination Guidelines* to learners in detail. Learners should clearly understand the expectations of these verbs, especially in relation to higher-order questions.

(g) Learners need to be aware of the specific requirements of a higher-order question. In addition, teachers need to assess higher-order questions appropriately so that learners clearly understand the mark allocation. A mere listing of facts without an explanation in context will earn only 2 marks, instead of the full 8 marks.

QUESTION 5: MICROECONOMICS

In general, the level of performance in the question was satisfactory. This particular essay was popular. The candidates, however, performed poorly in the additional part.

Common errors and misconceptions

(a) The following common errors were identified in the main part of the essay:

- Some candidates responded with the incorrect market structure than the ones

required. *Monopolistic competition* was confused with *Monopoly*.
- The majority of the candidates responded in tabular form which encouraged candidates to explain the distinguishing criteria in one word only instead of full sentences.
- Listing of characteristics instead of explanations was evident in a fair percentage of candidates' responses.

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(b) Most candidates performed poorly in the additional part of the essay. Types of *collusion* with examples were discussed instead of evaluating the advantages and disadvantages of *collusion*.

(c) Although guided in the question paper as to what a conclusion should entail, the writing of a relevant conclusion was a challenge for most candidates. Some candidates repeated content from the introduction and the body in the conclusion.

Suggestions for improvement

(a) Teachers must assess learners regularly on essay questions by focusing more on the structure of essays. Teachers should focus on the additional part and the conclusion of the essay – these areas have been identified as problematic for many learners.

(b) Subject advisors/Cluster leaders should provide adequate support and material that would help learners to deal with challenging topics, e.g. graphs.

(c) Teachers should ensure that learners are able to interpret questions correctly to avoid irrelevant information being included in their responses. Learners should be exposed to different questions on the same topic and guided on the interpretation of questions. In this regard, learners should practise how to identify the key issues to be discussed.

(d) Learners should be encouraged to practise answering higher-order questions. Teachers must unpack questions in a way that guides learners to focus on the key issues demanded by the question. Learners should be engaged in classroom discussions, which will promote their ability to interpret content and to think critically because of the feedback they get from others.

QUESTION 6: CONTEMPORARY ECONOMIC ISSUES

In general, the level of performance in response to this question was above average.

Common errors and misconceptions

(a) Many candidates discussed *the benefits of tourism* instead of *the effects of tourism*. These compromised candidates' responses as answers were focused only on the positives instead of both negative and positive aspects of tourism. This suggested a lack of adequate preparation and spotting for the examination.

(b) The mere listing of facts instead of full explanations was evident in the main and additional part of the essay.

(c) The additional part of the question was not answered well. Candidates could not relate South Africa's tourism profile to promoting tourism. Some discussed the reasons for growth in tourism.

Suggestions for improvement

(a) The teaching of all content should be completed timeously so that more opportunities for revision are created. Poor planning and delivery often lead to some teachers rushing through the last few modules and not spending enough time on contemporary economic topics. Teachers need to ensure that each topic is given adequate attention, as outlined in the ATP.

(b) In their conclusions, learners should be taught how to structure a response in support of, or against the facts mentioned in the body of the essay. During revision sessions, teachers should constantly remind learners of the guideline in the question paper regarding the conclusion to the essay.

(c) Learners must be exposed to current affairs/news/events on a continuous basis from Grade 10. SBA tasks should be prepared based on current issues to help learners to relate the content to the real world. Teachers must be encouraged to expose learners to the latest developments related to the *Contemporary Economic Issues*.

(d) Teachers should make the *2021 Examination Guidelines* available to all learners as this would help them to check whether all aspects of the curriculum have been completed and to identify areas where the textbook lacks the relevant information. This will prevent content gaps in the teaching-learning process. It will provide opportunities for the teacher to set small tasks for learners to research and can be given as part of regular homework.

(e) Most resources are outdated and have not been revised recently. There have been amendments to the *Examination Guideline*s. Teachers must be encouraged to identify content gaps in their sources when interrogating the *2021 Examination Guideline*s and network with other schools, the cluster, or the subject advisor in obtaining the relevant content to supplement the resources.

CHAPTER 6

GEOGRAPHY

The following report should be read in conjunction with the Geography question papers of the November 2023 NSC examinations.

6.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Geography examination in 2023 decreased by 24 581 compared to that of 2022.

There was a pleasing improvement in the pass rate this year. Candidates who passed at the 30% level improved from 81,3% in 2022 to 86,2% in 2023. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 52,2% to 61,4%.

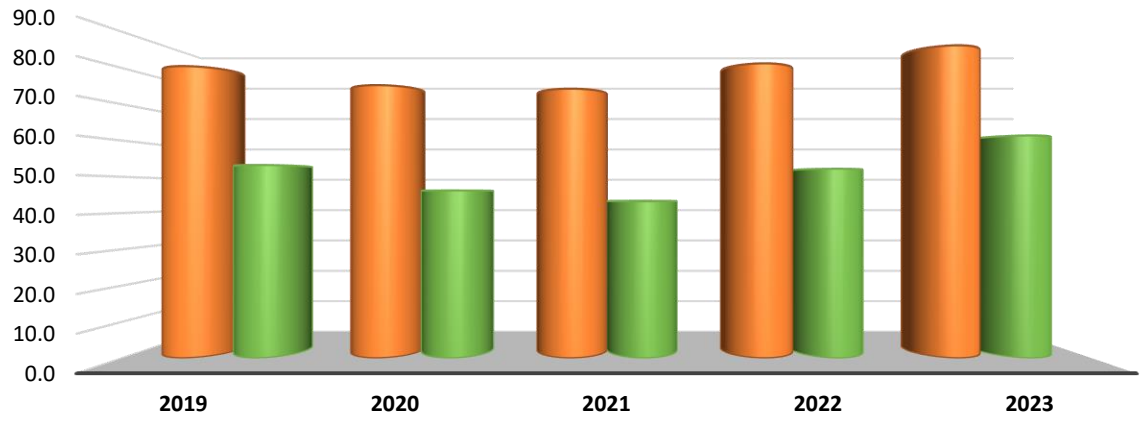
The percentage increase of distinctions (over 80%) improved from 1.0% (3689 candidates) in 2022 to 2.3% (7919 candidates) in 2023.

The various commendable intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 6.1.1 Overall achievement rates in Geography

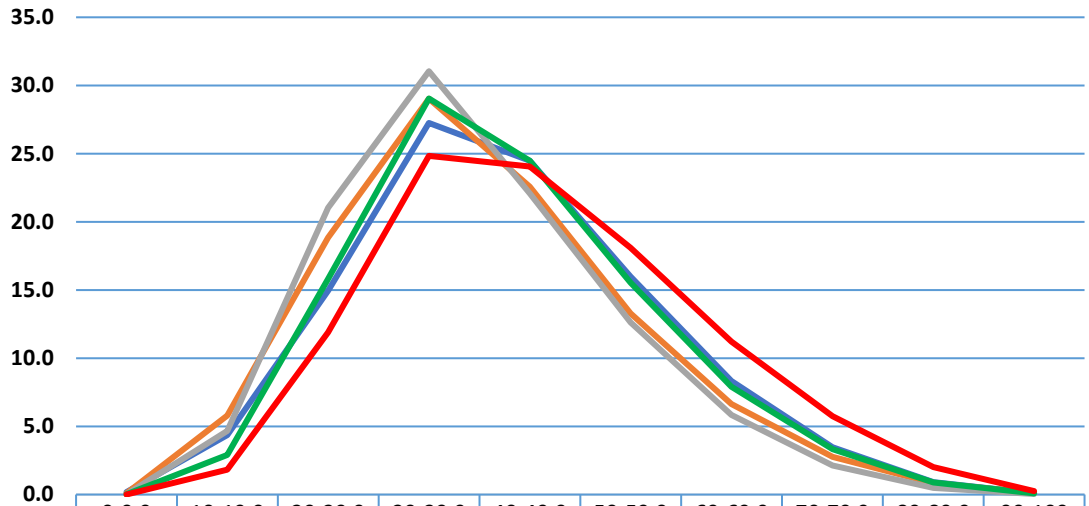
Year	No Wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	271 807	218 821	80,5	144 755	**53,3**
2020	287 629	216 467	75,3	132 955	**46,2**
2021	358 655	266 402	74,3	155 060	**43,2**
2022	368 882	299 751	81,3	192 612	**52,2**
2023	344 301	296 887	86,2	211 374	**61,4**

Graph 6.1.1 Overall achievement rates in Geography (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	80.5	75.3	74.3	81.3	86.2
% achieved at 40% and above	53.3	46.2	43.2	52.2	61.4

Graph 6.1.2 Performance distribution curves in Geography (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.2	4.4	15.0	27.2	24.5	16.0	8.3	3.5	0.9	0.1
2020	0.1	5.8	18.8	29.0	22.6	13.3	6.6	2.8	0.8	0.1
2021	0.0	4.7	21.0	31.0	22.1	12.6	5.8	2.1	0.5	0.0
2022	0.0	2.9	15.8	29.0	24.5	15.5	7.9	3.3	0.9	0.1
2023	0.0	1.8	11.9	24.8	24.1	18.1	11.2	5.8	2.0	0.3

6.2 OVERVIEW OF CANDIDATES PERFORMANCE: PAPERS 1 AND 2

The general comments below include points that arose from the November 2023 Geography NSC papers, and relevant advice given in previous *Diagnostic Reports* has been reiterated.

The November 2023 NSC Geography examination marks the third year of having two 3-hour papers of 150 marks each. The two-paper model was again well-received as it offered different benefits, which included:

- **More effective management of time**: Candidates had 3 hours to complete each paper; a total of 6 hours to complete a 300-mark examination.
- **Specific content per paper**: Each paper was written on separate days, affording candidates the opportunity to focus their preparations on specific content relevant to each paper.

General comments

(a) **Quality of candidates' performance**

In general, the overall performance showed a significant improvement which is promising. The averages for both Papers 1 and 2 were very similar, which indicated a balance between the candidates' performance in the two papers. The inclusion of the source material in the question paper and the use of smaller topographical and orthophoto maps made the papers more learner-friendly.

It was pleasing to note that most candidates attempted all questions in both Papers 1 and 2. As each question was subdivided into several subquestions, weaker candidates would have been able to score some of the marks allocated to the lower-order questions.

There was some improvement in candidates' achievement in the paragraph questions, however, the need to respond in full sentences was a challenge. This skill should be taught, tested and rigorously practised in all activities, tests and examinations. The advice and recommendations suggested in past *Diagnostic Reports* seem to have been implemented by teachers to an extent, but there is still room for further improvement.

In the shorter-response questions, candidates displayed an improved understanding of geographical processes and were able to provide appropriate responses. Topics that reflected the most improvement were *Climate and Weather*, *Geomorphology* and *Rural and Urban Settlements*. Candidates continued to experience challenges in Section B on *Geographical Skills and Techniques* which included map calculations, map interpretation and in particular GIS. A significant number of candidates struggled to provide map evidence in both Paper 1 and Paper 2. Mapwork application should be integrated with the theory taught wherever possible.

The continued inclusion of part-marking into the marking principles for certain questions has had a positive impact on the performance of the candidates in Paper 1 and especially in Paper 2, where it was applied to a number of questions. Previously, in questions where a factor and qualifier were required to obtain two marks, candidates either received two or zero, depending on whether they gave a full response or not. The inclusion of part-marking allowed markers to award one mark where the candidate had given the correct factor without a qualifier. This marking principle was applied in the following questions: Paper 1: Q1.4.5, Q1.5.4 and Q3.2.2. Paper 2: Q1.4.1; Q1.4.4, Q1.5.4, Q2.4.6 and Q3.3.3.

(b) **Policy documents and LTSM:**

- The revised *CAPS* document, recovery annual teaching plans (ATPs), the *2021 Examination Guidelines* and *Diagnostic Reports* are essential planning documents that form the basis of the planning process. Rotational topics must be noted each year. Documentation for 2024 has been sent to all PEDs.
- Prescribed textbooks, study guides and other departmental publications continue to be the primary resources available to teachers. However, teachers are expected to adapt the information to ensure it is correct and remains current.
- Online resources continue to play a significant role in the teaching and learning process. Educational websites, video presentations and shared resources from different provinces and publishers contribute to the continuity necessary in the teaching and learning of Geography.

(c) **Use of past NSC papers and exemplar papers:**

- Accessing and utilising NSC papers of the past three years are essential for teaching and learning. It is evident that teachers make use of these in lessons and revision. NSC Geography papers serve as reliable sources on questioning patterns and styles. Recent trends in the testing of short objective questions and the use of infographics were reflected in Paper 1: Q1.1, Q1.2, Q2.2 and Paper 2: Q1.1, Q1.2 and Q2.2.
- The migration to two equal-weighted papers from 2021 did not necessitate any changes to the content. It is, therefore, essential that every learner has access to past papers from 2015 onwards, as these are based on the current *CAPS* content. Teachers and learners must familiarise themselves with the specific content for each paper and extract the relevant questions from past examination question papers when preparing for examinations. Special note must be made of the relevant yearly rotational topics in the *Economy of South Africa* module.
- The exemplar papers with digital maps are also available and will assist teachers and learners. The A4 maps are now more accessible as additional copies can be printed by schools.

General comments

Areas of concern that were raised in the *2022 Diagnostic Report* remain pertinent in the context of the 2023 NSC examination paper. They are emphasised here once again.

(a) There were sufficient lower-order questions to give all candidates a fair chance to achieve a pass mark of at least 30%. Most of these were found in the short objective questions. At the start of a number of the subquestions in Section A, there were also lower-order questions. Answers to these questions could be obtained directly from the source, e.g. Q2.5.1 in Paper 1 and Q1.5.1 in Paper 2. Based on the 100-script analysis from all provinces, candidates achieved an average score of between 58 and 73% in these questions with the exception of Q2.2 in Paper 1 where a 49% average was achieved.

(b) Thorough curriculum coverage was a challenge for a large number of candidates. In Paper 1 Q1.5 (15 marks) berg winds and Q2.3 (15 marks) drainage patterns presented a challenge to candidates, as did the following questions in Paper 2: Q1.4 (15 marks) commercial decentralisation and neighbourhood shopping centres (15 marks) and Q1.5 public transport (15 marks).

(c) Maize, platinum and the Coega IDZ were some of the rotational topics tested. New sections stipulated in the *2021 Examination Guidelines,* with regard to rotational topics, were unfamiliar to a number of candidates.

(d) Questions that required a factor/explanation and qualifier in Paper 1 (Q1.4.5; 4 marks, Q1.5.4; 2 marks, Q3.3.2; 2 marks) and in Paper 2 (Q1.4.1; 2 marks; Q1.4.4; 4 marks, Q1.5.4; 8 marks, Q2.4.6; 6 marks and Q3.3.3; 2 marks) were poorly answered by a significant number of candidates; they either gave only the factor/explanation or the qualifier.

(e) Many candidates' responses were still not aligned to the demands of the instructional verbs in the question. A large number of candidates did not know how to approach these questions or understand what was expected of them. Words such as 'suggest', 'identify', 'describe', 'determine', 'explain how', 'explain why' and 'explain' require different types of responses. This resulted in candidates losing many marks in the middle to higher-order questions.

(f) **Short objective questions**: Candidates generally performed well in these questions. A variety of short objective-type questions were used, e.g. multiple-choice questions: Paper 1 (Q1.2 rural and urban climates; Q2.2 fluvial landforms and rejuvenation), Paper 2 (Q1.2 urban hierarchy and terminology, Q2.2 economic concepts); match the columns; choosing words from within brackets or identifying features: Paper 1 (Q1.1, synoptic weather maps, Q2.1, drainage basin features), Paper 2 (Q1.1, land reform and rural and urban concepts, Q2.1 mining). However, candidates did not perform well in Q2.2 (fluvial landforms and rejuvenation) in Paper 1 – an average of 49% was achieved for this question.

(g) **Source-based questions** (1 or 2 marks): Questions that required basic comprehension skills to obtain answers from sources like infographics remained a challenge for some candidates: Paper 1 (Q1.3.1; Q1.4.2; Q1.4.4; Q1.5.1; Q1.5.2; Q2.3.1; Q2.4.1; Q2.4.3; Q2.5.2) Paper 2: (Q1.3.1; Q1.3.2; Q1.4.2; Q1.5.1; Q1.5.2; Q2.3.1; Q2.3.2; Q2.4.1; Q2.4.2; Q2.4.3; Q2.4.4; Q2.5.1).

(h) **Short data response-type questions** (2, 4 or 6 marks): These data response-type questions, where short explanations or more detailed responses were required, were often poorly answered. Candidates, in a significant number of cases, were unsure whether a one-word answer or longer response was required: Paper 1: Q1.3.5; Q1.3.6; Q1.4.5; Q1.4.6; Q1.5.4; Q2.3.3; Q2.3.6; Q2.3.7; Q2.5.4; Q2.5.5 and in Paper 2: Q1.4.4; Q1.4.5; Q1.5.3; Q2.4.6.

(i) **Paragraph-style questions** (8 marks): These questions were of middle to higher-order as is the norm. Candidates' performance in Paper 1 showed an improvement in Q1.5.5 on *berg winds*, but Q2.4.5 on *river capture* was poorly answered. Most candidates struggled to integrate all aspects that were required to answer the questions. In Paper 2 the candidates' performance in paragraph questions showed an improvement due to the application of part-marking (Q1.5.4 on injustice issues related to public transport and Q2.3.5 on the informal sector). Despite this, some candidates did not fare well in Q2.3.5 on the informal sector. It appeared that many candidates did not know when to give causes, effects, impacts and solutions when responding to these questions. They were also unable to demonstrate understanding of the instructional verbs, e.g. 'suggest' or 'explain'.

(j) Some candidates did not have a sound knowledge of the basic geographical concepts, therefore, were not able to answer questions of a higher cognitive demand linked to

these regularly tested concepts. Paper 1: Q1.4 (tropical cyclones*)*, Q2.4 *(drainage* patterns); Paper 2: Q1.5 (traffic congestion) and Q2.5 (informal sector).

(k) A continued lack of practice to master the application skills in the Geographical Skills and Techniques section of the question paper impacted negatively on candidates' performance. Candidates did not effectively make use of the topographical map and orthophoto map to assist them in answering questions. It was also evident that the integration of map skills and theory were not thoroughly practised by a significant number of candidates. These two aspects of Geography need to be taught in an integrated manner. Regular practice of calculations was necessary for candidates to prepare sufficiently for the NSC examinations. This section produced poor results in both papers.

(l) Map interpretation seems to be an ongoing challenge. Questions that required candidates to give answers relating to the topographical maps and orthophoto maps or refer to a specific block on the maps continued to be a challenge e.g. Q3.2. A significant number of candidates gave general answers either not found on the maps or in the relevant blocks and therefore, lost marks.

(m) Candidates continued to struggle with Geographical Skills and Techniques (GIS), which were examined in both question papers. Some candidates lost marks for not indicating the correct steps in calculations: Paper 1 (Q3.1.4, 3 marks and Q3.1.5, 3 marks), Paper 2 (Q3.1.3, 2 marks and Q3.1.5, 4 marks). Many candidates did not understand the terminology and the application thereof to answer questions on Geographical Information Systems (GIS) Paper 1: Q3.3.2 (remote sensing); Q3.3.5 (raster data). Paper 2: Q3.3.2 (buffering); Q3.3.4 (data layer).

(n) Most of the major topics in Section A in both Papers 1 and 2 and all sections regarding Geographical Skills and Techniques mentioned in the *CAPS* document, were tested. This benefited the candidates who studied their work comprehensively and made effective use of past papers.

General suggestions for improvement

(a) Teachers need to emphasise the importance of reading the instructions carefully before answering the question paper. These instructions provide important information with regard to the length of responses (point 9) and to indicate the unit in final answer (point 10) and showing all steps in calculation (point 16).

(b) Instructional verbs that require a higher cognitive level of thinking continue to be a challenge for learners. Questions containing these instructional verbs should always be answered in full sentences, showing a clear knowledge and understanding of the geographical content tested. The instructional verbs that were deemed the most difficult in this past examination were: 'explain how' and 'explain why'. These questions require answers that include a factor/explanation and a qualifier. Included in the *Examination Guidelines (2021)* is a comprehensive list of typical instructional verbs used in Geography and the response required to meet the intention of the instructional verb. Teachers are encouraged to make this list available to their learners and to use the instructional verbs in class activities regularly. The use of the marking guidelines from this past examination will assist teachers and learners to understand what is required.

(c) Reading for meaning continues to be a challenge. This results in learners not being able to grasp the gist of the question. Highlighting the instructional verbs and important

aspects of the question will definitely assist learners.

(d) Most questions require some interpretation technique and understanding of geographical processes. Learners, therefore, cannot merely reproduce content knowledge gained in the classroom. They should practise the application of theory taught, using a variety of sources.

(e) As geographical issues such as injustices (concerns) are often assessed, learners should be able to focus on the causes, effects and solutions. These questions are set regularly: Paper 1: Q1.3.6; Q1.5.5; Q2.5.5. and Paper 2: Q1.3.4; Q1.3.5; Q1.5.4; Q2.3.5; Q2.5.2 and Q2.5.3. In-depth knowledge of such issues is essential. Additional research by teachers and learners might be required. There are many reliable geographical websites that will provide up-to-date and valid information. Reviewing past question papers will also give learners an idea of how these questions are phrased.

(f) Teachers must note that the short objective questions (Q1.1, Q1.2, Q2.1, Q2.2) do not need to only test lower-order thinking skills. Some questions might require higher-order thinking skills. Learners must read the instructions carefully before answering the objective questions. It should be noted that more than one source might be used in these questions.

(g) Learners must be exposed to different styles of multiple-choice questions. In both papers, complex multiple-choice questions are asked. Paper 1: Q1.2.6; Q1.2.7; Q1.2.8; Q2.2.6 and Paper 2: Q1.2.8, Q2.2.3 and Q2.2.8 (1 mark each). It is to be noted that there are distractors in the options given in the multiple-choice questions, e.g. Paper 1 Q2.2.2 and Paper 2 Q2.2.4. Learners must consider all four options before they make their choice. Teachers are advised to update their methods of setting compliant multiple-choice questions which can include lower-, middle- and higher-order cognitive skills testing. Learners should be made aware of the principles underlying multiple-choice questions. It is to be noted that two or more topics might be tested in the short objective questions as in Paper 1: Q1.2 rural and urban climates and Q2.2 fluvial features and rejuvenation and paper 2 Q1.1 land reform and rural and urban concepts.

(h) Effective and regular practising of paragraph writing is essential. Learners need to write in full sentences and should not use bullets or point form. These questions usually require a degree of critical and analytical thinking, which places them on a higher cognitive level. Since paragraph questions are 4 x 2 marks, four points (if required) must be explained; answers in many instances require qualification. The recommended eight lines should be used as a guide to the length of the paragraph. This is to avoid long-winded answers and time-wasting.

When planning a response, learners should underline or highlight the main topic of the question, the instructional verb and the focus areas of the question. Good practice when writing paragraph responses would be to make at least four points and then elaborate on each point.

Regular paragraph writing in short informal and formal tests, as well as in internal examinations, will allow learners to improve their skills and confidence when attempting these questions.

(i) Teachers must ensure that learners are familiar with the geographical concepts and definitions required. Learners should compile a glossary of terms/concepts and an explanation of each in their notebooks for easy reference. This will assist them when

describing and defining concepts and terms. Definitions/Concepts are often asked as the first question on a particular topic and carry 2 marks each (Paper 1 Q3.3.3 and P2: Q1.4.1). As these are seen as concepts, they do not have to be explained verbatim. Baseline assessments and other informal tasks which mirror the questions of the NSC Examination should be practised regularly, focusing on the concepts taught. This should be done on completion of every subsection.

(j) Geography is a dynamic subject and new information on numerous topics is updated regularly. Recent Climatological (tropical cyclones) and Geomorphological events must be used in teaching and learning. The rural, urban and economic environment is also constantly changing. Teachers are, therefore, encouraged to collect resources on an ongoing basis and link current events to content taught in Grade 12. As life-long learners, teachers must stay abreast of new developments in their subject.

(k) Teachers are encouraged to include compliant source-based questions (like those used in the NSC examinations) in class assignments, tests and examinations. They should make use of relevant and recent reliable resources from the internet and avoid using sources that appear only in textbooks and are familiar to learners. Teachers should expose learners to a variety of sources, e.g. diagrams, sketches, photographs, graphical data (line graphs, bar graphs and pie graphs) and infographics. Learners should be taught how to access and interpret information from these different sources. Teachers and learners must be aware that different sources may also be combined for examination purposes like in Paper 1: Q2.3 and Paper 2: Q.1.4; Q1.5 and Q2.4. The interpretation of graphs and tables containing statistics remains a challenge. The more learners are exposed to working with them, the more confident they will feel about answering these questions.

(l) Infographics are informative and were used as stimuli in both question papers. This information was very valuable and should have assisted the learners in obtaining the correct answers (Paper 1: Q1.3 and Paper 2: Q1.4; Q2.3 and Q2.4). It is a visual representation of information or data, e.g. contains written information (extract), a sketch or map, graphs, tables and photographs. Extracts contain valuable information to guide learners to appropriate answers. All the information given should be considered when answering questions. The skill of integrating the visual and written information is one that should be practised regularly. Learners could be asked to quote or state directly from the text in the infographic which then needs to be verbatim and not paraphrased. If learners are asked to provide evidence from the infographic, they are not expected to quote directly.

(m) It is important for teachers to use plan views, cross-sectional and long-profile sketches when teaching various terms/concepts. Learners should be able to draw the correct view of features like the plan view sketch of a tropical cyclone as was asked in Q1.4.7 in Paper 1. Labelled sketches continue to be examined and should be practised regularly.

(n) Teachers should be fully aware of the relevant subject content to be taught by constantly referring to the *CAPS* and the *Examination Guidelines* for 2021. Details regarding the choice of agricultural product, mineral, core industrial areas, spatial development initiatives (SDIs) and industrial development zones (IDZs) to be studied for 2024 have been communicated to each PED.

(o) Rotational topics like *Spatial Development Initiatives (SDIs)* and *Industrial Development Zones (IDZs*) must be covered by teachers and learners. In most cases they are either briefly mentioned or are not found in textbooks at all. Teachers and subject advisors need to conduct additional research into these topics to share with

one another. The *Examination Guidelines* have divided these topics into subsections, and it is essential that teachers provide sourced-based information on these subsections to support learners.

(p) As most prescribed textbooks do not cover all the subject content mentioned in the *CAPS* and the *Examination Guidelines* to the same degree, teachers should do additional research themselves. Teachers should consult more than one textbook if possible. Information provided in the various textbooks might not always be geographically correct and, when in doubt, additional research should be done on the topic.

(q) Teachers should provide each learner with a copy of the *2021 Examination Guidelines*, highlighting the content that will be taught. This can be used as a checklist to ensure that all content is covered, and to assist in preparing for tests and examinations. The format of each examination paper is also clearly laid out.

(r) To improve learner performance, teachers must refer to previous examination papers as a guide to ensure that the standard of questions and the variety of questioning techniques used in assessment at school level is appropriate. This would also assist teachers to show learners how scaffolding of questions occurs, from those testing lower-order cognitive skills to the higher-order questions which address more advanced thinking skills. Previous question papers should not, however, be used as a tool for predicting future papers.

(s) Teachers must ensure that the distribution of marks in the internal assessment tasks is also compliant with the requirements stipulated in the *CAPS* document. Blooms' Taxonomy or a similar tool should always be supplied for formal tests, examinations and tasks. The weighting is 25% lower-order, 50% middle-order and 25% higher-order. If too many lower-order questions are asked in the internal assessment conducted at school-level, learners will not be exposed to questions addressing a higher cognitive demand, as asked in the final NSC examination. This will also give learners false notions of the level of performance required in the NSC examination. All tasks should be based on the new 2021/2022/2023 formats regarding structure and content distribution.

(t) Teachers need to emphasise the importance of the units of measurement in the final answers where required. Marks will not be awarded if the correct unit of measurement is not provided in the final answer. Learners should be made aware that this instruction applies to both the theory and mapwork sections of the question paper.

(u) With regard to improving mapwork results, learners must do a proper analysis of the general information of the map and orientate the topographical map to the orthophoto map before answering Section B on Geographical Skills and Techniques. This will assist in answering questions in Paper 1 (Q3.2.5; Q3.3.5) and Paper 2 (Q3.1.4; Q3.2.4). When orientating the maps, an easily identifiable feature on both maps should be specified. Using features like roads, railway lines, larger features and the shape of built-up areas can also be used to do map orientation. By finding the area indicated by a red/black block on the topographical map, a learner can determine the location of the orthophoto map on the topographical map.

(v) Learners need to understand the importance of integrating their theory knowledge with Geographical Skills and Techniques. Although most of this integration is in Q3.2 (12 marks) in both papers, it must be noted that it can be found in other questions e.g. P1: 3.3.2 and P2: Q3.3.4; Q3.3.5. The frequent use of topographical maps and orthophoto maps as teaching aids in theory lessons will assist learners. Mapwork skills

and interpretation exercises should be regularly practised in all types of questions, e.g. multiple choice, map calculations, map application and interpretation and GIS.

(w) The answers to Section B on Geographical Skills and Techniques are mostly derived from the maps provided. Regular revision using past papers from 2014 to 2023 will assist learners to master this skill. The focus, however, should be on the NSC 2021, 2022 and 2023 papers due to the new structure of this section.

(x) All aspects of mapwork as stipulated in the *2021 Examination Guidelines* must be covered effectively.

(y) Geographic Information Systems must be taught in detail. Teachers must emphasise the significance and purpose of GIS concepts and how to apply them: P1: Q3.3.2 (remote sensing; Q3.3.3 to Q3.3.5 (raster data); P2 Q3.3.1 to Q3.3.2 (buffering); Q3.3.3 to Q3.3.4 (data layer).

(z) Teachers must expose learners to the methods/steps for calculations indicated in the *2021 Examination Guidelines* and NSC marking guidelines. It must be noted that while certain methods may be correct in Mathematics, they may not contain all the steps that are required in Geography.

(aa) When practising and setting Mapwork exercises, teachers are encouraged to use a variety of maps which reflect the different regions of South Africa, e.g. inland or coastal regions, and from different provinces. This will prepare candidates to answer questions on whichever map they receive in the NSC examination. A variety of maps are available to teachers and learners from past NSC examinations.

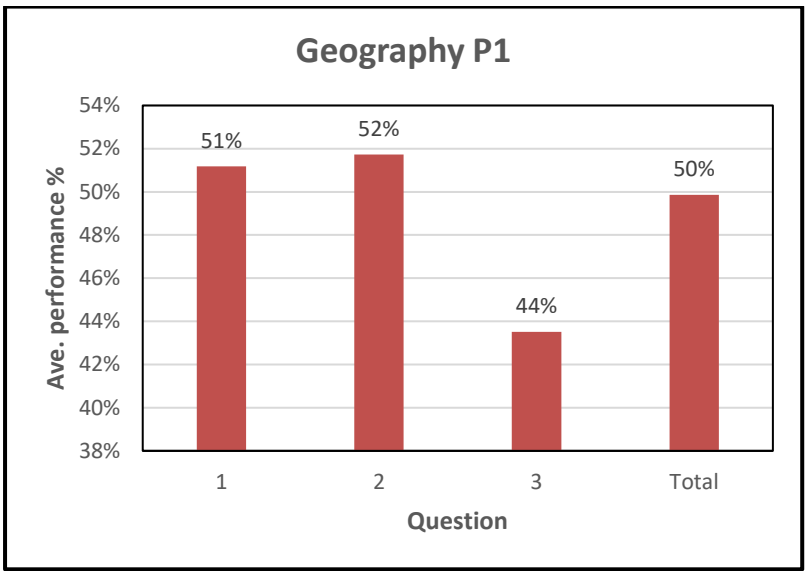
(bb) In addition to making use of previous examination papers and SABC revision programmes to explain and revise important geographical concepts, other useful tools include YouTube live feeds and presentations. Exemplar papers showing the new Geography paper format are available on the DBE website.

(cc) Teachers are encouraged to refer to the updated instructions and information page in the 2023 NSC examination paper and to include this in their formal tests and examinations. This will prepare the learners for the final examination. There are general instructions for Section A and specific instructions for Section B (Geographical Skills and Techniques) that should be highlighted. The annexure should also be incorporated into examination papers as was the case in the final 2021 to 2023 NSC question papers. Teachers are also encouraged to implement the new format of testing the short objective questions using a number of related sources instead of just one source as in Paper 1: Q1.2; Q2.2 and Paper 2: Q1.2.

6.3 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

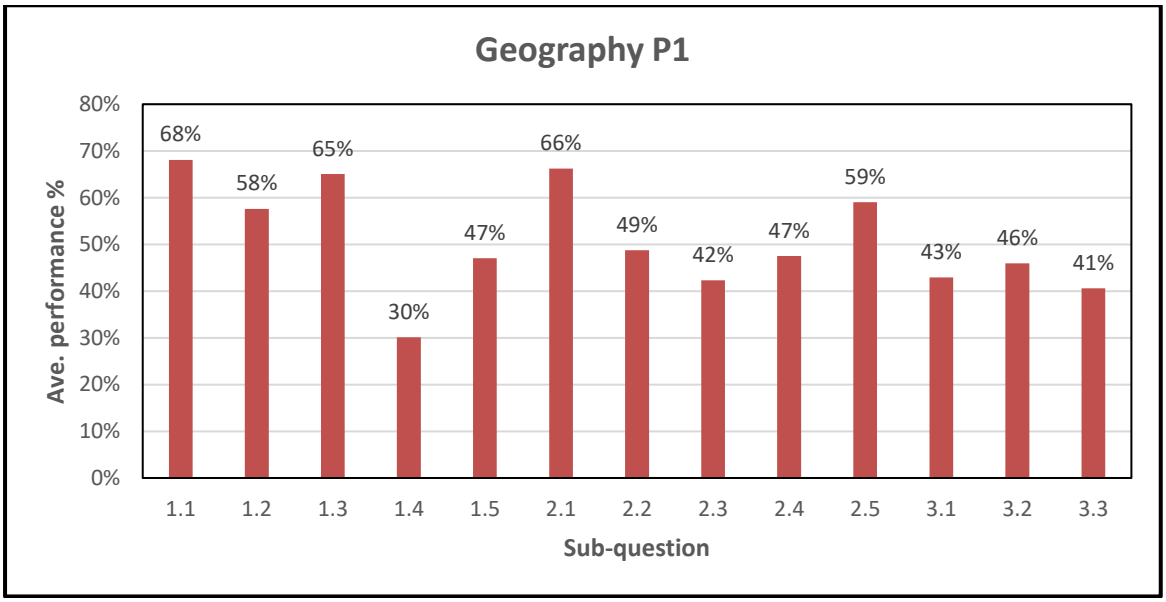
The following graph is based on data from a random sample of 100 candidates' scripts per province. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 6.3.1 Average performance per question in Paper 1



Q	Topics
1	Climate and weather
2	Geomorphology
3	Geographical skills and techniques

Graph 6.3.2 Average performance per subquestion in Paper 1



Sub-Q	Topics	Sub-Q	Topics	Sub-Q	Topics
1.1	Synoptic weather maps	2.1	Drainage basin features	3.1	Map skills and calculations
1.2	Rural and urban climates	2.2	Fluvial landforms and rejuvenation	3.2	Map interpretation
1.3	Mid-latitude cyclone	2.3	Drainage patterns	3.3	Geographical info systems
1.4	Tropical cyclone	2.4	River capture		
1.5	Berg winds	2.5	River Management		

6.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

SECTION A

QUESTION 1: CLIMATE AND WEATHER

Common errors and misconceptions

(a) In Q1.1.6 learners needed to be able to discern between a *cold front* and a *moisture front* and in Q1.1.7 they were required to understand that the top reading on the station model referred to the air temperature. Although candidates generally did well in Q1.1.8 (7 marks) some struggled to apply their knowledge of synoptic weather maps and interpretative skill to select the correct station model.

(b) Both rural and urban climates were tested in Q1.2 (8 marks). Candidates did not fare as well in Q1.2.1 to Q1.2.4 (4 marks) based on rural climates or in Q1.2.5 to 1.2.8 on urban climates. Candidates struggled with the concepts of slope aspect, direct versus oblique radiation, radiation fog and conditions specific to the shadow zone. Q1.2.5 which required candidates to select a graph which represents the change in temperature from rural to urban area proved challenging. In the complex multiple-choice questions candidates selected the incorrect answers as many did not read the full statement which referred to either the urban area in Q1.2.6 and Q1.2.7 or the rural area in Q1.2.8. Reading for meaning and application of geographical concepts remain a concern.

(c) Q1.3 (15 marks) on mid-latitude cyclones was the best answered question of the longer subquestions in this section. However, candidates still struggled with Q1.3.3 which assessed the understanding of movement of mid-latitude cyclones, Q1.3.5 which required an explanation of how a well-developed cold front results in heavy rainfall and Q1.3.6 focused on how this heavy rainfall affects the physical (natural) environment. Candidates struggled to differentiate between the natural environment and the human-made environment.

(d) Candidates performed the poorest in Q1.4 (15 marks) with an average of 30% which was the lowest for the question paper. This question used a satellite image as its source, and it would seem many candidates were not familiar with this type of image. Although Q1.4.1 asked candidates to state one condition required for the development of a tropical cyclone, candidates merely mentioned a temperature of 26,5 °C but did not refer to ocean surface temperatures and thus were not credited.

Candidates struggled to connect the clockwise convergence of air and rain bands towards the centre of the tropical cyclone visible on the satellite image as an indicator that the tropical cyclone developed in the southern hemisphere in Q1.4.2 (1 mark) and Q1.4.3 (2 marks). Q1.4.4 and Q1.4.5 required candidates to identify A as having no cloud and B showing dense cloud on the satellite image. Most candidates could answer Q1.4.4 (2 marks) but struggled to explain why there is a difference in cloud cover as asked in Q1.4.5 (4 marks).

The response to Q1.4.6 required application of knowledge integrating the forward movement and rotation of the tropical cyclone which results in the strongest winds developing in the forward left-hand quadrant. In Q1.4.7 (3 marks) most candidates could not draw a sketch of a tropical cyclone (plan view) as it would appear on a synoptic weather map and as such received zero marks. This was a high order, difficult question which tested candidates' ability to represent their knowledge to present a diagrammatic depiction of a tropical cyclone.

(e) Although candidates answered most of Q1.5 (15 marks) well, there were challenges with Q1.5.2 (1 mark), Q1.5.3 (2 marks), Q1.5.4 (2 marks) and Q1.5.5 (8 marks). Many candidates erroneously selected sketch A and then alluded to the wind being an onshore wind implying that air moves from a low to a high pressure. Q1.5.4 required candidates to explain why cloudless conditions are indicated by the station model at X on the sketch map. Candidates interpreted the station model instead of providing an explanation as to why no clouds could form.

Q1.5.5 was a paragraph question that focused on two aspects. Candidates were expected to explain how berg winds impact negatively on the natural vegetation and suggest strategies to limit this negative impact. Many candidates only answered the first part of the question and as such could only be credited with a maximum of 6 marks. Once again candidates wrote about farming and crops instead of referring to natural vegetation only.

Suggestions for improvement

(a) The short objective questions in Q1.1 tested a variety of features associated with synoptic weather maps. Although the basics were taught in Grades 10 and 11, these features are revisited in Grade 12 when synoptic weather maps focussing on summer and winter conditions are used when teaching mid-latitude cyclones and tropical cyclone conditions. Learners must be able to determine whether a particular synoptic weather map shows summer or winter conditions as asked in Q1.1.1. They should be able to identify ridges and troughs (Q1.1.2) or work out the atmospheric pressure reading of an isobar (Q1.1.3) and determine whether the pressure gradient is steep or gentle (Q1.1.4) by looking at the spacing between the isobars.

Learners must be able to apply their knowledge of rotation of air masses associated with low- and -high-pressure cells as was asked in Q1.1.5. Teachers must integrate synoptic weather maps in the teaching of the main topics in Climate and Weather. It is vital that learners are able to identify a variety of features on a synoptic weather map.

(b) With regard to Q1.2.1 and Q1.2.2 teachers must ensure that concepts like slope aspect and its effect on the radiation received on various slopes in the southern hemisphere are thoroughly taught when covering valley climates as they are mentioned in the *CAPS* document on page 41. Use of sketches and diagrams like the one used in Q1.2 is essential to illustrate these concepts. Radiation fog which was the correct response to Q1.2.3 forms at night in some valleys due to cold dense air draining down onto the valley floor. This causes the warmer air that was on the valley floor to rise, condense and form radiation fog which remains in the valley until the sun's rays evaporate the moisture the following morning. Remnants of radiation fog can, therefore, be visible in some valleys till midmorning as was depicted in the sketch at C.

The shadow zone referred to in Q1.2.4 is an area in a valley that does not receive direct sunlight due to the angle of the sun's rays. This occurs on the south-facing slopes in the southern hemisphere. As a result, this slope is characterised by moist conditions as little evaporation takes place and this promotes dense vegetation. Q1.2.6 to Q1.2.8 were complex multiple-choice questions which required a combination of answers. This increases both the cognitive level demand and degree of challenge in these questions. The concepts that were tested are the main factors that account for the different temperatures found in rural and urban areas and are well known to the learners. Learners must be taught to read the full question before attempting a response as the focus area was mentioned at the end in all of these questions.

Teachers are reminded that short objective questions are not only lower-order easy challenge questions. Teachers need to apply this in their testing in the classroom to train their learners to answer these questions.

(c) In Q1.3 the information on the infographic assisted the candidates to respond correctly. Teachers must use this same testing method in informal assessments, tests and examinations. Teach learners where to look for the information that is required. Q1.3.3 used the names of places on the map moving eastwards to test the direction of movement of mid-latitude cyclones instead of asking the question directly. The correct response was either that they moved with the westerly wind belt or from west to east.

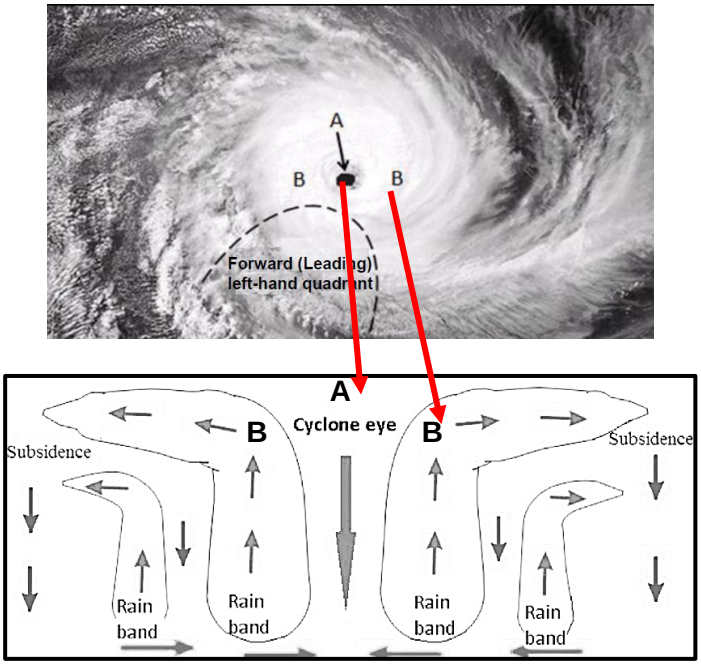
In Q1.3.5 an explanation of the processes that resulted in heavy rainfall occurring from a well-developed cold front was required. Understanding of a series of processes that result in a particular outcome are regularly tested in this section. Learners should be able to explain the processes (steps) that need to take place within a well-developed cold front to result in heavy rainfall. The use of the cross-section in the infographic would also have assisted the candidates.

Q1.3.6 referred to the impact of heavy rainfall on the physical (natural) environment. Teachers should emphasise that the physical (natural) environment refers to the following: natural vegetation, wild animals, soil, water masses, natural habitats, natural processes like erosion and water pollution. Too often emphasis is incorrectly placed on crops, domestic animals, humans and the built environment (human-made). Over the last few years there has been a change in emphasis towards the impact on the natural environment in Paper 1 as this focuses on Physical Geography specifically.

(d) When teaching tropical cyclones, there are specific criteria that must be accurately taught. For example, learners must mention an ocean surface temperature of at least 26,5 °C (not 27 °C) and not just a warm ocean.

In Q1.4.2 and the follow up Q1.4.3 candidates erroneously mentioned that the satellite image showed a tropical cyclone in the Northern Hemisphere. Candidates needed to use the satellite image and identify the clockwise rotation evident from the clouds or rain bands or the position of the forward left-hand quadrant as evidence. The *CAPS* does not make any reference to examples from the Northern Hemisphere and as such cannot be tested. It is apparent that teachers need to work with satellite images more regularly to familiarise the learners with the images of southern hemisphere examples. A good example would have been to track Cyclone Freddy (2023) daily on a satellite image.

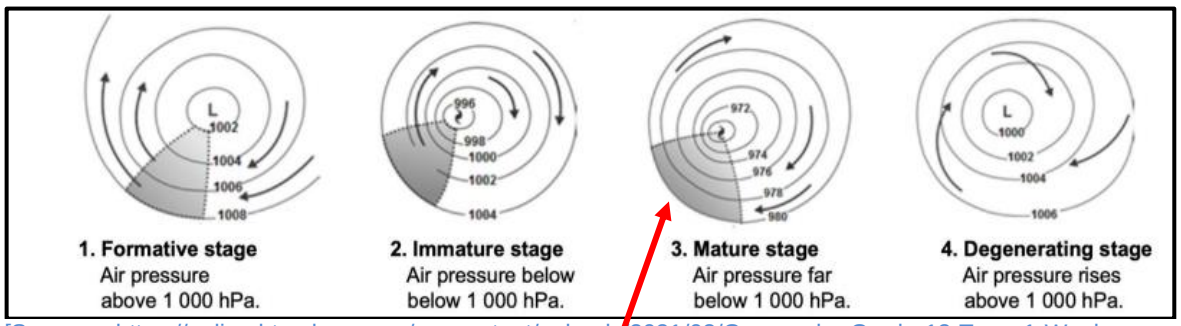
The relationship between rising and subsiding air and cloud formation needs to be well-explained to learners. In Q1.4.5 A refers to the eye of the storm where air converges in the upper atmosphere and sinks down into the eye creating stable conditions. At B which is the eyewall (rain band) there is large-scale rising of air, cooling and condensing, which results in dense clouds forming. The cross-sectional sketch illustrates A and B as they appear on the satellite image in the Nov 2023 NSC question paper below.



[Adapted from https://www.researchgate.net/figure/Vertical-cross-section-of-a-mature-cyclonic-storm-and-associated-basic-characteristics_fig1_305592274]

To correctly answer Q1.4.6 candidates had to identify that the forward left-hand quadrant would have the steepest pressure gradient resulting in the strongest winds or that the reason for the very strong winds was due to the combined strength of the clockwise rotation of the of tropical cyclone and the forward movement of the whole system. This is a higher-order question which would need the learners' extensive understanding of tropical cyclones to be awarded the marks.

Q1.4.7 was the most poorly answered question in the entire paper and was pitched at the highflyers. Candidates were asked to draw a sketch of a mature tropical cyclone as it would appear on a synoptic weather map, i.e. a plan view. Teachers would have used similar sketches to illustrate the various stages in the formation of a tropical cyclone when teaching this section.



[Source: https://online.htseden.co.za/wp-content/uploads/2021/03/Geography-Grade-12-Term-1-Week-2_2021-1.pdf]

The question asked candidates to draw the mature stage, similar to what is seen above (sketch 3) and indicate an air pressure reading below 1 000 hPa. The 4 isobars needed to show a closer spacing to accommodate the stronger forward left-hand quadrant which is evident in the mature stage and then the correct symbol in the centre for the southern hemisphere. The correct symbol must show a clockwise rotation of the air masses converging at the low-pressure centre as is seen below.

(e) With regard to Q1.5.2 and Q1.5.3 teachers should continuously reiterate that air moves from a high-pressure to a low-pressure to balance out the imbalance of pressure. When learners see the logic of this, they will not forget it. This particular wind that blows from the interior plateau warms up due to the fact that as the air descends down the escarpment it heats up adiabatically at 1 °C/100 m which results in a hot dry wind reaching the coast near the low-pressure. Learners need to understand the process that as descending air warms up, any moisture in the airmass will evaporate. No clouds can form if there is no moisture.

Teachers should note that in Q1.5.5 the emphasis is on the natural vegetation and so responses like the hot wind dries out the natural vegetation or the soil is correct. This does make the natural vegetation more vulnerable to veldfires. Berg winds cannot start a veldfire, but they can fan and assist in spreading the fire. Some suggested strategies to be considered are creating firebreaks, ensure access to water, having lookout towers/warning systems in place, windbreaks to block the wind from spreading fires, creating an awareness and educating the community. This was a two-part question (negative impact and strategies) and both parts needed to be covered in order for a candidate to receive full marks.

QUESTION 2: GEOMORPHOLOGY

Common errors and misconceptions

(a) Candidates experienced challenges with the multiple-choice questions testing the concepts of *fluvial processes, fluvial landforms/features* and *river rejuvenation* in Q2.2 (7 marks). Two concepts were tested in these short questions and Q 2.2.6 was a complex multiple-choice question where candidates had to match two responses to select a final answer which increased the degree of challenge. Q2.2.1, Q2.2.2 and Q2.2.3 and Q2.2.4 tested *fluvial processes, fluvial landforms* and *the course of the river*. Q2.2.5, Q2.2.6 and Q2.2.7 posed more of a challenge as candidates were not familiar with the concept of *rejuvenation* being tested in this manner.

(b) Q2.3 (15 marks) recorded the lowest average performance in the Geomorphology section at 42%. Although this section of Geomorphology on drainage patterns is often tested, candidates struggled to unpack their knowledge and apply it to the questions specifically. In this instance a rectangular drainage pattern was tested with a dendritic drainage pattern, and this had to be identified in Q2.3.1 (2 marks). Many candidates confused the rectangular drainage pattern with the trellis drainage pattern. Candidates struggled to state the underlying rock structure and rock type in Q2.3.2 (2 marks) and to explain how the underlying rock structure influenced the drainage pattern in Q2.3.3 (2 marks).

Most candidates were able to answer Q2.3.4 (1 mark) and Q2.3.5 (2 marks) which was pleasing. In Q2.3.6 (2 marks) candidates found it challenging to explain the relationship between *stream order* and *drainage density* and in Q2.3.7 (4 marks) many struggled to explain how the slope and permeability of the underlying rock influenced the drainage density in B. Q2.3.7 was of a high order and difficult challenge as three factors had to be considered when responding.

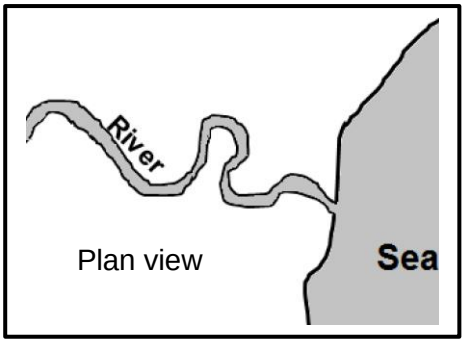
(c) Candidates struggled with the concept of *river capture* (stream piracy) due to a lack of understanding of the processes involved. Many candidates correctly selected A in Q2.4.1(1 mark) but could not give a reason from the sketches for their choice in Q2.4.2 (2 marks). Most candidates could identify the elbow of capture and wind gap correctly

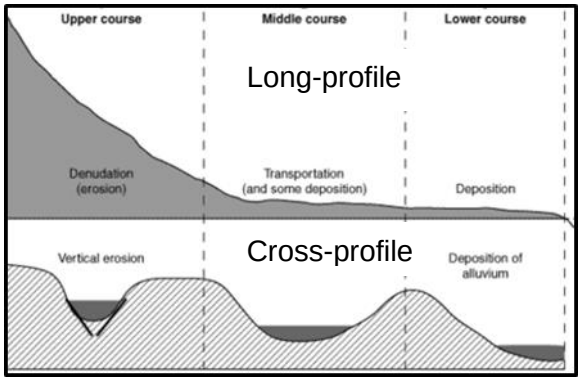
in Q2.4.3 (2 marks). Q2.4.5 (8 marks) which was the paragraph question was deemed challenging as candidates could not describe the changes that river E experienced after river capture. Some candidates did not identify river E as a misfit stream.

(d) With regard to Q2.5 candidates did not fare as well as previous years with an average of 59% for this question. The question required candidates to read an extract on which the first few questions are based. Some candidates lacked the necessary comprehension skills despite a glossary being provided. Responses to Q2.5.1 (1 mark), Q2.5.2 (2 marks) and Q2.5.3 (4 marks) came directly from the extract. Q2.5.4(a) (2 marks) and (b) (2 marks) required the candidates to describe the positive impact of the removal of alien plants on the volume of water and the water table. Many candidates could not describe these relationships. In Q2.5.5 (4 marks) very few candidates could indicate why the removal of alien plants would improve the biodiversity of the catchment area.

Suggestions for improvement

(a) Teachers need to expose their learners to the various views (Q2.2.1) that are used in Geomorphology: *longitudinal profile* (view from source to mouth of a river), *plan view* (overhead view), *cross-profile* (view of a feature from bank to bank). When fluvial features/landforms are taught, teachers should have sketches to show learners the various views.





[Source: NSC Nov 2023
Source: https://www.google.com/search?q=long+profile+of+a+river]

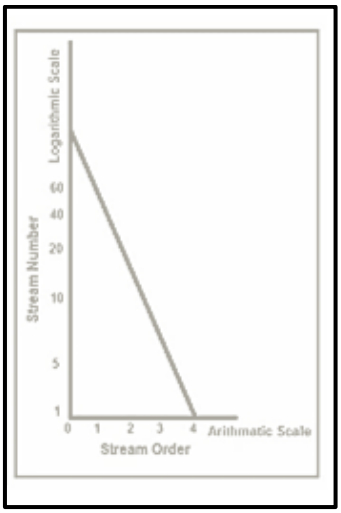
Learners should be taught that meanders are found in both the middle and lower course of the river. However, they should also focus on other information given in the sketch, e.g. the sea indicates the lower course. Teachers should use past questions, like Q2.2.2–Q2.2.4, to set up class activities, tests and examinations to prepare learners.

In questions like Q2.2.5 and Q2.2.6 learners should focus on what is evident in the sketch. In Q2.2.5 although options A and C are both causes for river rejuvenation only C was evident on the sketch and in Q2.2.6 all four options are evidence for river rejuvenation yet only the valley within a valley and paired terraces are visible on the sketch. Teachers should train learners to read the whole statement (Q2.2.7) before they select the correct options.

(b) Teachers should not only test the most common combination of trellis drainage patterns and dendritic drainage patterns, but also other drainage patterns so that learners are prepared for any combination that is asked as in Q2.3.1. Learners should be able to relate various drainage patterns caused by the different underlying rock

structures as in Q2.3.2, e.g. a rectangular drainage pattern is formed due to joints and faults in the rock which causes rivers to flow in the joints creating 90° bends. Teachers should always use sketches and topographical maps when teaching drainage patterns.

Teachers should make use of sources such as graphs to assist learners to link the two concepts of stream order and drainage density. The graph below illustrates that as the stream order increases so does the number of streams in the drainage basin which shows that the drainage density is also increasing.



[Source: https://academistan.com/geography/geomorphology/morphometric-analysis-of-river-basins/#google_vignette]

Teachers are encouraged to not only teach the theory but practise the application of how slope (gradient) and permeability of the underlying rock influence the drainage density as in Q2.3.7. A steeper gradient results in a greater runoff with more river channels and a higher drainage density. Underlying rocks that are impermeable also promote greater runoff and a higher drainage density.

(c) Teachers should use a variety of 'before' and 'after' sketches for teaching and learning of river capture (Q2.4.1) so that learners become confident in applying their knowledge to whatever sketch they are given.

Teachers need to discuss the characteristics of the misfit stream (Q2.4.5), with their learners like the change in the volume, velocity and carrying capacity of the river.

(d) Teachers should use various extracts when teaching sections like catchment and river management tested in Q2.5. Teacher should teach learners to look at the positive or negative impacts on biodiversity as in Q2.5.5 based on the extract/information provided. This is applied knowledge and requires practice. Teachers should note that a glossary will be provided for concepts not found in the *Examination Guidelines*, e.g. alien plants.

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

Common errors and misconceptions

(a) Candidates did not consult the orthophoto map for the contour interval value to answer Q3.1.2 (1 mark).

(b) Map skills and calculations continue to pose a challenge for many candidates. In Q3.1.4 (3 marks) candidates struggled to calculate the area of the farm at F in block E3 on the topographical map despite being given the measurements. A number of candidates measured the distances for themselves, and others did not convert their final answer to m^2 as was instructed.

(c) The average gradient calculation in Q3.1.5 (3 marks) was not well answered. Many candidates did not show the calculation of the VI to obtain the mark, others did not substitute correctly, and many did not represent their answer as a ratio.

(d) Slope identification in Q 3.1.6 (1 mark) remains a challenge. Very few candidates could identify the convex slope by looking at the arrangement of the contour lines between 8 and 9 on the orthophoto map. The convex slope is proof that there is no intervisibility between 8 and 9.

(e) In Q3.2 (Map Interpretation) candidates did not make full use of both the topographical map and the orthophoto map. Many candidates were not able to apply their Physical Geography theory knowledge to answer the questions asked in this section resulting in a 46% average being achieved.

(f) Many candidates selected the incorrect option for Q3.2.1 (1 mark) as they did not relate the word 'dashed' as a descriptor for non-perennial rivers on the topographical map.

(g) In Q3.2.2 (2 marks) candidates struggled to explain how the katabatic wind influences the temperatures at G in block B1 on the topographical map.

(h) A significant number of candidates selected pumpkin as the crop which is most likely to be found at G in block B1 on the topographical map for Q3.2.3 (1 mark) but could not provide a climatological reason for their choice of crop in Q3.2.4 (2 marks).

(i) Q3.2.5 (1 mark) and Q3.2.6 (2 marks) focused on the river at 10 on the orthophoto map. Most candidates selected the correct flow direction as south-westerly but struggled to give evidence from the topographical map for their choice.

(j) In Q3.2.7 (1 mark) and Q3.2.8 (2 marks) candidates were able to determine the course of the river at H on the topographical map but were unable to give map evidence to support their answer.

(j) Most candidates struggled to answer Q3.3 (8 marks) on GIS which resulted in this section recording an average of only 41%. In Q3.3.1 (1 mark) candidates struggled to identify the environmental issue labelled I in block A2 as a polygon feature.

(k) In Q3.3.2 (2 marks) candidates could not explain how remote sensing could be used to monitor the environmental issue identified at I. Practical application of concepts to real world scenarios remains a concern.

(l) Candidates struggled to use the same feature at J (topographical map) and 11(orthophoto map) to answer Q3.3.5 (2 marks).

Suggestions for improvement

(a) Learners should be encouraged to read through the General Information and consider where the place being tested, is located (e.g. Queenstown). Questions can be set from the general information. There are also English terms and their Afrikaans translations provided as some topographical maps might use a combination of Afrikaans and English terms.

(b) Teachers need to alert learners to consult the map and not just expect the contour interval to be 5 m (Q3.1.2). Unlike the topographical map which has a fixed contour interval of 20 m, the orthophoto map contour interval can either be 10 m if the topography is fairly steep or 5 m if the topography is gentle. This is so that the contour lines do not obscure the features on the orthophoto map.

(c) Teachers must reiterate to learners that they should read the questions carefully before attempting a response. Like Q3.1.4 certain measurements were given so that learners did not have to recalculate. Learners are reminded to present their final answer in m^2 Teachers must remind learners that they should convert the map measurements directly into metres by multiplying the length and the breadth by 500 m (map scale) before multiplying them together to obtain the final answer. If the unit of measurement is missing from the final answer, no marks are awarded for that step.

While teachers are encouraged to follow the mark allocation for steps in all calculations as mentioned on page 20 in the *2021 Examination Guidelines*, it is important to note that measurements might be given due to limited marks being set aside for calculations (10 marks).

(d) In order to calculate the average gradient, learners are given the formula into which they substitute the values as directed as in Q3.1.5.

Formula: **Vertical Interval (VI)**
Horizontal Equivalent (HE)

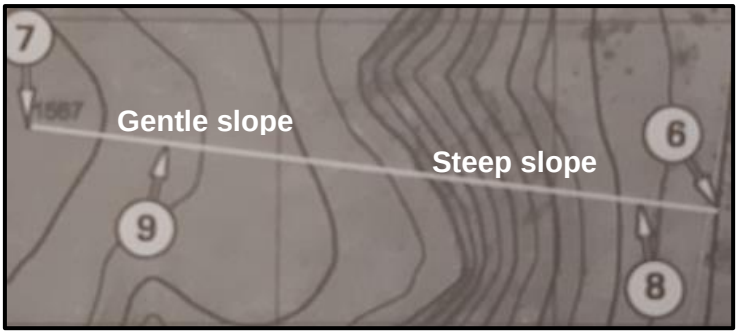
The VI is calculated from the values of the spot height 1567 (given) and the height at 6 in block D4 which was 1 420 m. VI is the difference in height between the 6 and 7. In this calculation the HE (distance between 6 and 7) is given at 950 m.

VI=1 567 m - 1 420 m = 147(1) m

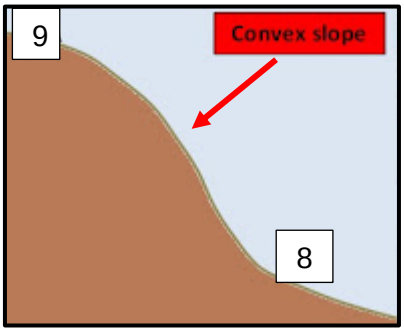
$\frac{147}{950}$ (1) (For correct substitution)

1 : 6.46 OR 1 : 6.5 (1) (the final answer must be written as a ratio – no unit of measurement is required)

(e) Teachers should use both topographical and orthophoto maps when teaching learners about intervisibility, contour patterns and types of slopes as Q3.1.6. The contour lines closest to 9 (higher point) are much further apart (gentle slope) than at 8 (lower point) where they are more closely arranged (steep slope). This creates a convex slope which does not allow for intervisibility.

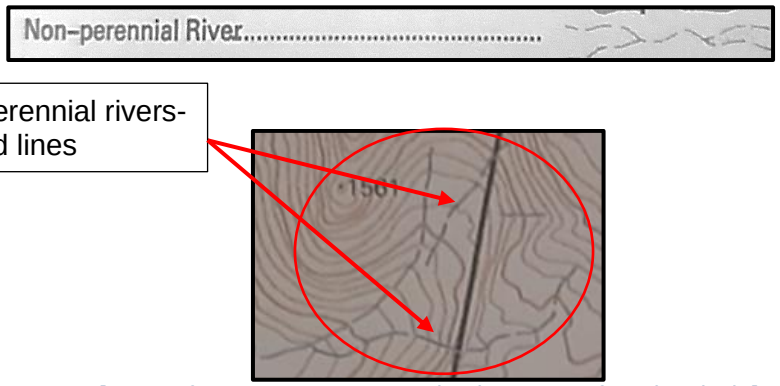


[Extract from NSC Nov 2023 orthophoto map of Nooitgedacht]



[Source: https://easymapwork.blogspot.com/2010/07/topographic-map-interpretation.html]

(f) Learners should be taught to make the link between type of rainfall and how the rivers are represented on the topographical in symbol form asked in Q3.2.1. They need to study the topographical map to determine that all rivers are represented by a dashed symbol (below) which means that they only flow for a part of the year and are therefore seasonal.



[Extract from NSC Nov 2023 orthophoto map of Nooitgedacht]

(g) When teaching microclimates and the associated valley winds (Q3.2.2) teachers should integrate the content with examples on topographical maps.

(h) When teaching application of this section on valley climates, teachers should integrate mapwork with the theory to give a more practical example. When teachers discuss the temperature of the valley floor and the resultant frost pocket as in Q3.2.4, they can also mention that frost resistant crops like pumpkins are able to survive in these areas.

(i) Direction of the flow of a river is often tested. Learners need to be taught the theory and they should practise the skill of identifying the map evidence – this is required to give a reason for the selected direction, e.g. River 10 on the orthophoto map does flow in a south-westerly direction (Q2.3.5 and Q2.3.6).

The following types of evidence on maps should be taught in this regard:

- V-shape of the contour lines point towards the high-lying area (in this case to the north/north-east) .
- Use contour heights, spot heights along the path of the river (highest is 1 524 to the north-east).
- Identify a dam wall as rivers flow out from these walls (found on the southern side).
- The acute angle at which tributaries join the mainstream: confluence points in the direction of the mouth of the river (to the south-west)

Refer to https://study.com/learn/lesson/topography-topographic-maps.html

(j) Learners should be taught to look for the following map evidence with regard to identifying courses of the river on topographical and orthophoto maps. (Q2.3.7 and Q2.3.8) as illustrated in the table below.

UPPER COURSE	MIDDLE COURSE
Near to source	River meanders
Closely spaced contours	Contours far apart
Steep gradient	Gentle gradient
V-shaped valley	U-shaped valley

(j) GIS concepts and application thereof need to be well-taught. Learners must be familiar with examples of point, line and polygon feature on the topographical map as tested in Q3.3.1. Teachers should use questions on application of concepts like remote sensing similar to those asked in past papers (Q3.3.2), to stretch their learners and prepare them well for future examinations.

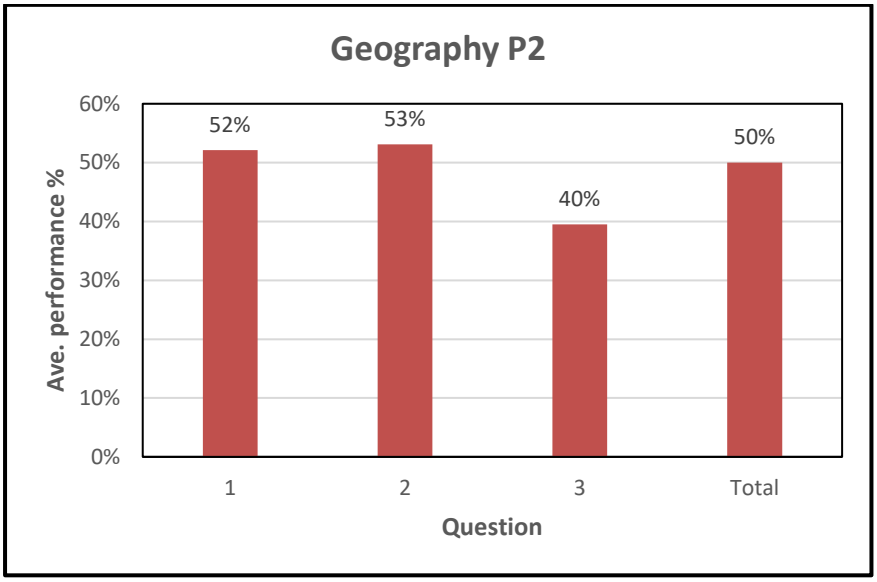
(l) Teachers are encouraged to include teaching the concepts of tone and texture associated with orthophoto maps as was asked in Q3.3.5.

Smooth texture and light tone show that there is a little water in the dam at 11. A darker tone would indicate a larger amount of water.

6.5 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

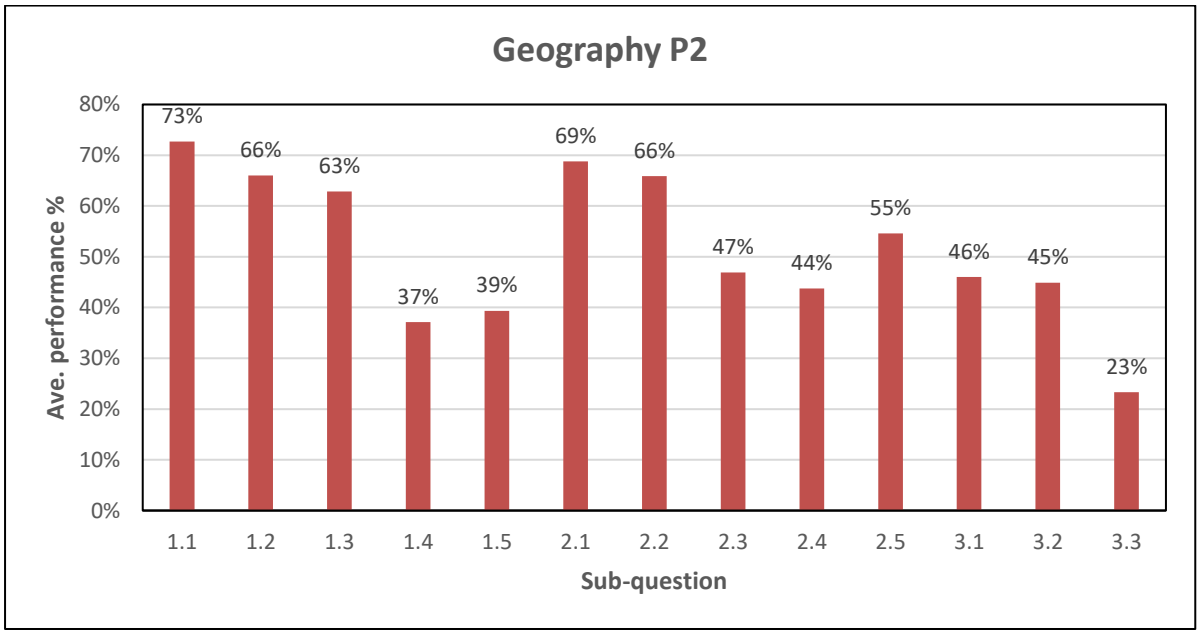
The following graph is based on data from a random sample of 100 candidates' scripts per province. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 6.5.1 Average performance per question in Paper 2



Q	Topics
1	Rural and urban Settlements
2	Economic geography of South Africa
3	Geographical skills and techniques

Graph 6.5.2 Average performance per subquestions in Paper 2



Sub-Q	Topics	Sub-Q	Topics	Sub-Q	Topics
1.1	Settlement terminology	2.1	Mining	3.1	Map skills and calculations
1.2	Settlement terminology	2.2	Economic Terminology	3.2	Map Interpretation
1.3	Rural depopulation	2.3	Maize farming	3.3	Geographic Info Systems
1.4	Commercial decentralisation	2.4	Core industrial region/IDZ		
1.5	Public transport/Traffic congestion	2.5	Informal sector		

6.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

SECTION A

QUESTION 1: RURAL AND URBAN SETTLEMENTS

Common errors and misconceptions

(a) Although Q1.1 (7 marks) was generally well answered, there were challenges experienced with regard to the following questions: Q1.1.4, Q1.1.5 and Q1.1.6 (3 marks). Candidates seemed to be unable to differentiate between the different types of land reform, e.g. *land tenure* and *land redistribution*.

(b) In Q1.2.1 (1 mark) lack of understanding of the concept of *central place town* created challenges in applying it. A significant number of candidates opted for option A, which related to high order goods and services instead of option C which related to basic urban services.

(c) In Q1.2.3 (1 mark) candidates confused the concept *range* with *threshold population*.

(d) In Q1.3.1 (1 mark) some candidates lacked skills in interpreting graphs and understanding of the concept 'rural depopulation'.

(e) With regard to Q1.3.3 (4 marks) a significant number of candidates misinterpreted the question and gave responses of no social services instead of limited social services. Lack of reference to the extract also created a challenge.

(f) Q1.3.4 (4 marks) asked for reasons as to why rural settlements experience a negative economic impact. Some candidates misinterpreted the question and gave the outcomes of the impact, other candidates spoke about social impacts.

(g) With regard to Q1.3.5 (4 marks) a significant number of candidates gave responses that could be considered unsustainable measures and social e.g. give people food. The question focused on sustainable economic measures.

(h) Q1.4.1 (2 marks): Many candidates lacked an understanding of *commercial decentralisation*. In a significant number of instances, they defined *decentralisation* and in other instances gave vague answers, when they wrote about the outward movement without mentioning from the CBD to the outlying business districts.

(i) In Q1.4.2 (1 mark) candidates lacked an understanding of how commercial decentralisation impacted negatively on the performance. A significant number of candidates gave general characteristics, e.g. tall buildings which did not relate to commercial decentralisation (high density of buildings).

(j) Q1.4.3 (4 marks): A significant number of candidates wrote about the cause of high rentals and crime and not how it increases commercial decentralisation (they wrote about why there are high rentals and crime).

(k) In Q1.4.4 (4 marks) it was evident that many candidates did not understand what a neighbourhood shopping centre was and, therefore, could not provide reasons for its development. This question was an 'explain why' question which required an explanation/factor and a qualifier. In a significant number of instances candidates either

gave the factor/explanation and got one mark or only gave the qualifier and as such were not awarded marks.

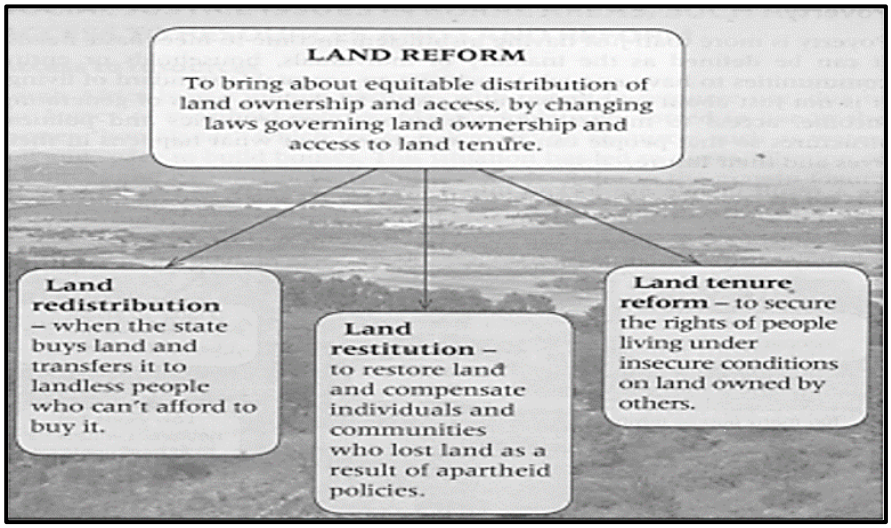
(l) Q1.4.5 (4 marks): Candidates experienced challenges as the question related to a neighbourhood shopping centre.

(m) In many instances, in Q1.5.3 (4 marks) candidates repeated the question, e.g. they mentioned improved public transport and only related it to decreasing traffic congestion instead of focusing on methods of improved public transport and its impacts on decreasing traffic congestion.

(n) Q1.5.4 (8 marks) This question focused on economic injustices and in a significant number of instances candidates' responses were based on social injustices. This question was an 'explain why' question which required an explanation/factor and qualifier. In a significant number of instances candidates either gave the factor/explanation and got one mark or gave the qualifier and as such were not awarded marks.

Suggestions for improvement

(a) In order for learners to have a proper understanding of different concepts, we need to use aids such as visuals which highlight the differences. E.g. Q1.1.4, Q1.1.5 and Q1.1.6, a clear illustration between the different types of land reform needs to be given to learners.

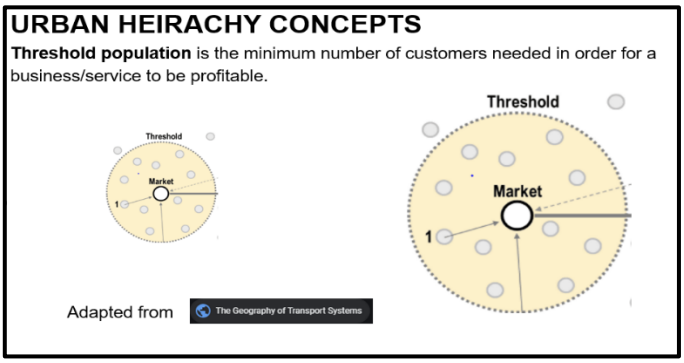


[Source: https://www.youtube.com/watch?v=dScZZeqW1RA&list=PLLTtun7pIbIwMiKLHSbR1tCx26blvXVL6&index=2]

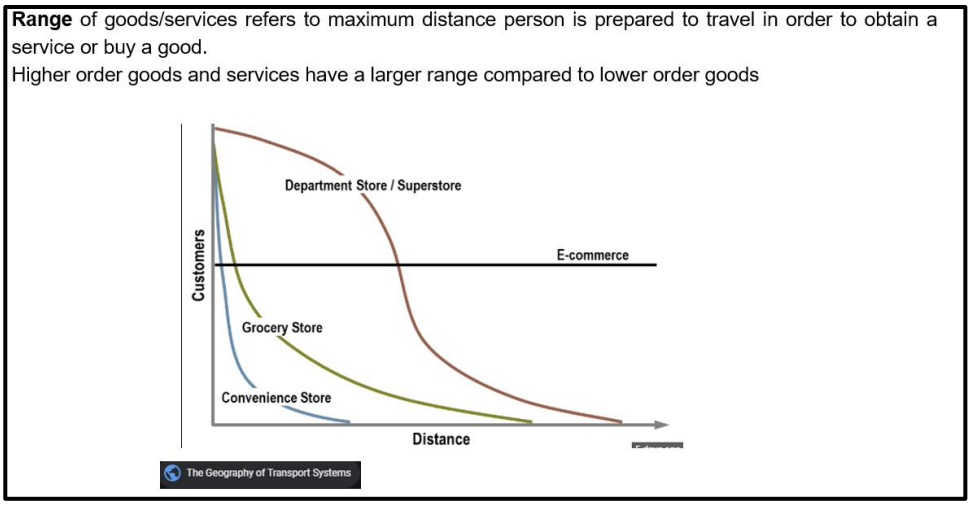
Teachers should ensure that learners are not only exposed to classification of urban settlements as was asked in Q1.2.1, but also the difference between the types of urban settlements. Using visuals will make it more effective.

[Source: https://www.youtube.com/watch?v=D9JXb-0CMbg&list=PLLTtun7pIbIwMiKLHSbR1tCx26blvXVL6&index=6]

In the case of Q1.2.3 an effective method is to use visuals and compare the two concepts in order to create a clear differentiation.

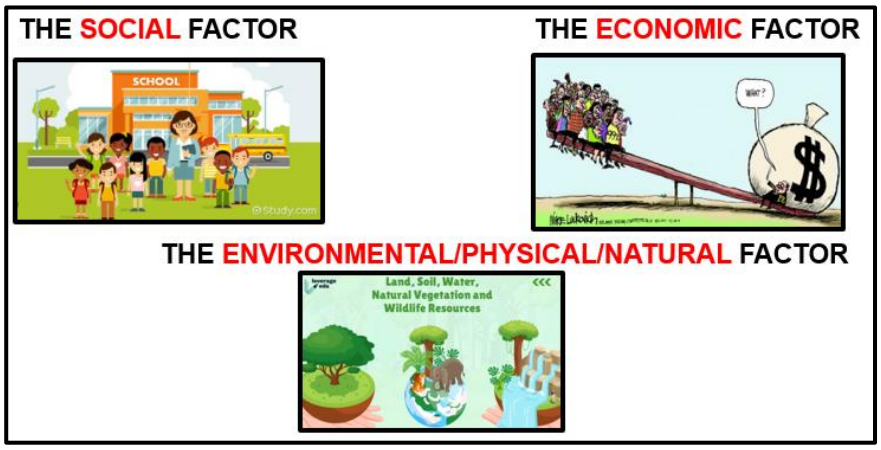


[Source: https://www.youtube.com/watch?v=IIK03D-fjuQ&list=PLLTtun7pIbIwMiKLHSbR1tCx26blvXVL6&index=5]



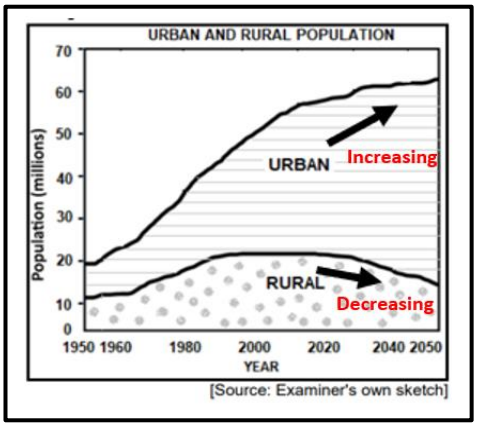
[Source: https://www.youtube.com/watch?v=IIK03D-fjuQ&list=PLLTtun7pIbIwMiKLHSbR1tCx26blvXVL6&index=5]

Learners must be made aware that social, economic, and environmental factors are asked in many questions like Q1.3.4. It is essential to know the difference between them.



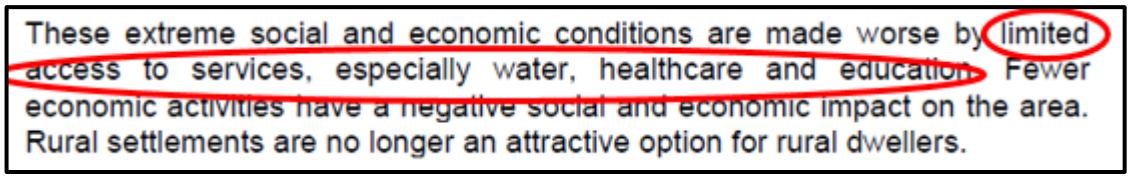
[Source: https://www.youtube.com/watch?v=sd8c3Ky8K5Q&list=PLLTtun7pIbIxVHORepqtfoxjCOhP22ut_&index=7&t=220s]

(b) Exposing candidates to a variety of resources and showing them how they could be used to answer questions is very important.



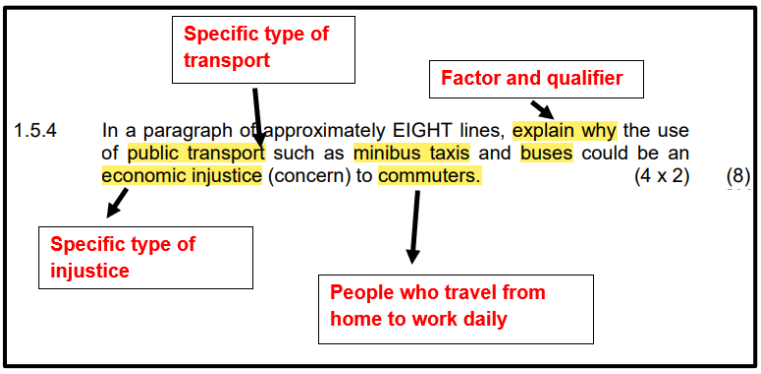
In the graph above the increase in the urban population and the decrease in the rural population can be linked to the concept of rural depopulation (Q1.3.1).

(c) Learners need to read and analyse a source thoroughly before answering the questions based on the source as in Q1.3.3.


These extreme social and economic conditions are made worse by limited access to services, especially water, healthcare and education. Fewer economic activities have a negative social and economic impact on the area. Rural settlements are no longer an attractive option for rural dwellers.

(d) Learners must read the question properly so that they do not give general answers. Teachers should guide learners to look at key words (Q1.3.5) such as 'sustainable measures' which refers to strategies that will remain effective over a longer period of time. Learners should be able to differentiate between *decentralisation*, which is the movement of activities from a core area to the outskirts, and *commercial decentralisation*, which refers to the movement of businesses out of the CBD to the OBD, as in Q1.4.1.

(e) Teachers are encouraged to use questions from past papers to visually illustrate different aspects that the learner should focus on e.g. Q1.5.4.



(f) Teachers need to ensure that all aspects of the *CAPS* and the *Examination Guidelines* are to be covered and not only the often-tested topics, e.g. a *neighbourhood shopping centre (*Q1.4.4 and Q1.4.5) which is a collection of independent retail stores, services, and a parking area. Local examples should be used by teachers.

(g) Learners must always refer to the statement at the beginning of each question as this will indicate which section is being assessed, e.g.:

Q1.3 Refer to the extract and graph below based on rural depopulation.
Q1.4 Refer to the source below on the influence of public transport systems on traffic congestion.

(h) Teachers should ensure that the learners are exposed to a variety of sources as the paper does not limit itself to one type of resource, e.g. Q1.4 included a photograph, sketch and an extract. A combination of three or more sources is known as an infographic and is used regularly in questions.

QUESTION 2: ECONOMIC GEOGRAPHY OF SOUTH AFRICA

Common errors and misconceptions

(a) In Q2.1.3 (1 mark) candidates were not familiar with the term *geothermal gradient* and did not realise that the question focused on a physical factor.

(b) Some candidates in Q2.1.4 (1 mark) lacked an understanding and were unable to differentiate between the concepts *renewable* and *non-renewable resources*.

(c) Q2.1.5 (1 mark): Some candidates clearly lacked knowledge of areas where platinum was being mined.

(d) In Q2.2.5 (1 mark) a significant number of candidates could not differentiate between the different types of trade. They confused domestic and provincial trade.

(e) In Q2.3.1 (1 mark) it was evident that a significant number of candidates did not know the map of South Africa and could not identify the different provinces, despite a map of the 9 provinces being given.

(f) Q2.3.3 (4 marks): The question specifically focused on reasons why South Africa had a large domestic market, yet a significant number of candidates focused on reasons

why there was a large maize production or the general significance of maize.

(g) In Q2.3.4 (4 marks) the question specifically focused on how climatic factors reduced maize production, many candidates only mentioned the climatic factor, e.g. heavy rainfall and did not mention what impact it had on maize production, e.g. washed away crops.

(h) Q2.4.1 (1 mark): The question specially focused on the map in the infographic and a significant number of candidates gave transport infrastructure that was not indicated on the map as a response. In some instances, candidates indicated seaport, but the map specifically indicated harbour.

(i) In Q2.4.4 (2 marks) some candidates gave information from the timeline that focused on other issues, e.g. general projects and the amount it was worth instead of focusing specifically on diversification of industries.

(j) Q2.4.5 (4 marks): A number of candidates misinterpreted the question and assumed that it focused on people without jobs, but the question focused on the labour force (people already employed) which negatively impacted the result.

(k) Q2.4.6 (6 marks): Many candidates spoke about the advantages of the Coega Industrial Development Zone but did not emphasise how it attracted investment from overseas companies. The question focused on attracting investment from overseas companies.

(l) In Q2.5.2 (2 marks) some candidates gave social reasons, the question focused on economic reasons. Candidates still confused the informal sector with informal settlements.

(m) Q2.5.3 (4 marks): Some candidates explained the social importance instead of the economic performance and once again confused the informal sector with informal settlements. In some instances, candidates listed responses instead of explaining as was required by the action verb used.

(n) In Q2.5.4 (8 marks) a significant number of candidates repeated responses, e.g. infrastructure or examples of infrastructure but were allocated 2 marks only. Candidates focused on formalising and registering informal sectors although the question focused on improving informal sectors. Once again candidates confused the informal settlements with the informal sector.

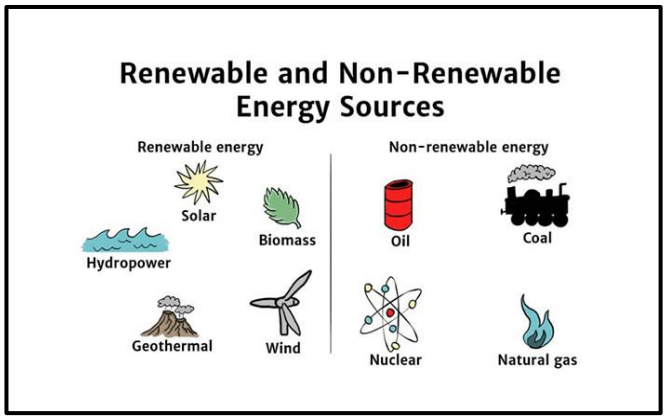
Suggestions for improvement

(a) Learners must note that short questions do not necessarily need to be purely theoretical but can involve analysis of a source like a map. In order for learners to reach the correct answer, the map needs to be properly analysed, e.g. Q2.2.8.

(b) Learners must know and be able to apply definitions as asked in Q2.1.3. The *geothermal gradient* is defined as the increase in temperature with depth in the Earth**.** The increase in temperature could have an impact on mining as it affects conditions below the surface.

(c) Using examples in teaching and learning can bring clarity with regard to the understanding and differentiating between terms/concepts, e.g. Q2.1.4. A non-renewable resource is a resource that is used up faster than it can be replenished. A renewable resource is a resource that can be replenished. The table below illustrates

this very well.



[Source: https://www.adtsolar.com/renewable-energy/renewable-vs-non-renewable-energy-sources/]

(d) The *Examination Guidelines* gives a detailed breakdown of how the rotational topics are going to be tested and all aspects that need to be covered by teachers and learners, e.g. Q2.1.

Mining

- Contribution of mining to the South African economy
- Significance of mining to the development of South Africa
- A case study of one of South Africa's main minerals produced

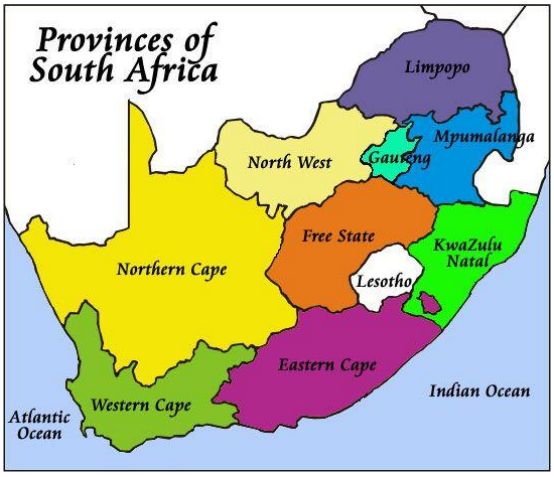
NOTE: Instruction at the beginning of the section on Economic Geography

EXAMINATION	YEAR	PRESCRIBED MINERAL
November 2021 May/June 2022	2021/22	Coal
November 2022 May/June 2023	2022/23	Gold
November 2023 May/June 2024	2023/24	Platinum

- Location of mineral studied on a map, identification and interpretation
- Apply factors that favour and hinder mining in South Africa to the main minerals above
- Contribution of prescribed mineral to the South African economy

(e) Learners need to apply the correct terminology used in the *Examination Guidelines* as in Q2.2.5 (international and domestic trade) and teachers should emphasise the difference.

(f) All learners should be familiar with the names and location of the 9 provinces in South Africa (Q2.3.1).



[Source: https://www.google.com/search?q=map+of+the+9+provinces+of+south+africa&sca]

(g) In questions like Q2.3.4 the learners should focus on the impact of the climatic factor (heavy rainfall) and not merely state the climatic factor.

Heavy rainfall X
Washes away crops ✓

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(h) Learners must learn to focus on the specific source referred to in an infographic as in Q2.4.1 where the focus was on the map which indicated a harbour.

(i) Teachers need to make learners aware that the proper understanding of concepts is essential in order to answer questions like Q2.5.4.
Basic services are all essential services, which are required for the continuity of life, e.g. electricity and energy, water, and sanitation, refuse and waste removal.
Infrastructure is the basic physical and organisational structures, e.g. powerlines, potable water.
A strategy for regulating the informal sector is giving them permits and not registering the business as this formalises the business.

Learners must note that when answering questions, two marks are allocated for the strategy or the example. If various examples of the same response are provided, only two marks will be awarded as in Q2.5.4.

.

Regulate the sector (accept examples) (2)
Allocate designated areas for them to trade (accept examples) (2)
Supply basic services (accept examples) (2)
Provide infrastructure (accept examples) (2)
Increased security for their goods (2)
Create partnerships with the private sector (accept examples) (2)
Upskilling of entrepreneurs (2)
Access to funding (accept examples) (2)
[ANY FOUR]

(j) When learners are asked to quote from the extract, they must write down the exact words, using inverted commas, e.g. Q 2.4.4.

'Solar cell factory (to open in Coega IDZ') (1)
'Aquaculture: (Coega's new fish farm zone progresses') (1)
'New 1 000 MW gas power (plan for Coega') (1)
[ANY TWO] (2 x 1) (2)

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

Common errors and misconceptions

(a) In Q3.1.1 (1 mark) some candidates experienced challenges converting measurements to different units, e.g. cm to m.

(b) Q3.1.2 (1 mark): Candidates experienced challenges determining the seconds when working out co-ordinates.

(c) In Q3.1.3 (2 marks) selective reading seems to be a challenge. Candidates in many instances worked on the orthophoto map distance but then multiplied by the topographical map scale (50 000) instead of the orthophoto map (10 000). In some instances, candidates got the correct final answer but did not indicate the unit and as such were not awarded marks for the final answer.

(d) In Q3.1.4 (1 mark) the emphasis was on bigger scale; candidates spoke about a bigger map which was incorrect.

(e) In Q3.1.5 (4 marks) due to different units being used, e.g. degrees and seconds, candidates had to indicate them in all steps and unfortunately this was not the case. In some cases, candidates had no knowledge on how to calculate magnetic declination.

(f) With regard to Q3.1.6 (1 mark) the application of magnetic declination seemed to be a continued challenge as candidates gave generic answers, e.g. do not get lost, to find your destination. Some candidates mixed the purpose of calculating magnetic declination with calculating magnetic bearing. It must be noted that this was a higher order question.

(g) The main reason for the poor performance in Q3.2.1 (a) and (b) (3 marks) was that many candidates considered factors like the occurrence of a golf course instead of focusing on the core issues of building density and small plots.

(h) In Q3.2.2 (a) (1 mark) it was evident that a number of candidates were not familiar with the term *green belt*.

(i) Q3.2.2(b) (2 marks): Candidates did not focus on the environmental injustices. The question focused on reducing environmental injustices and some candidates just stated the environmental injustice instead of showing how green belts reduce environmental injustices.

(j) Some candidates did not consult the map in Q3.3.3 (a) and (b) (2 marks) and gave responses that were not found on the map; hence no marks were awarded.

(k) In Q3.2.3(c) (2 marks) candidates wrote about creating employment opportunities and mentioned the social benefits. This question was a higher-order question and focused on the economic benefit on employment opportunities already created and not on creating employment opportunities.

(l) Q3.2.4 (2 marks) focused on why the airport was located in the *rural urban fringe* and not why it was not located in other areas as some candidates responded. Some candidates clearly did not understand what the *rural-urban fringe* was.

(m) In Q3.3.1 and Q3.3.2 (3 marks) the application of GIS concepts like *buffering* was a serious challenge. In some instances, candidates did not refer to block D2 as directed in the question and gave general answers.

(n) Q3.3.3 (2 marks): Many candidates experienced challenges in differentiating between GIS concepts and explained data layering instead of what a data layer is.

(o) Q3.3.4 (2 marks) was specific to the transport data layer found in block B1. Candidates seemed to not refer to the reference on the map in order to answer correctly. Some candidates incorrectly answered, e.g. national route instead of national freeway while other candidates referred to other layers instead of the transport data layer.

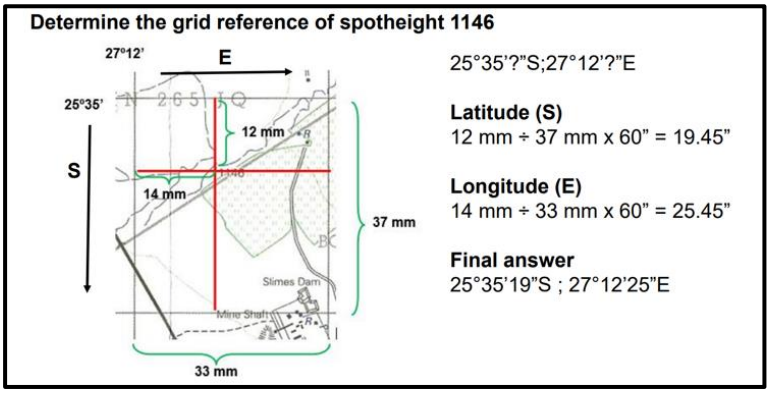
(p) In Q3.3.5 (2 marks) many candidates could not identify the street pattern or relate its characteristics to traffic congestion.

Suggestions for improvement

(a) To assist learners with the conversion of units, teachers should give learners a simple table with the units that are used in question papers. Encourage them to familiarise themselves with these units.

TOPOGRAPHIC MAP	ORTHOPHOTO MAP
1cm: 50 000cm	1cm: 10 000cm
1 cm: 500m	1 cm: 100m
1cm: 0.5 km	1cm: 0.1 km

(b) Teachers cannot assume that learners will remember the methodology of the calculations from previous grades, e.g. Q3.1.2 grid-reference. A step-by-step illustration of how to calculate grid-reference should be taught.



[Source: https://www.youtube.com/watch?v=xBaQUlhtAkg&t=118s]

(c) Calculations can be asked on either the topographical map or the orthophoto map. Learners must read the question carefully to see which map is being referred to as both maps have different scales.

[Source: https://www.youtube.com/watch?v=9RU6-8t9xUU&list=PLLTtun7pIbIwODoFvDiazjUD8tknBbAha&index=6]

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(d) Learners must be made aware that size of map and scale of map are not the same. In

Q 3.1.4 the question referred to the larger scale. Learners must note that when they talk about a bigger map, they are referring to the size of the map and not the scale of the map. Reference to the size of a map is incorrect. A bigger map can have a smaller scale than a smaller sized map. Reference should rather be made to the size of the features on the map which is determined by the map scale.

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(e) Learners must note in the magnetic declination calculation both degrees and minutes. All steps must therefore show the correct unit e.g. Q3.1.5

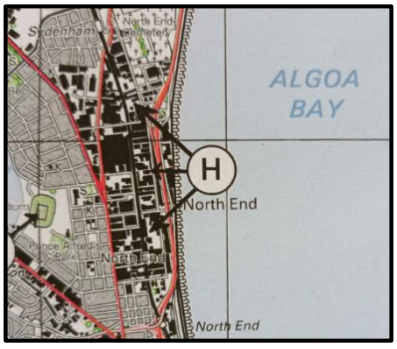
Mean annual change: 12' (1) westwards
Total annual change: 2 x 12' = 24' (1) westwards
MD for 2023: 29°00' + (1) 24' = 29°24' west of true north (1)

(f) Q3.1.6 is a good example for teachers to use when emphasising to the learners that they must focus on the specifics of the question. Learners must be able to differentiate between the purpose of calculating magnetic declination (determine the position of true north) and the importance of it (not to get lost).

(g) The concept of green belt needs to be clarified and taught to learners (Q 3.2.2). A green belt is an area of land with fields or parks around a town or city, where people are not allowed to build houses or factories by law (concept).

[Source: https://www.google.com/search?q=greenbelt&tbm=isch&ved=2ahUKEwjyy4ihs7qDAxXJR6QEHarUBuIQ2]

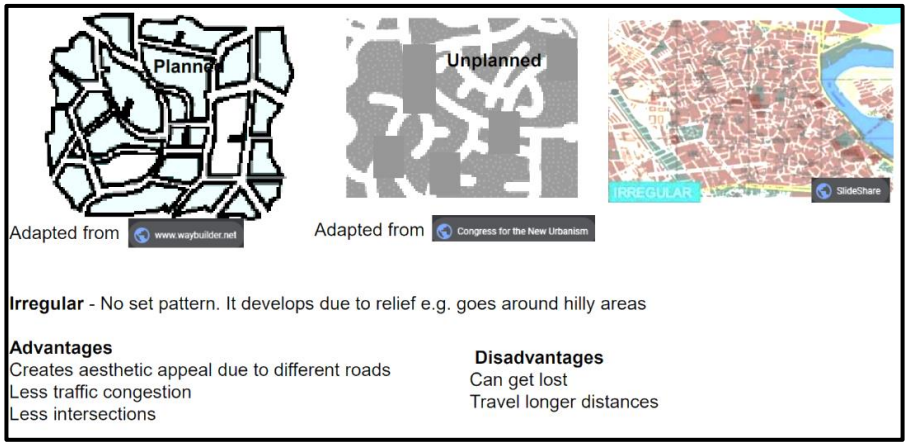
(h) Learners need to be made aware that there are various questions that make reference to the two maps and responses must come from the map. E.g. Q3.2.3 (a).

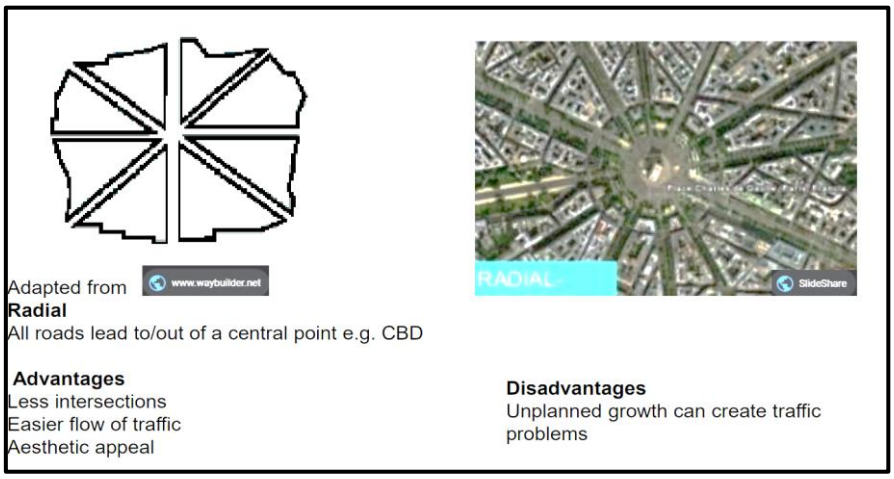


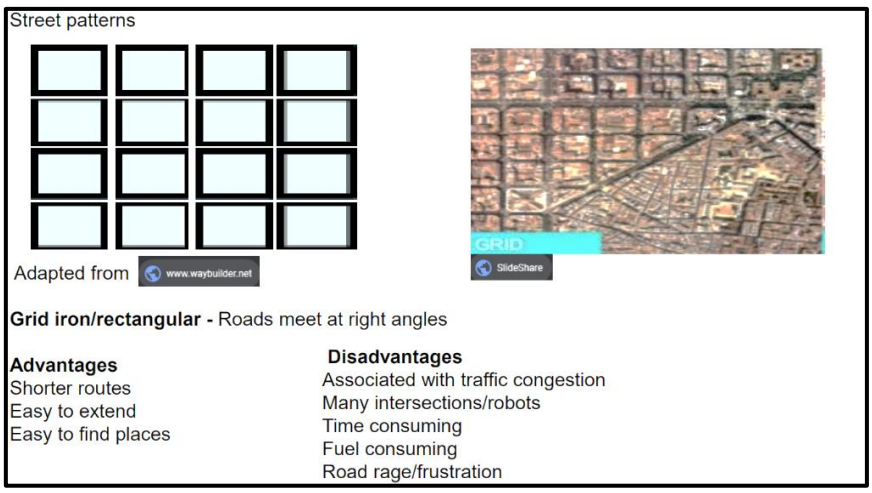
(a) Accessibility to the harbour (1)
Near railway line (1)
Accessible to main roads (1)
Horizontal development of buildings/ Large buildings (1)
High density of buildings (1)
Large tracts of land (1)
On the outskirts (1)
Flat land (1)
Close to water source (1)
[ANY ONE]

(i) Teachers need to assist learners in differentiating between GIS concepts like data layers and data layering (Q3.3.3). A *data layer* is a layer of information with a specific theme. *Data layering* refers to different types of information/data layers which are projected onto one another/placed on top of one another.

(j) Teachers need to ensure that learners are able to apply their theoretical knowledge and differentiate between the different street patterns and identify the characteristics associated with each. This application question is regularly tested.







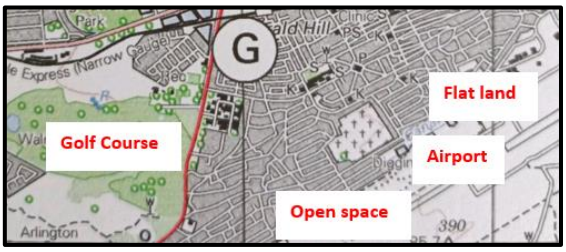
[Source: https://www.youtube.com/watch?v=vEnpoodej6M&list=PLLTtun7pIblwMiKLHSbR1tCx26blvXVL6&index=7]

(k) The challenge regarding the understanding of the concept *rural-urban fringe* is ongoing.

Rural-urban fringe
- Urban function invade the surrounding rural area
- Has urban and rural functions
- High income residential areas, golf course, sewage works

[Source: https://www.youtube.com/watch?v=vEnpoodej6M&list=PLLTtun7pIbIwMiKLHSbR1tCx26blvXVL6&index=7]

Evidence of a rural-urban fringe on a topographical map.



CHAPTER 7

HISTORY

The following report should be read in conjunction with the History question papers of the November 2023 NSC examinations.

7.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the History examination in 2023 decreased by 11 596 compared to that of 2022.

There was a slight decline in the pass rate this year. Candidates who passed at the 30% level changed from 88,2% in 2022 to 87,7% in 2023. There was a corresponding change in the pass rate at the 40% level over the past two years from 69,7% to 68,4%.

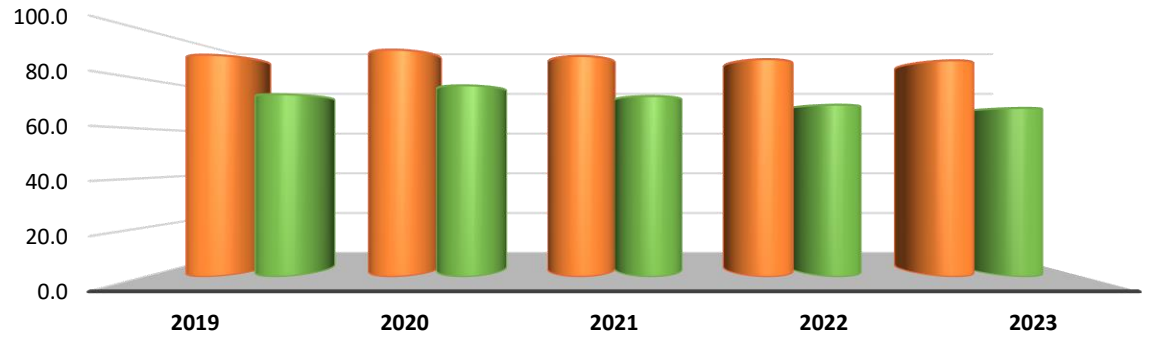
There was a marginal decline in the percentage of distinctions over 80%, which decreased from 3,6% in 2022 to 3,2% in 2023. Given the decrease in the size of the 2023 cohort, this converts into a decrease in the total number of distinctions from 8 544 to 7 223.

The various intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates contributed to the overall results in the subject.

Table 7.1.1 Overall achievement rates in History

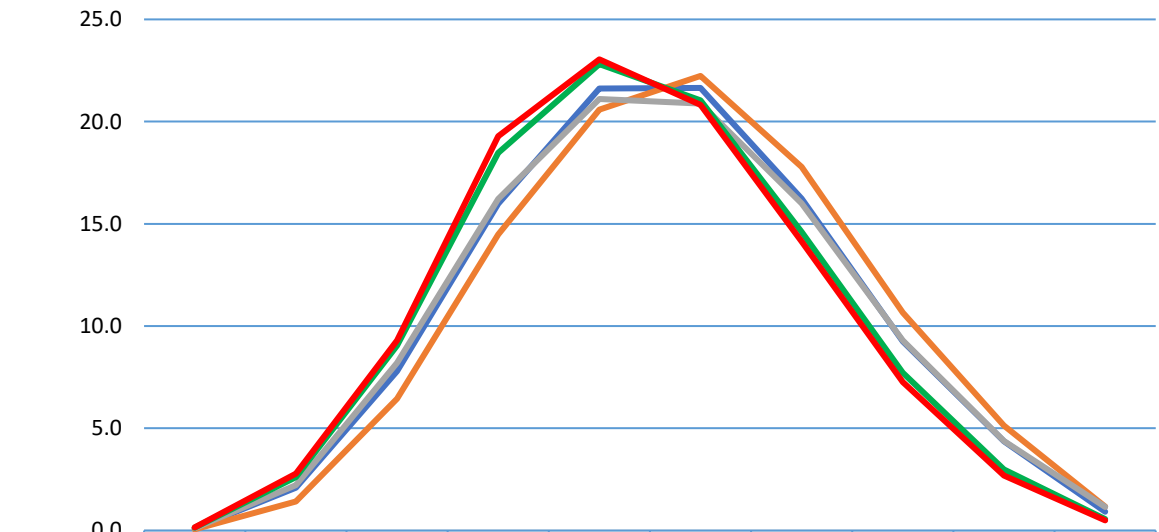
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	164 729	148 271	90,0	121 936	74,0
2020	173 498	159 737	92,1	134 610	77,6
2021	227 448	203 473	89,5	166 576	73,2
2022	237 327	209 315	88,2	165 483	69,7
2023	225 731	198 052	87,7	154 501	68,4

Graph 7.1.1 Overall achievement rates in History (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	90.0	92.1	89.5	88.2	87.7
% achieved at 40% and above	74.0	77.6	73.2	69.7	68.4

Graph 7.1.2 Performance distribution curves in History (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.1	2.1	7.8	16.0	21.6	21.6	16.2	9.2	4.4	0.9
2020	0.1	1.4	6.4	14.5	20.6	22.2	17.8	10.7	5.1	1.2
2021	0.1	2.2	8.2	16.2	21.1	20.9	16.0	9.3	4.4	1.1
2022	0.1	2.6	9.0	18.5	22.8	21.0	14.6	7.7	3.0	0.6
2023	0.2	2.8	9.3	19.3	23.0	20.8	14.1	7.3	2.7	0.5

General comments on Paper 1 and Paper 2

2023 marked the third year of a new three-year cycle in the subject History, with the introduction of new topics in both papers.

Paper 1 included source-based questions which examined *Origins of the Cold War in Europe* and the *Civil Rights Movement,* as well as two essays based on the *Extension of the Cold War in Vietnam* and *Independent Africa (the Congo).*

Paper 2 included two relatively new sections. These are the source-based question, i.e. *Internal Resistance* and an essay, i.e. the *Black Consciousness Movement (BCM)*.

2023 witnessed a general decline in the quality of candidates' performance. It is however, gratifying to note that performance is still above 87% and that candidates are being taught the prescribed content in both Paper 1 and Paper 2 and this is also apparent in the number of candidates who responded to specific choice questions.

In Section A (source-based questions) of both question papers, it was clear that a significant number of candidates were unable to answer middle- and higher-order questions. These questions required candidates to interpret, analyse, evaluate, compare and determine the usefulness, limitations and reliability of sources. Furthermore, a large number of candidates could not write logical and coherent paragraphs based on the key question.

In Section B (essay questions) of the question papers, the majority of the candidates displayed good content knowledge but were unable to take a stance and develop a balanced and independent line of argument. Several essays lacked properly contextualised introductions and conclusions. There was also a noticeable increase in the number of candidates whose essay responses took the form of model (prepared) answers or regurgitation of content with no effort to write an original argumentative essay. This developing tendency of prepared essay responses gained momentum in the past two to three years and could be accountable for the decline in the quality of candidates' performance.

Teachers must make every effort to ensure that the prescribed content is taught in a user-friendly manner, and this must be underpinned by the requisite historical skills to ensure a further improvement in the overall pass rate.

7.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

(a) Generally, candidates' performance in this question paper ranged from fair to very good. It was evident that many candidates opted for two essay questions and one source-based question. The popular choice questions were Q1, Q3, Q4 and Q6. Few candidates attempted Q2 and Q5.

(b) In Section A: Source-based questions, many candidates found it challenging to define concepts in their own words or explain concepts in the context of a section. They were unable to interpret statements from the sources effectively. It was also evident that many candidates lacked the ability to extract, select, interpret, analyse, evaluate and synthesise information from the sources that were provided. This resulted in unsatisfactory responses to higher-order questions, where candidates were unable to explain the *limitations*, *reliability* and *usefulness* of sources. Comparison of information from different sources also proved to be challenging.

(c) A large number of candidates relied mostly on the relevant information in the sources, with little or no reference to their own knowledge. They were unable to write well-structured paragraphs effectively. Candidates simply copied information from the sources.

(d) Successful candidates were able to interpret, analyse, evaluate and synthesise evidence from the given sources and also use their own knowledge to consolidate their responses. They were also able to comment on the *usefulness*, *limitations* and *reliability* of the sources used.

(e) In Section B: Essay questions, there was a general improvement in essay-writing this year as most candidates could write and complete a comprehensive essay. A large number of candidates opted to answer Question 5 (Congo). Overall candidates demonstrated the required content knowledge in the essays but could not develop relevant introductions and conclusions or take a stance and defend it with more

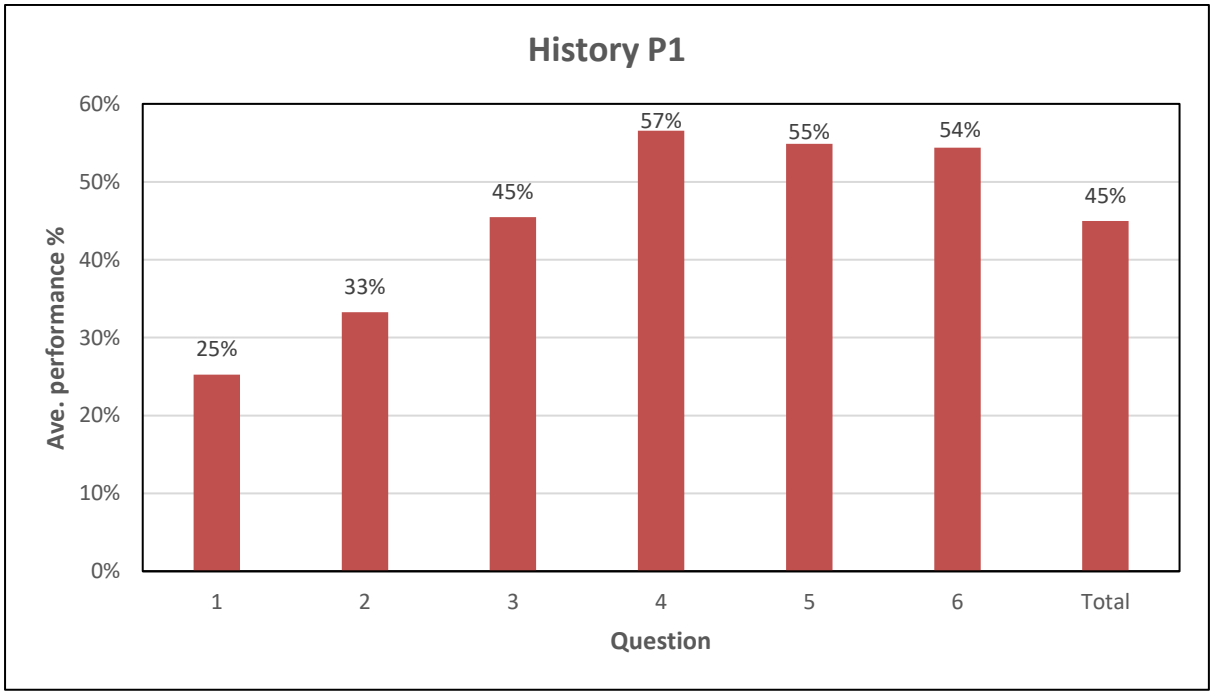
persuasive lines of argument.

(f) There were, however, a worrying number of candidates whose essay responses took a form of model (prepared) answers or regurgitation of content with no effort to write an original argumentative essay.

7.3 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

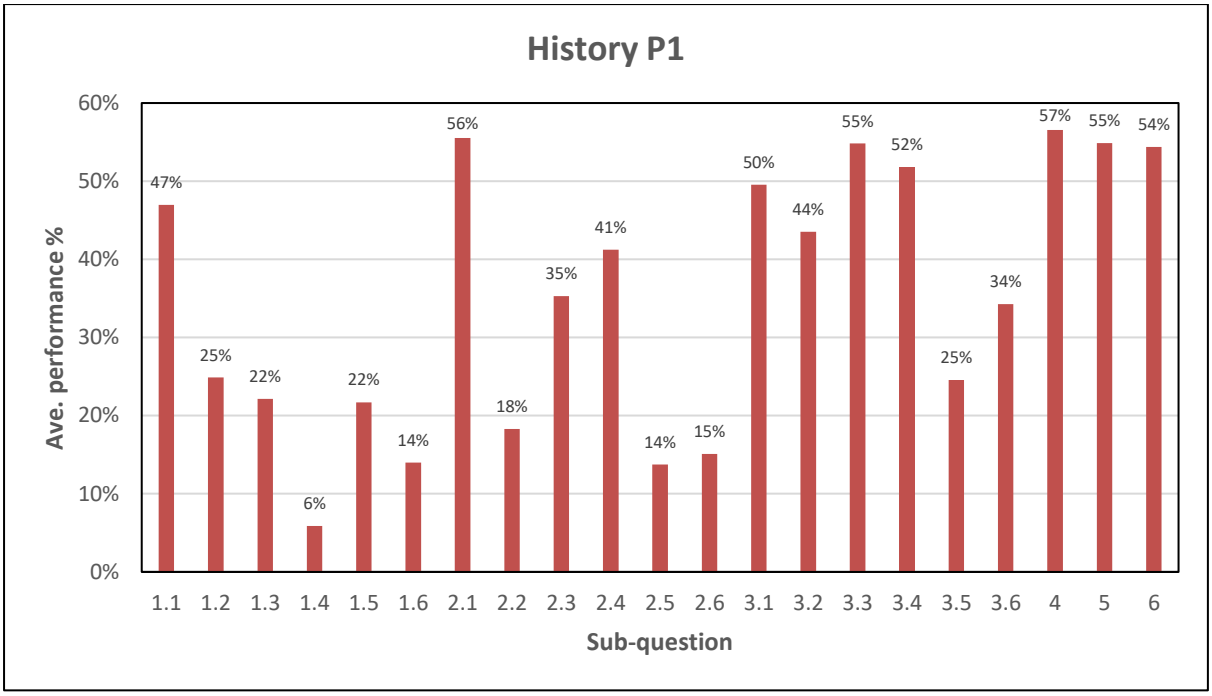
The following graph is based on data that was gathered from a random sample of candidates' scripts. While this graph might not accurately reflect the national averages, it serves as a useful tool to analyse how candidates performed in specific choice questions.

Graph 7.3.1 Average performance per question in Paper 1



Q	Topic/s
1	The Cold War: The Origins of the Cold War
2	Independent Africa: Africa in the Cold War: Case Study – Angola
3	Civil Society Protests from the 1950s to the 1970s: The US Civil Rights Movement
4	The Extension of the Cold War – Case Study: Vietnam
5	How was independence realised in Africa in the 1960s and 1970s? Case Study: The Congo
6	Civil Society Protests from the 1950s to the 1970s: The Black Power Movement

Graph 7.3.2 Average performance per subquestion in Paper 1



Q	Skills assessed	Q	Skills assessed	Q	Skills assessed	Q	Skills assessed
1.1	1.1.1 Extraction 1.1.2 Extraction 1.1.3 Interpretation 1.1.4 Interpretation	**2.1**	2.1.1 Concept 2.1.2 Extraction 2.1.3 Extraction 2.1.4 Interpretation	**3.1**	3.1.1 Extraction 3.1.2 Concept 3.1.3 Interpretation 3.1.4 Interpretation	**4**	Essay
1.2	1.2.1 Concept 1.2.2 Interpretation 1.2.3 Extraction 1.2.4 Extraction 1.2.5 Interpretation	**2.2**	2.2.1 Interpretation 2.2.2 Interpretation	**3.2**	3.2.1 Interpretation 3.2.2 Interpretation 3.2.3 Interpretation	**5**	Essay
1.3	1.3.1 Extraction 1.3.2 Concept 1.3.3 Extraction 1.3.4 Limitation	**2.3**	2.3.1 Extraction 2.3.2 Concept 2.3.3 Interpretation 2.3.4 Usefulness	**3.3**	3.3.1 Extraction 3.3.2 Extraction 3.3.3 Reliability	**6**	Essay
1.4	Compare Sources	**2.4**	2.4.1 Extraction 2.4.2 Interpretation 2.4.3 Interpretation 2.4.4 Interpretation 2.4.5 Extraction	**3.4**	3.4.1 Extraction 3.4.2 Interpretation 3.4.3 Extraction 3.4.4 Concept 3.4.5 Extraction		
1.5	1.5.1 Interpretation 1.5.2 Interpretation	**2.5**	Compare Sources	**3.5**	Compare Sources		
1.6	Paragraph	**2.6**	Paragraph	**3.6**	Paragraph		

7.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

SECTION A: SOURCE-BASED QUESTIONS

QUESTION 1: THE COLD WAR: THE ORIGINS OF THE COLD WAR

Common errors and misconceptions

(a) In Q1.1.3 a large number of candidates were unable to explain why the occupying countries had 'to ensure that the Germans were not able to build up a military force again'. They simply extracted the information provided in the source, which was not a requirement to answer the question.

(b) In Q1.1.4 many candidates had difficulty in commenting on the implications of having the city of Berlin in the Soviet zone in the context of Cold War tensions between the USSR and the USA in 1948.They made general statements without providing relevant explanations.

(c) In Q1.2.1 most candidates could not explain *blockade* in their own words. They provided generalised responses such as 'to stop someone' and 'to close'.

(d) In Q1.2.2 the majority of the candidates were unable explain why the USA regarded the Berlin Blockade as 'a clear violation of existing agreements concerning the administration of Berlin'. It was evident that these candidates did not fully comprehend Source 1A where the agreements on the administration of Berlin were highlighted. They simply extracted the information provided in the source, which was not a requirement to answer the question.

(e) In Q1.2.3 most candidates were unable to comment on why the USA emphasised its willingness to settle any disagreements with the USSR by negotiations. Most candidates provided one instead of two responses. They provided irrelevant extractions, non-factual responses and there was a clear lack of comprehension of the USA and USSR power struggle.

(f) In Q1.2.5 some candidates lacked the ability to comment on why the USA emphasised its willingness to settle any disagreements with the USSR by negotiations. They made general statements without providing relevant explanations.

(g) Most candidates could not explain the term *monetary reform* in the context of the Berlin zones in 1948 (Q1.3.2). The words, *in the context of*, were misunderstood and many candidates made general statements without providing relevant explanations. Some candidates explained it as a financial aid. They simply were unable to connect the word 'financial' in the source to 'reforms'.

(h) In Q1.3.4 most candidates struggled to comment on the *limitations* of Source 1C for an historian researching the division of Berlin. Responding to a question on the skill of identifying limitation remains a problem for most candidates. They merely explained the usefulness of the source.

(i) Q1.4 required candidates to compare two sources. Candidates experienced difficulty in commenting on how Source 1B differed from Source 1C regarding reasons given by the USA and the Soviet Union for remaining as occupying powers in Berlin in 1948. Most candidates only provided one comparison.

(j) Some candidates could not explain why Russia (Stalin) wanted to have a final say in the administration of Berlin (Q1.5.2). While many candidates responded by copying the contextualisation from the source, other candidates paraphrased the question when providing responses, e.g. 'He wanted to have the last word on how Berlin was run'. Some merely lacked content knowledge.

(k) The majority of the candidates responded poorly to the paragraph question (Q1.6). Candidates copied information directly from the sources. They were, however, unable to use the information in the sources to write a comprehensive paragraph. The majority of the candidates displayed an inability to interpret, evaluate and synthesise information from different sources.

QUESTION 2: INDEPENDENT AFRICA: AFRICA IN THE COLD WAR: CASE STUDY: ANGOLA

Common errors and misconceptions

(a) In Q2.2.1 most candidates were unable to explain why the photograph was taken in December 1975. They lacked the information that linked the photograph to the specified year (1975).

(b) In Q2.2.2 a large number of candidates could not comment on the implication of the title of the photograph 'Angola's Brutal History and the MPLA's Role in it'. Some had a challenge in responding to the word 'brutal' in the question. It is clear that they lacked basic interpretation skills.

(c) Most candidates could not explain the term *civil war* in the context of contestation of power over Angola (Q2.3.2). The words, *in the context of*, were misunderstood and many candidates made general statements without providing relevant explanations e.g. 'a war fought between countries'; 'people fighting'.

(d) In Q2.3.3 a large number of candidates could not comment on the meaning of the statement, *'But both were determined for reasons of their own prestige …*', in the context of their involvement in the Angolan Civil War*.* They lacked basic interpretation skills.

(e) Many of the candidates could not explain the *usefulness* of Source 2C for an historian studying the Angolan Civil War. They merely copied the contextualisation of the source and provided this as their response.

(f) In Q2.4.2 some candidates could not explain what is implied by the following in the context of the Angolan Civil War: *'Conflict became ethnicised'*. They lacked the ability to interpret the question.

(g) In Q2.4.4 most candidates could not comment on why South Africa decided to support UNITA. This is likely due to their lack of knowledge about South Africa's role in the Angolan Civil War. These candidates lacked knowledge and understanding of the question.

(h) The majority of the candidates had difficulty comparing the information in Sources 2C and 2D regarding the approach followed by the three nationalist movements in Q2.4. Many of them could not link the information in both sources.

(i) A large number of candidates showed very poor competence in paragraph-writing skills and did not answer the question asked. Some candidates tended to look at sources in

isolation. Candidates required the ability to utilise the sources to support their response to a question without a strong dependence on using direct quotes from the source itself.

QUESTION 3: CIVIL SOCIETY PROTESTS FROM THE 1950s TO THE 1970s: THE US CIVIL RIGHTS MOVEMENT

This proved to be a popular question which was attempted by a large number of candidates. The candidates' performance ranged from fair to good.

Common errors and misconceptions

(a) Q3.1.2 and Q3.4.4 were poorly answered because many candidates were unable to define the term *constitution* (Q3.1.2) in their own words, and to explain the concept *segregationist* (Q3.4.4) in the context of the state of Alabama.

(b) In Q3.1.3 a large number of candidates struggled to comment on what is meant by the statement, *'They also knew that they might be injured or even killed for trying to exercise that right [of travelling together]'*. They lacked knowledge and failed to interpret the question correctly. They used information from the source verbatim.

(c) It was evident in Q3.2.3 that some candidates were unable to comment on why the flames and smoke from the burning bus are labelled, 'The Flames of Hatred!'. Many candidates responded by rewriting the message from the source without explaining it. Some also used the contextualisation of the source as their response.

(d) In Q3.3.3 several candidates struggled to comment on the *reliability* of Source 3C for an historian researching the 1961 Freedom Rides in the USA. Responding to a question on the skill of identifying *reliability* remains a problem for most candidates. They used information from the source verbatim and confused reliability with summarizing content (information) provided in paragraphs of a source.

(e) In Q3.4.2 many candidates were unable to comment on what is implied by Governor Patterson's statement regarding the Freedom Riders, *'Any rioters in this state will not receive police protection'*. They lacked knowledge and failed to interpret the question correctly.

(f) Some candidates experienced difficulty with the comparison question (Q3.5). They could not explain how Source 3C was supported by Source 3D regarding the treatment of the Freedom Riders. Most candidates only provided one comparison.

(g) In Q3.6 some candidates struggled to use the information in the relevant sources and their own knowledge to write a coherent paragraph explaining the challenges that were encountered by the civil rights protestors who participated in the Freedom Rides in the USA in the 1960s.

SECTION B: ESSAY QUESTIONS

QUESTION 4: THE EXTENSION OF THE COLD WAR – CASE STUDY: VIETNAM

This was the most popular question and the performance of candidates who attempted this question ranged from very satisfactory to good. The marks obtained were marginally better than those attained in the other essays.

Common errors and misconceptions

(a) Some candidates provided an unnecessary and detailed background about Vietnam. Candidates needed to be able to address what was required by the question.

(b) A few candidates were unable to discuss the following statement critically: '*The tactics used by the Vietcong were successful in making USA strategies ineffective during the Vietnam War between 1963 and 1975*'.

(c) A substantial number of candidates applied the *L* in the *PEEL* method incorrectly. They ended each paragraph by simply repeating the statement provided in the question which did not relate well to the information provided in the preceding paragraph.

(d) It was also noted that the essays of weaker candidates lacked proper introductions and contained irrelevant background information. In addition, many could not sustain their line of argument or draw convincing conclusions.

(e) Chronology should be stressed in this question as the line of argument depends on it.

QUESTION 5: INDEPENDENT AFRICA: HOW WAS INDEPENDENCE REALISED IN AFRICA IN THE 1960s AND 1970s? – CASE STUDY: THE CONGO

The number of candidates responding to this question is increasing. Generally, the performance ranged from satisfactory to good.

A large percentage of candidates who attempted this question were able to agree with the statement, *'Mobutu Sese Seko's political, economic and cultural policies positively transformed the post-independent Congo in the 1960s'*. The content presented was largely discursive and there was an attempt to develop a line of argument.

Many candidates discussed the policies critically by illustrating how the policies transformed Congo successfully. Responses demonstrated relevant introductions and conclusions and developed a line of argument.

Common errors and misconceptions

(a) Some candidates seemed to have written prepared or model essays rather than argumentative responses.

(b) Most candidates did not use content to support their line of argument. They repeated the question statement at the end of every paragraph and as a result, the essay became monotonous and lacked originality.

QUESTION 6: CIVIL SOCIETY PROTESTS FROM THE 1950s TO THE 1970s –THE CIVIL BLACK POWER MOVEMENT

Most candidates answered this question and seemed to have prepared for the theme thoroughly. Those who did not perform well appeared to be candidates who had not covered, or were not taught, this theme at school.

Common errors and misconceptions

(a) Many candidates were unable to explain to what extent the Black Power Movement depended on the use of violent, radical and militant strategies to end discrimination in the USA.

(b) Some candidates just gave a narrative account of Black Power, the philosophy, the leaders and the Black Panthers without mentioning how the Black Power Movement depended on the use of violent, radical and militant strategies to end discrimination in the USA.

(c) A few candidates wrote essays that lacked introductions, a logical and sequential body of events as well as persuasive conclusions.

(d) Most candidates seemed to have written prepared or model essays rather than argumentative responses.

7.5 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

(a) Generally, candidates' performance in this question paper ranged from poor to very good with most of them just above average.

(b) Many candidates chose two essay questions and one source-based question, and they performed better than those who chose two source-based and one essay question.

(c) Candidates who chose two source-based questions and one essay question did not do well mostly because of their inability to respond to middle-order (interpretation and analysis) as well as higher-order (usefulness, reliability, limitations, comparison and paragraph-writing) questions.

(d) The popular choice questions were Q1 and Q2 (Source-based), and Q4 and Q5 (Essays).

(e) There was a general improvement in essay writing this year as some of the candidates could complete a comprehensive essay. Weaker candidates, however, failed to provide properly structured essays with relevant introductions and conclusions.

(f) To second-language speakers, English seemed to be a language barrier in writing, hence it is difficult for them to get average to full marks.

(g) There were a few candidates who managed to score 50 marks per question, implying that there were only a few distinctions awarded.

(h) As indicated in the 2022 Diagnostic Report, paragraph writing and questions involving *comparisons*, *usefulness*, *reliability* and *limitations* of sources are still posing a challenge to most candidates.

(i) Candidates who performed above average were able to interpret, analyse, evaluate and synthesise evidence from the given sources and also use their own knowledge to consolidate their responses.

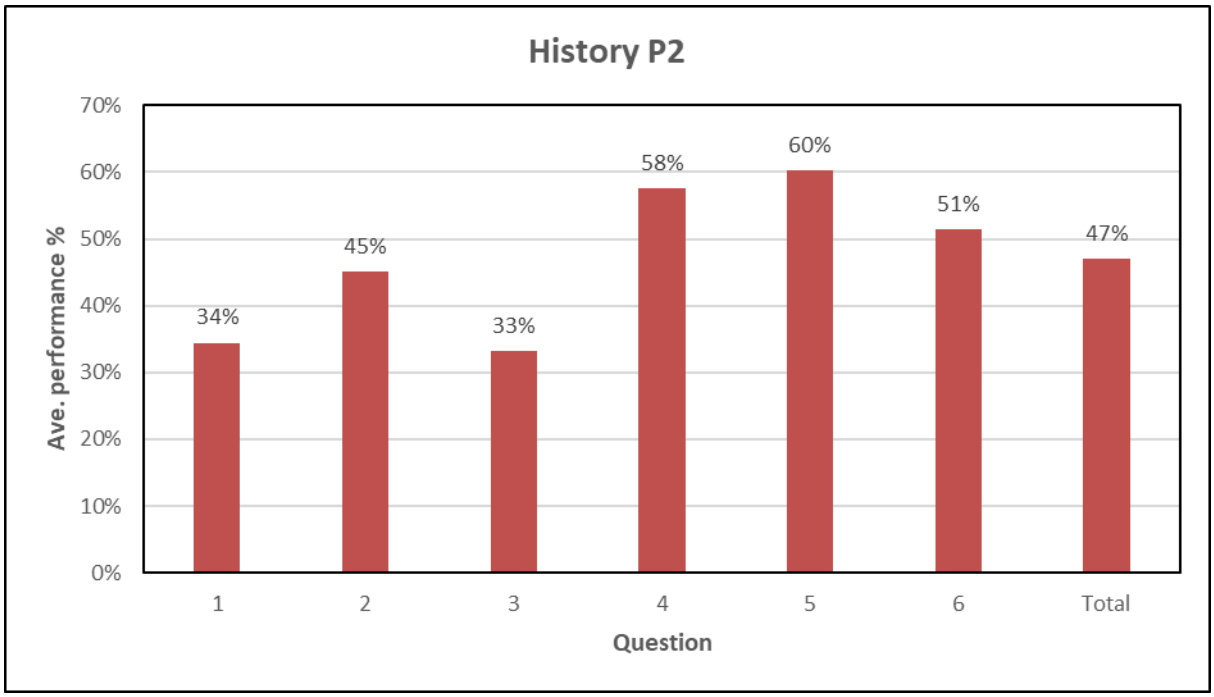
(j) In Section B there was a noticeable improvement in essay-writing as most candidates were very good at content knowledge while some of them also excelled not only in developing relevant introductions and conclusions but also in taking a line of argument and sustaining it throughout.

(k) Like in Paper 1, there were, however, a worrying number of candidates whose essay responses took the form of model (prepared) answers or regurgitation of content with no effort to write an original argumentative essay.

7.6 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

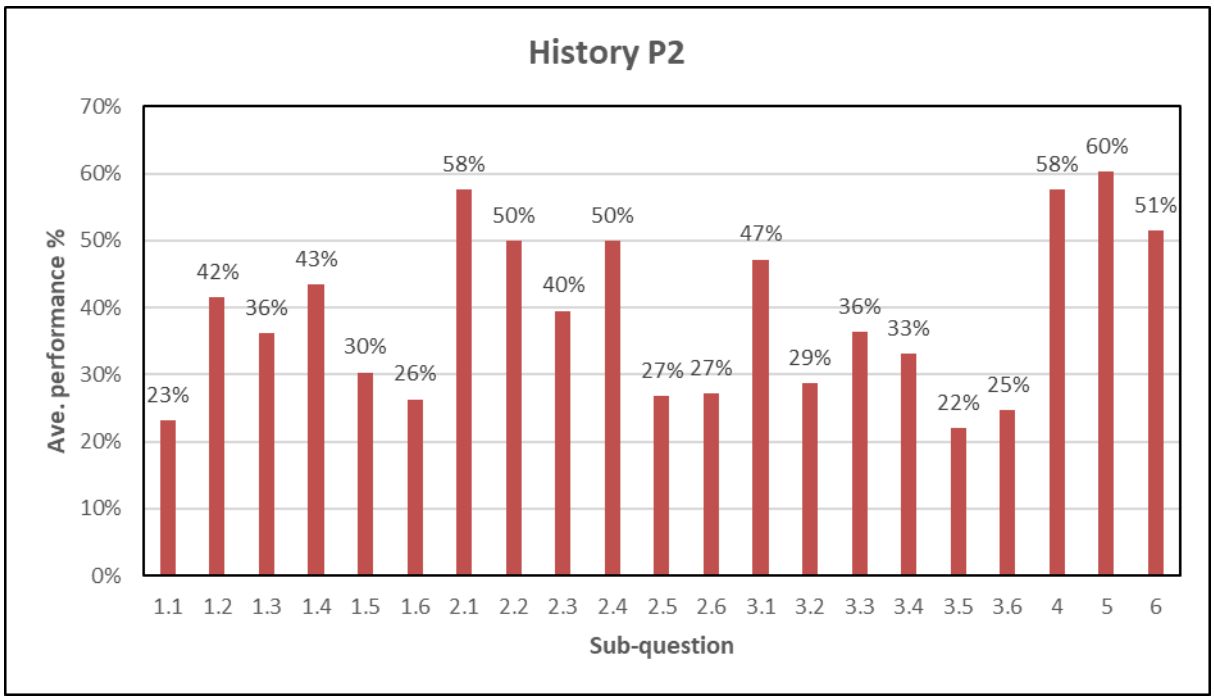
The following graph is based on data that was gathered from a random sample of candidates' scripts. While this graph might not accurately reflect the national averages, it serves as a useful tool in analysing how candidates performed in specific choice questions.

Graph 7.6.1 Average performance per question in Paper 2



Q	Topics
1	Civil Resistance, 1970s to 1980s: SA – The crisis of apartheid in the 1980s: Internal resistance to reforms
2	The coming of democracy to South Africa and coming to terms with the past – The TRC
3	The end of the Cold War and a New World Order, 1989 to the present – A new world order
4	Civil Resistance, 1970s to 1980s: South Africa: Challenge of Black Consciousness to apartheid state
5	The coming of democracy to SA and coming to terms with the past – Negotiated settlement and the GNU
6	End of Cold War and a New World Order: Impact of Gorbachev's reforms on Soviet Union and SA

Graph 7.6.2 Average performance per subquestion in Paper 2



Q	Skills assessed	Q	Skills assessed	Q	Skills assessed	Q	Skills assessed
1.1	1.1.1 Extraction 1.1.2 Interpretation 1.1.3 Concept (Define) 1.1.4 Interpretation	**2.1**	2.1.1 Extraction 2.1.2 Concept (Define) 2.1.3 Interpretation 2.1.4 Interpretation 2.1.5 Extraction	**3.1**	3.1.1 Concept (Define) 3.1.2 Extraction 3.1.3 Interpretation 3.1.4 Interpretation	**4.**	Essay
1.2	1.2.1 Interpretation 1.2.2 Extraction 1.2.3 Limitation	**2.2**	2.2.1 Extraction 2.2.2 Concept (Explain) 2.2.3 Interpretation 2.2.4 Extraction	**3.2**	3.2.1 Extraction 3.2.2 Interpretation 3.2.3 Interpretation 3.2.4 Concept (Explain)	**5.**	Essay
1.3	1.3.1 Extraction 1.3.2 Extraction 1.3.3 Interpretation 1.3.4 Concept (Explain)	**2.3**	2.3.1 Interpretation 2.3.2 Interpretation	**3.3**	3.3.1 Interpretation 3.3.2 Interpretation	**6.**	Essay
1.4	1.4.1 Extraction 1.4.2 Extraction 1.4.3 Interpretation 1.4.4 Interpretation	**2.4**	2.4.1 Extraction 2.4.2 Extraction 2.4.3 Interpretation 2.4.4 Reliability	**3.4**	3.4.1 Extraction 3.4.2 Interpretation 3.4.3 Extraction 3.4.4 Interpretation 3.4.5 Usefulness		
1.5	Compare Sources	**2.5**	Compare Sources	**3.5**	Compare Sources		
1.6	Paragraph	**2.6**	Paragraph	**3.6**	Paragraph		

7.7 DIAGNOSTIC ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

SECTION A: SOURCE-BASED QUESTIONS

QUESTION 1: CIVIL RESISTANCE, 1970s TO 1980s: SOUTH AFRICA: THE CRISIS OF APARTHEID IN THE 1980s – INTERNAL RESISTANCE TO REFORMS

Common errors and misconceptions

(a) Overall performance in Q1.1.2 was very poor. Candidates were unable to interpret why COSATU supported disinvestment against the apartheid government; this lost them the 2 marks.

(b) Q1.1.4 was inadequately answered as most candidates struggled to interpret the implication of the statement, *'that it [COSATU] was committed to one-person one-vote in a unitary South Africa'*, in the context of its role as a labour movement. Many of them provided one response, yet the question required two responses.

(c) In Q1.2.1 most candidates could only achieve 2 of the 4 marks because they were unable to give a full account of why the poster was created.

(d) Many candidates had difficulty in explaining the *limitation* of the source in Q1.2.3. A few who attempted the question managed to provide only one response and scored only 2 of the 4 marks.

(e) Though Q1.3.1 was an extraction, it was poorly answered, and candidates found it difficult to score the 2 marks.

(f) Q1.3.3 was poorly answered as many candidates could not interpret why the government prohibited COSATU from campaigning for the unbanning of the ANC.

(g) Most of the candidates were unable to explain the concept *sanctions* in Q1.3.4 within the context of COSATU's resistance against the apartheid government.

(h) Q1.4.3 was poorly answered as most candidates could not explain the meaning of the statement, *'COSATU was denied the "right to operate on the national political terrain" '*, in the context of restrictions imposed by the apartheid government. This type of question is perceived to be a difficult Level 2 question.

(i) Most candidates showed a huge improvement in their responses to the higher-order (Level 3) question which was based on the skill of comparing how sources support each other (Q1.5).

(j) The paragraph question, (Q1.6) was poorly answered as most candidates extracted the answer directly from the sources and could not write an original paragraph. Many candidates lacked the ability to identify relevant evidence from sources; were unable to write logical and coherent paragraphs; wrote paragraphs that were longer than the required length of 8 lines and were also unable to refer to the sources from which they picked their evidence. As a result, many candidates could only manage a Level 1 (0–2) and Level 2 (3–5) score and not a Level 3 (6–8) score.

QUESTION 2: THE COMING OF DEMOCRACY TO SOUTH AFRICA AND COMING TO TERMS WITH THE PAST – THE TRC

Common errors and misconceptions

(a) Q2.1.3 was poorly answered as most candidates could not explain why black South Africans demanded explanations from perpetrators, and not only disclosure by the National Party.

(b) Some candidates confused *amnesty* in Q 2.1.2 with *reconciliation*.

(c) Most candidates could not respond to Q2.1.4 correctly as they struggled to make sense of the implication of the statement. Most extracted the answer directly from the addendum.

(d) In Q2.1.5 some candidates could not score full marks because they could not extract the whole response.

(e) Q2.2.3 was also poorly answered by most candidates as they were unable to comment on why De Klerk did not act on the allegations, made by General Steyn, of third force activities. They found difficulty responding to this interpretation (Level 2) question.

(f) Many candidates could not answer Q2.3.1 as they did not understand the 'significance' of the phrase in its proper context.

(g) Very few candidates managed to score 2 marks out of the allocated 4 in Q2.3.2 because they could not figure out the implication of Tutu's words in context of the TRC process.

(h) Although Q2.4.2 was an extraction question, it was poorly answered because many candidates appear to have been confused by the length of the question.

(i) A few of the weaker candidates were unable to respond to Q2.4.3 correctly, either because of their inability to interpret or because they did not understand the term 'foot soldiers'.

(j) Q2.4.4 on the reliability of Source 2D was well answered by most candidates who managed to score the full 4 marks. This is a huge improvement in comparison to previous questions testing the same skill.

(k) Q2.5 was difficult for most candidates. They could not provide a comparison of the sources. A few managed to obtain only 2 of the 4 allocated marks. Some candidates literally referred to the characters in the visual source as 'fishes' in their answers which made it difficult to understand their responses. Candidates used all four sources instead of the two sources mentioned in the question.

(l) In Q2.6 most candidates extracted answers directly from the sources instead of explaining how the TRC exposed leaders of the apartheid government for gross violations of human rights. They just summarised the contents of sources without looking at the requirements of the question.

QUESTION 3: THE END OF THE COLD WAR AND A NEW WORLD ORDER, 1989 TO THE PRESENT – A NEW WORLD ORDER

Common errors and misconceptions

(a) Q3.1.1 was poorly answered by many candidates as they struggled to define the concept *globalised economies*. Most defined the concept *globalisation* instead. The main reasons for this could be linguistic barriers and a lack of understanding regarding the relevant content.

(b) Many candidates failed to respond to Q3.1.3 appropriately because they could not comment on how powerful nations and financial institutions benefitted from the implementation of globalisation 'from above'.

(c) Most candidates could not interpret and explain how experiencing globalisation 'from below' would be of advantage to Africa. (Q3.1.4).

(d) Some candidates misinterpreted Q3.2.2 and could not give correct responses**.**

(e) In Q3.2.3 many candidates failed to explain the implication of the given statement in the context of the IMF and World Bank.

(f) Most candidates failed to respond to Q3.2.4 which required an explanation of the term *structural adjustments* in the context of the policies of international financial institutions regarding African countries.

(g) Many candidates could not interpret Q3.3.1 correctly. They were expected to explain whether the given caption of the cartoon was appropriate for the cartoon itself. Most candidates found it difficult to understand the symbolism of elements in sources.

(h) Most candidates struggled to extract the relevant information from the source when attempting Q3.4.1.

(i) Responding to Q3.4.2 was also a challenge for many candidates. They were unable to comment on why globalisation is generally associated with development.

(j) Some candidates could not determine the *usefulness* of the source. They thought that by summarising each paragraph in the source, they were explaining its usefulness. The main reasons for the poor responses were an inadequate understanding of the content and unfamiliarity with these types of questions.

(k) In Q3.5 some candidates could not effectively compare the sources to determine their differences.

(l) Most candidates could not write logical and coherent paragraphs for Q3.6, instead they extracted incoherent information directly from the sources.

SECTION B: ESSAY QUESTIONS

QUESTION 4: CIVIL RESISTANCE, 1970s TO 1980s: SOUTH AFRICA–THE CHALLENGE OF BLACK CONSCIOUSNESS TO THE APARTHEID STATE

Common errors and misconceptions

(a) Question 4 was the most popular essay question. The performance ranged from average to good; however, many responses were generally descriptive or narrative in nature and lacked the originality required of an effective argumentative essay.

(b) Candidates generally had a basic understanding of the related content, rather than an in-depth understanding of how Black Consciousness organisations and community programmes used the BC philosophy to be self-reliant and liberate themselves psychologically.

(c) Most candidates seemed to have written prepared or model essays rather than argumentative responses.

(e) In most cases, the PEEL method was not properly applied and where attempts were made, it was more artificial with candidates simply repeating the question statement.

QUESTION 5: THE COMING OF DEMOCRACY TO SOUTH AFRICA AND COMING TO TERMS WITH THE PAST – NEGOTIATED SETTLEMENT AND THE GNU

Common errors and misconceptions

(a) Most candidates did not address the question adequately. They failed to maintain a consistent and structured line of argument. Their essays were generally of a descriptive rather than an argumentative nature.

(b) Most candidates did not know how to take a stance when the question required them to 'critically discuss'.

(c) Some candidates gave a generic discussion and left out 'violence' and 'conflict' as required by the question.

(d) In this question, candidates had challenges regarding chronology, dates and names.

(e) Most candidates seemed to have written prepared or model essays rather than argumentative responses. This is evident by some who took a stance as if the question asked, 'Do you agree?'.

(f) Some candidates confused the Declaration of Intent; Sunset Clause; Record of Understanding and Multiparty Negotiation Forum.

(g) Candidates did not use content to support their line of argument. They repeated the question statement at the end of every paragraph and as a result, the essay became monotonous and lacked originality.

QUESTION 6: END OF THE COLD WAR AND A NEW WORLD ORDER – IMPACT OF GORBACHEV'S REFORMS ON SOVIET UNION AND SOUTH AFRICA

Common errors and misconceptions:

(a) This is a very interesting topic and each year more and more candidates respond to the question. With enough support, the question provided a base for good marks.

(b) The question focused on how Gorbachev's reforms led to political reforms in South Africa, but many candidates focused on the disintegration of the Soviet Union (USSR) and some even on European countries like Poland etc. This was not a requirement.

(c) Some candidates had sufficient content knowledge but could not sustain the line of argument (LOA).

(d) A general and predetermined LOA was imposed on each paragraph even if it was not in line with the discussions in the said paragraph.

(e) There was a worrying over-reliance on the wording from the question statement when the candidates were constructing their introductions.

(f) Content (in the body of the essay) was parroted back without any attempt to respond to the argumentative demands of the essay questions.

(g) The conclusion was approached in the same deficient way as the introduction. There was no effort to provide an apt summation of the preceding argument.

7.8 SUGGESTIONS FOR IMPROVEMENT IN PAPER 1 AND PAPER 2

Teachers should:

(a) Ensure that the prescribed content, as contained in the *CAPS, Abridged Section 4 of CAPS* and the *2021 Examination Guidelines* document, are aligned to the Recovery Annual Teaching Plan (ATP) – 2023/2024.

(b) Incorporate suggestions for improvement in relation to teaching and learning from this Diagnostic Report into teaching and intervention as well as learning strategies.

(c) Teach learners the relevant themes using interactive, user-friendly teaching methodology and relevant notes so that they have an in-depth understanding of the content focus areas.

(d) Refer to past NSC question papers for practical examples on how the challenging assessment skills can be tested and incorporated into lessons.

(e) Incorporate more Level 3-type questions into their classroom activities.

(f) Foreground possible concepts to learners at the beginning of each new topic.

(g) Introduce learners to more content. This can be achieved by ensuring that learners read through the course material and by exposing learners to other sources such as documentaries and primary sources relating to each topic or content focus.

(h) Provide more regular informal assessment (Assessment for Learning) before the start of the new lesson to test the skills on the concepts and the content covered in the

previous lesson.

(i) Use previous question papers to expose learners to the types of questions that will be set in informal and formal assessment tasks as well as in examinations.

(j) Use previous question papers to practise the answering of Level 2 and 3 questions as part of informal assessment.

(k) Teach learners to look for key words (clues) in the addendum when answering the Level 1 questions as the answers will be in the source. Guide learners to extract, then write the full sentence as it appears in the addendum.

(l) Train learners on paragraph-writing skills. In responding to a paragraph, candidates must not only directly quote from the sources without using their own words. Liaise with language teachers to assist learners with this skill and remind the learners that the paragraph and language skills learnt in their Home and Additional Languages are applicable to how they respond to paragraph writing in all subjects.

(m) Expose learners to a variety of sources (e.g. visual, written, statistical, graphical and electronic) and provide opportunities to develop the related source-based skills such as extraction and selection of relevant information, interpreting, analysing, evaluating, comparing and contrasting sources, and ascertaining *limitations*, *usefulness* and *reliability* of sources.

(n) Ensure that the learners understand the story before they analyse and respond to the various questions posed.

(o) Develop a list of concepts (in your own words and within a context) pertaining to each theme that must be covered and apply these concepts throughout the year as each topic is addressed. This will assist learners to refine the skills needed to answer interpretative questions.

(p) Equip learners with the necessary skills related to the definition or explanation of concepts in an historical context: extraction, interpretation, analysis, ascertaining the reliability, limitations and usefulness of historical sources to improve their historical consciousness. These foundational historical skills must be underpinned by the teaching and learning of the prescribed content that has been delineated into source-based and essay questions. It is strongly advised that all historical concepts applicable to a specific topic be thoroughly unpacked and explained at the beginning of each topic, while the content focus is gradually unlocked.

(q) Use item analysis, especially after formal tasks, for positive feedback.

(r) Integrate ITC in their lessons to help learners understand the content and make provision for adaptation. Different sources of information like videos and written sources should be provided to enhance the knowledge of the learners. Develop user-friendly resource materials, especially for the new content areas such as Origins of the Cold War, Vietnam, Congo, Internal Resistance to Reforms and The Challenge of the Black Consciousness to the apartheid state.

(s) Essay-writing skills should be given priority. Different aspects of the essay like the introduction can be practised as an informal task to polish the skill. Different questions on the topic should be used to practise and consolidate the knowledge of the topic.

(t) Teach all the bullets that are indicated in the *Examination Guidelines*. The impact of

the collapse of Communism in the *Examination Guidelines* indicates that South Africa and the USSR must be done in-depth.

(u) Administer at least three assessment activities/tasks on source and essay skills per week, taking into consideration the quantity and quality of informal assessment tasks.

(v) Share model marked scripts with all learners to entrench an understanding of the demands of argumentative essays. This should be done to expose them to a high standard of argumentative essays, not to encourage rote learning. AVOID PREPARING MODEL ESSAY RESPONSES FOR THEIR SCHOOLS (CANDIDATES).

(w) Broaden and acquire more knowledge, by referring to more than one textbook while preparing for lesson presentations. Teachers should be aware of new resource materials such as media articles or newspaper supplements. Radio and TV features can also be used productively. Visit the DBE website as it has useful information on *Working with Sources* and the SBA document. Go to www.dbe.gov.za and follow the links for the NSC.

(x) Provide more exposure to the TRC, especially on how to work with sources and the use of case studies. It is advisable for teachers to visit the SAHO and the SAHA websites, which use case studies to highlight the workings of the TRC.

(y) Sharpen paragraph-writing skills by ensuring that learners do the following:

- Read the question and underline the key words.
- Study all sources to gain a thorough understanding of them.
- Underline the words in written sources and incorporate them in the writing of paragraphs.
- Start a paragraph with an opening statement that affirms or opposes the question and conclude the paragraph with a closing statement that supports the opening statement.
- Learners should not copy directly from the sources but use their own words, e.g. *According to Source 1A …*
- Ensure that responses are concise and to the point by structuring short sentences to frame the paragraph.
- Do not summarise information from sources without responding to the question.
- Always refer to the question when writing a paragraph.

(z) Encourage learners to use the 5 Ws in all historical inquiries, as listed below:

Question to ask	**Purpose**
Who?	To gain knowledge about historical figures
What?	To equip learners with historical knowledge
When?	To study historical periods
Where?	To learn where historical events took place
Why?	To learn why historical events took place

On completion of a topic or specific content focus, learners should be trained to acquire skills by asking them to apply the 5 Ws to the content being taught.

(aa) Set skills-focused tasks to assess specific cognitive levels, such as making comparisons between sources so that answers can be structured in the context of the question posed.

(bb) Develop the requisite essay-writing techniques by:

- Coaching learners on how to unpack the question posed by identifying four key aspects, namely the action verb used (e g. explain to what extent, do you agree or critically discuss), content focus, context of the content focus and time frame.
- Underlining the key words in the question. If the question demands that a stance be taken, this must be stated in the introduction.
- Training learners on the stages of essay writing:
  - ✓ Introduction: Stance and contextualisation.
  - ✓ PEEL method to be applied in the body of the essay – in each paragraph.
  - ✓ Line of argument: How the event contributed to the question (Link).
  - ✓ This will prevent the learners from copying the question statement as a line of argument.
  - ✓ Conclusion to link with the introduction.
- Using the *PEEL* writing template listed below to teach learners how to write an argumentative essay:
  - **Point**: State the main point by indicating a line of argument. Each paragraph should include a point that sustains the major point (line of argument) that was made in the introduction.
  - **Explanation**: Explain the point or line of argument by demonstrating how it relates to the question posed (line of argument).
  - **Example/Evidence**: Select and provide appropriate examples/evidence to support the line of argument.
  - **Link**: Ensure that the concluding statement in each paragraph is linked to the line of argument taken in the introduction.

(cc) Attend content and assessment workshops, subject meetings or subject briefing sessions, firstly, to familiarise themselves with the requirements and demands of the *CAPS* and the *2021 Examination Guidelines* document and, secondly, to use recent and relevant teaching and learning methods in classrooms.

(dd) Ensure that learners have a broader exposure to the related content to develop an in-depth understanding of the topic.

(ee) Equip learners with the skills required to write history essays rather than providing them with prepared essays.

(ff) Refrain from using only the bullets of the essay in the marking guidelines but should consult other information used in the textbook to get a broader perspective on the topic because learners study bullets as they appear in the marking guidelines.

(gg) Undertake the necessary research on the latest historical trends in the teaching and learning of History.

(hh) Interact with relevant resources such as books, historical journals, internet sites, DVDs, YouTube videos, Google, SA History Online (SAHO), the History Channel, television news channels and newspapers in order to meaningfully convey the prescribed content to learners.

(ii) Instil the following steps when teaching learners how to compare evidence in two sources to answer questions on either similarities or differences:

- Read the question thoroughly and underline the main point.
- Study the contextualisation of both sources and underline its main context.

- Check the author and the purpose of each source, after studying the contextualisation of the source. This will give a clue about the perspective and intention of the source, which could then be compared to the other source.
- Detect opposing viewpoints by identifying the rival organisations or ideologies that the two sources represent. If opposing viewpoints form part of the contextualisation of the two sources that are compared, learners must underline both viewpoints, because the different perspectives displayed by each source will already provide the learner with one option of the answer.
- Familiarise themselves with the information in the sources mentioned. The 5 Ws stated earlier can be used in this regard.
- Have a clear understanding of what a visual source entails by finding dates, numbers, historical figures, facial expressions, text or any other object relevant to the question.
- Provide the required responses for the question in either of the following ways:
  - In answering a question about similarities, learners could use the following: *Both sources refer to …* or *Source 1A mentions …* and *Source 1B shows …*
  - When comparing information for differences or contrast, it is crucial that learners state: *Source 1A says … WHILE Source 1B states …* or *In Source 1A we read… WHILE Source 1B shows …* or *Source 1A is written from a communist perspective (Russian point of view) WHILE Source 1B is written from a capitalist perspective (US point of view)*.
- Highlight the point that will be credited for each response that refers to both sources, i.e. 2 (two) marks. To get full marks in a question with a mark allocation of (2 x 2) (4), learners should provide TWO responses that refer to both sources, but on two different aspects.

Subject advisors should:

(a) Assist teachers with an understanding of the expectations of the *Examination Guidelines*.

(b) Thoroughly study and understand the *2023 Diagnostic Report* and then conduct workshops with teachers on the findings of the *2023 Diagnostic Report*, as well as challenging topics.

(c) Plan, prepare and conduct intensive content and assessment workshops on problematic areas as identified in this report with FET History teachers.

(d) Conduct assessment training on how to mark higher-order source-based questions (usefulness/reliability/limitations, compare and paragraph writing) and essay questions. A sample of learner responses should be used to train teachers on how to use the levels of rubrics and matrix to assess paragraphs and essays correctly. Orientate teachers on the principles and criteria of how to mark source-based, paragraph and essay questions which are found on pages 2 to 6 of the NSC November 2023 Marking Guidelines.

(e) Vigorously monitor and quality assure the assessment tasks administered by teachers.

(f) Develop appropriate resource materials with which both teachers and learners can interact on an on-going basis.

(g) Train teachers on how to set quality assessment tasks in order to standardise tasks that constitute the Programme of Assessment.

(h) Encourage teachers to show learners how to write original argumentative essays and to avoid preparing essays for learners (EITHER AT CIRCUIT OR DISTRICT LEVEL)

(i) **SUGGESTIONS FOR TEACHING RELIABILITY, USEFULNESS AND LIMITATIONS OF A SOURCE:**

For proper evaluation of these aspects, the **contextualisation of the source** should include the following:

- Who the **author (owner)** of the source is: this should not only address the name but also the position or profile of the author;
  - Identifying the author as a chairperson of an institution or as the President of a country enhances the *reliability* or *usefulness* of a source.
  - A source by an author from a rival ideology might suggest *NOT Reliable* or *NOT Useful* depending on the context of the question/If the source is biased/one-sided, that would be a *Limitation* of the source – again, depending on the context of the question.
- **When (date)** the source was written:
  - It is important to check whether the date of the source was at the time of the event or whether it was too far away from the time of the event; The date of a source that is very close to the event can be regarded as *Reliable* or *Useful,* though not always the case because the source can still be biased.
  - A source far removed from the time of the event, giving a perspective different from the original event might be a deliberate distortion, suggesting *Limitation* of the source.
- **Where (the venue/place)** the source was created:
  - A speech given in an official venue, e.g. Parliament or at an official function held anywhere, would give credit to the *Reliability* or *Usefulness* of a source.
  - Publications in the US national newspapers like *New York Times* or *The Washington Post* might be pro-capitalist *(Reliable or Useful)* or be anti-communist *(Not Reliable of Not Useful)* depending on the context of the question).
  - Publications in newspapers from the Soviet Union, e.g. *Pravda or Izvestia*, might be pro-communist or anti-capitalist, depending on the context of the question).
- The **purpose** of writing (publishing) the source or **why** the source was published:
  - If the purpose is to strengthen internal processes of an institution or to outline how a project would unfold, that could be positive *(Reliable or Useful)* but if it paints a negative picture about a rival ideology, it could be considered as full of propaganda and therefore be regarded as biased (having *limitations*).
  - Is the source an opinion piece of writing (biased) or factual information *(Reliable/Useful)*?
- Can the information be independently **corroborated?**
  - Refer to other sources within the Addendum that corroborate information in the question *(Reliability or Usefulness)*.

Teacher Development should:

(a) Identify teacher needs and gaps as outlined in the *2023 Diagnostic Report*.

(b) Assist teachers on how to plan, prepare and present interactive History lessons.

(c) Ensure that new teachers are supported and guided on subject content and teaching

methodology.

(d) Equip teachers with the latest teaching trends and techniques in History.

(e) Train newly appointed teachers on how to mark, especially on how to mark essay questions.

(f) Prepare teachers to apply the principle of Language Across the Curriculum (LAC) in their subject.

(g) Train school principals on the implementation of quality management systems (QMS) that, among others, would include management of curriculum implementation.

CHAPTER 8

LIFE SCIENCES

The following report should be read in conjunction with the Life Sciences question papers of the November 2023 NSC examinations.

8.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Life Sciences examination in 2023 decreased by 19 983 compared to that of 2022.

There was also a pleasing improvement in the pass rate this year. Candidates who passed at the 30% level improved from 71,5% in 2022 to 75,6% in 2023. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 49,0% to 52,3%.

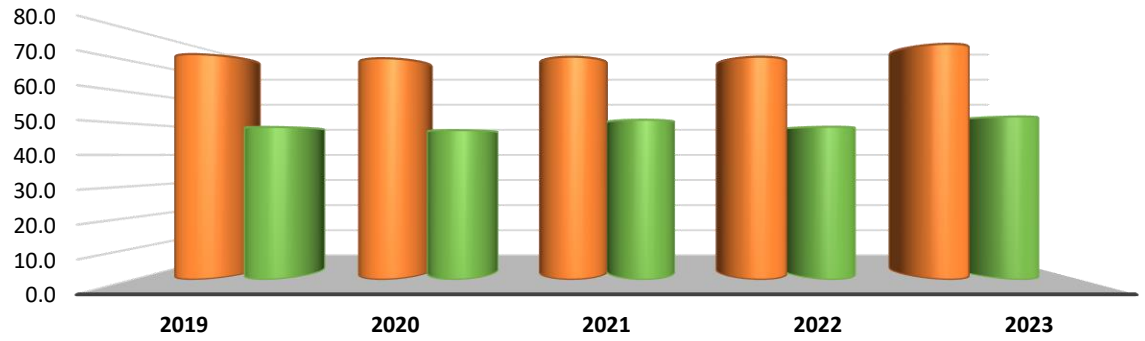
The percentage of distinctions over 80% declined from 2,5% in 2022 to 2,3% in 2023. Given the decrease in the size of the 2023 cohort, this converts into a decrease in the total number of distinctions from 9 975 to 8 718.

Despite the decline in distinctions, the various commendable intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 8.1.1 Overall achievement rates in Life Sciences

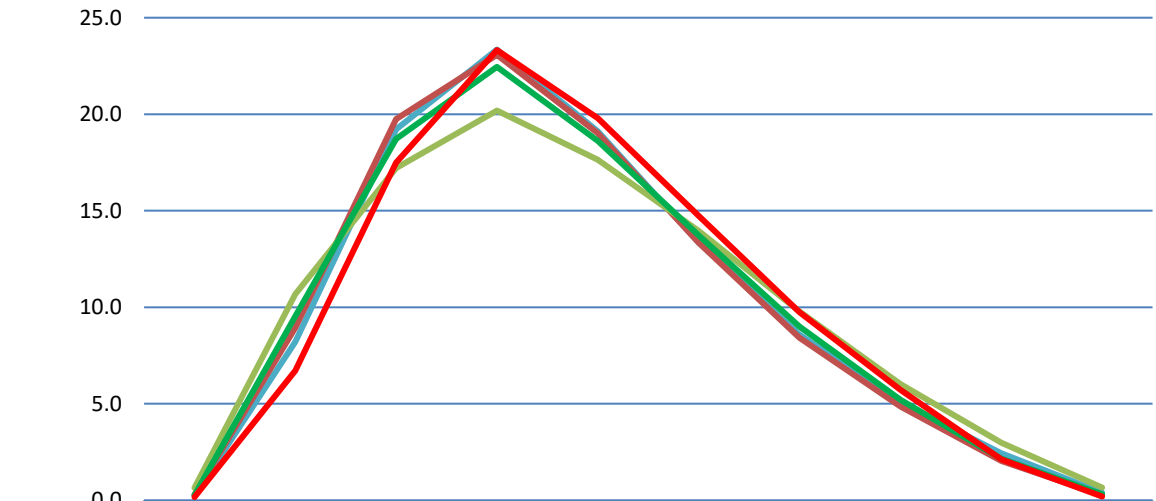
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	301 037	217 729	72,3	147 436	49,0
2020	319 228	226 700	71,0	153 028	47,9
2021	384 216	274 584	71,5	197 017	51,3
2022	399 007	285 217	71,5	195 620	49,0
2023	379 024	286 708	75,6	198 309	52,3

Graph 8.1.1 Overall achievement rates in Life Sciences (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	72.3	71.0	71.5	71.5	75.6
% achieved at 40% and above	49.0	47.9	51.3	49.0	52.3

Graph 8.1.2 Performance distribution curves in Life Sciences (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.2	8.2	19.2	23.3	19.1	13.4	8.6	5.1	2.4	0.4
2020	0.3	8.9	19.7	23.1	19.0	13.3	8.4	4.9	2.0	0.3
2021	0.6	10.7	17.2	20.2	17.6	14.0	9.8	6.0	3.0	0.7
2022	0.3	9.5	18.7	22.5	18.6	13.7	9.0	5.2	2.2	0.3
2023	0.2	6.7	17.5	23.3	19.8	14.7	9.8	5.7	2.1	0.2

General comments on Paper 1 and Paper 2

Both Papers 1 and 2 assess the application of scientific investigation skills in different scenarios. These skills includes the design and evaluation of scientific investigations. Scientific investigations are introduced in Grade 10 and should be thoroughly reinforced before Grade 12. It would serve the learners well if they could master these skills. It is encouraging to note that the majority of candidates have developed the necessary skills in *data analysis, data presentation* (drawing of graphs) and calculations; however, the application of knowledge to practical situations is an area that requires further strengthening.

The ability of candidates to articulate their responses successfully is assessed in questions that require extended writing. Therefore, parts of the paper will involve lengthy texts and will assess the ability to read and extract relevant information, apply knowledge and articulate precise responses. Learners need to be trained not to be intimidated by these questions and should practise active reading and comprehension skills.

8.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

(a) Some candidates did not read or follow the instructions as stated in the questions, e.g. in multiple-choice questions they would choose more than one option.

(b) Candidates struggled to meet the response demanded of instruction verbs such as 'name', 'state', 'describe', 'explain' and 'calculate'. Misinterpretation of the instructional verbs is reflected by low learner performance. e.g. *explain the change*: candidates did not describe the change that occurred and only gave reasons for its occurrence; therefore, they lost a mark.

(c) Many candidates underestimated the importance of correct spelling. The incorrect spelling might change the meaning of the response and candidates could lose marks. For example, correct spelling is necessary when writing terms such as *glucagon* and *glycogen*; *chorion* and *choroid*; *urethra* and *ureter.*

(d) Some candidates gave more responses than were required by the question. If only two answers were required, only the first two answers were marked according to Marking Principle 2 of Life Sciences.

(e) Poor performance was still evident in questions based on scientific investigations despite the support provided in the diagnostic reports of previous years. Candidates gave generic responses to questions that required specific information on the investigation provided.

(f) Many candidates did not know how to calculate *percentage decrease* and incorrectly rounded off the answer.

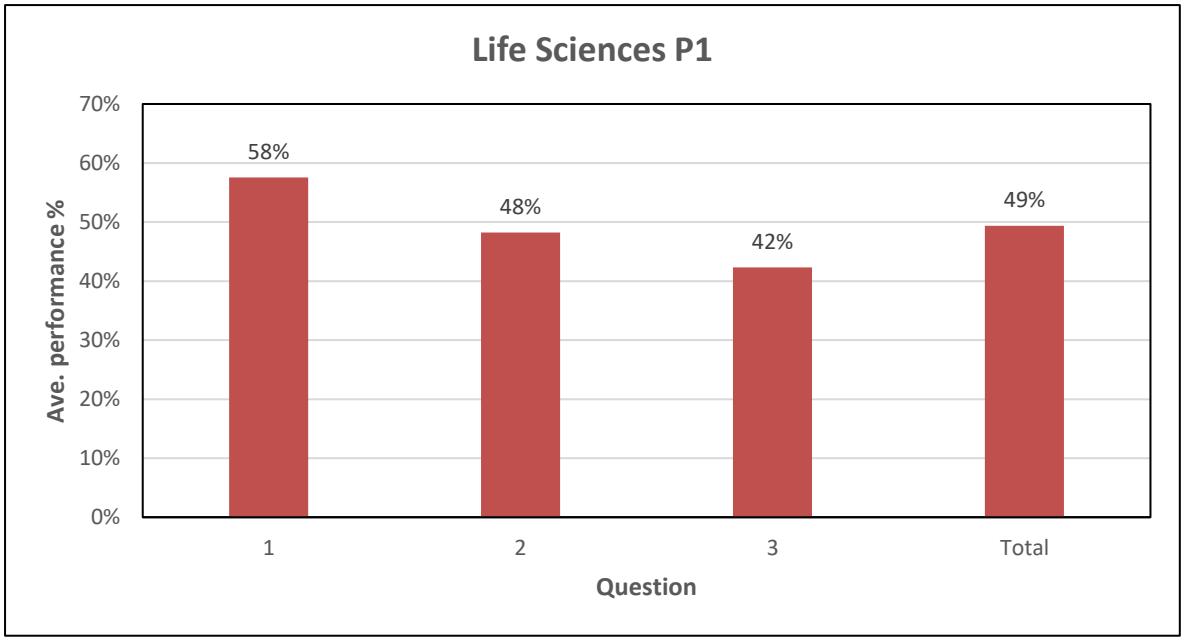
(g) The sections on *reproductive strategies* and *plant responses to the environment* were poorly answered. These are relatively short topics and it appeared as if some teachers merely glossed over them. It is important to concentrate on these two topics, as they are a compulsory inclusion in the paper for 8 and 13 marks respectively.

8.3 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 1

Based on the item analysis, the weakest performance by candidates was recorded in the subquestions on the *Reproductive strategies*, *Nervous system, Homeostasis and Skin temperature* and *Plant responses to the environment*.

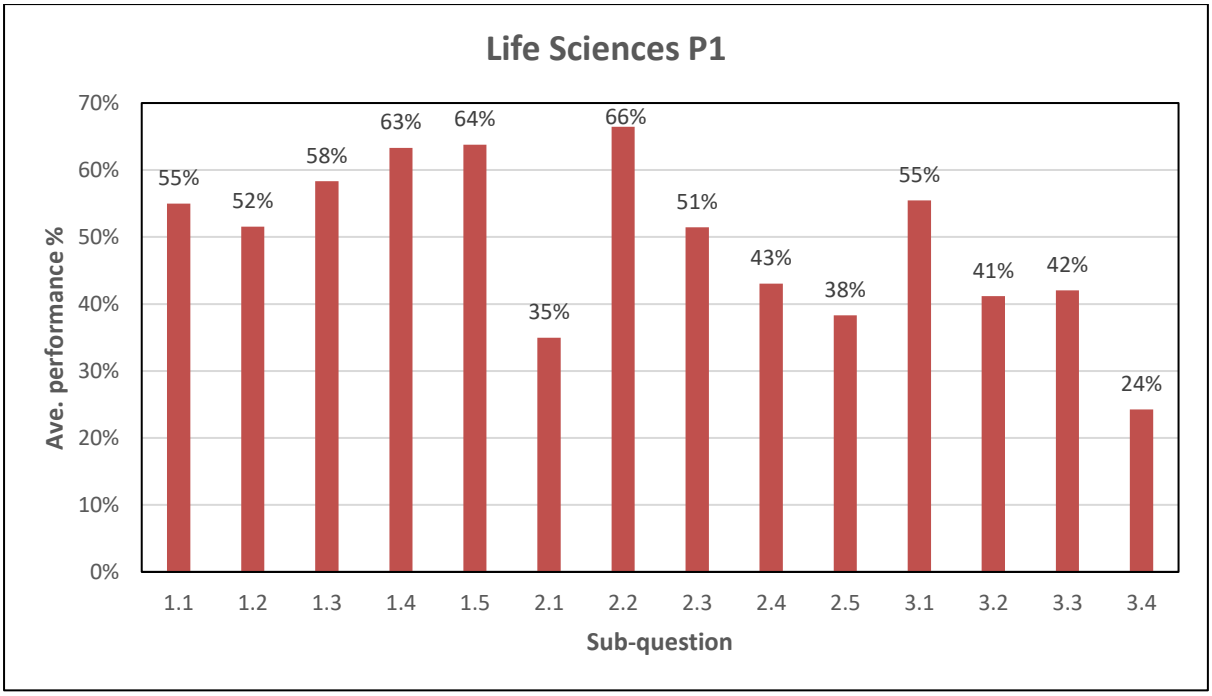
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 8.3.1 Average performance per question in Paper 1



Q	Topics
1	Multiple choice, Terminology, Matching Items, Receptors – the human ear, human reproduction (fertilisation and development of the zygote)
2	Reproductive strategies, male reproductive system, female reproductive system (ovarian cysts and hormones) central nervous system (brain) and knee-jerk reaction
3	Scientific investigation on Alzheimer's disease, adrenal gland and homeostasis (salt and water levels), exercise and skin temperature, scientific investigation on the effect of auxins.

Graph 8.3.2 Average performance per subquestion in Paper 1



Sub-Q	Topic	Sub-Q	Topic
1.1	Multiple-choice question	2.3	Female male reproductive system - ovarian cysts and hormones
1.2	Terminology	2.4	Nervous system – brain injuries
1.3	Matching items	2.5	Knee-jerk reaction
1.4	Receptors – the human ear	3.1	Investigation – Alzheimer's disease
1.5	Fertilisation and development of the zygote	3.2	Adrenal gland and homeostasis (salt and water levels),
2.1	Reproductive strategies – amplexus	3.3	Skin temperature and exercise
2.2	Male reproductive system	3.4	Scientific investigation – plant responses on auxin

8.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: MULTIPLE-CHOICE, TERMINOLOGY, MATCHING ITEMS, THE HUMAN EAR AND FERTILISATION AND DEVELOPMENT OF THE ZYGOTE

Common errors and misconceptions

(a) Some candidates did not read or follow the instructions as stated in the questions; e.g. in multiple-choice questions they would choose more than one option.

(b) In Q1.1 candidates performed well except for Q1.1.4, Q1.1.5 and Q1.1.7 where they had to apply their knowledge. They were not familiar with the following:

- Breathing muscles as the *effectors* to control the *carbon dioxide levels* in the *blood* in Q1.1.4;
- Role of *auxins* to kill *broad-leaved weeds* in Q1.1.5;
- Term *oval-shaped head* of *sperm* in Q1.1.7.

(c) Since spelling continues to be a problem, the following points in Q1.2 mentioned in previous reports are still valid. Candidates:

- Wrote *ureter* instead of *urethra* in Q1.2.2, *glucogen/glucagon* instead of *glycogen* in Q1.2.4, *chorion* instead of *choroid* in Q1.2.6 and *epidermis* instead of *epididymis* in Q1.2.8.
- Used the abbreviation *PNS* instead of the full-term *Peripheral Nervous System* in Q 1.2.3. It was also evident that the branches of the nervous system had not been well taught.
- Were required to identify the *placenta* as the micro-filter during pregnancy Q1.2.5 and many wrote the *chorionic villi* which is only part of the answer.
- Gave incomplete answers, e.g. *myelin* instead of *Myelin sheath* in Q1.2.7.

(d) In Q1.3.1 many candidates selected 'both' as the option. They could not distinguish that *oogenesis* produces 1 mature gamete (ovum) and 3 polar bodies while *spermatogenesis* produces 4 mature gametes (sperm cells).

(e) Incomplete answers were given by candidates in Q1.4.1 (a) as 'semi-circular' instead of *semi-circular canals*. Afrikaans candidates also gave the answer as 'halfmaanvormige sirkels' which is incorrect. In Q1.4.2 candidates were required to give both the letter and the name of the part. Some candidates only gave either the letter or only the name of the part and they also did not know which part of the ear was filled with air in Q1.4.2(a).

(f) In Q1.5.1(a) many candidates gave the description 'fertilised ovum' and in Afrikaans 'bevrugte ovum' instead of the term *zygote*.

QUESTION 2: REPRODUCTIVE STRATEGIES, MALE REPRODUCTIVE SYSTEM, FEMALE MALE REPRODUCTIVE SYSTEM (OVARIAN CYSTS AND HORMONES) CENTRAL NERVOUS SYSTEM (BRAIN) AND KNEE-JERK REACTION

Common errors and misconceptions

(a) Poor performance was evident in Q2.1, which was based on reproductive strategies. Candidates lost marks because they:

- Did not read the explanation in the stem of the question and struggled to identify that the diagram depicted *external fertilisation* for Q2.1.1. This might be because the diagram with the male frog on top of the female gave many the idea that internal fertilisation took place. They could not link the release of many (over 6 000) eggs with *external fertilisation*.
- Could not get 2 marks for Q2.1.2 which required the explanation of why the eggs would not survive on land. They gave the effect (eggs will dry out) and not the cause (have no shells). They also referred to *predation* as a reason for fertilised eggs not being able to survive on land which was incorrect because there would be predation in water as well.
- Could not present their responses in a cause-and-effect way in both questions Q2.1.3 and Q2.1.4. They often gave the effect of the strategy without the cause. They also confused the concepts 'increasing chances of fertilisation' in Q2.1.3 with 'reproductive success' in Q2.1.4.

(b) Most candidates performed well in Q2.2. However, some candidates lost marks in:

- Q2.2.2 because they only described the function of the secretion of the prostate gland, e.g. *Neutralises the acidity in the vagina* without stating why it is able to carry out this function; therefore, they lost a mark.
- Q2.2.3(b) because they:
  - Drew an incorrect type of graph (they did not know the difference between a histogram and a bar graph);
  - Provided an incomplete caption or a caption containing only one variable;
  - Drew more ranges of age groups than was required in the question;
  - Wrote the label on the Y-axis without including the units;
  - Plotted the co-ordinates incorrectly, and
  - Drew bars of different sizes.

(c) Some candidates performed well in Q2.3. However, most candidates:

- Could not apply their knowledge in Q2.3.3 to explain why the hormone was high. They could not link the correct hormone to the explanation and also confused the functions of different hormones.
- Could not make the connection to the *negative feedback mechanism* between *progesterone* and *FSH*, in Q2.3.4. They did not understand that *the corpus luteum cyst would prevent the corpus luteum from degenerating*. The corpus luteum would therefore continue to produce progesterone which would inhibit the *pituitary* from producing *FSH* and therefore no follicle would develop, and no ovum would be produced. Candidates referred to the thickening of the endometrium to prevent a woman falling pregnant.

(d) Most candidates did not perform well in this question.

- Although Q2.4.2 was a lower-order question, many candidates failed to obtain marks as their descriptions fell short of being complete. They looked at the diagram to explain where they saw the *corpus callosum*. No marks were credited if they stated that it was underneath the cerebrum. They wrote that it joined the two hemispheres of the *brain* instead of the *cerebrum*. The *cerebellum* also has two hemispheres.
- Q2.4.4(a), (b) and (c) on brain injuries suffered during a rugby match posed a great challenge. Most candidates gave generic functions of the different parts of the brain rather than applying their knowledge to link the function of the affected part of the brain with what the learner in the scenario was experiencing. Some candidates referred to the function of the cerebellum as '*controlling balance*' instead of '*co-ordinating voluntary muscle movement*', therefore controlling balance.

(e) Poor performance in Q2.5.3 can be attributed to the fact that candidates were unable to read this question with understanding. They had to describe the pathway of the impulse in this specific *reflex arc* and not a general *reflex arc*. The *knee-jerk* has no *interneuron*. If candidates included the *interneuron* in the pathway, they lost marks as the *sequence* was incorrect. Candidates were also required to state where the *receptor* was found (in the patella tendon) as well as mentioning the *effector* (quadriceps muscle).

QUESTION 3: SCIENTIFIC INVESTIGATION ON ALZHEIMER'S DISEASE, ADRENAL GLAND AND HOMEOSTASIS (SALT AND WATER LEVELS), EXERCISE AND SKIN TEMPERATURE, SCIENTIFIC INVESTIGATION ON THE EFFECT OF AUXINS

Common errors and misconceptions

(a) In Q3.1 some candidates:

- Confused *Alzheimer's disease* with *multiple sclerosis* in Q3.1.1.
- Answered 'age' as a genetic risk factor instead of 'family history' in Q3.1.2(b).
- Gave generic answers for Q3.1.3 and Q3.1.4. Candidates were required to be specific in their answers for a scientific investigation, e.g. 37 females were used and not 'a large sample size'. Scientists repeated the investigation 3 times a week for 3 months and did not just repeat the investigation.
- Found it difficult to analyse why the investigation did not provide enough information to write a conclusion in Q3.1.5. They did not understand the role of a control in an investigation.

(b) In Q3.2.3 and Q3.2.4 some candidates could not associate the correct hormone, *aldosterone*, with the homeostasis of the *salt levels* and *ADH* with *osmoregulation*. When explaining a *homeostasis* question, many candidates left out the key words such as 'more', 'increases', 'reabsorbed' and 'in the blood'. When the adrenal gland is stimulated it produces *more aldosterone*, which *increases the permeability* of the renal tubules, and *more salt* is *reabsorbed into the blood*. Candidates were not credited if they stated that salt concentration increases in *the body*. Many candidates confused the terms, *reabsorption* and *absorption*.

(c) In Q3.3 many candidates lost marks because:

- They referred to *thermoregulation* as temperature regulation in Q3.3.1. *Thermoregulation* specifically refers to the *homeostatic* mechanism involved for humans to bring about the change in skin temperature.
- In Q3.3.3 they did not know the formula for percentage decrease, they confused it with percentage increase. Most candidates scored only 1 mark for (x100). And did not know the rules of rounding off, e.g. 5,347 can be rounded off to two decimals as 5,35 or one decimal as 5,3 (the 7 does not influence the 3) or whole number as 5. Some candidates first rounded off to 5,35 then 5,4 which is an incorrect rule of rounding off.
- In Q3.3.4 they did not read the question with understanding. It clearly stated that they must explain the roles of the sweat glands and the capillaries in lowering the *skin temperature* from before to directly after exercise. Many candidates explained what happened to *body temperature* before and after exercise They were not sure whether to write *vasodilation* or *vasoconstriction*. They, therefore, wrote that before exercise *vasoconstriction* took place and after exercise *vasodilation* took place. No marks were awarded if they wrote both accounts as this was a higher-order question which required them to analyse the graph and explain what caused the decrease in *skin* temperature during exercise.

(d) Q3.4 showed the lowest performance in the paper because:

- Most candidates wrote the *effect of auxin* as the *independent variable* in response to Q3.4.1(a). This was incorrect as the *effect* of auxin is the growth of the lateral branches.
- Many candidates confused *reliability* with *validity* in Q3.4.2.
- In Q3.4.3 some candidates could not identify the setup as a *control* and could not explain the purpose of the control.

- In Q3.4.4 most candidates wrote the aim instead of using the aim to formulate a conclusion.

Suggestions for improvement on teaching content and concepts for P1

(a) Paper 1 is about the physiology of humans; therefore, diagrams of different structures/organs are an integral part of this paper. The structures/organs are best taught using annotated diagrams. Diagrams without labels should be given to learners to identify the parts and their functions.

(b) Teachers should focus on *all* the functions of *auxins* in plants and not only *phototropism* and *geotropism*. Wherever possible, the investigations involving plant responses to the environment should be done. If not, then learners must be exposed to the practical design of these experiments through worksheets, notes, slides and past examination papers.

(c) Teachers must place more emphasis on scientific investigations and their design. Learners should be taught the value of each design element and how it contributes to a valid investigation.

(d) Some old terminology in Afrikaans e.g. *bytestis* instead of *epididimis* should be discouraged.

(e) Learners should be encouraged to read questions with proper understanding. There may be subtle differences that alter the response required, e.g. Q1.3.1 *the process that produces four mature gametes in humans from a single diploid cell* can only *be spermatogenesis*, and not *oogenesis where only one mature ovum with three polar bodies* is formed.

(f) Learners must be sensitised to the fact that the diagrams they encounter in the examination may differ slightly from the ones they encounter in the classroom.

(g) Teachers should understand that homeostatic control in the body occurs when that factor is high or low and not when everything is within normal range in blood. The misconception by learners that there should have been *vasoconstriction* before, in order for *vasodilation* to occur after, has been most prevalent in this paper.

(h) Teachers should also note that the semen:
- Contains nutrients – which provide energy for the movement of the sperm;
- Is alkaline – to neutralise the acidic conditions of the vagina; and
- Contains mucus – which is important for the mobility of the sperm in the female reproductive system.

8.5 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

General comments

(a) The poor performance of some candidates emanated from:
- Not reading nor following instructions in each question/subquestion;
- The lack of deeper understanding of the Life Sciences content or concepts;
- Giving generic responses to questions that required specific information;
- Incorrect spelling that may have changed the meaning of the response;
- Writing incorrect scientific notations and concepts;
- Inability to apply knowledge in a new scenario;
- Failure to see the link between two concepts;
- Poor understanding of instructional verbs 'state', 'explain' and 'describe', and
- Misconceptions about some scientific facts.

(b) Poor performance was evident in questions based on scientific investigations where candidates gave generic responses to questions that required specific information on the investigation provided.

(c) Most candidates could not respond to questions which required basic mathematical skills.

(d) Some candidates regarded the marking guidelines of past question papers as definitive or exhaustive and failed to understand that scenarios might be different, depending on the demands of a question. Therefore, candidates needed to identify the requirements of a question to respond to them appropriately.

(e) Most candidates failed to understand that the mark allocation indicated the time that must be spent on that particular question, not necessarily the number of responses required – unless indicated as such, e.g. Q1.4.4; Q2.3.2; Q2.5.2; Q2.5.3(a).

(f) Some candidates lost marks on questions requiring extended writing as they merely listed phrases or wrote flow diagrams and did not describe or explain concisely, therefore, they were not awarded full marks.

(g) Candidates could not link the content in the Grade 12 curriculum with the knowledge acquired in the preceding years, e.g. *thrombosis* leads to artery blockage, therefore, less transportation of oxygen or nutrients, also, transitional species linking to *archeopteryx* in Grade 10.

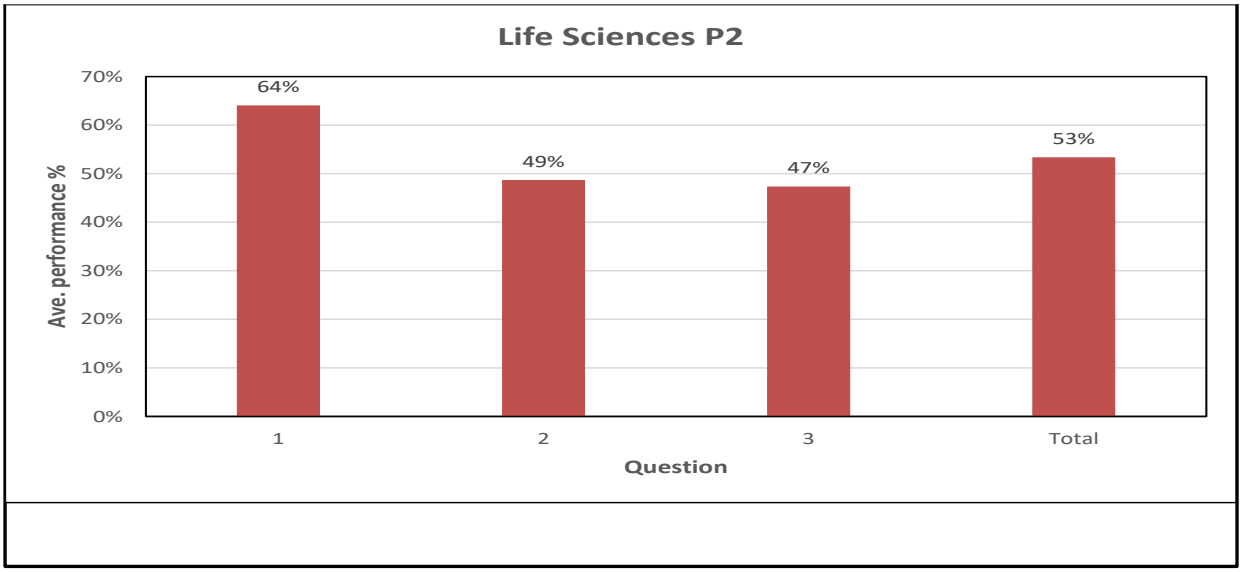
(h) Many candidates lost marks when they gave two responses when only one was required, e.g. 1.1, 1.3, 1.4.6, 2.1.5(a), 2.5.1(b), 3.5.4, etc. The 'mark the first one' rule did not apply in these types of questions.

8.6 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

Based on the item analysis, the weakest performance by candidates was recorded in the subquestions on *Gene mutation*, *Artificial selection* and *Genetic engineering* and *Human evolution*.

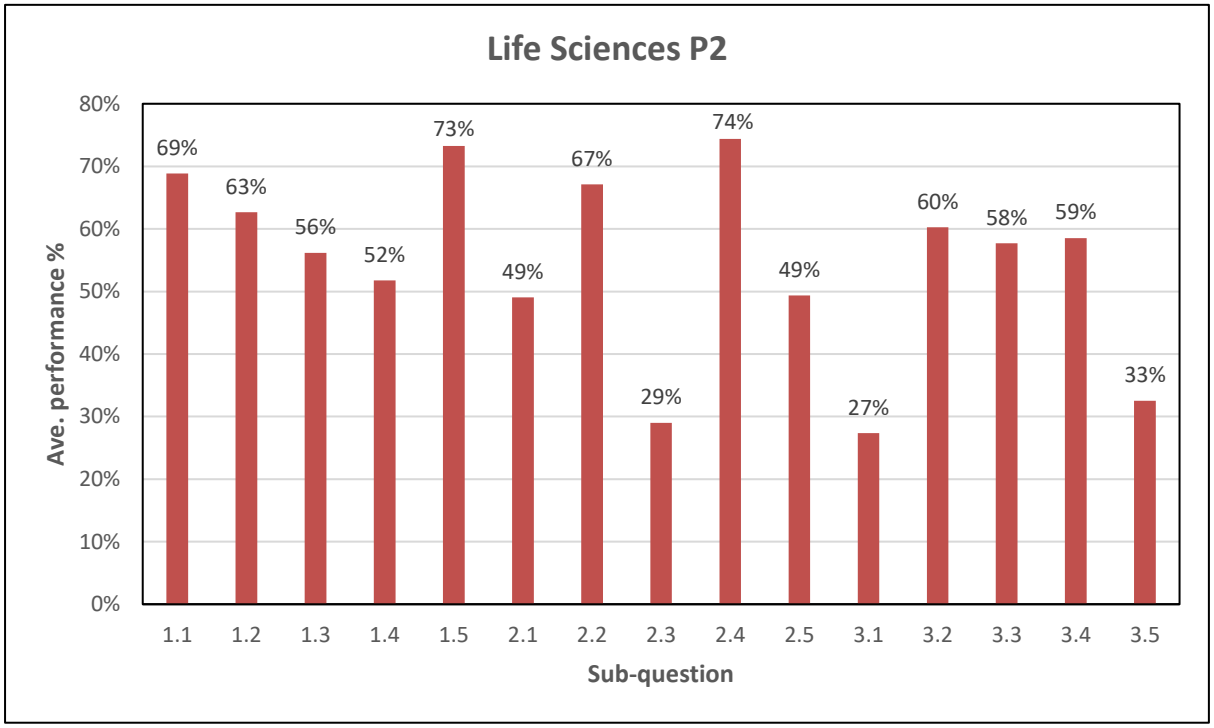
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 8.6.1 Average performance per question in Paper 2



Q	Topics
1	Multiple choice, Terminology, Matching items, Pedigree diagram (Blood Groups), Protein Synthesis
2	Meiosis, DNA Replication, Mutation on DNA, Monohybrid cross, Dihybrid cross
3	Artificial selection and Genetic engineering, Natural Selection, Scientific investigation - evolution, Phylogenetic tree, Human evolution

Graph 8.6.2 Average performance per subquestion in Paper 2



Sub-Q	Topic	Sub-Q	Topic
1.1	Multiple-choice question	2.4	Monohybrid cross
1.2	Terminology	2.5	Dihybrid cross
1.3	Matching items question	3.1	Artificial selection and genetic engineering
1.4	Pedigree diagram	3.2	Natural selection
1.5	Protein synthesis	3.3	Scientific investigation - Evolution
2.1	Meiosis	3.4	Phylogenetic tree
2.2	DNA Replication	3.5	Human Evolution
2.3	Mutation on DNA		

8.7 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: MULTIPLE-CHOICE, TERMINOLOGY, MATCHING ITEMS, PEDIGREE DIAGRAM, PROTEIN SYNTHESIS

Common errors and misconceptions

(b) In Q1.1 candidates performed well, except for Q1.1.1 and Q1.1.9.

- In Q1.1.1 many candidates confused the scientists who discovered specific aspects of the structure of DNA.
- In Q1.1.9 a number of candidates did not know the South African scientists and the fossil they discovered.

(c) In Q1.2 candidates lost marks because they:

- Frequently referred to *double helix* as *double stranded helix* in Q1.2.3;
- Referred to *peptide bond* as *polypeptide bond* or *peptile bond* in Q1.2.4;
- Confused *incomplete dominance* with *complete* or *co-dominance* in Q1.2.6;
- Referred to *chromatin network* as *chromatin* only in Q1.2.8; and
- Left Q1.2.7 *(nucleoplasm)* and 1.2.9 (*cytokinesis)* unanswered.

(d) Most candidates performed well in Q1.3. However, some candidates lost marks because they did not follow the instructions, e.g. *A/B* instead of *Both A and B.* Some candidates did not seem to know the genetic disorders caused by gene or chromosomal mutations in Q1.3.1. Furthermore, some candidates did not know that plants have mitochondria in Q1.3.3.

(e) In Q1.4.4 most candidates did not give ALL the possible *genotypes* as indicated in the questions and seem to have been confused by the mark allocation. The scientific notations of blood groups were incorrectly written by some candidates in Q1.4.5 as *Iili* or I^OI^O.

(f) Q1.5 was well answered by most candidates. Some candidates showed their thought processes in Q1.5.3, which could have disadvantaged them as they only needed to show the correct answer. Q1.5.6 some candidates wrote the specific type of sugar on mRNA as *pentose*, which is a collective name for all the types of sugars making up the *nucleic acids.*

QUESTION 2: MEIOSIS, DNA REPLICATION, MUTATIONS ON A DNA, MONOHYBRID CROSS, DIHYBRID CROSS

Common errors and misconceptions

(a) Most candidates found Q2.1 challenging as:

- They could not state how *metaphase I* is different from *metaphase of mitosis* in Q2.1.5(b). Most candidates gave events taking place in metaphase and could not distinguish how metaphase I is different from metaphase of mitosis. A number of candidates did not know the events taking place in *mitosis* which had been taught in Grade 10 and are prescribed in the Grade 12 curriculum. Many candidates incorrectly referred to the *bivalents* lying at the equator in metaphase I.
- In Q2.1.6 they could not apply the knowledge of *abnormal meiosis* when given a new scenario or did not understand what the question required. Most candidates explained how non-disjunction led to Down syndrome as in past papers.

(b) In Q2.2 most candidates performed well; however, there were some noticeable errors by some candidates such as:

- Not describing the *double helix* nature of the DNA that unwinds;
- Not mentioning the step, 'Forms two separate strands' after unzipping; and
- Stating that two DNA strands are formed instead of '*Two identical DNA molecules are formed*'.

(c) Q2.3 was poorly answered by most candidates. They lost marks because:

- In Q2.3.1 they quoted the sentence directly from the text and could not answer why it was a DNA molecule.
- In Q2.3.3 they did not describe all the terms (*autosome*, *dominant* and *allele*) and mainly focused on the *dominant* part alone. Some candidates confused

somatic cell and *autosome* or incorrectly stated that *autosomes* were *chromosomes* for body characteristics.
- In Q2.3.4(a) they could not apply the knowledge on *gene mutation* in a new scenario; most gave generic answers without referring to the specific *codons* and *amino acids* that changed. Many candidates did not refer to a 'change in the *sequence* of amino acids.' Most candidates confused this question as asking for *natural selection* because of the concept 'resistance to warfarin' – which has been asked in the context of natural selection in rats, in past papers.
- In Q2.3.4(b) they did not understand the effects of mutations on individuals as harmful/harmless/neutral/beneficial and could not explain how this would affect the humans if they had thrombosis. Many stated that a person would die, which is a secondary effect. Some did not understand the question and suggested that a new drug needed to be developed. Some stated that the person would have a blood clot in the artery (thrombosis) which was part of the question.

(d) Q2.4 was well answered by most candidates. Errors were picked up in some candidates' scripts. They wrote:
- the *phenotype* of the parents and offspring as *heterozygous* for *polydactyly*, thus indicating the *genotype* instead of the *phenotype*;
- P_1 and F1 as well as the processes meiosis and fertilisation in incorrect places;
- 'Fusion' instead of 'fertilisation'; (This will not be accepted in future because 'fusion' does not indicate what is being fused during this process.)
- A ratio instead of the percentage of offspring that would be *polydactyly* as required;
- The *genotype* as sex-linked inheritance.

(e) Q2.5 on the *dihybrid cross* was challenging for most candidates. They lost marks because they:
- Wrote the genotype of one parent while the question asked for the *genotypes of the parents* in Q2.5.1(a) and Q2.5.3;
- Gave either the genotype (*heterozygous* round and white) or only one *phenotype* or all the *phenotypes* involved in the cross for Q2.5.1(b);
- Confused the *genotype* in the *gametes* as the *genotypes* in the *somatic cell* or wrote incomplete *gametes* (the question asked for ALL possible gametes) in Q2.5.2(a);
- Wrote a cross, comma or noticeable space between the *alleles* of different characteristics for the genotype of a parent e.g. BB x DD (this represented an incomplete or co-dominance); BB DD; BB, DD in Q2.5.1(a) and Q2.5.3.

QUESTION 3: ARTIFICIAL SELECTION AND GENETIC ENGINEERING, NATURAL SELECTION, SCIENTIFIC INVESTIGATION (EVOLUTION IN PRESENT TIMES), PHYLOGENETIC TREE AND HUMAN EVOLUTION

Common errors and misconceptions

(a) Q3.1 scored the lowest marks in the paper.
- Most candidates lacked the ability to apply the process of artificial selection for the given scenario, in Q3.1.1. They were generic in their responses and many confused this process with genetic engineering.
- A number of candidates did not know how to calculate ‘how many times’; many calculated the percentage increase while some calculated the difference, in Q3.1.3.

- The majority of the candidates could not differentiate between the process of artificial selection and genetic engineering.

(b) Many candidates performed fairly in Q3.2. There were some common errors and misconceptions which caused some candidates to lose a minimum of 3 marks. These candidates:

- Referred to variation in species/organisms. Natural selection occurs in a population.
- Wrote 'desirable characteristic' instead of 'favourable characteristic'.
- Stated that organisms 'that could not adapt' instead of 'that were not adapted'.
- Indicated that these organisms 'became extinct' instead of 'died out'.
- Stated that organisms 'produce' instead of 'reproduce'.
- Indicated 'ALL the individuals in the next generation' instead of 'There will be a greater proportion of individuals.'

(c) Scientific investigations in Q3.3 remained a challenge for candidates. Many candidates lost marks because they:

- Incorrectly identified the variables while some wrote the 'effect of' for an independent variable in Q3.3.1. Whilst some candidates are swopping the independent and dependent variable.
- Failed to write the factors as outlined in the procedure. They stated 'same species of lizards' instead of 'similar species of lizards' and 'were kept in the same environment' instead of 'were kept in an environment similar to their habitats'.
- Gave generic responses such as 'same measuring tool'.
- Wrote the whole sentence in the procedure and did not identify the exact variable in that sentence
- Wrote a generic response for Q3.3.3 or incorrectly stated 'the *investigation* was done 5 times' instead of 'the *measurements* were done 5 times.' Some candidates stated that 'calculating an average' increased the reliability.
- Did not write the relationship between the two variables to show the variable that influenced the other in Q3.3.5. Some wrote terms like 'directly proportional': In Life Sciences they are required to be explicit in the nature of the relationship between the variables. In some cases, the candidates did not include all aspects (height of the head, bite force).
- Failed to articulate the degree of comparison between 3 species for the data given. They used 'stronger' instead of 'strongest' in Q3.3.7

(d) Q3.4 was answered fairly well by many candidates: Candidates lost marks because they:

- Did not write the full scientific name of a species in both Q 3.4.1 and 3.4.5, e.g. *'erectus"* instead of '*Homo erectus*';
- Converted their answer in Q3.4.2 to a thousand years instead of the million years as specified by the instruction in the question; and
- Could not explain the relationship between the change in the brain volume and the development of tools. Most candidates wrote about an increased brain size leading to higher thought processes.

(e) Q3.5 was poorly answered by most candidates. Candidates lost marks because they:

- Could not describe a *transitional species* in Q3.5.3. This indicated that they were not familiar with the concept of a transitional species. Therefore, they were further disadvantaged in Q3.5.4 and 3.5.5 which were follow-up questions. They incorrectly described it as having characteristics of *two organisms* instead of 'having common*/*intermediate characteristics between two species (ancestral

and predecessor)'.
- Were not familiar with the term 'prognathism', in Q3.5.6, because most wrote about the general structural differences between African apes and humans. Some candidates focused their response on *A*. *sediba* and failed to explain the significance of the change for *H*. *sapiens.*

Suggestions for improvement on teaching content and concepts for P2

(a) Teachers must ensure that the learners are provided with the historical information relating to the discovery of DNA:
- The structure of DNA was discovered by Watson, Crick, Wilkins and Franklin.
- Franklin and Wilkins discovered the double helix nature of DNA from X-ray diffractions.
- Watson and Crick discovered the base pairing nature of DNA using the information from Franklin and Wilkins.
- Only Watson, Crick and Wilkins received the Nobel Prize since Franklin had passed on.

(b) Learners should also be knowledgeable about SA scientists who discovered fossils:
- Broom: Mrs Ples (*Australopithecus africanus*)
- Dart: Taung child (*Australopithecus africanus*)
- Clarke: Little Foot (*Australopithecus spp.*)
- Berger: Karabo (*Australopithecus sediba*)

(c) Learners must understand that *mitosis* is similar to *meiosis II*. Therefore, teaching the differences between Meiosis I and Meiosis II/Mitosis might prove easier for the learners to comprehend.
E.g. Differences between *Metaphase I* and *Metaphase II/metaphase of mitosis*:
  - *Metaphase I*: *Homologous chromosomes* are lying at the equator *in pairs;*
  - *Metaphase II/metaphase of mitosis*: Chromosomes are lying at the equator in a *single row.*

It should be noted that the example above describes the difference between these phases. (How would you identify one from the other?)
Bivalents is a term used to describe homologous chromosomes when the *chromatids* overlap during crossing over. When they separate, they are no longer called *bivalents*. Learners must state that *chromatids of homologous chromosomes* 'overlap', and not that they 'cross-over', when describing 'crossing over'.

(d) Mutations have three effects or consequences on an individual or population:
- Harmful – can result in sickness/disorder which might eventually lead to death but not necessarily, e.g. Down syndrome, colour blindness, etc.
- Harmless/Neutral – Have no effect on an individual, no protein change occurs and therefore the characteristic is not affected.
- Beneficial – the resulting characteristic from the mutation can cause organisms in a population to survive when the environment changes since it can be a favourable characteristic.

(e) A gene mutation would occur either during *replication* or *transcription*. Learners must be taught how to identify this in a given context. The following are the expected steps when responding to a question to explain how the mutation affected the protein:
- A change in the sequence of nitrogenous bases on mRNA (apply to given context);
- This caused an amino acid to be replaced (apply this to a given context);
- Resulting in a change in the sequence of amino acids;

- Therefore, forming a different/same protein formed (apply this to a given context)

(f) Biotechnology involves the manipulation of genes of an organism. Especially genetic engineering, artificial selection, e.g. when a 'donkey is interbred with a horse' or when a 'gene is taken from one organism and inserted in another organism'. The difference in these processes is that artificial selection involves interbreeding of whole organisms, whilst genetic engineering involves a single gene inserted in an organism.

(g) Higher thought process is a function of the cerebrum whether its volume is large or small. But when the brain volume increases, there must be an indication that the higher thought processes also increased. Most organisms have some intelligence that enables them to survive in their environments.
It is therefore important for learners to state that an *increased* brain volume led to an *increased* intelligence/*increased* higher thought processes and therefore, more complex tools were developed as a result.

(h) A *transitional species* displays the intermediate/common characteristics between a predecessor (which comes before it) and a descendent (which derives/comes after it). Although this concept is not explicit in the Grade 12 curriculum, it is a requirement in order to understand the theory of the punctuated equilibrium versus the opposing theory. The evidence for both these theories is based on the evidence provided by the *transitional species*. Also, the understanding of the significance for human evolution of the fossils found in SA involves the discovery of *A. sediba* which is thought to be a *transitional species*. Therefore, it is important for learners to know and understand the concept of a *transitional species* so that they are able to apply the information in a given source-based question.

(i) The principles of taxonomy need to be thoroughly covered in Grade 10 in preparation for *human evolution* in Grade 12. The terms *genus, species* and *genera* as the plural of *genus* must be consolidated thoroughly. Learners must be instructed in scientific nomenclature; that when a species name is requested that both the *genus* and species must be provided.

(j) The term *prognathism* is explicit in the *Examination Guidelines*. When given a skull, learners must be able to state whether it is *prognathous* or *non-prognathous* (as in humans). But when comparing two species that are *prognathous*, they must state which one is more *prognathous* and which one is less *prognathous.*

General suggestions for improvement for both P1 and P2

(a) A greater emphasis on practical work and practical tasks of good quality in Grades 10 and 11 will assist in preparing learners more adequately for questions based on scientific investigations. Learners must be challenged to design their own investigations by being given an 'observation', 'hypothesis' or 'aim'. This is especially important since knowledge of scientific investigations is assessed in both Paper 1 and Paper 2.

Learners must be warned about avoiding these common errors when designing a scientific investigation:

- Incorrectly writing the independent variable as 'effect of temperature'. This will lead to loss of a mark. The effect of 'indirectly' refers to a dependent variable.

- Using 'result' instead of the 'aim' to extract the variables can sometimes lead to an incorrect dependent variable. Sometimes the results indicate how the dependent variable was measured, e.g.
  Aim: To determine the influence of *temperature* on the *growth of chicken*
  The table below shows the results of the investigation

Temperature (ºC)	**Average mass of the chicken** (g)

- A conclusion must come from altering the aim to show the relationship between the variables. Learners must understand that the different types of data (continuous and discontinuous data) require different ways of stating a conclusion.
  Life Sciences requires learners to be explicit when writing these conclusions and not use terms such as 'directly proportional' or 'inversely proportional'.
- The difference between validity or reliability.
  - *Validity of the investigation:* All the factors that can influence the results are kept constant. Learners must be encouraged to use the term *'validity'* as opposed to *'fairness'*.
    The *validity* of the investigation increases/is improved when all the factors that can influence the results are kept constant and only the independent variable is changed.
  - *Reliability of the results:* When the investigation is repeated or when the sample size is increased will the same results be achieved?
    Reliability of the results is increased/improved when an investigation is repeated or *measurements of the dependent variable* are repeated or when the investigation is done over a long period of time or when a sample size is increased.

  Learners must understand these terms to be able to apply them in any given investigation.

- The purpose of a control or a baseline.
  - A 'control' is a group in an experiment that does not receive the treatment of the independent variable tested.
  - A 'baseline' is the measurement taken before the treatment of the independent variable tested.

  Both these factors serve as a point of reference to compare, if it is the independent variable that causes the results that will be obtained.
  Learners need to be taught to identify when an experimental setup is a control and what its purpose is in the given investigation or how a control can be set up for a given investigation.

- Learners must be taught the skill of drawing different graphs, from Grade 10, and they must be exposed to the criteria used to assess a graph. This includes how to write a heading. Headings in a graph must be explicit and not written with 'vs/versus'.

- Calculations form an integral part of data interpretation and analysis; therefore, learners must be able to do simple calculations when required to do so. Examples of calculations expected in Life Sciences:

- Calculating a difference (by how much): $\text{final value} - \text{initial value}$
- Calculating percentage: $\frac{\text{value given}}{\text{total}} \times 100$
- Calculating percentage increase: $\frac{\text{final value} - \text{initial value}}{\textit{initial value}} \times 100$
- Calculating percentage decrease: $\frac{\text{initial value} - \text{final value}}{\textit{initial value}} \times 100$
- Calculating 'by how times': $\frac{\text{final value}}{\text{initial value}}$
- Calculating average: $\frac{\text{Sum of all values given (add them)}}{\text{total number of the value given}}$

Learners are expected to round off their answers to two decimal points unless stated otherwise. (This instruction will be included in the examination instructions to candidates in future.)

(b) Learners should be provided with the official *2021 Examination Guidelines* before a particular topic is taught. This will give them clear guidance on the terminology to be mastered per subtopic, as well as the content that they should know and learn for the examinations. Learners are overwhelmed with information presented on social media, different textbooks and study guides. The *Examination Guidelines* will guide the learners in extracting information that is relevant for the Grade 12 NSC Life Sciences examination.

(c) Teachers are advised to consult the *Diagnostic Reports* and Internal Moderator reports constantly as they are invaluable tools in planning and teaching content.

(d) It is important to teach learners to write only one letter in multiple-choice questions. If a learner gives more than one letter as a response, he/she will not be awarded any marks.

(e) Biological terminology can only be mastered through practice after each section is taught. Learners must be made to write these terms out, so that they can hone their spelling skills.

(f) Instructional verbs such as 'state', 'explain' and 'describe' should be thoroughly explained to the learners. Learners should be exposed to questions requiring them to describe/explain to enable them to know the difference. School and district-based assessments must cover the full range of instructional verbs to afford learners the opportunity to master the type of responses required.

(g) Open-ended questions should be asked in both formal and informal tasks for learners to understand that when opinions are requested, these should be relevant.

(h) Learners should be frequently exposed to questions involving lengthy texts, so that they can practise reading with understanding and constructing precise responses.

(i) Learners should be encouraged to read the stem of the question, as this will guide them on the responses expected from the information given.

(j) Learners must be taught not to give their responses in a negative form, e.g*. what is an autosome*, response: 'it is not a sex chromosome'.

(k) Teachers must use questions from past papers to expose learners to examination-type questions pitched at different cognitive levels and levels of difficulty and not only rely on textbook activities and so that they do not provide generic responses to questions that require application.

(l) Teachers should extract topic-focused questions from previous years' question papers and use these in informal assessments during the course of teaching that particular topic. This will reinforce content knowledge and will ensure that learners have acquired all the objectives set for the specific topic.

(m) Teachers should make an effort to pronounce terms correctly. Often learners spell the words as they hear them. Learners should practise writing out the terminology.

(n) Teachers must support learners to learn the sequence of steps describing *natural selection* or *DNA replication* found in the *2021 Examination Guidelines*. Learners should also be able to apply this generic process to the source material provided. Special care needs to be taken to tailor their answers to the context of the question given.

(o) Teachers and learners should understand that the Grade 12 NSC qualification in Life Sciences is a three-year qualification and content from the preceding years may be examined within the context of the Grade 12 curriculum. This means that the content and concepts from the preceding years, e.g. *organic compounds*, *cell structure*, *photosynthesis*, *respiration*, *systems of the body* (with particular reference to *homeostasis* and the *negative feedback), population ecology*, *classification (including binomial nomenclature) and history of life on Earth (including the significance of a transitional species)* etc., may form the basis of the knowledge examined within the context of the Grade 12 curriculum. Therefore, the teaching and assessment in Grades 10 and 11 should simulate and emphasise what is expected in Grade 12.

(p) Subject advisors should organise more content workshops (every term) to share best practices and to update teachers who were not at the marking centres, on the latest developments in the subject.

(q) Whilst textbooks are a valuable part of teaching and learning, teachers are expected to mediate their use, so that learners are exposed to the correct scientific information and they are not disadvantaged by the incorrect facts in some textbooks.

(r) Teachers and learners must understand that ALL the knowledge and skills as outlined in the *CAPS* and *Examination Guidelines* will be assessed as per the prescripts of the policy and this means that no topic is more important than the other.

CHAPTER 9

MATHEMATICAL LITERACY

The following report should be read in conjunction with the Mathematical Literacy question papers of the November 2023 Examinations.

2.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Mathematical Literacy examination in 2023 decreased by 28 170 compared to that of 2022. There was a decline in the pass rate this year.

Candidates who passed at the 30% level declined from 85,7% in 2022 to 82,3% in 2023. There was a corresponding change in the pass rate at the 40% level from 60,4% to 56,7% over the past two years.

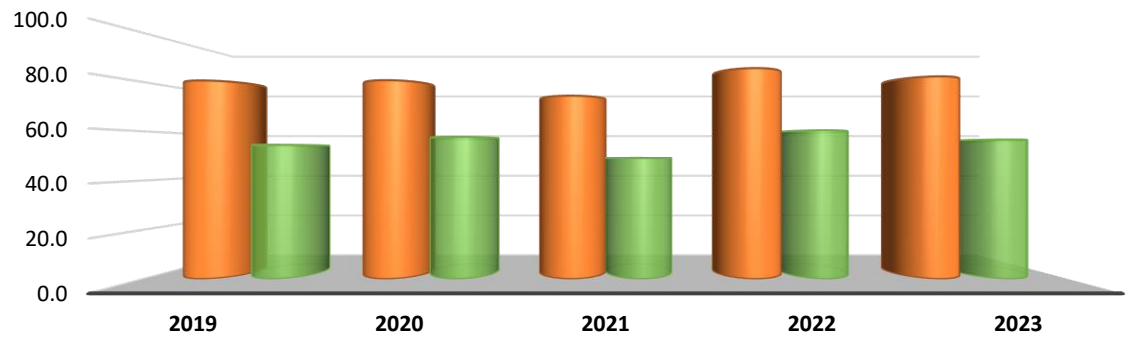
There was a slight improvement in the percentage of distinctions over 80%, which increased from 1,7% in 2022 to 2,1% in 2023. Given the decrease in the size of the 2023 cohort, this converts into an increase in the total number of distinctions from 7 650 to 8 859.

The various intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates contributed to the overall results in the subject.

Table 9.1.1 Overall achievement rates in Mathematical Literacy

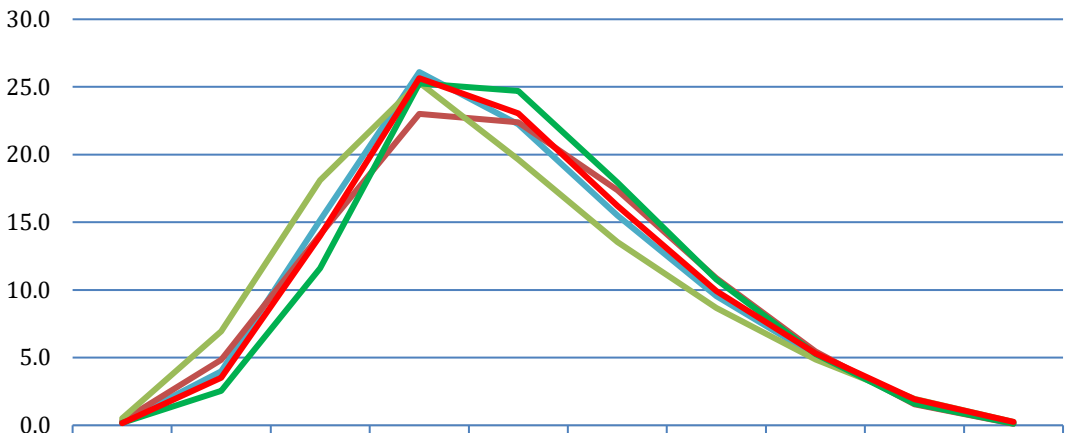
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	298 607	240 816	80,6	162 877	54,5
2020	341 363	275 684	80,8	197 131	57,7
2021	441 067	328 382	74,5	216 692	49,1
2022	450 005	385 515	85,7	271 830	60,4
2023	421 835	347 227	82,3	239 045	56,7

Graph 9.1.1 Overall achievement rates in Mathematical Literacy (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	80.6	80.8	74.5	85.7	82.3
% achieved at 40% and above	54.5	57.7	49.1	60.4	56.7

Graph 9.1.2 Performance distribution curves in Mathematical Literacy (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.2	4.0	15.2	26.1	22.2	15.5	9.5	5.1	1.9	0.2
2020	0.3	4.8	14.1	23.0	22.4	17.4	10.9	5.5	1.6	0.1
2021	0.5	6.9	18.1	25.3	19.6	13.5	8.7	4.9	2.0	0.3
2022	0.2	2.5	11.6	25.3	24.7	17.9	10.8	5.3	1.6	0.1
2023	0.2	3.5	14.0	25.6	23.0	16.2	9.9	5.3	1.9	0.2

9.2 GENERAL COMMENTS ON PAPER 1 AND PAPER 2

(a) **Terminology:** Candidates still struggle with the definitions of commonly used terms in Mathematical Literacy such as *radius* and *median*. Learners should compile a topic-wise glossary of terms at the back of their notebooks with a brief but clear definition next to each term. A separate notebook may also be kept for this purpose. By the end of the year, all learners should have a comprehensive glossary of all the relevant terms.

(b) **Level 4 questions were once again poorly answered.** Teachers are advised to scaffold these questions by reading through and interpreting the requirements of each question with learners.

(c) **Use of past NSC papers:** Firstly, it must be noted that past examination question papers should not be used to teach new content. They must be used for revision purposes only. Past papers cannot replace the *CAPS* document and *Examination Guidelines*. Teachers can, however, adapt certain questions for use in class. Secondly, teachers should ensure that learners revise questions that define mathematical terms, especially in each context.

(d) **The importance of formative testing:** Short, informal formative tests must be used to build the confidence of learners in all topics. If learners do their corrections, it provides them with immediate feedback and an understanding of the mark allocation. The less challenging sections in each of the questions in the NSC Mathematical Literacy papers, particularly Question 1, can be used as confidence boosters.

(e) **Previous recommendations: Candidates seem to have not taken heed of previous recommendation.** Teachers should consult past *Diagnostic Reports* to establish if some topics or concepts are repeatedly indicated as problematic to most learners. For example, it has been noted over time that learners' basic mathematical knowledge is problematic, and this includes learners' inability to work with large numbers or understand the concept of time.

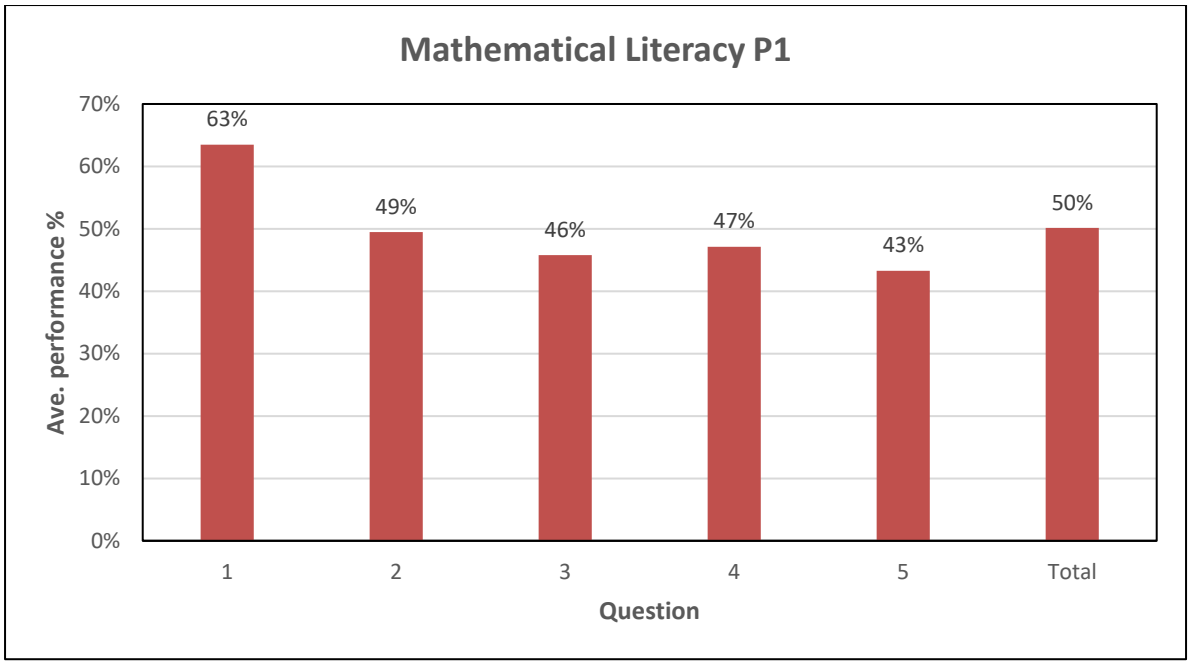
(f) Candidates once again lacked the skill of reading information from a graph, table, etc. These should be practised and integrated into classroom and homework activities throughout the FET phase.

9.3 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

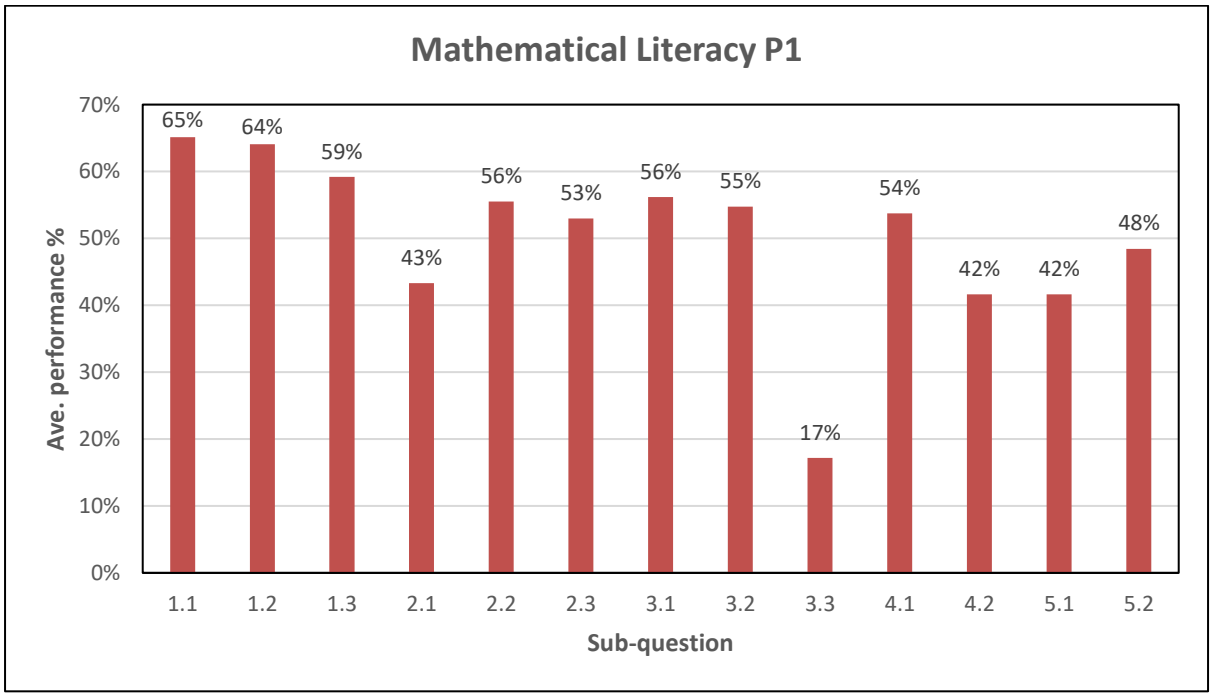
(a) The 2023 question paper was set according to the *2021 Examination Guideline*s document. The Application Topics tested in Paper 1 are: Finance, Data Handling and Probability. Question 1 was based entirely on short contexts with all questions pitched at level 1.

Graph 9.3.1 Average performance per question in Paper 1 2023



Q	Topic
1	Finance & Data Handling
2	Finance & Probability
3	Data Handling
4	Finance, Data Handling & Probability
5	Finance, Data Handling & Probability

Graph 9.3.2 Average performance per subquestion in Paper 1 2023



Sub-Q	Topic	Sub-Q	Topic
1.1	Data Handling	3.2	Data Handling
1.2	Finance	3.3	Data Handling
1.3	Finance	4.1	Data Handling & Probability
2.1	Finance	4.2	Finance
2.2	Finance	5.1	Data Handling & Probability
2.3	Finance	5.2	Finance
3.1	Data Handling & Probability		

9.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

The three Application Topics and the sequence of questions, where Q1 was based on short, contextual questions, benefitted candidates. Q1 was the best answered question.

QUESTION 1: SHORT CONTEXTS (INTEGRATED LEVEL 1 QUESTIONS ONLY)

Common errors and misconceptions

(a) In Q.1.1.1 candidates could not identify the data in the given table as an example of discrete data.

(b) In Q.1.1.2 candidates still find it difficult to write large numbers in words.

(c) Most candidates managed to write the ratio in the correct order in Q1.1.5 but could not simplify the ratio.

(d) In Q1.2.2 many candidates did not add the 0,11 to calculate the total amount for one music CD.

(e) Many candidates could identify the two values from the given table in Q.1.2.3 but could not calculate the amount as a percentage.

(f) Some candidates did not multiply the R8,33 by 210 000. Instead they used the amount of R99 in Q.1.2.4. Several candidates used the correct values but divided these two correct values instead of multiplying them.

(g) In Q1.2.5 candidates could identify the correct values and multiply these values instead of dividing them.

(h) In Q1.3.3 candidates could explain the term *Gross Monthly Income*; they tended to confuse this term with *Net Income*.

Suggestions for improvement

(a) Teachers should give learners enough practice in defining Mathematical Literacy definitions in context. As per *CAPS,* Mathematical Literacy must be taught and tested in a real-life authentic context.

(b) Reading information from tables and graphs in Mathematical Literacy forms part of the Basic Skills Topics and this concept is taught at the Grade 10 level. Teachers are encouraged to integrate these Basic Skills Topics within the Application Topics.

(c) The Glossary of Terminology provided by the DBE and provincial education departments should be utilised during teaching and learning activities at the beginning of a new section.

(d) Pie charts will not always have perfect, neat, and tidy representations. The data used is set in real-life authentic contexts, therefore, the charts will not have perfectly balanced sectors where the names/labels of these sectors will fit perfectly in these sectors. Teachers are encouraged to illustrate examples of these pie charts that do not have perfectly balanced sectors where the labels will fit on the sectors of the pie charts.

QUESTION 2: FINANCE

Common errors and misconceptions

(a) In Q.2.1.4 candidates are still making a well-documented error by not being able to note the difference between a *VAT Included* and a *VAT Excluded* calculation.

(b) Most candidates in Q2.2.2 identified the correct *Tax Bracket* and could calculate the income tax payable before rebates are subtracted. Candidates found it difficult to interpret the negative answer. The concept of the tax threshold is poorly understood.

(c) In Q2.3.3 candidates could not extract from the given context that the number in brackets represents a deficit or a negative number.

(d) In Q.2.3.4 most candidates just subtracted the smaller number from the bigger number, ignoring the fact that they must subtract from the expected income, regardless of which is the most.

Suggestions for improvement

(a) Teachers should focus on the different calculations for VAT inclusive and VAT exclusive calculations. The Basic Skills Topics covers the mathematical calculation of working with percentages in detail.

(b) Teachers should make use of a variety of financial documents in past DBE examination question papers. Subject advisors should encourage teachers to design authentic tasks by making use of real-life authentic financial documents.

(c) Teachers must continue to teach learners how to interpret tax rebates and explain how age relates to the number of rebates an individual will receive. Regular practice is required for working on calculations of rebates and tax per month by using tables.

(d) Teachers and subject advisors are encouraged to design updated material on the subtopic *Budgets*. The progression of this topic with regard to content and context should be clear for the different grades in the FET band. For example, the progression from budgets with small number (households) to budgets with very large numbers (national budgets) must be evident in the learning and teaching material for learners.

QUESTION 3: DATA HANDLING

Common errors and misconceptions

(a) Most candidates were unable to comment after they made the correct comparison for Q.3.1.3, while others were calculating the difference between urban and rural age groups.

(b) In Q3.1.4 most candidates were able to identify the percentage of children who are overweight or obese, but they were unable to calculate children who are NOT overweight or obese using the number of learners in a rural school. Most candidates did not round off their answer.

(c) Most candidates identified the 11,1 but did not subtract it from 100 in Q.1.1.5. Candidates still struggle with probability questions which are phrased as 'NOT'.

(d) In Q3.2.2 most candidates read the months from the graph incorrectly. Secondly, candidates wrote only one month and lastly they wrote all the months given in the question paper.

(e) Candidates could not comment on whether the selection of the sample in Q.3.3.3. was biased, skew or unfair. They merely stated that there were more children with normal nutritional status than malnourished. This suggests that candidates find it difficult to comment on a data sample using the following Mathematical terms, i.e. *skew*, *biased* or *unfair*.

Suggestions for improvement

(a) Teachers should start the Application Topic Data Handling by revising the Data Cycle. Learners must be exposed to questions in the data cycle on whether the data sampling was biased and what makes a data sample biased.

(b) The topic Probability should be taught by following the *CAPS* policy document, and the classroom and homework activities should include questions that are phrased as follows: 'Determine the probability of random selecting an item that is NOT …' Consolidation of this type of phrasing can be selected from past DBE examination question papers.

(c) Learners should be exposed to all types of growth charts, i.e. males and females, babies, including time in months and years, head circumference and weight.

QUESTION 4: FINANCE, DATA HANDLING AND PROBABILTY

Common errors and misconceptions

(a) Candidates could identify the mode in Q.4.1.1 but struggled to write their answer as 'no mode'. Most candidates write 0 as no mode.

(b) In Q4.1.2 most candidates wrote the items instead of writing the number of items.

(c) Candidates only subtracted the one-way trip of R15, not realising that R30 for a return trip had to be subtracted in Q4.1.3.

(d) In Q4.1.4 candidates could understand the concept of *median*, however, determining the median is still a challenge for most candidates. Some candidates are still making the error by not arranging the data in order before identifying the middle value(s).

(e) In Q4.1.5 candidates are still writing a as a *ratio*. It is noted that this error has been made by candidates for years.

(f) In Q4.2.4 many candidates lack the understanding of how an increase in the selling price impacts the break-even point: whether the break-even point will be lower or higher than the previous break-even point.

Suggestions for improvement

(a) Measures of central tendencies (*mode*, *mean* and *median*) should be practised with very large and very small numbers. After learners have been tested on these concepts on a regular basis, teachers should give learners written feedback on the misconceptions.

(b) The break-even point should not only be identified by learners, but they should also have a good understanding of what the break-even point means and how this point is influenced by an increase/decrease of the selling price/cost price.

(c) Learners must engage in activities of how to present a probability answer as stated in the *CAPS* policy document. Probability activities must be set in real-life authentic contexts. Where learners make the error of writing *probability* as a *ratio*, a written comment next to the learner's incorrect answer must be made on why it is incorrect to represent a probability as a ratio.

(d) Learners must be exposed to exam-type questions and contexts where the learner can practise the skill of extracting the mathematics from the given information before any calculations are done.

QUESTION 5: DATA HANDLING AND FINANCE

Common errors and misconceptions

(a) In Q5.1.2 many candidates struggled with percentage increase and decrease calculations and formula. Values were swopped around to get a positive answer.

(b) In Q.5.1.3 candidates demonstrated an understanding of the *range* concept, however, they could not work with negative numbers, resulting in failure to identify the maximum and minimum values.

(c) In Q.5.1.4 many candidates still struggled with the *reverse mean calculation,* however, they were able to change the subject of the formula. They managed to change the subject of the formula but could not identify that there were 10 values in the data set.

(d) In Q5.2.1 some candidates were not able to determine which currency is stronger or weaker than the other currency.

(e) In Q.5.2.2 some candidates could identify the different exchange rates in the given

table, however, they did not know whether they had to multiply or divide by the exchange rate.

Suggestions for improvement

(a) The focus on exchange rates should be on developing an understanding of the value of a currency in relation to other currencies and on the value of a particular currency in relation to the cost of living/business venture in a country, rather than on repetitive calculation using mathematical content and procedures.

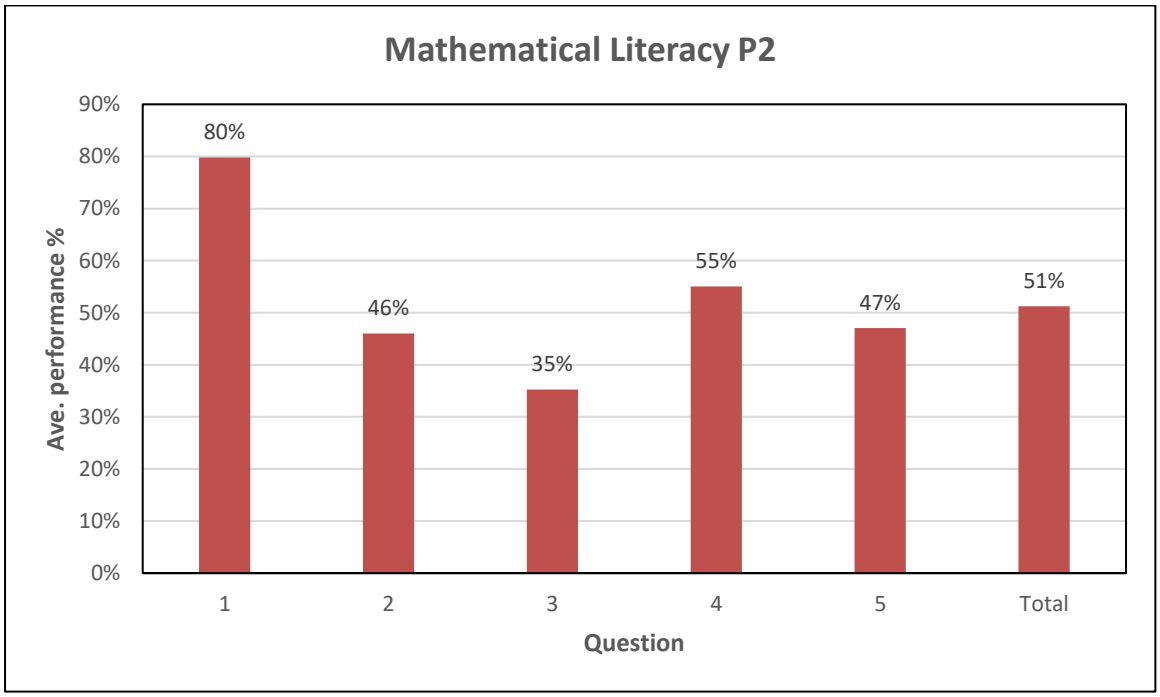
(b) The basic mathematical procedure on how to convert from one currency to another should be taught. The DBE booklet should be utilised as it explains how ratio can be used to convert from one currency to another. This method pre-empts confusion about when to divide when dealing with currency conversions.

(c) The basic skills topic which deals with basic percentage calculations must be revised on a weekly basis. The percentage calculations are integrated and tested within ALL Application Topics in Mathematical Literacy.

9.5 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

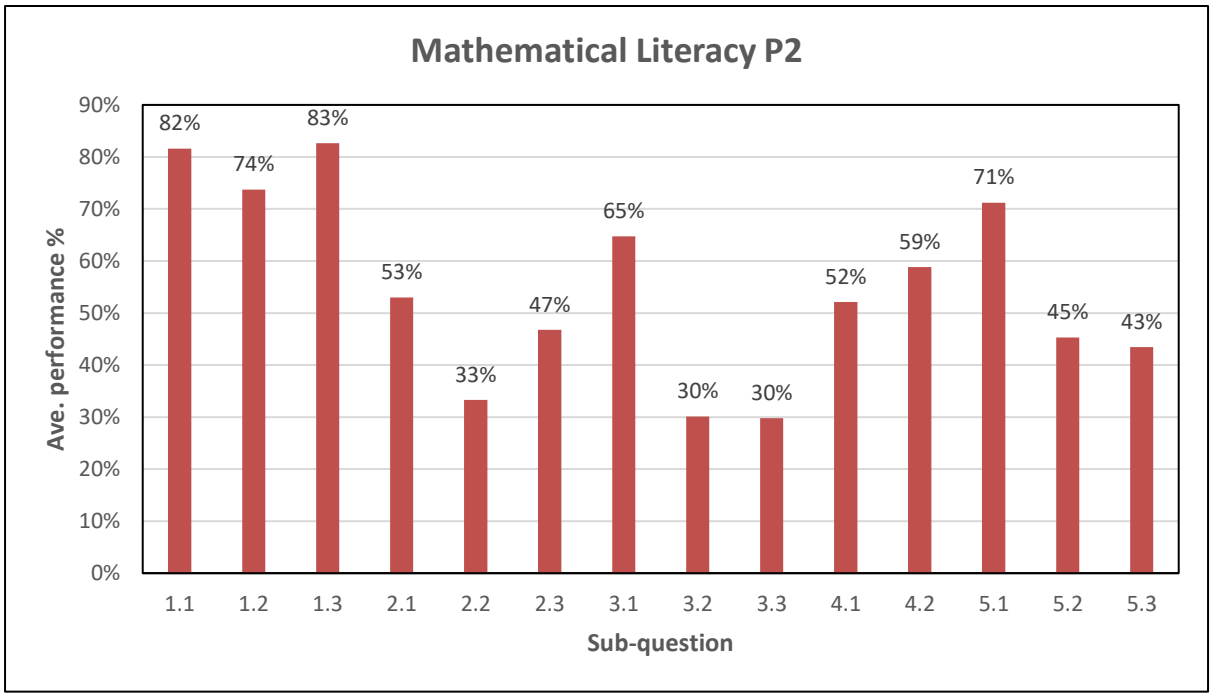
The following graph is based on data from a random sample of candidates. While this graph may not accurately reflect national averages, it is useful in assessing the relative degree of challenge of each question as experienced by candidates.

Figure 9.5.1 Average performance per question in Paper 2 2023



Q	Topic
1	Measurement, maps, plans and other
2	Probability, maps, plans and other
3	Measurement
4	Measurement, probability, maps, plans and other
5	Measurement, maps, plans and other

Figure 9.5.2 Average performance per subquestion in Paper 2 2023



Sub-Q	Topic	Sub-Q	Topic
1.1	Measurement, maps, plans and other	3.2	Measurement
1.2	Maps, plans and other	3.3	Measurement
1.3	Maps, plans and other	4.1	Measurement, maps, plans and other
2.1	Maps, plans and other	4.2	Measurement and probability
2.2	Maps, plans and other	5.1	Measurement
2.3	Probability, maps, plans and other	5.2	Measurement
3.1	Measurement	5.3	Measurement, maps, plans and other

9.6 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: SHORT CONTEXTS (INTEGRATED LEVEL 1 QUESTIONS ONLY)

Common errors and misconceptions

(a) Q1.1 was well answered by most candidates but some of them did not follow instructions and instead of writing down the letter, they wrote the definition.

(b) In Q 1.1.2 many candidates incorrectly chose G, showing that they could not differentiate between *area* and *volume*.

(c) Some candidates in Q1.2.1 wrote down the names of the streets, instead of giving the number of streets.

(d) In Q1.2.3 candidates were given an unfamiliar strip chart, and many were not able to correctly interpret it. The last distance of 1 100 m was mostly interpreted as the total distance and not the distance between the last two markers.

(e) Many candidates answered Q1.3 well. A few candidates could not interpret the steps to assemble the chair, therefore they were unable to identify the number of screws in step 4.

(f) In Q1.3.4 some candidates did not recognise the word 'pair'. Hence, they failed to identify the correct component.

Suggestions for improvement

(a) Learners need to be exposed to different types of maps with different orientations. Learners must be made aware that they can rotate the question paper to ensure that the map is in the position with which they are more familiar.

(b) Basic definitions should be taught in a clear and succinct manner. Learners should be encouraged to write the basic definition at the back of their notebooks.

(c) Teachers are encouraged to use the definition booklets from DBE. Speed tests may be administered on the match questions developed from these terminologies and definitions.

(d) Educators are encouraged to expose learners to various types of assembly diagrams, showing components and instructions.

QUESTION 2: MAPS AND PLANS AND PROBABILITY

Common errors and misconceptions

(a) In Q 2.1.1 many candidates had a problem with the definition of a *layout plan* and confused the definition with that of a *floor plan*.

(b) The performance in Q2.1.2 was good.

(c) In Q2.1.3 many candidates chose A instead of C in the options provided because they were unable to recognise that north is facing downwards.

(d) Q2.1.4 was poorly answered. Candidates had trouble to express their opinions due to language barriers. Candidates failed to explain why the plants were not placed on the northern table. Most candidates incorrectly wrote 'because of the sunlight'.

(e) In Q2.1.5(a) some candidates could not accurately measure using a ruler or did not have a ruler in the examination room to measure. Some candidates were able to get the correct numerical value but wrote the wrong unit (m) and lost a mark.

(f) In Q2.1.5(b) many candidates did not know how to calculate the scale. This shows that conversion, ratio, and simplification of a ratio which are basic mathematical literacy concepts is still a challenge. Some candidates still have a challenge to convert from cm to metres or vice versa.

(g) Many candidates used area for the packaging problem in Q2.2 and arrived at the incorrect answer. A few candidates did not use half the table, instead they calculated the number of packs of water that could fit on the whole table, when the question stated that the packs would occupy half the table. Those who understood the packaging problem only calculated that 6 packs would fit on half of the table, not realising that one more pack could fit if you turn the pack so that the breadth can fit onto the length of the table.

(h) In Q2.3.1 some candidates still confused general direction with giving directions from one place to another. Some candidates did not look at the point of reference of the north(N) to state the general direction, as the north on the map was not in the most familiar position.

(i) In Q2.3.3 candidates did not read the whole map to see the label for the Pretoria Hotel. Many Pretoria-based candidates used their own knowledge and not the given map as the location of the hotel.

(j) Many candidates in Q2.3.5. identified roads instead of presenting a reason. There was a lack of interpretation of the arrows. Not realising that all the roads on the map lead to the Pretoria Hotel and could be used by the conference attendees to get to the hotel.

(k) Although many candidates answered Q2.3.6 well, there are still candidates who are struggling with addition of time.

Suggestions for improvement

(a) Learners should be taught to explain terms using the given context.

(b) Teachers should spend sufficient time on teaching scales and conversion into scale.

(c) Learners must practise measuring accurately using a ruler.

(d) Teachers should demonstrate packaging practically in the classroom to explain why volume calculations cannot be used in packaging problems.

(e) Teachers should expose learners to questions that require them to determine the probability as a percentage.

(f) Learners must be exposed to reasoning and opinion questions.

(g) Learners must be taught to use the given resource and not to rely on their general knowledge to answer questions.

(h) Teachers should afford learners the opportunity to critique the structure or plan during the lessons so that they get used to reasoning in context.

(i) Teachers should expose learners to plans and maps with the position of north not facing upwards.

QUESTION 3: MEASUREMENT

Common errors and misconceptions

(a) In Q3.1.1 some candidates added the six zeroes but did not remove the comma, arriving at an incorrect answer of 2,7000000.

(b) Some candidates in Q3.1.2 added mixed units or could not correctly convert grams to kilograms.

(c) In Q3.2.1 many candidates did not know that a square is a special type of rectangle with the length equal to the width, hence they were unable to calculate volume of the square hole.

(d) Q3.2.2 was poorly answered. Candidates could not interpret the question that the post would occupy some of the volume of the hole.

(e) In Q3.2.3 many candidates could not apply the ratio concept and lost valuable marks. Most candidates did not divide 5,5 bags of cement by 0,75 to determine the number of bags required to make 1 m^3 of concrete. Early rounding off was also a problem.

(f) Q3.3.1 was misinterpreted by many candidates. Candidates did not read the whole extract and only worked with the drawn diagrams. Most candidates used the dimensions of the post cap rather than the posts. This might be because only the post cap was visible in the context.

(g) In Q3.3.2 candidates failed to link the question from previous and related subquestions. Some candidates added the areas of the triangle and the rectangle but did not multiply by 4 and 12 to get the total area of the caps that needed to be painted. Some candidates confused the height (2,5 cm) of the post cap with the perpendicular height (7,86 cm).

(h) In Q3.3.3 conversion from cm^2 to m^2 was done incorrectly. Many candidates divided the spray rate instead of multiplying.

Suggestions for improvement

(a) Writing large numbers in words or as numerals should be regularly assessed.

(b) Teachers are advised to encourage learners to read questions carefully, i.e. find out whether a question should be rounded off to one or two decimal places.

(c) Learners should be taught that all dimensions should be in the same unit before substituting into a formula.

(d) Learners need to practise writing answers with the correct units and should be taught how to convert from one unit to another.

(e) Teachers and learners should bring 3D items to class that can be analysed and interpreted.

(f) Teachers should afford learners time to critique the scenarios during lessons with the intention of teaching them to be relevant when they give opinions, reasons, suggestions or views.

(g) Teachers should vary the format of the spread rate of paint, e.g. 12,46 litres/m^2 or 0,08 m^2/litres so that learners know when to divide and when to multiply by the spread rate.

QUESTION 4: MAPS AND PLANS, MEASUREMENT AND FINANCE

Common errors and misconceptions

(a) In Q4.1.1 some candidates used the length of the floor runway which was 54 instead of the given width of (4 feet) which was in the context.

(b) Q4.1.2 was well answered because the conversion factor was given. However, some candidates multiplied instead of dividing.

(c) In Q4.1.3 many candidates could not reason why seats were not arranged behind each other since they are not exposed to seating arrangements at fashion shows. Some candidates also had problems expressing their reason because of a language barrier.

(d) Q4.1.4(a) and (b) were poorly answered. Most candidates substituted the diameter instead of the radius into the given formula, and some did not square the radius to calculate the area of the triangle.

(e) In Q 4.2.3 most candidates substituted correctly to a BMI formula, however, they did not square the denominator.

(f) In Q4.2.4 and 4.2.5 candidates could not read the body chart correctly and hence could not answer the probability questions.

(g) In Q4.2.5, because the Probability was given, learners manipulated their answers to correspond with the given probability of 0,833.

Suggestions for improvement

(a) Learners should be taught to distinguish between *diameter* and *radius*.

(b) Simple exercises need to be given to learners to practise writing ratios in the correct order and simplified form.

(c) Teachers should expose learners to questions and unfamiliar contexts that require them to determine the probability as percentage and decimal.

(d) Calculator operation should be emphasised when working with formulas. Teachers should explain the difference between the square (multiply a number by itself twice) and multiplying by 2 (adding a number twice).

(e) Teachers should emphasise that the circumference of the circle is the perimeter of that circle, which means it is the total length or distance around the circle.

QUESTION 5: MAPS AND PLANS AND MEASUREMENT

Common errors and misconceptions

(a) In Q5.1 most candidates substituted correctly into the formula; however, they did not square the length when calculating the surface area and omitted the unit.

(b) In Q5.2.1 most candidates did not divide the mass by 0,001 tons to convert it to kilograms and multiply by 2 since the block of ice weighed 2 tons.

(c) Most candidates in Q5.2.2 were unable to change the subject of the formula to calculate the volume of ice. Some candidates substituted the volume of water as the volume of ice.

(d) Q5.3.1 was well answered.

(e) In Q5.3.2 most candidates divided the distance in miles by 1,151 instead of multiplying by 1,151. Candidates were supposed to convert first to miles, then to km. Some candidates tried to convert straight from nautical miles to km.

(f) Q5.3.3(a) was challenging as most candidates could not convert 10 days 4 hours to 244 hours and change the subject of the formulae to calculate speed. Many candidates did not round off the speed to two decimal places.

(g) In Q5.3.3(b) most candidates did not divide 313,67 by 24 hours to determine the number of days and hours to find the arrival date and time.

Suggestions for improvement

(a) Learners should be taught to substitute values exactly where they are expected to be according to the given formula.

(b) Teachers should bring along calendars to class when they teach time in months, weeks, days and hours.

(c) Teachers should expose learners to various formulae where the unknown is not necessarily the subject of the formula, example calculating the speed using the formula Distance = speed × time.

(d) Relevant terminology such as *find the total (add)* and *find the difference* should be used also in class activities for learners not to only experience them when writing examinations.

(e) Teachers should expose learners to problems involving conversion of units using two factors.

(f) Teachers should expose learners to a variety of transport timetables. Learners should be encouraged to work with the column or row that has all the necessary information for calculating the average speed unless they are restricted to work with a specific route.

CHAPTER 10

MATHEMATICS

The following report should be read in conjunction with the Mathematics question papers for the NSC November 2023 examinations.

10.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Mathematics examination in 2023 decreased by 7 718 compared to that of 2022.

There was a significant improvement in the pass rate this year. Candidates who passed at the 30% level improved from 55% in 2022 to 63,5% in 2023. There was a corresponding improvement in the pass rate at the 40% level over the past two years from 36% to 43,6%.

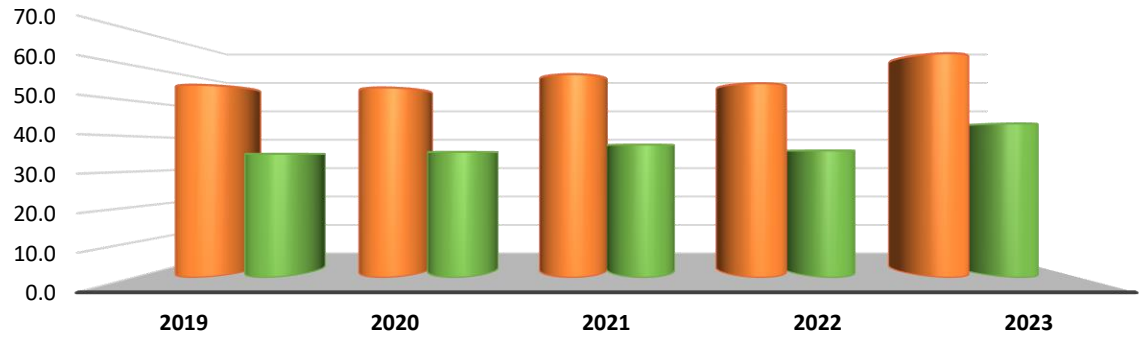
The percentage of distinctions over 80% improved from 2,7% in 2022 to 3,4% in 2023. Given the decrease in the size of the 2023 cohort, this converts into an increase in the total number of distinctions from 7 283 to 8 909.

The various commendable intervention strategies employed by teachers, subject advisors and provincial education departments were continued in 2023. The resourcefulness and diligence of the above-average candidates also contributed to the overall improvement in the subject.

Table 10.1.1 Overall achievement rates in Mathematics

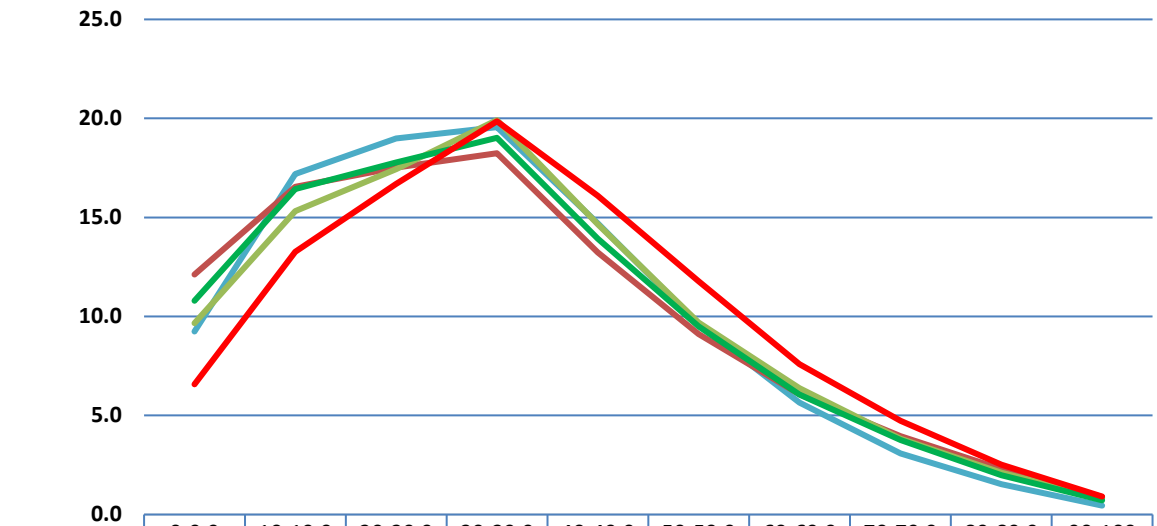
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	222 034	121 179	54,6	77 751	35,0
2020	233 315	125 526	53,8	82 964	35,6
2021	259 143	149 177	57,6	97 561	37,6
2022	269 734	148 346	55,0	97 041	36,0
2023	262 016	166 337	63,5	114 311	43,6

Graph 10.1.1 Overall achievement rates in Mathematics (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	54.6	53.8	57.6	55.0	63.5
% achieved at 40% and above	35.0	35.6	37.6	36.0	43.6

Graph 10.1.2 Performance distribution curves in Mathematics (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	9.2	17.2	19.0	19.6	14.7	9.6	5.6	3.1	1.5	0.4
2020	12.1	16.5	17.5	18.2	13.2	9.1	6.1	3.9	2.3	0.9
2021	9.7	15.3	17.4	19.9	14.7	9.7	6.4	3.8	2.1	0.8
2022	10.8	16.4	17.8	19.0	13.9	9.5	6.1	3.8	2.0	0.7
2023	6.6	13.3	16.7	19.9	16.1	11.8	7.6	4.7	2.5	0.9

10.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

(a) Many candidates were able to answer the knowledge and routine questions correctly. This suggests that the candidates were well-prepared to deal with these questions in the paper. Unlike in the past, candidates scored some marks in most of the questions.

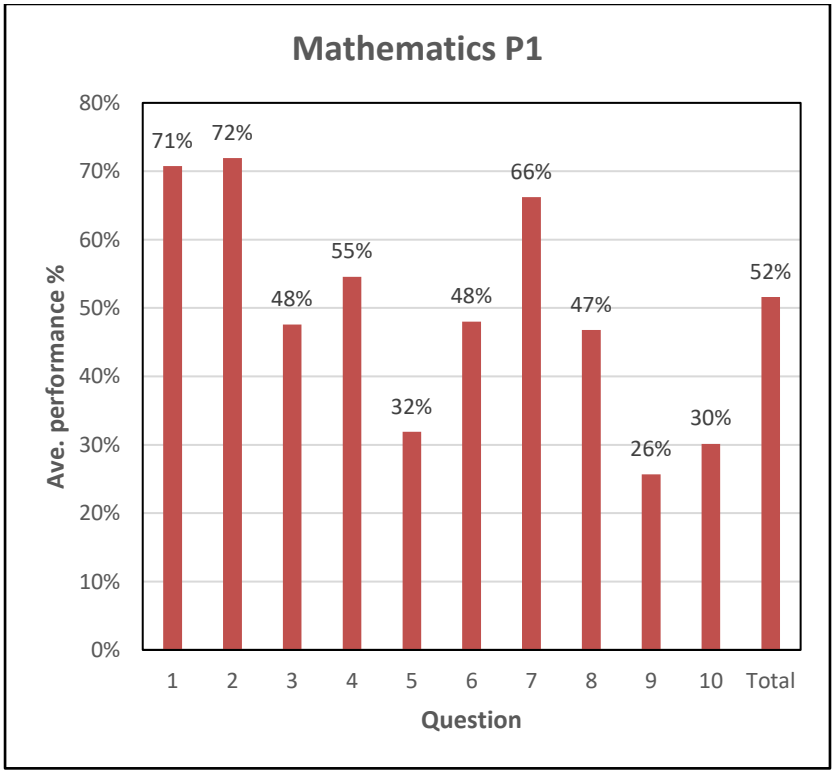
(b) The algebraic skills of the candidates are poor. Most candidates lacked fundamental and basic mathematical competencies which should have been acquired in the lower grades. This becomes an impediment to candidates when answering complex questions.

(c) While calculations and performing well-known routine procedures form the basis of answering questions in a Mathematics paper, a deeper understanding of definitions and concepts cannot be overlooked. Candidates did not fare well in answering questions that assessed an understanding of concepts.

10.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

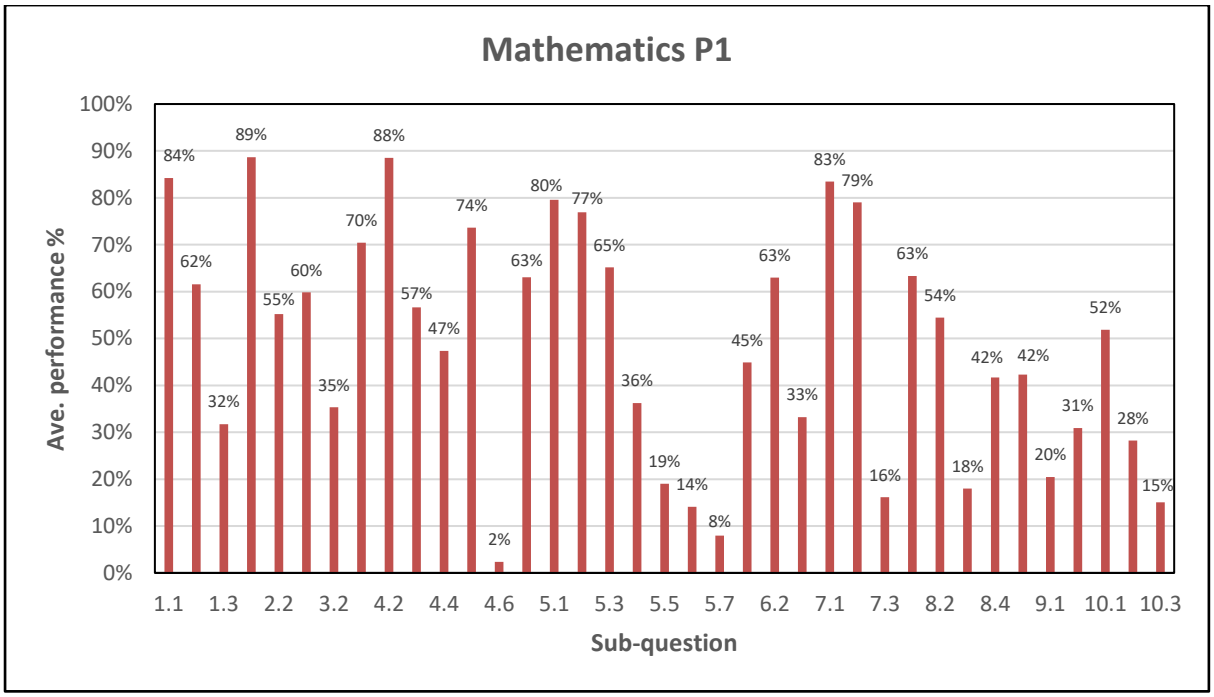
The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 10.3.1 Average performance per question in Paper 1



Q	Topics
1	Equations, Inequalities & Algebraic and Exponential Manipulation
2	Number Patterns & Sequences
3	Number Patterns & Sequences
4	Functions, Inverse Functions & Graphs
5	Functions & Graphs
6	Finance
7	Calculus
8	Calculus
9	Calculus
10	Probability & Counting Principles

Graph 10.3.2 Average performance per sub-question in Paper 1



10.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: ALGEBRA

Common errors and misconceptions

(a) In Q1.1.2 some candidates did not write the equation correctly in standard form, so they incorrectly substituted '6' as the value of *c* instead of '–6'.

(b) In Q1.1.3 many candidates were able to square the equation correctly but then factorised $x^2 - 4x = 0$ incorrectly as $(x-2)(x+2) = 0$. Some divided $x^2 - 4x = 0$ through by *x* which meant that the candidate lost a solution to the equation.

(c) Many candidates struggled to solve the inequality in Q1.1.4 after correctly calculating the critical values. Some candidates drew a sketch but were unable to use it to write down the required answer. Another common error was the incorrect notation in the answer. Candidates wrote the answer as $x > -1$ or $x > 3$ instead of $x < -1$ or $x > 3$.

(d) The simultaneous equation given in fraction form in Q1.2 proved challenging for most candidates. The notion of isolating the one variable and substituting this into the second equation was well understood. However, candidates changed $\frac{1}{x} + \frac{1}{y} = 1$ to $x^{-1} + y^{-1} = 1$ and then after substitution incorrectly worked with the exponent of –1.

(e) In Q1.3 many candidates were able to write the exponents with separate bases, i.e. $2^m.2 + 2^m = 3^n.3^2 - 3^n$. However, some failed to factorise the resulting expression correctly, i.e. $2^m.(2+1) = 3^n.\left(3^2 - 1\right)$. The majority of the candidates just worked with

the exponents and this resulted in an equation $m+1+m=n+2-n$ which did not lead them to solving the given problem.

Suggestions for improvement

(a) Learners must ensure that they understand what correct *standard form* is in a quadratic equation.

(b) Learners must be taught to check their solutions when using the squaring technique to solve an equation that is not originally quadratic.

(c) Emphasis must be given to working with lowest common denominators to solve fraction-based problems.

(d) When dealing with *surd* equations, learners should be reminded that they need to isolate the *radical* before they can square both sides of the equation. Teachers must emphasise that implicit restrictions are placed on *surd* equations and that learners should continue to test whether their answers satisfy the original equation.

(e) Learners need to be exposed to complex questions involving *surds* and *exponents*. Correct use of *exponential rules* must be revised, tested and re-explained from Grade 9 through to the final Grade 12 examination.

(f) Regular revision and emphasis on working with *prime bases* in *exponents* is important.

(g) Learners need to be exposed to problem-solving questions involving algebraic manipulation in all areas of algebra. This requires regular revision and testing of non-routine questions in the algebra section, focusing on a range of skills that candidates need to have mastered from Grade 10.

(h) As suggested in previous reports:
- Teachers should not take for granted that learners know how to round off a number to the required number of places. Where necessary, this skill should be retaught in Grades 11 and 12. Teachers should penalise learners in SBA tasks when they do not round off to the correct number of places.
- Teachers should take some time, preferably in Grade 10, to focus on teaching learners how to represent inequalities (e.g. $-3<x<5$; $x<-3$ or $x>5$) on a number line and also how to write an inequality from the illustration on a number line. This will benefit learners as they are required to write inequality solutions for a number of questions in both examination papers. Emphasis on the correct notation is essential when writing down the solutions to inequalities.
- Linked to this, teachers should explain the difference between *and* and *or* in the context of inequalities. Learners cannot use these words interchangeably as they have different meanings.

QUESTION 2: PATTERNS

Common errors and misconceptions

(a) The most common errors in Q2.1 and its sub-questions were the use of incorrect formulae (i.e. $T_n=a(n-1)d$ rather than $T_n=a+(n-1)d$) or incorrect substitution of n as T_n or S_n.

(b) Many candidates substituted n = 5 into the given T_n formula in Q2.1.2 to answer Q2.1.1 rather than developing the *quadratic pattern*. The candidates knew how to develop the pattern as this was well done in Q2.1.2, when asked to show that the *quadratic pattern* had a general term of $T_n = 6n^2 - 9n + 6$, but the link was not made between determining the formula of a *quadratic pattern* and generation of the *quadratic pattern*.

(c) In Q2.2.3 most candidates could not show that the pattern was increasing for all *natural numbers*. They were not able to manipulate the *quadratic pattern* as a *quadratic function* to provide the argument of where the *axis of symmetry* of the pattern was.

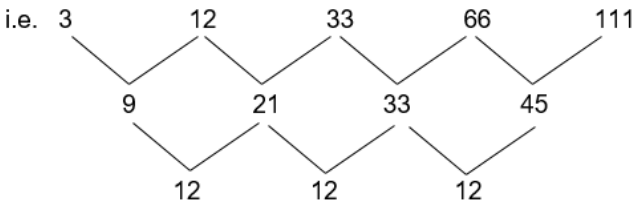
Suggestions for improvement

(a) Learners must be made aware of which formulae on the information sheet apply to which type of sequence. It is good practice for them to use the information sheet in class so that they become familiar with it.

(b) Teach learners how to identify whether the question requires them to calculate the value of the n^{th} term or the sum of the first n terms.

(c) Questions must be read carefully so that the learners know what is required of them.

(d) Learners should be discouraged from using information provided in later questions to answer earlier questions in an examination. Learners must be encouraged to develop patterns using their properties rather than using their explicit *general terms*. The understanding of where a pattern 'starts' and what the pattern 'does' is important to emphasise. The basic diagram was sufficient in answering Q2.2.1.



(e) Teachers need to specifically teach the relationships between a *quadratic pattern* and a *parabola*, making particular reference to the *axis of symmetry* and *minimum* or *maximum* values of the pattern.

QUESTION 3: PATTERNS

Common errors and misconceptions

(a) Candidates were correctly able to determine the general term, however, most candidates incorrectly simplified $T_n = 3.2^{n-1}$ to $T_n = 6^{n-1}$. This did not impact the candidates in Q3.1.1 but did impact the candidates' ability to correctly solve Q3.1.2.

(b) Many candidates did not make the link between n and k in the *sigma notation* in Q3.1.2. The candidates also showed little understanding of how to generate a *series* from *sigma notation* to identify the a and the r values. Further to this, some candidates substituted the calculated information into T_n rather than S_n.

(c) Most candidates were unable to answer Q3.2 correctly. The interpretation of '*The sum of 22 terms of the arithmetic series is 734 more than the sum to infinity of the geometric sequence*' was incorrectly translated to $S_{22} = 734$.

Suggestions for improvement

(a) Teachers should emphasise the differences between the *term*, *sum* and *sum to infinity* formulae in *arithmetic* and *geometric patterns*.

(b) The inclusion of word problems in the *patterns* section is important. Teachers need to emphasise how to take the words of a problem and write it in symbolic form to solve an *equation* or *inequality*.

(c) Constant revision of *exponential laws* to solve equations correctly is pivotal to candidates' success. Teachers need to emphasise this and revise this thoroughly in all grades.

QUESTION 4: FUNCTIONS (EXPONENTIAL AND LOGARITHMIC GRAPH)

Common errors and misconceptions

(a) Many candidates did not calculate the coordinates of the *x*-intercept, A, correctly in Q4.3 which resulted in an incorrect equation of the *straight line*.

(b) Most candidates did not understand the concept of *vertical distance* in Q4.4. The candidates substituted incorrect points into the distance formula in an attempt to calculate any distance.

(c) In Q4.4 some candidates left their answer for the vertical distance between the functions at $x = 1$ as a negative value.

(d) The majority of candidates did not realise that the given function had a restricted domain which in turn meant the inverse of the given function would have a restricted domain. The candidates had learnt that the domain of the inverse was $x > 0$, which is true for an unrestricted *logarithm function*.

Suggestions for improvement

(a) Teachers need to emphasise what the points on a graph are and help learners identify what the properties of these points are before they start answering a question.

(b) *Vertical and horizontal distances* should be explained without the use of the distance formula when interpreting functions. In conjunction with this, teachers must emphasise that distance is a scalar property and cannot be negative.

(c) Teachers should work with restricted domain graphs in class to make learners aware that functions can be restricted and emphasise the effect this has on their properties.

QUESTION 5: FUNCTIONS (HYPERBOLA AND PARABOLA)

Common errors and misconceptions

(a) In Q5.4 many candidates forgot the restriction of the horizontal asymptote on the range of the function, possibly because it was the *x*-axis and visually drawn on the graph as an asymptote.

(b) Most candidates were unable to interpret Q5.5 correctly from the given graph. Many tried to solve the inequality algebraically and others did not take cognisance of the vertical asymptote of the hyperbola.

(c) The majority of candidates did not understand the terminology '*will not intersect*' and tried to solve for $-2x + k > \frac{8}{x}$ or $-2x + k \neq \frac{8}{k}$ which led them to incorrect solutions and misinterpretation of the question. The integration of *nature of roots* into functions was not commonly understood by candidates.

(d) Q5.7 was not understood by many candidates. The link between Q5.6 and Q5.7 was not seen by the candidates which resulted in very few candidates attempting to answer this question.

Suggestions for improvement

(a) Teachers should spend some time on graphical interpretation of functions. This can be started with the very first graph that is sketched in Grade 10. The concepts of $f(x) > 0$, $f(x) > g(x)$ and $f(x).g(x) > 0$ must be emphasised throughout the FET phase when teaching functions.

(b) The link for learners between the algebraic work (i.e. *nature of roots*, *simultaneous equations* and *inequalities*) and the graphical representation must be created by the teacher when working with functions. However, teachers need to emphasise the importance of understanding these concepts and teach the learners to read off the solutions to the questions from the graph. Not all solutions in functions questions need be algebraic – this practice seems to be the default for most candidates.

(c) The integration of *calculus* into *functions* is an important concept for teachers to revise, test and practise with learners.

QUESTION 6: FINANCE

Common errors and misconceptions

(a) In Q6.1 many of the candidates who did not solve for the value of *r*, did not use the value of *n* as 6. Generally, candidates found it difficult to deal with months if they were not a multiple of 12. Some candidates used $n = \frac{1}{2}$ while many used 72 months.

(b) In Q6.1 it was a common error for candidates not to divide the rate by 12 in the formula to calculate the nominal interest rate correctly.

(c) Many candidates used the incorrect formulae in all questions related to *financial mathematics*. In addition, the candidates commonly did not use their calculator correctly to calculate the final answer.

(d) In Q6.2.2 many candidates used the *present value* formula rather than the *future value* formula.

(e) Most candidates in Q6.3 did not use *logarithms* correctly, and if they did, the candidates rounded their answer of n = 147,8 to n = 148. This indicated a misconception of the number of withdrawals of R20 000 that could have been made.

Suggestions for improvement

(a) Learners need deeper insight into the relevance of each of the formulae and under which circumstances each formula can be used. The variables in each formula must be explained. More practice in Financial Mathematics is necessary so that learners can identify when to use the different formulae.

(b) Teachers should demonstrate all the steps required when using a calculator. This should be done repetitively in class with every example done in Financial Mathematics. In formal assessment tasks at school, learners should be penalised for rounding off early.

(c) The difference between compound interest, future value- and present value annuities must be thoroughly explained.

(d) The correct Financial Mathematics language should be used in class and learners should read the question with understanding.

(e) Teachers need to emphasise – and learners need to practise – using different compounding periods for time intervals other than in years.

QUESTION 7: CALCULUS

Common errors and misconceptions

(a) In Q7.1 some candidates made the following notational errors: $\lim_{h\to 0} = \frac{f(x+h)-f(x)}{h}$ or left out the limit of h altogether. They lost a mark for these errors. Other candidates made errors in substitution.

(b) In Q7.2.2 candidates incorrectly changed $7.\sqrt[3]{x^2}$ to $7x^{\frac{3}{2}}$ instead of $7x^{\frac{2}{3}}$.

(c) When answering Q7.3, many candidates calculated the first derivatives correctly. However, they did not understand how to solve the inequality $x^2 > \frac{4}{3}$, partly because the square root of $\frac{4}{3}$ is not a rational number and partly because of a lack of understanding of how to work with inequalities.

Suggestions for improvement

(a) Emphasis should be placed on the use of the correct notation when determining the derivative, either when using first principles or the rules.

(b) Teachers should revise the rules of *exponents* and *surds* when changing an expression into differentiable format.

(c) The concepts of *gradient of tangent* and *point of inflection* must be understood. Teachers should explain the difference between the two concepts.

(d) Integration and re-emphasis of algebraic concepts, viz fractions, factorising, inequalities and exponential rules, should be emphasised when working with *calculus*.

QUESTION 8: CALCULUS

Common errors and misconceptions

(a) Some candidates did not realise that the function in Q8.1 was already factorised for them. They expanded the factors and equated to the left side. Instead of getting zero, they created another function. These candidates also solved for the *x*-intercepts rather than the *x*-coordinates of the turning points first.

(b) In Q8.1 candidates did not equate the derivative to 0 explicitly. Some candidates only worked out the *x* values without calculating the corresponding *y* values. This led to an incorrect graph in Q8.2. Other candidates attempted to use the quadratic equation principle of $x = -\frac{b}{2a}$ to calculate the *x*-coordinate of the turning point which does not lead to the correct answer in a cubic function.

(c) Many candidates did not label the graph in Q8.2 even though it was explicitly asked of them to do so. Other candidates could not draw the cubic function and drew a version of a parabola. A common mistake was not indicating the *y*-intercept.

(d) In Q8.3 most candidates did not use graphical interpretation to answer this question but rather used quadratic function theory and substituted in $b^2 - 4ac$ which was incorrect.

(e) In Q8.4 many candidates substituted into $m = \frac{\Delta y}{\Delta x}$ to calculate a gradient rather than using calculus methods to solve for the gradient.

(f) Many candidates equated $m = \tan\theta$ where the gradient they had calculated was a negative value. The link that the gradient was positive was not recognised by the candidates.

Suggestions for improvement

(a) Learners should be taught to determine the properties of a graph from Grade 10 to 12 in a progressive manner. The defining property of a turning point having a zero gradient is a way to describe a turning point. Teachers need to prove this link between the definition of a turning point and the Grade 11 concept of determining the axis of symmetry to calculate the *x*-coordinate of the turning point.

(b) When teaching *factorisation of third-degree polynomials*, teachers should include examples where there is only one real root.

(c) Teachers should continue to teach graphical interpretation in cubic graphs as a follow on from the interpretation taught in Grade 10 and 11.

(d) The concept of the point of inflection needs to be taught explicitly.

(e) The application of Calculus lends itself to many applications. Teachers need to expose learners to a wide variety of questions, which include integration of topics including *analytical geometry, measurement* and *trigonometry*.

QUESTION 9: CALCULUS

Common error and misconception

(a) The vast majority of the candidates did not attempt this question because they were unable to formulate the equation required in Q9.1.

(b) Many candidates did not use the given equation in Q9.1 to answer Q9.2.

(c) Some common errors included:

- Candidates simplified the equation required in Q9.2 to $x^{-2} = \frac{1}{576}$ and then incorrectly concluded that $x = \frac{1}{24}$.
- Candidates calculated that $x^2 = 576$ and then concluded that $x = -24$ rather than $x = 24$.

Suggestions for improvement

(a) Learners appear to be dependent on the formulae being given when solving *optimisation* problems. It is advisable that learners interrogate the *optimum* function even when it is given in a question. This should help their conceptual development.

(b) Teachers should ensure that there is enough time for learners to understand the application of Calculus fully.

(c) Reading for understanding should be ongoing if learners are to improve their responses to word problems.

QUESTION 10: PROBABILITY

Common errors and misconceptions

(a) In Q10.1.2 many candidates did not use the probability rule correctly to answer this problem. The theory of P (at least one) = 1 – P(A and B) was incorrectly used.

(b) Most candidates who calculated a probability that was greater than 1 did not realise that this could not be correct.

(c) In answering Q10.2.1 many candidates were unable to correctly draw the tree diagram.

(d) In Q10.3.2 most candidates did not understand that there were 4 positions for the 5 learners to be seated between the 2 youngest learners. The most common error was $5! \times 2!$.

Suggestions for improvement

(a) Teaching basic concepts cannot be overlooked. When learners understand the basic concepts well enough, then the more complex concepts are easier to grasp.

(b) It must be stressed that the probability of an event A lies in the interval $0 \leq P(A) \leq 1$.

(c) Reading for understanding must be a regular practice in the classroom. This should equip learners with the skills to deal with word problems in assessment tasks.

(d) Teachers need to teach both tree diagrams and Venn diagrams thoroughly. These concepts should be examined in school-based assessment tasks throughout the FET phase.

(e) Teach learners the *Fundamental Counting Principle* in such a way that they will be able to base their answers on their reasoning, rather than on the rule.

10.5 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

(a) Integration of topics was still a challenge to many candidates. Mathematics should not be studied in compartments. Candidates are expected to apply knowledge from one section to another section of work.

(b) It was evident that many of the errors made by candidates in answering the Trigonometry questions in this paper had their origins in a poor understanding of the basics and the foundational competencies taught in the earlier grades.

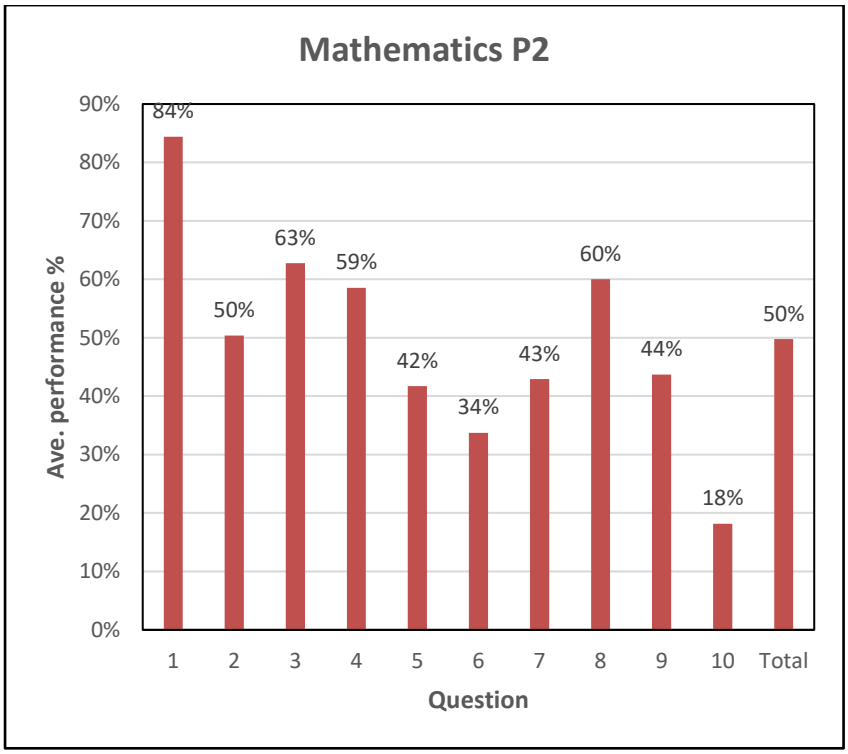
(c) In general, candidates needed to exercise caution with algebraic manipulation skills since overlooking certain basic principles or practices results in the unnecessary loss of marks.

(d) Although the calculator is an effective and necessary tool in Mathematics, learners are of the belief that the calculator provides the answer to all their problems. Some candidates needed to realise that conceptual development and algebraic manipulation were often impeded because of their dependence on a calculator.

10.6 DIAGNOSTIC QUESTION ANALYSIS FOR PAPER 2

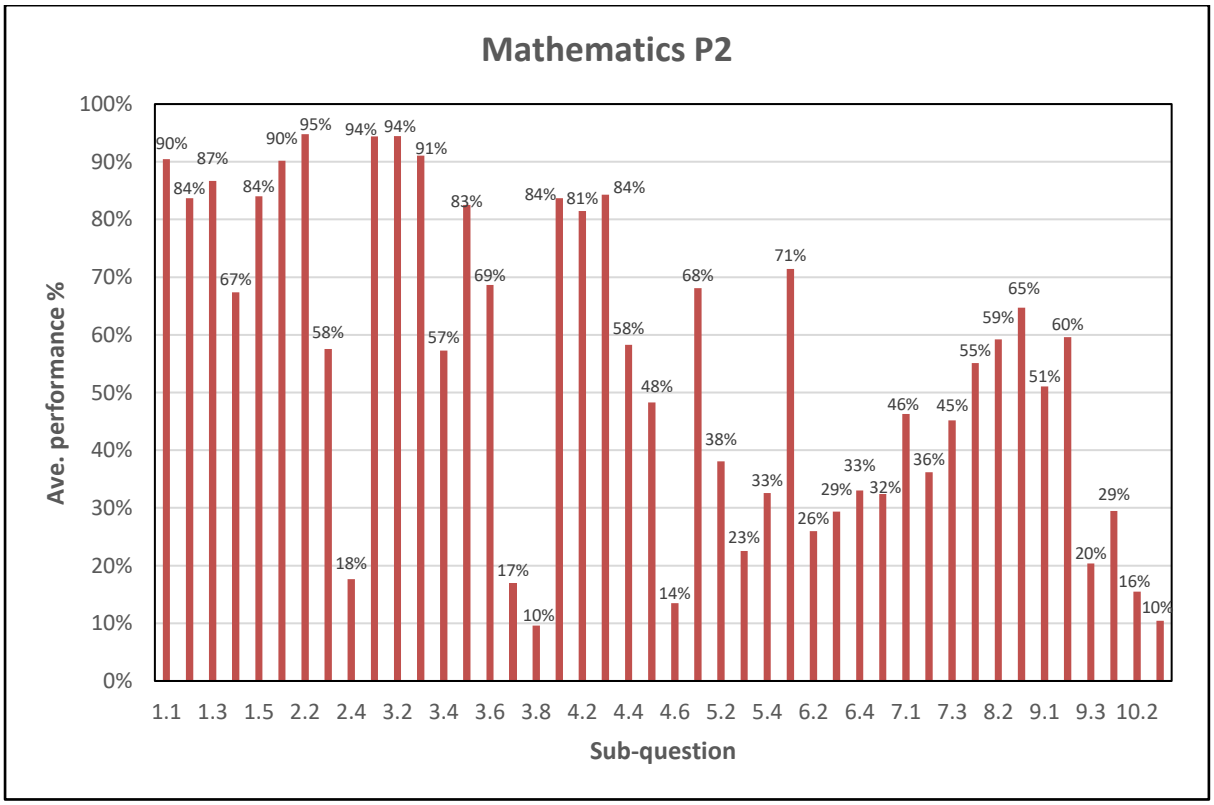
The following graph was based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 10.6.1 Average performance per question in Paper 2



Q	Topic(s)
1	Data Handling
2	Data Handling
3	Analytical Geometry
4	Analytical Geometry
5	Trigonometry
6	Trigonometry
7	Trigonometry
8	Euclidean Geometry
9	Euclidean Geometry
10	Euclidean Geometry

Graph 10.6.2 Average performance per sub-question in Paper 2



10.7 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: DATA HANDLING

Common errors and misconceptions

(a) When writing the equation in Q1.1 a few candidates interchanged the values of *a* and *b*. Some calculated the values of *a* and *b* correctly but did not write the required equation or they swopped the values of *a* and *b* in the equation. Another common error in this question was that candidates failed to round off their answers for *a* and *b* correctly to two decimal places.

(b) In Q1.2 some candidates substituted 550 for *y* instead of substituting 550 for *x*.

(c) Some candidates rounded off the value of *r* to 1 instead of 0,98 when answering Q1.3. Candidates should have been aware that 0,98 and 1 have very different meanings when analysing *correlation coefficients*.

(d) When answering Q1.4 some candidates either wrote 'strong' or 'positive' as their answer. Both were unacceptable as they only described one attribute of the correct answer.

(e) In Q1.5.2 some candidates did not round off their answer correctly to two decimal places.

(f) Many candidates calculated the standard deviation interval correctly in Q1.5.3 but failed to indicate the number of stops that were less than one standard deviation below the mean. They were not awarded full marks because they did not answer the question completely.

Suggestions for improvement

(a) Teachers should link the equation of the least squares regression line ($y = a + bx$) with the equation of the straight line and emphasise that '*a*' refers to the *y-intercept* and '*b*' refers to the *gradient*.

(b) Learners must be careful not to interchange the *x*- and *y*-values in the table when they input these into the calculator.

(c) When determining the equation of the least squares regression line, it is advisable that learners write down the values of *a* and *b* and then write down the equation of the regression line. In this way, they can get the CA mark for the equation.

(d) When teaching *Statistics*, the focus should not only be the calculations. Teachers should also pay attention to the meaning of the different concepts, e.g. *mean, standard deviation, correlation coefficient,* etc. The values obtained in the calculations should then become more meaningful for learners.

(e) The understanding of statistical terminology is developed by using these terms frequently in the class. The use of diagrams when explaining the concepts of *standard deviation* and *deviation intervals* from the *mean* should help learners in understanding these concepts.

(f) Practise calculator skills with learners. Learners should be familiar with what the symbols on the calculator represent, for example, σ_x represents *population standard deviation* and *r* represents *correlation coefficient*.

(g) Learners should be able to use the values of their calculations to make predictions and comments about the data. Time should be devoted to interpretation questions.

QUESTION 2: DATA HANDLING

Common errors and misconceptions

(a) A few candidates calculated the midpoint of the class intervals when answering Q2.1. These candidates were attempting to calculate the estimated mean of the data instead of the cumulative frequencies.

(b) In Q2.3 many candidates were unable to differentiate between *frequency* and *cumulative frequency*. They gave the answer as 13, the frequency of the interval $4 \leq x < 6$, instead of the correct answer of 33.

(c) In response to Q2.4 reading for meaning proved to be a challenge for many candidates. Some of the candidates who were able to understand the question made careless errors when setting up the equation. They left out the brackets and wrote $\left(5 \times 13 + \frac{k}{2}\right)$ instead of $5 \times \left(13 + \frac{k}{2}\right)$. Some candidates failed to realise that the total number of teachers was now 40 + *k*. Other candidates incorrectly subtracted the frequencies, i.e. 13 – 5, and arrived at the correct answer of 8. They were not awarded any marks for this attempt. A number of candidates only wrote down 8, the correct answer. These candidates were only awarded one mark as there was no working to substantiate their answer.

Suggestions for improvement

(a) Learners need to understand the difference in the meaning of the concepts: *frequency* and *cumulative frequency*.

(b) Reading for understanding is a fundamental requirement in the *Data Handling* section. This skill needs to be developed in classroom activities.

(c) While the calculator is a useful tool in answering many questions in the *Data Handling* section, teachers cannot overlook performing the calculations manually. This assists learners in understanding the calculation but moreover, it provides learners with the necessary skills to deal with questions that include variables.

QUESTION 3: ANALYTICAL GEOMETRY

Common errors and misconceptions

(a) In Q3.1 some candidates swopped the *x*- and *y*-values around when substituting into the distance formula. Other candidates calculated the gradient of SL instead of the length of SL.

(b) In Q3.2 some candidates used the incorrect gradient formula despite it being given on the information sheet. Other candidates swopped the *x*- and *y*-values around when substituting into the gradient formula.

(c) A few candidates only wrote down the value of tan θ when answering Q3.3. They did not continue to calculate the size of θ, as was required in the question. Some candidates incorrectly assumed that the size of θ was $\frac{4}{3}$.

(d) In response to Q3.4 some candidates calculated $\text{N}\hat{\text{K}}\text{O}$, instead of $\text{L}\hat{\text{K}}\text{O}$. Other candidates calculated the gradient correctly but then incorrectly calculated the angle of inclination as a positive angle.

$$m_{\text{LN}} = \frac{1+4}{-4+2}$$
$$m_{\text{LN}} = -2$$
$$\therefore \text{L}\hat{\text{K}}\text{O} = 63{,}43^{\circ}.$$

Other candidates incorrectly assumed that ΔKON was an isosceles triangle.

(e) Although Q3.5 was well answered by most candidates, some candidates used the gradient of the line perpendicular to SN instead of using the gradient of a line parallel to SN. Some candidates incorrectly assumed that the line passed through S and used the coordinates of S in determining the equation of the line.

(f) Many candidates attempted to answer Q3.6 by making use of the area rule. In doing so, they made incorrect substitutions into the area rule, i.e. they would substitute the length/s of sides that did not form ΔLSN. Candidates failed to realise that ΔLSN was right- angled and that they could make use of the area formula: Area = $\frac{1}{2}\text{base} \times \text{height}$ to answer the question. Some candidates incorrectly used SN as the height of the triangle.

(g) In Q3.7 many candidates assumed that P would be the midpoint of SN without first stating that SN is a diameter of the circle. It was critical for candidates to establish that SN was a diameter for P to be the centre of the circle. Some candidates incorrectly assumed that P was the 4th vertex of a rectangle LNSP and calculated the coordinates of P as (6 ; 1). This was incorrect as this point (6 ; 1) was not equidistant from L, S and N.

(h) Most candidates were unable to answer Q3.8 because they were unable to calculate the coordinates of P in Q3.7.

Suggestions for improvement

(a) If learners are not sure, they should consult the information sheet for the correct formula.

(b) Teachers should teach learners to label the coordinates as $(x_1 ; y_1)$ and $(x_2 ; y_2)$ on the diagram. This will prevent learners from making mistakes when substituting the coordinates into a formula. The order of substitution must be consistent, especially when using the gradient formula.

(c) Teachers need to emphasise the relationship between the sign of the gradient and the size of the angle of inclination of the line.

(d) It is important that learners realise that it is not acceptable to make any assumptions, e.g. that a certain point is the midpoint of a line. Even if it looks as if the point is the midpoint, it may not just be assumed and used. These need to be proven first before the results can be used in an answer.

(e) Teach learners to analyse diagrams in Analytical Geometry and to use relevant properties to respond to questions.

(f) Teachers should show learners different orientations of the base and the perpendicular height of a triangle. This should give learners more options when calculating the area of a triangle.

(g) Teach learners to expect that Euclidean Geometry facts will be integrated into Analytical Geometry and will be needed in the answering of some Analytical Geometry questions.

QUESTION 4: ANALYTICAL GEOMETRY

Common errors and misconceptions

(a) In Q4.1 some candidates solved for *x* in the equation $x^2 + y^2 = 20$ and did not give the answer in terms of *p,* as was required by the question. Some candidates gave their answer as $p = \pm 4$, instead of just $p = 4$.

(b) In Q4.2 some candidates calculated the midpoint of DE, instead of using the midpoint E to calculate the coordinates of F.

(c) Many candidates answered Q4.3 correctly. Those who did not obtain full marks made basic algebraic mistakes, e.g. not changing a sign of a term when transposing it.

(d) Most candidates were unable to answer Q4.4 correctly. Many candidates calculated the x-intercept of DF, namely 5, and gave that as the answer to the *x*-coordinate of the centre of the bigger circle.
Some candidates displayed poor algebraic skills when solving for *t* as shown below:

$$\frac{0-6}{t-8} = \frac{-1}{2}$$
$$-t-8 = -12$$

This question could be answered by using the fact that the tangent is perpendicular to the radius. However, candidates attempted much more complicated methods and made many incorrect assumptions and errors in their calculations.

(e) Candidates who could not answer Q4.4 were unable to attempt Q4.5 because they did not have the coordinates of G at their disposal. Some candidates incorrectly stated that the radius of the bigger circle was 0.

(f) Very few candidates were able to answer Q4.6 correctly. A contributing factor for this was that candidates needed to have answered Q4.4 and Q4.5 to attempt Q4.6. Some candidates knew that for circles to touch internally the distance between their centres must be equal to the difference between the lengths of their radii. They wrote down this distance. However, this question asked for more than that, namely, how far to translate the smaller circle to touch the larger circle internally. These candidates could not link the distance that they calculated with the required answer.

Suggestions for improvement

(a) Teachers need to revise the concept of *perpendicular lines* and *gradients*, particularly that the tangent is perpendicular to the radius at the point of contact.

(b) Learners should be reminded to refer to the information sheet for the relevant formulae.

(c) Learners should practise using a formula to get an answer (e.g. using the formula to calculate the coordinates of the midpoint), as well as to calculate an unknown variable if the answer has been given (e.g. calculate the coordinates of an endpoint if one endpoint and the midpoint are given).

(d) Learners must also be exposed to higher-order questions in class and in school-based assessment tasks. Questions on intersecting circles and circles touching internally and externally should be included in these tasks.

QUESTION 5: TRIGONOMETRY

Common errors and misconceptions

(a) Many candidates were unable to identify the quadrant correctly, and therefore used $x=+2\sqrt{2}$ instead of $x=-2\sqrt{2}$ throughout Q5.1. Some candidates ignored the instruction to not use a calculator and gave decimal answers to the trigonometric ratios. They were penalised for this.

(b) In Q5.1.2 some candidates were unable to write the expansion for sin 2β correctly despite it being given in the information sheet. Instead they incorrectly wrote the expansion for sin 2β as 2sin β.

(c) When answering Q5.1.3 some candidates were not able to reduce $\cos(450°-\beta)$ correctly to sin β, i.e. they were unable to deal correctly with an angle greater than 360° as well as a co-ratio.
A common incorrect response that showed a lack of understanding of compound angles was:

$\cos(450°-\beta)$

$\cos 450° - \cos\beta$

$0 - \cos\beta$

$-\cos\beta$

(d) Q5.2.1 was poorly answered by many candidates as they failed to realise that $\cos^4 x+\sin^2 x.\cos^2 x$ could be factorised. Some candidates flouted a very basic rule of Algebra by cancelling terms of an expression: $\frac{1-\sin^2 x}{1+\sin x}=1-\sin x$. Although these candidates arrived at the correct answer, they were not awarded any marks. Instead, they should have factorised the numerator and then cancelled factors as shown: $\frac{1-\sin^2 x}{1+\sin x}=\frac{(1-\sin x)(1+\sin x)}{1+\sin x}=1-\sin x$.

(e) In Q5.2.2 many candidates left their answers as a general solution, instead of the specific solution in the given interval. Some candidates included the reference angle

of 90° as a solution.

(f) Many candidates did not respond to Q5.2.3 because they could not link the given expression to the sine graph.

(g) In Q5.3.1 almost all candidates were unable to use the expansion for cos (A – B) to derive the expansion for sin (A – B).They had no idea how to begin with this derivation.

(h) In Q5.3.2 some candidates incorrectly considered $\sin 48° \cos x - \cos 48° \sin x$ to be the expansion for the cosine compound angle instead of the sine compound angle. This lead to the incorrect general solution for x.

(i) The candidates' response to Q5.3 was poor. Some candidates started their responses incorrectly by indicating that $\sin 3x$ was equal to $\sin 2x + \sin x$.
Other candidates incorrectly factorised the numerator as:

$$\frac{\sin 3x + \sin x}{\cos 2x + 1}$$

$$\frac{\sin x(\sin 2x + 1)}{\cos 2x + 1}$$

Candidates also failed to choose the appropriate expansion for $\cos 2x$. Consequently, they were unable to simply the expression to a single trigonometric ratio.

Suggestions for improvement

(a) Learners find it difficult to recall the Trigonometry taught in Grades 10 and 11. Teachers should ensure that all learners are able to select the relevant quadrant when drawing sketches in the Cartesian plane to calculate trigonometric ratios.

(b) Remind learners that the same simplification skills used in Algebra also apply to Trigonometry. Revise addition, subtraction and simplification of algebraic fractions with learners before teaching simplification of trigonometric expressions and proving trigonometric identities.

(c) Expose learners to questions on trigonometric ratios, involving combinations of compound angles, angles greater than 360° and co-ratios.

(d) Learners should be encouraged to use sketch graphs of $\sin x$ and $\cos x$ when solving equations where either of these ratios is equal to 1, 0 or –1.

(e) Learners should be given exercises to practise simplifying complex trigonometric expressions, proving identities and solving complex trigonometric equations.

QUESTION 6: TRIGONOMETRY (GRAPHS)

Common errors and misconceptions

(a) In Q6.1 some candidates gave the domain (which is an interval) instead of the period (which is a single value). Many candidates incorrectly divided 180° by 2 instead of dividing 360° by 2.

(b) In answering Q6.2 many candidates ignored the domain specified in the question. They gave the range as [–1 ; 1] instead of $\left[-\frac{\sqrt{2}}{2};1\right]$. Some candidates incorrectly excluded the extremities of the interval.

(c) Q6.3.1 is a familiar question, yet many candidates failed to respond to this question. Some included the endpoints of the interval not realising that at the endpoints the two functions are equal. In this instance, their answer was [45° ; 90°] instead of (45° ; 90°). Some candidates showed a lack of understanding of how to write an interval as an inequality. They incorrectly gave the answer as $x > 45°$ or $x < 90°$.

(d) When answering Q6.3.2 some candidates were able to establish the critical values of 105° and 165° but were unable to present the answer correctly as an interval.

(e) Many candidates used algebraic methods to solve the equation in Q6.4 instead of using the graph. They would either leave their answer as a general solution or only provided one solution, i.e. $x = 15°$

(f) As in Q6.4 candidates again resorted to algebraic methods to answer Q6.5 instead of translating the graph and observing the image obtained. It was disturbing that a number of candidates did not respond to this question.

Suggestions for improvement

(a) Although these concepts are discussed in Grade 10, it is necessary for learners to be constantly reminded of the meaning of concepts like *period, domain, amplitude* and *range.*

(b) Learners should be told that the period of a trigonometric function is the length of a function's cycle. Since this value is a length, it is a single number and not an interval of values.

(c) Learners should be shown how to write intervals, using both inequalities and interval notation.

(d) Teachers should make learners aware of the cyclic nature of trigonometric graphs. This is useful in determining the coordinates of other points on the graph.

(e) Teachers should put more emphasis on teaching graphical interpretation, by reading off values from graphs and using the properties of the graphs and transformations rather than using long algebraic methods. This skill is particularly useful when the question is allocated only a few marks.

QUESTION 7: TRIGONOMETRY

Common errors and misconceptions

(a) In Q7.1 many candidates attempted to use the sine formula instead of the area formula. This resulted in them not being able to express the side of the triangle in terms of the required variables.

(b) Q7.2 required candidates to analyse the diagram and create a trigonometric expression for RS and substitute into this expression the result obtained in Q7.1.

Instead, some candidates tried to manipulate the expression given for RS algebraically. These candidates assumed that the given expression was true. They were not awarded any marks for their efforts.

(c) Some candidates did not realise that they could use the expression given in Q7.2 to calculate the size of α. Instead, they tried to formulate other expressions involving α, most common of which was to use the sine formula in ΔSTK. This proved to be fruitless. Some candidates rounded off the answer for sin α. Consequently, they arrived at $\alpha = 53{,}13°$ instead of $\alpha = 53{,}51°$.

Suggestions for improvement

(a) Teachers should devote the appropriate amount of time to this section. This should allow learners to score the accessible marks in this section of work.

(b) Teachers need to develop strategies to be used when solving right-angled triangles and triangles that are not right-angled. Teach learners the conditions that determine which rule should be used to solve the question.

(c) It might be a good idea to give learners an exercise in which they identify which rule is to be used to solve the question. The learners must also substantiate why they think that the rule that they have selected applies to the question.

(d) Learners should be encouraged to highlight the different triangles using different colours.

(e) Initially, expose learners to numeric questions on solving 3D problems. This makes it easier for them to develop strategies on how to solve such questions. Once learners have gained confidence with numeric type questions, they should then be exposed to non-numeric and higher-order questions.

(f) Learners must be reminded that they should not round off intermediate values in their calculations. Early rounding off creates an error in the final answer. Only the final answer should be rounded off to the required number of places.

QUESTION 8: EUCLIDEAN GEOMETRY

Common errors and misconceptions

(a) Q8.1 tested bookwork. Some candidates did not show or describe any construction. Some candidates labelled angles inappropriately, e.g. just $\hat{K}$, instead of $\hat{K}_1$ or $\hat{K}_2$. Some candidates used as reason 'isosceles triangle', instead of 'angles opposite equal sides'.

(b) Some candidates made the following incorrect statements when answering Q8.2:

- DOBC is a cyclic quadrilateral.
- $\hat{A} = 2\hat{O}_1$
- $\hat{O}_2 = \frac{1}{2}\hat{C}$
- $\hat{A} = \hat{C}$

(c) When answering Q8.3.1 many candidates were able to state that $O\hat{M}B = 90°$. However, they provided the following incorrect reasons for their statement:

- radius perpendicular to chord.
- line from centre perpendicular to chord.
- line from centre to midpoint of chord.

(d) In Q8.3.2 some candidates were unable to provide the correct reason for AM being equal to MB. However, they were able to calculate the length of OB correctly. Some candidates did not use brackets when substituting into the expression for the *Theorem of Pythagoras*. They wrote $5\sqrt{3}^{\,2}$ instead of $\left(5\sqrt{3}\right)^2$. Consequently, they went on to enter the same into the calculator and obtained an incorrect final answer

Suggestions for improvement

(a) Learners should be taught that a construction is required in order to prove a theorem. If the construction is not shown, then the proof is regarded as a breakdown and they get no marks.

(b) Teachers must cover the basic work thoroughly. An explanation of the theorem should be accompanied by showing the relationship in a diagram. In addition, learners should be made to prove theorems as part of their informal tasks. A good strategy is to expect learners to write the proof of a theorem as a task the day after the theorem was explained in class.

(c) Teachers are encouraged to use the 'Acceptable Reasons' in the *Examination Guidelines* when teaching. This should start from as early as Grade 8. Learners should be issued with a copy of the 'Acceptable Reasons'.

(d) Learners should be encouraged to scrutinise the given information and the diagram for clues about which theorems could be used when answering the question.

(e) Learners should be taught that all statements must be accompanied by reasons. It is essential that the parallel lines be mentioned when stating that corresponding angles are equal, alternate angles are equal, the sum of the co-interior angles is 180° or when stating the proportional intercept theorem.

QUESTION 9: EUCLIDEAN GEOMETRY

Common errors and misconceptions

(a) In Q9.1 many candidates did not get a mark for the reason, because of only stating: 'proportionality theorem', instead of also stating which lines were parallel in the reason. Some candidates equated ratios between sides which were not actually equal, because they did not choose the sides appropriately, e.g. $\frac{\text{FB}}{\text{EB}} = \frac{\text{DE}}{\text{EA}}$.

(b) In Q9.2 many candidates did not label the angles correctly, e.g. $\hat{\text{F}}$ and $\hat{\text{B}}$ instead of $\text{E}\hat{\text{F}}\text{D}$ and $\text{E}\hat{\text{B}}\text{A}$. Some candidates incorrectly gave the reason as 'alternate angles' or 'co-interior angles'. Other candidates correctly gave the reason as 'corresponding angles'. However, they did not state 'the lines parallel' and were not awarded a mark as the reason was incomplete.

(c) Many candidates incorrectly used the *midpoint theorem* to answer Q9.3. They should have used the fact that the corresponding sides are in proportion when two triangles are similar. A few candidates incorrectly applied the *Theorem of Pythagoras* even

though there was no right-angled triangle. They were not aware of the minimum conditions in which the *Theorem of Pythagoras* could be used.

Suggestions for improvement

(a) Teachers should focus on developing learners' skills to analyse the question and the diagram for clues on which theorems are required to answer the questions correctly.

(b) Clearly explain to learners the difference between the *midpoint theorem*, the *proportionality theorem* and *similarity* so that they will know which of these concepts can be used in a specific situation.

(c) When answering Euclidean Geometry, learners should be discouraged from writing correct statements that are not related to the solution. No marks are awarded for statements that do not lead to solving the problem.

(d) Learners need to be told that success in answering Euclidean Geometry comes from regular practice, starting off with the easy and progressing to the difficult.

(e) Teachers should take some time to discuss the naming of angles, for example, the acceptable methods are $\hat{T}$ or $\hat{T}_1$ or $O\hat{T}S$. Teachers should also clarify when it is acceptable to refer to an angle at $\hat{T}$ and when to refer to it as $\hat{T}_1$.

QUESTION 10: EUCLIDEAN GEOMETRY

Common errors and misconceptions

(a) A fair number of candidates made incorrect assumptions when answering Q10.1. Among them were that: an exterior angle of the cyclic quadrilateral ($\hat{B}_3$) = the interior opposite angle ($\hat{R}_2$), RP = RQ and therefore APQR is a kite, RQ || AP and $\hat{M}_1 = 90°$.

(b) Candidates who could not answer Q10.1 correctly could not understand how to start to answer Q10.2. Some candidates used the properties of a cyclic quadrilateral in their attempt to prove that the same quadrilateral is cyclic. Some candidates did not know the difference between a *theorem* and its *converse*. They omitted the word 'converse' in the reason: 'exterior angle of cyclic quad'.

(c) Very few candidates obtained full marks for Q10.3. The main reason for this was that candidates were unable to answer Q10.1 and Q10.2 correctly. Poor naming of angles in the answers often led to candidates themselves getting confused about which angle they were referring to.

(d) Q10.3 required candidates to obtain a proportion from the similar triangles in Q10.2, using the *proportional intercept theorem* in ΔRAC to establish a second proportion and then to combine the two. Many candidates failed to establish one or the other proportion and therefore could not make the conclusion.

Suggestions for improvement

(a) More time needs to be spent on the teaching of Euclidean Geometry in all grades. More practice on Grade 11 and 12 Euclidean Geometry will help learners to understand theorems and diagram analysis. They should read the given information

carefully without making any assumptions. This work covered in class must include different activities and all levels of the taxonomy.

(b) Teach learners not to assume any facts in a geometry sketch but to only use what was given and that which was proven already in earlier questions.

(c) Learners need to be made aware that writing correct statements that are irrelevant to the answer in Euclidean Geometry will not earn them any marks in an examination.

(d) Consider teaching the approach of ‘angle chasing’ where you label one angle as x and then relate other angles to x. In this way, learners should find it easy to identify angles that are equal but moreover, they should find it easier to establish the reasons for the relationships between the angles.

CHAPTER 11

PHYSICAL SCIENCES

The following report should be read in conjunction with the Physical Sciences question papers of the November 2023 examinations.

11.1 PERFORMANCE TRENDS (2019–2023)

The number of candidates who wrote the Physical Sciences examination in 2023 decreased by 2 605 compared to that of 2022.

The table below indicates an increase in the pass rate at 30% (Level 2) and at 40% (Level 3), particularly over the past four years.

There was a pleasing improvement in the pass rate this year. Candidates who passed at the 30% (Level 2) improved from 74,6% in 2022 to 76,2% in 2023. There was a corresponding improvement in the pass rate at the 40% (Level 3) over the past two years from 49,7% to 51,1%.

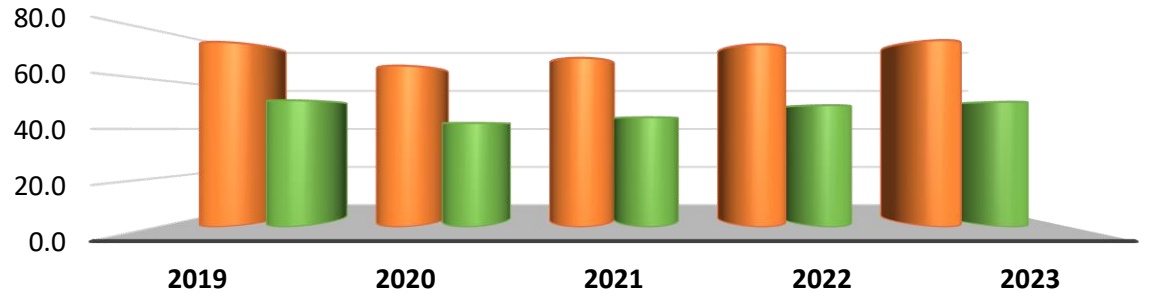
The percentage of distinctions over 80% (Level 7) remained stable at 3,1%. Given the lower number of candidates in 2023, this converts into a total of 6 398 distinctions compared to 6 479 distinctions in the previous year.

The results achieved by this cohort are commendable. Strategic intervention programmes at all levels (national, provincial, district and school) ensured that learners were adequately prepared. The diligence and perseverance of the above-average candidates also contributed to the favourable overall performance.

Table 11.1.1 Overall achievement rates in Physical Sciences

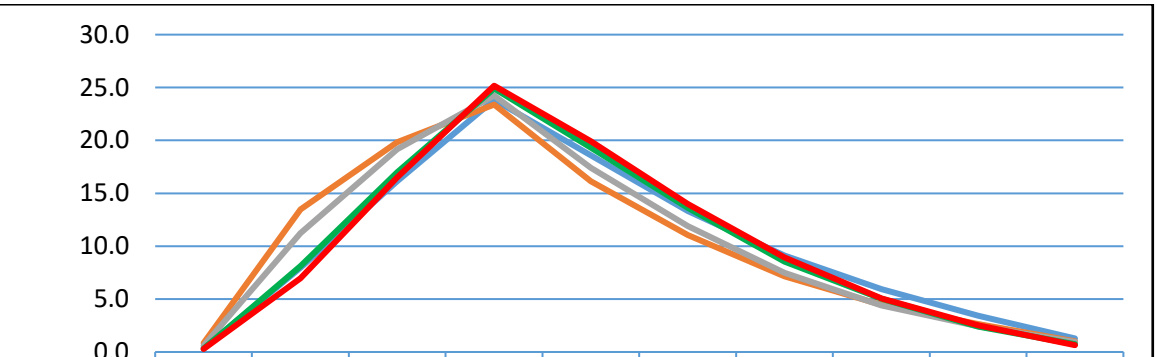
Year	No. wrote	No. achieved at 30% and above	% achieved at 30% and above	No. achieved at 40% and above	% achieved at 40% and above
2019	164 478	124 237	75,5	85 034	51,7
2020	174 310	114 758	65,8	73 982	42,4
2021	196 968	135 915	69,0	88 164	44,8
2022	209 004	155 877	74,6	103 811	49,7
2023	206 399	157 368	76,2	105 414	51,1

Graph 11.1.1 Overall achievement rates in Physical Sciences (percentage)



	2019	2020	2021	2022	2023
% achieved at 30% and above	75.5	65.8	69.0	74.6	76.2
% achieved at 40% and above	51.7	42.4	44.8	49.7	51.1

Graph 11.1.2 Performance distribution curves in Physical Sciences (percentage)



	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-100
2019	0.3	8.0	16.1	23.8	18.6	13.3	9.1	6.0	3.4	1.3
2020	0.8	13.5	19.8	23.4	16.1	11.0	7.2	4.5	2.6	1.0
2021	0.6	11.2	19.2	24.2	17.4	11.9	7.5	4.4	2.4	0.9
2022	0.3	8.1	17.0	24.9	19.3	13.6	8.6	5.0	2.4	0.7
2023	0.3	7.0	16.5	25.2	19.9	14.0	8.9	5.1	2.5	0.6

General comments on Paper 1 and Paper 2

The questions in Paper 1 on Newton's Laws and Doppler Effect were generally well answered. The multiple-choice questions, as well as the questions on Static and Current Electricity and the Photo-electric Effect, were again poorly answered.

Questions pertaining to pure recall of content were poorly answered because key words and phrases were omitted from definitions. Short informal assessment tasks relating to these issues will greatly assist in improving these shortcomings. This practice can be used to good effect in content relating to definitions and laws listed in the *CAPS* and the *Examination Guidelines*.

Interpretation of graphs is still a challenge for many learners. Problem-solving exercises that involve graphs should be done in a variety of topics. Identification of the variables in relation to the equation describing the graph should be stressed. Practical work needs more attention in schools to ensure learners are able to apply practical skills, e.g. identification of variables, drawing of conclusions, interpretation of results and drawing and interpretation of graphs.

The application of mathematical principles is still a challenge for many learners. Learners should be given a variety of problem-solving activities that involve mathematical knowledge pertaining to simultaneous equations, quadratic equations, binomials, factorisation, trigonometry and graphs in classwork, homework, tests, and examinations.

Stoichiometry will always be an important part of Paper 2. The understanding of *stoichiometry* should be a continuous theme in the teaching of Chemistry. The more thoroughly it is done in Grades 10 and 11, the more successful candidates will be in Grade 12. (A sound foundation should be established in Grades 8 and 9.)

11.2 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 1

General comments

(a) In Question 1 (Multiple-choice Questions – All topics) the candidates performed better than the previous year (2022) when it was one of the worst performing questions. It is, however, still not a good performance. Candidates needed to apply the skills for approaching and answering multiple-choice questions. Most questions were on Level 1 and 2, while some questions were pitched at Level 3. Candidates performed poorly in the Level 3 questions since integration of knowledge areas and skills was also needed. One reason for candidates struggling to perform well in this question may be that many candidates are only exposed to the answering of multiple-choice questions in formal assessments and not as part of the learning process during teaching.

(b) Throughout the paper, candidates showed a lack of understanding when they had to differentiate between *vectors* and *scalars.*

(c) Candidates lost marks unnecessarily because they forgot to write subscripts in formulae.

(d) Generally, candidates struggled to grapple with topics that were integrated in a question.

(e) Interpretation and drawing of sketch graphs was a challenge for many candidates.

(f) Candidates showed a lack of understanding in mathematical relationships, specifically when referring to ratios and proportions.

(g) In many questions, candidates made the same errors and displayed the same poor conceptual understanding as in previous years. Provinces should mediate effective implementation of the recommendations in this diagnostic report.

(h) The lack of knowledge of topics taught in Grades 10 and 11 could be seen in the poor performance of the candidates in Questions 7 and 8. Electrostatics and electric circuits must be completed in Grades 10 and 11 with only the internal resistance to be done in Grade 12. These two questions had the second lowest averages.

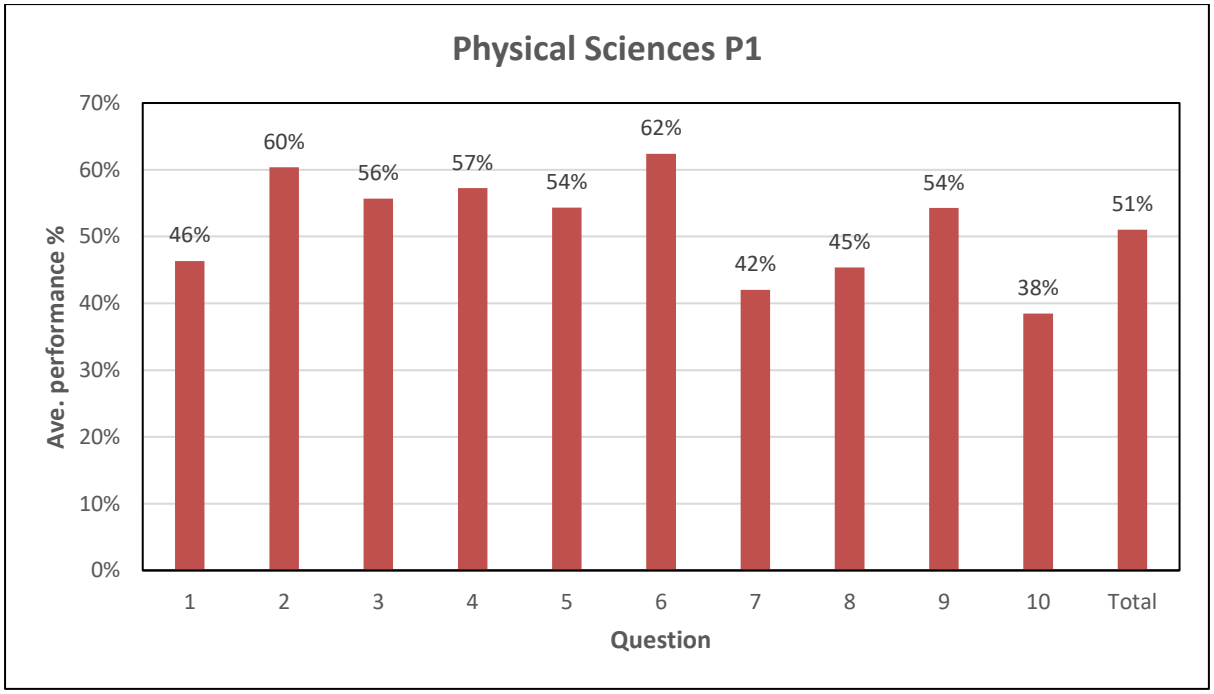
(i) Many candidates lost marks unnecessarily for: not writing the correct formulae using the data sheet provided; not showing their substitutions; and for leaving out subscripts. Some candidates did not give the correct units for the answers, or they did not convert their numerical answers to a minimum of two decimal places. Some left their answers as a fraction.

11.3 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 1

The following graph is based on data from a random sample of candidates' scripts. While this graph might not accurately reflect national averages, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

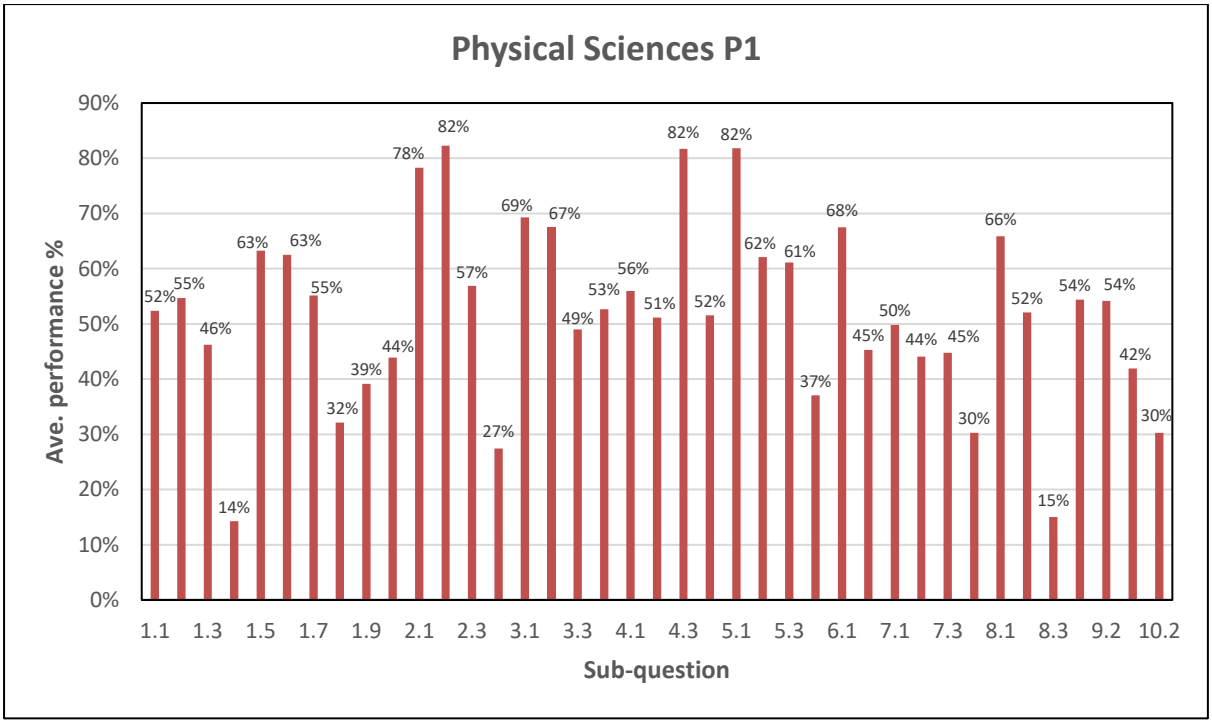
There was poor performance in Question 1 (Multiple-choice questions) but there was an improvement from 2022. It must be noted that the *Examination Guidelines* do not restrict multiple-choice questions to Level 1 and 2 questions. The averages also reflect the poor performance in Question 7, 8 and Question 10. These were the worst performing questions in 2023. Question 6 was the best performing question.

Graph 11.3.1 Average performance per question in Paper 1



Q	Topics	Q	Topics
1	Multiple-choice questions	6	Doppler Effect
2	Newton's laws of motion	7	Electrostatics (Coulomb's law & electric fields)
3	Vertical projectile motion	8	Electric circuits
4	Momentum and impulse	9	Electrodynamics: motors, generators, AC and DC
5	Work, energy and power	10	Photoelectric effect and Electrostatics

Graph 11.3.2 Average performance per subquestion in Paper 1



Sub-Q	Topic	Sub-Q	Topic
1.1	Newton's Second Law	6.1.1	State Doppler Effect
1.2	Newton's First Law	6.1.2	Calculate speed of sound in air
1.3	Vertical Projectile Motion	6.1.3a	Compare effect of speed on speed of air
1.4	Vertical Projectile Motion and Momentum	6.1.3b	Compare effect of speed on $f_{emitted}$
1.5	Work and Energy	6.1.3c	Compare effect of speed on $f_{observed}$
1.6	Doppler Effect	6.2.1	Apply red shift
1.7	Electrostatics	6.2.2	Explain red shift
1.8	Circuit Electricity	7.1	Describe electric field
1.9	Electrodynamics	7.2	Draw net electric field
1.10	Photoelectric effect	7.3	Calculate distance r
2.1	Statement Newton's 2nd Law	7.4	Calculate net force on electron
2.2	Free–body diagram	8.1	Statement Ohm's Law
2.3.1	Application Newton 2	8.2.1	Calculate total R_{ext}
2.3.2	Application Newton 2	8.2.2	Calculate reading on ammeter
2.4.1	Comparing effect of angle on friction	8.2.3	Calculate power dissipated
2.4.2	Explaining angle change on friction	8.3.1	Compare brightness of bulb
3.1	Defining free fall	8.3.2	Explain brightness of bulb
3.2	Calculating initial speed upwards	9.1.1	Identify component A
3.3.1	Calculating energy transferred to ground	9.1.2	State energy conversion
3.2.3	Calculating time for maximum height	9.1.3	Identify direction of rotation
3.4.1	Interpreting velocity-time graph	9.1.4	State two change to rotate faster
3.4.2	Interpreting velocity-time graph	9.2.1	Define root mean square current
3.4.3	Interpreting velocity-time graph	9.2.2	Calculate root mean square current
4.1	Apply Newton's Third Law	9.2.3	Calculate energy consumed by toaster
4.2	Calculation impulse	10.1.1	Define work function
4.3	State conservation of momentum	10.1.2	Calculate if electrons will be emitted
4.4	Calculation conservation of momentum	10.1.3	Calculate number of photons needed
5.1	Free–body diagram	10.2.1	Identify type of line spectrum
5.2	Name independent variable	10.2.2	Describe line spectrum
5.3	State Work-Energy Theorem	10.2.3	Identify diagram relating to line spectrum
5.4	Calculate mass of trolley		

11.4 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 1

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

Common errors and misconceptions

(a) In Q1.3 candidates had to integrate projectile motion with energy, which is also basic knowledge from conservation of mechanical energy taught in Grade 10.

(b) Q1.4 was the worst answered question. It was an integrated question and a higher-level question. Candidates struggled with the integration of formulae without any values. This is a higher-level skill and has been assessed many times in the past.

(c) Q1.7 assessed basic knowledge of electrostatics from Grade 10 such as the fact that a neutral object can still be attracted to a charged object.

(d) Q1.8 was the second worst performing multiple-choice question. Candidates lack the understanding of what a voltmeter measures, how the current flows and how circuits are connected. The poor performance in Q1.8 was repeated in Question 8. The knowledge of basic concepts and interpretation of circuits are a constant struggle for learners year after year.

(e) Q1.9 assessed the understanding of current flow in a generator and, as seen in the circuits as well, candidates did not understand the concept of *current* very well. This was a very simple question which showed an enormous lack of understanding. The main reason for the poor performance was that candidates did not understand the function of the split ring commutator.

(f) The poor performance in Q1.10 suggests that candidates struggled with the concept of *ratio* and the *manipulation of a formula*, which is also a mathematical skill.

Suggestions for improvement

(a) Multiple-choice questions test learners' understanding of concepts, principles, laws, and the relationship between the dependent, independent, and constant variables. This must be demonstrated through logical reasoning and not by engaging in lengthy calculations. During teaching and learning, carefully selected concrete examples must be worked out to demonstrate these concepts, laws and principles, followed by generalisations and the making of predictions.

(b) Learners must also be encouraged to refer to the formula sheet because it gives the summaries of laws and principles as well as the relationship between the variables.

(c) Learners should practise more multiple-choice questions. They should try to find the scientific solution and not guess an answer. This could be used as a teaching tool and should be done after every topic.

(d) Teach learners to answer by elimination of distractors. If calculations are involved, let them do the calculations and show answers instead of only writing the answers.

(e) Teachers could incorporate multiple-choice questions into their lessons, especially by assessing definitions.

(f) Some apps, such as zipgrade or Kahoot!, could also make facilitate the practising of multiple-choice questions.

(g) Teachers should include the use of ICT in the teaching of the subject. Multimedia/Software such as *PhET* and *Edukite* as well as YouTube videos should be used to demonstrate the answers for multiple-choice questions through simulations (virtual experiments).

(h) Assessment of multiple-choice questions should be included in all class activities and not only in control tests and preliminary examinations. It is recommended that a booklet be drawn up, containing multiple-choice questions testing different topics. Different sources, such as previous NSC and provincial papers and textbooks, should be used. The booklet should also have a step-by-step explanation on how to answer multiple-choice questions.

QUESTION 2: NEWTON'S LAWS OF MOTION

Common errors and misconceptions

(a) Candidates omitted key words in writing the law. Some failed to understand the central concept of this law to be acceleration. They started the second part of the law with 'the net force' and were penalised for stating the wrong relationships between *force, acceleration* and *mass*. These relationships can be concluded from the formula sheet and candidates needed to understand the value of the formula when learning and writing the definitions and laws. Overall, the performance was very good.

(b) The free-body diagram was very well answered and the best performing subquestion in Q2. Common errors in the free-body diagram were missing labels, missing arrows, arrows not touching the dot, additional forces, the normal force not perpendicular to the plane and the gravitational force not perpendicular to the horizontal. If free-body diagrams were wrong, the candidates did their calculations according to their diagrams and hence got the calculation wrong too. No positive marking from wrong free-body diagram was applied.

(c) Units were often left out of the final answer of the calculations. Some candidates used the system approach with the two objects and were then penalised. Candidates often used the wrong mathematics in substituting *cos* instead of *sin*.

(d) Candidates misinterpreted 'constant force' as 'constant acceleration' in Q2.3; as a result, they substituted zero for acceleration in their calculation for tension.

(e) Most candidates chose the option of 'remain the same', for Q2.4.1. They were relating the angle to the co-efficient of kinetic friction.

(f) Generally, in questions that required candidates to discuss or explain a scientific concept or relationship, the performance was poor. In Q2.4.1 candidates had a 33% chance of guessing the correct answer because they had to choose from 'increase', 'decrease' or 'remain the same'. However, the explanation in Q2.4.2 was the worst performing subquestion in Q2. Candidates struggled to apply the mathematical relationships already used in Q2.3 in their explanation of Q2.4.2.

Suggestions for improvement

(a) Learners must be exposed to the definitions in the *Examination Guidelines* and the *CAPS*. Key words must be emphasised in these definitions.

(b) The importance of drawing free-body diagrams for each object correctly and their usefulness in problem-solving must be emphasised. Learners should be taught to draw the forces only in the free-body diagram and not the components. Teachers should encourage learners to do a separate sketch with components that can be used for their calculations. Teachers could introduce free-body diagrams in Grade 9 in the teaching of *forces*.

(c) It is important to note that forces may not be drawn on top of one other.

(d) Teachers should emphasise that the net force acting on an object is the sum of all the forces acting on the object parallel to the direction of motion of the object.

(e) Learners must be systematically exposed to different questions in which trigonometric relations must be applied.

(f) Teachers should expose their learners to all scenarios for this section as described in the *Examination Guidelines*.

(g) Teachers should help the learners see the relationship already used in the mathematical formula used in the calculation, to explain the changes made to the system. For example:

$F_f = \mu_k N = \mu_k(mg\cos\theta)$

$F_f \alpha \cos\theta \rightarrow \mu_k$, m and g are constant

As θ decreases $\rightarrow$ cos θ increases

N increases and F_f increases

QUESTION 3: VERTICAL PROJECTILE MOTION

Common errors and misconceptions

(a) The candidates answered the Q3.1 without thinking about the wording. 'Gravity', 'gravitational force' and 'weight' were used as if they have the same meaning. It should be stressed that the definitions in the *Examination Guidelines* should be taught.

(b) One of the main reasons for candidates losing marks in Q3.2 was their inability to calculate the $(E_k)_{lost}$ on the ground – they had to use the impact velocity with the ground and the rebound velocity from the ground in order to calculate the respective kinetic energies. Many used the initial velocity of projection from the top of the building and therefore obtained a maximum of 2/5 marks.

(c) Q3.3.1 was a challenge because of the integration of different topics. Not only did candidates have to use equations of motion, but also energy principles. Integration usually relates to a higher-order question.

(d) In Q3.4 the graphs were given, and candidates had to interpret the values already given or calculated in the previous subquestions in relation to the graph. Some candidates could not relate the correct values to the correct labels on the graph.

Suggestions for improvement

(a) Learners should be able to do calculations with up or down as positive. Learners must first make sure that they understand the motion of the projectile and which values are relevant at each position. A rough drawing or diagram indicating the physical motion of the projectile together with all the information given (*velocities*, *displacements*, *time* etc.) is necessary in all scenarios.

(b) The allocation of direction to vectors is crucial to ensure correct substitution of values. Emphasis should be placed on the vector quantities such as *velocity*, *acceleration* and *displacement* so that learners comprehend that vector quantities have both magnitude and direction.

(c) Mark allocations should be noted: 3 marks signify a one-step calculation, while 4–6 marks require a multi-step calculation.

(d) The interpretation and sketching of graphs are two different but connected skills. Teachers should expose learners to both skills.

(e) Learners should be able to interpret the straight line using the equation $y = mx + c$ from mathematics for $v_f = a\Delta t + v_i$, where $y = v_f$, $c = v_i$ and m is the gravitational acceleration. Teachers should assist learners in seeing the correlation between mathematics and science formulae.

QUESTION 4: MOMENTUM AND IMPULSE

Common errors and misconceptions

(a) The poor performance in Q4.1 was due to the fact that many candidates failed to relate to Newton III and wrote the magnitude with no direction or with the incorrect direction.

(b) It is important to take note that the correct term is an *isolated system* and not a *closed system*. *Closed system* will not be accepted in future.

(c) Candidates still confused their formulae and did not know the difference between *sum of momentum* and *change in momentum*. Because of this, the signs were incorrect, and most candidates only obtained half of the marks that they could have received.

(d) In some cases, candidates saw F_{net} as the same as *impulse*.

(e) The main challenge in this question was that many candidates confused v_i and v_f.

(f) A further problem was that they wrote mv + mv = mv + mv, without differentiating between the masses and velocities.

(g) Candidates confused the momentum formula with the kinetic energy formula. They often started with the principle of momentum formula and then used the kinetic energy formula for their substitution.

Suggestions for improvement

(a) When using the sigma sign Σ, learners need to do so correctly. The sigma used alone has no meaning.

(b) Learners need to be taught that using the impulse equation is applicable for ONE object and momentum principle for TWO objects; they should never be combined.

(c) Learners should be encouraged to assign subscripts when using the formulae.

(d) Teachers should emphasise that the symbol Δ implies final quantity – initial quantity and the symbol Σ imply the sum of quantities.

QUESTION 5: WORK, ENERGY AND POWER

Common errors and misconceptions

(a) Candidates seemed to struggle with the different variables when given an experiment. Despite being given a graph which would have helped them in this case to determine what the independent variable was, candidates were unable to relate the values to the formula.

(b) Q5.4 was poorly answered. Candidates struggled to extract the necessary information from the graph and the preamble to do the calculation. Candidates did not realise that $E_{kf} = 0$ (since the trolley comes to a stop in the different experiments).

(c) In Q5.4 candidates lacked insight using cos0° instead of cos180° when calculating work done by frictional force, leading to a negative value for mass which is impossible.

Suggestions for improvement

(a) Learners must look at the mark allocation to determine the number of forces on the free-body diagram.

(b) Learners should be taught graphical analysis. The independent variable is indicated by the X-axis and the dependent variable by the y-axis.

(c) Continuous practice with examples that require complex reasoning is needed for these calculations.

(d) Teachers must emphasise that the 'loss' in energy is negative and that work done by a frictional force is negative work done.

(e) Whenever a graph is given, there is always the possibility of calculating the gradient. Then learners need to be able to determine what the meaning of the value of the graph is.

(f) It is important that learners refer to the data sheet and use the formula as given on the data sheet and not create their own.

(g) Problem-solving exercises that involve graphs should be done in a variety of topics. Identification of the variables in relation to the equation describing the graph should be stressed. The scale of graphs, gradient, ordered-pairs and x and y-intercepts need to be emphasised within problem-solving in science contexts.

QUESTION 6: DOPPLER EFFECT

Common errors and misconceptions

(a) Most candidates knew the definition of Doppler by heart and wrote it down as such. Considering Q6.1.3 it was, however, clear that they did not necessarily understand the Doppler Effect even though they knew the definition.

(b) The calculation in Q6.2 could have been done by copying the formula off the data sheet and substituting the values. The calculation itself remained a challenge mathematically.

(c) In Q6.1.3 it was clear that candidates did not necessarily know what happened to all the other physical quantities mentioned in the formula. They appeared to be used to substituting, without thinking about any of the quantities.

(d) In Q6.1.3(a) very few of the candidates realised that the speed of sound in the air would stay the same. Only if the composition of the air changed, would the speed of sound change.

(e) In Q6.1.3(b) the candidates did not realise that the frequency of the source stayed the same. In previous years they were only required to substitute the value of the frequency of the source into a formula without showing further insight.

(f) It was only in Q6.1.3(c) that candidates performed well – answering about apparent frequency, since the response stemmed directly from the definition.

(g) In Q6.2.1 candidates had a 50/50 chance of writing down the correct answer. The explanation in Q6.2.2, however, was poorly answered with almost two-thirds of candidates not being able to use the correct scientific language to explain a phenomenon.

Suggestions for improvement

(a) Teachers should emphasise the quantities in the formula with regard to what will change in a specific example and what will remain the same.

(b) Learners should be taught not to only repeat information given in the question, but to elaborate in a scientific explanation.

(c) Teachers should revisit the topic of *red shift*. Explain this in terms of the spectral lines as well as the red end of the spectrum. Calculations are done on *sound* and the Doppler Effect. When referring to light and the Doppler Effect, there are only explanations involved and no calculations asked.

(d) Teachers need to expose learners to a variety of questions relating to the Doppler Effect as the scope is very broad, given the number of variables in the equation.

QUESTION 7: ELECTROSTATICS (COULOMB'S LAW and ELECTRIC FIELDS)

Common errors and misconceptions

(a) Q7.2 was a lower-level question, but the sample average was a low 44%. Candidates were not precise and exact in their sketches of the electric field pattern. The curves of

the field opposed one another, or the direction was faulty, or they were only one dimensional.

(b) Candidates did not differentiate between 'electric field (E)' and 'electric force (F)' in Q7.3. The formulae are not the same and the units are not the same. This clearly indicated that candidates did not use the data sheet and wrote the formulae from memory. Even the substitution of the constant k was done from memory instead of using the data sheet, which resulted in wrong values being substituted.

(c) Many candidates used 3r instead of r, where they added the distances and they did not square the r in the formula. This indicated both a lack of understanding of the application of the formula to the scenario, and a lack of mathematical skills.

(d) In Q7.4 many of the candidates used the incorrect formula to calculate the force and did not obtain any marks. Instead of using the formula F = Eq to calculate net electrostatic force, most of the candidates used Coulomb's Law formula where they made the same mistake of not writing a subtraction sign to show vector addition of electric fields or forces.

Suggestions for improvement

(a) Teachers should revise this work in Grade 12 and include it in the June examinations.

(b) Learners should be shown when it will be a force of attraction or repulsion; when it will be a force experienced by a field; and all the different possible field patterns. Only field patterns of equal charges will be asked. All of the above should be practised.

(c) Learners should be taught to differentiate between *force diagrams*, *vector diagrams*, and *field pattern diagrams*.

(d) The difference between 'field' and 'force' must be emphasised. Teachers should focus on the units of the two quantities. Learners should not substitute negative values for the charges (scalars). This results in a wrong negative sign for the vector of E or F.

(e) Teachers can use vector diagrams very effectively to assist learners with the sign conventions when working with forces/fields and to calculate net force/field.

QUESTION 8: ELECTRIC CIRCUITS

Common errors and misconceptions

(a) Candidates struggled to differentiate between 'parallel' and 'series' and to identify which resistors were connected and in which part of the circuit.

(b) Candidates did not write the formula for parallel resistors but wrote down the numerical calculation only.

(c) Candidates could not relate the brightness of the light bulb to the power output.

(d) In Q8.3.1 candidates had to choose from three options, so they had a 33% chance of being correct. The explanation of their choice in Q8.3.2 posed a problem and was the second lowest performing subquestion. They were not able to express scientifically why they had made their choice for Q8.3.1. They omitted key words such as *total resistance* and *total current*. In explaining the correct answer, it is important to specify

to which current, which potential difference and which resistance reference is being made.

Suggestions for improvement

(a) Learners must be taught to approach all explanation questions by referring to the formulae involved in that specific example. They should make sure that all symbols in the formula are referred to in the explanation. They need to start with *total resistance*, *total current*, *internal potential difference* (because of lost volts), *external potential difference*, etc. There is a sequence that should be followed in order to answer these questions. Practising these skills is essential.

(b) Learners must be taught to write the answer in bullet format so that the argument is easily followed.

(c) Learners should avoid arrows and symbols in explanations. Learners need to write in full sentences but not in essay format.

(d) Teachers should allow learners to practise calculations of power as well, and not only *potential difference* and *current*.

(e) Use *PhET* simulations to demonstrate the relationship between V_{ext} and $V_{int.}$ The effect of adding resistors or removing resistors in series and parallel can also be demonstrated.

QUESTION 9: ELECTRODYNAMICS

Common errors and misconceptions

(a) The definition of *root mean square current* was still a major problem. There seemed to be a lack of understanding of the content that candidates had learnt.

(b) Q9.1.3 required more application than theory. Some candidates did not know the difference between ‘clockwise’ and ‘anti-clockwise’.

(c) Q9.1.4 was placed back in the ATP in 2023. Not all candidates did this specific work in 2022, but that should be rectified in 2024.

(d) Q9.2.3 required the calculation of energy consumed by the toaster; it carried 3 marks and could be solved in one step. Most candidates used 2 steps and were unsure as to what to substitute. Many solved for ‘power’ instead of ‘energy’. The unit for energy is *joule* while many candidates wrote *watts*.

Suggestions for improvement

(a) Learners should practise the hand rules to make sure that they understand ‘clockwise’ and ‘anti-clockwise’.

(b) Teachers should revise the Grade 11 work on electromagnetic induction. Learners must understand the different parts that can influence the *emf*.

(c) Learners must be taught not to leave answers as a fraction but to write them with at least two decimals and to ensure that the unit is correct.

QUESTION 10: PHOTOELECTRIC EFFECT

Common errors and misconceptions

(a) Q10.1.3 was a challenge as it was an integrated question with complex reasoning. The multi-step included crossover of different topics.

(b) Candidates could do the calculation in Q10.1.2 but failed to write the conclusion.

(c) Q10.2.1 was poorly answered as candidates were not given a choice of two answers but had to give the theoretical answer of the spectrum. They then struggled in Q10.2.2 when having to describe the same spectrum, which was referred to in their answer to Q10.2.1. Most candidates described how the spectrum formed and not when it is seen.

(d) In Q10.2.3 candidates had a 50% chance of arriving at the correct answer as they had to choose the diagram. Many candidates did not know the answers to Q10.2.1 and Q10.2.2 but still guessed the answer for Q10.2.3.

Suggestions for improvement

(a) Using formulae as given on the data sheet remains an important task.

(b) It is important for learners to focus on including a minimum of two decimals in their answers.

(c) Teachers should emphasise that in the formula n = Q/e, n is a positive integer hence the answer could never be a negative.

(d) When teaching *photo-electric effect,* it is important for teachers to focus on scientific notation.

(e) When electrons are emitted, learners must realise that there is a comparison of one electron with one photon.

(f) Conclusions must be drawn and made according to the question asked.

(g) Teachers should help learners differentiate between energy of *photon* (*incident light*), work function of a metal and *kinetic energy* of electrons.

11.5.1 OVERVIEW OF CANDIDATES' PERFORMANCE IN PAPER 2

General comments

(a) To answer Chemistry papers successfully a thorough knowledge of the content is needed.

(b) The most important aspect is to read a question carefully and understand what is required of the question.

(c) Candidates should learn and know definitions and formulations as provided in the *Examination Guidelines* of 2021, not older versions. They (and teachers) should refrain from presenting explanations of laws and concepts as definitions.

(d) As in previous years, performance in Q2 (organic naming and structures) was good. Performance in physical properties of organic matter (Q3) was lower than in 2022.

(e) The performance in the question pertaining to chemical equilibrium (Q6) improved from previous years' performances.

(f) The questions on acids and bases (Q7), galvanic cells (Q8) and electrolytic cells (Q9) were very poorly answered.

(g) Questions requiring practical skills were not well answered. These included identification of variables (Q5.2), interpreting graphs (Q3.2, 3.4, Q6.3 and 6.5) and taking readings from a graph (Q3.5.1, 3.6 and Q6.4).

(h) Most candidates did not know how to use the *Table of Standard Reduction Potentials* correctly, which caused the poor performance in subquestions Q1.9 and Q1.10, as well as in Q8.2 and Q9.5.

(i) One of the marking rules is that a candidate will not be credited for writing only a formula without attempting to use it. Candidates had to substitute a value – even if it was wrong – so that a mark could be awarded for the formula.

(j) Candidates should understand the instruction 'Round off your **final** numerical answers to a minimum of **two** decimal places'. This only applies to the final answer.

(k) There is still a high percentage of candidates who performed poorly due to common/ consistent mistakes that could have been avoided, if they had prepared well for the examination. Many candidates lost valuable marks due to these avoidable errors. This must be resolved through proper teaching and learning. Examples of mistakes are:

- Omitting H atoms and/or bond lines when drawing structural formulae of organic compounds;
- Numbering of questions incorrectly;
- Using values incorrectly copied from the question paper in calculations;
- Copying of formulae incorrectly from the data sheet;
- Substituting values different from those supplied on the periodic table or constant tables;
- Presenting final answers with no units being indicated;
- Omitting the minus sign in unit for concentration ($mol \cdot dm^3$ instead of $mol \cdot dm^{-3}$) or including a minus sign when writing unit of volume (cm^{-3} instead of cm^3);
- Not doing the simple things properly, e.g. numbering on the front page of the exam; numbering questions clearly; starting each question on a new page and layout of answers.

1.5.1 GENERAL SUGGESTIONS FOR IMPROVEMENT

(a) Learners should be taught to manage their time so that they have enough time for each question. In the case of an error, the learner will then know not to get stuck on that question for too long. They must rather move on and then come back to that question.

(b) Definition tests are very important, and teachers should revise them fortnightly – on conclusion of a topic.

(c) Teachers should make use of other teachers in your district to learn from and to lean on. Establish Physical Sciences clusters in the district so that teachers are given opportunities to share best practices.

(d) Markers should share information with teachers who did not mark (peer debriefing).

(e) Teachers need to stress the importance of using the correct terminology, accurate representation of symbols (e.g. when to use small or capital letters such as pH). Equations, substitutions, final answers with correct units should also be emphasised. Teachers should go back to the basics.

(f) It is crucial to teach conceptual understanding thoroughly before drilling previous years' question papers. For example, organic reactions like cracking, conditions necessary for the reaction to take place, etc. must be taught. Some poorly answered questions, e.g. Q9.5, indicates that candidates are used to answering in a certain pattern (without necessarily understanding why).

(g) Learners must be guided on how to eliminate distractors. They must be given assessments using multiple-choice questions on a regular basis.

(h) Data sheets should form part of the learners' workbooks (pasted on 1st page) and learners should be told to copy formulae as they are from data sheets. When the incorrect formula is written first, all the marks for the subquestion are forfeited.

(i) All prescribed experiments (formal and informal) must be done and should cover different practical skills, including identification of variables, fairness of investigations, graph drawing and interpretation, calculations, drawing conclusions, etc.

(j) Teachers must take some time to revise stoichiometric calculation, as well as calculator manipulation skills.

(k) Since galvanic and electrolytic cells deal with redox reactions (involving loss or gain of electrons) as well as involvement of current, explanations using strength of reducing and oxidising agents, the use of the formulae n = 'Q' /'q_e' and I = 'Q' /'Δt' must be thoroughly assessed. Learners must be shown that the 'n' in the formula n = 'Q' /'q_e' is number of electrons not number of moles. So, to get to number of moles they must first calculate the number of atoms (N).

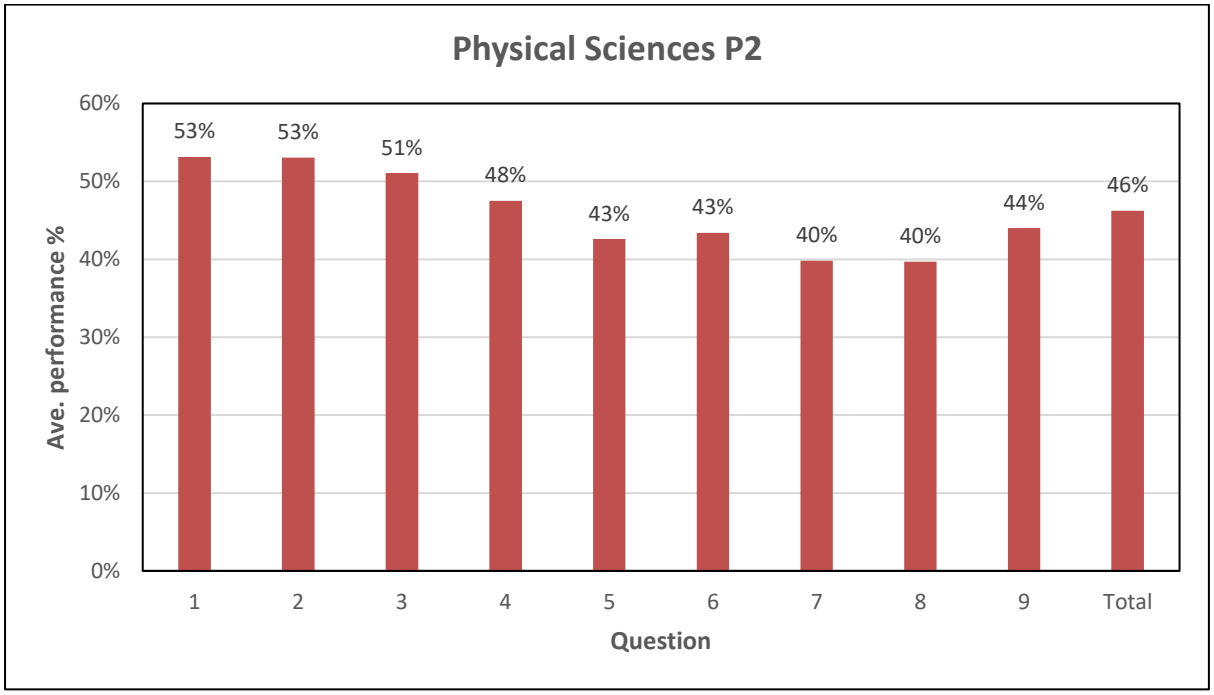
(l) Learners should be taught to store the answers of their calculations (unrounded) on their calculators, and only round off when the final answer is given. Should they use the answer to a calculation in a further calculation, the unrounded value should still be used.

11.6 DIAGNOSTIC QUESTION ANALYSIS OF PAPER 2

Performance improved in three questions, namely organic naming, and structures (Q2), chemical equilibrium (Q6), and electrolytic cells (Q9) as compared to 2022. There was a significant decline in the performance of the candidates in responding to questions on the physical properties of organic matter (Q3), while the performance in acids and bases (Q7) and galvanic cells (Q8) showed a decline of more than 10%.

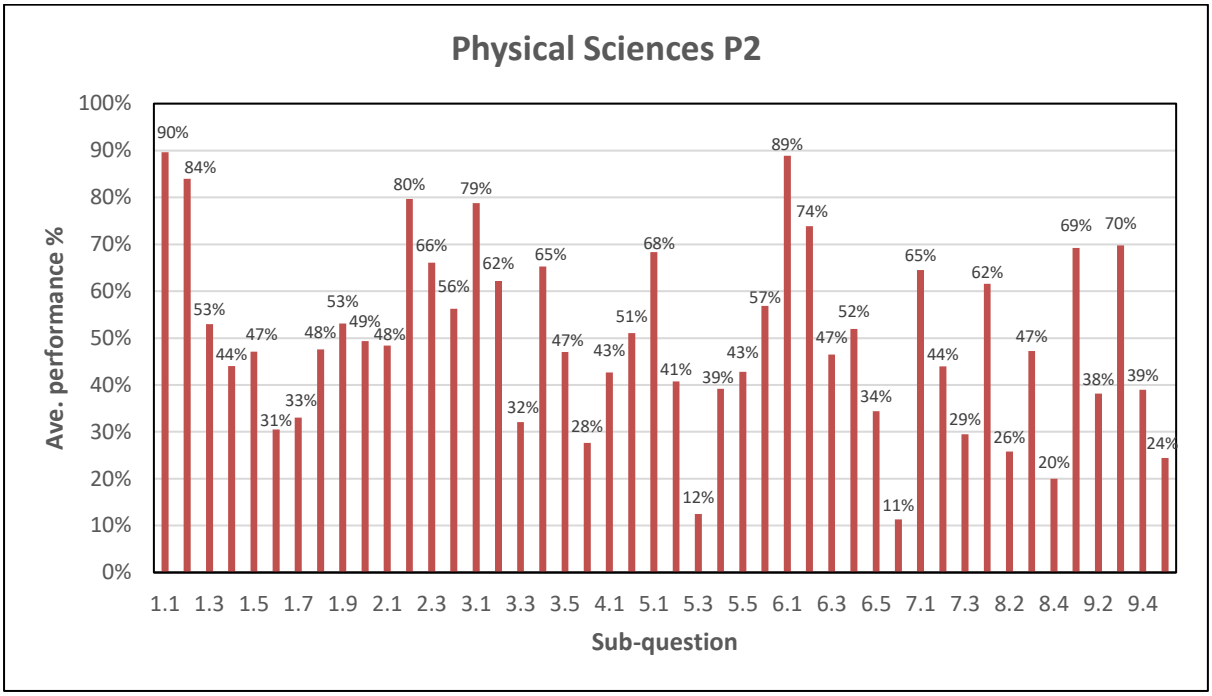
The following graph is based on data from a random sample of candidates' scripts. While this graph might not reflect national averages accurately, it is useful in assessing the relative degrees of challenge of each question as experienced by candidates.

Graph 11.6.1 Average performance per question in Paper 2



Q	Topic	Q	Topic
1	Multiple-choice Questions	6	Chemical Equilibrium
2	Organic Nomenclature and Structures	7	Acids and Bases
3	Physical Properties of Organic Molecules	8	Galvanic Cells
4	Organic Reactions	9	Electrolytic Cells
5	Rates of Reaction		

Graph 11.6.2 Average performance per subquestion in Paper 2



SubQ.	Topic	SubQ	Topic
1.1	Identification of saturated hydrocarbons	5.2	Identification of independent variable
1.2	Identify secondary alcohol	5.3	Calculation of concentration after dilution
1.3	Hydrolysis reaction	5.4	Calculation of rection rate using stoichiometry
1.4	Factors affecting reaction rate	5.5	Sketching a Maxwell-Boltzmann distribution curve and a second curve indicating the effect of a higher temperature
1.5	Representation of equilibrium and K_c	5.6	Explanation of effect of higher temperature in terms of the collision theory
1.6	Chemical equilibrium	6.1	Explain a reversible reaction
1.7	Strong and weak acids	6.2	State Le Chatelier's principle
1.8	Titration strong acid and strong base	6.3	Identification of change made to the equilibrium system from the graph and application of Le Chatelier's principle
1.9	Reduction potentials and galvanic cell	6.4	K_c calculation by reading off values from the graph
1.10	Electrolysis of concentrated CuCℓ	6.5	Interpreting changes to graphs, drawing of the correct potential energy diagram and explaining the effect of the decrease in temperature on K_c
2.1	Definition organic compound	6.6	Description of changes to graph if a catalyst is added to the initial rection

SubQ.	Topic	SubQ	Topic
2.2	IUPAC name of an alkene and an aldehyde	7.1	Definition of a strong base
2.3	Writing of structural formulae, general formula of homologous series, IUPAC name.	7.2	Calculate number of moles from volume and concentration, pH of solution after step 1 using stoichiometric calculations
2.4	Identification of chain and functional isomers.	7.3	Identification of metal ion in carbonate given the % purity and using stoichiometric calculations
3.1	Definition of boiling point	8.1	Reaction between Cu and $AgNO_3$: observable change and identification of oxidising agent
3.2	Conclusion from curve on boiling point versus molecular mass graph	8.2	Explanation of change using relative strengths of oxidising or reducing agents
3.3	Explanation why boiling point increases with molecular mass	8.3	Galvanic cell: identification of electrode and ionic solution, overall balanced equation
3.4	Identification of homologous series with lowest boiling points and explanation i.t.o. strength of intermolecular forces	8.4	Identification of salt in salt bridge which moves to a certain electrode and reason for this movement
3.5	Reading off molecular mass given the boiling point and identifying compound in order to name it.	9.1	Definition of electrolysis
3.6	Identification of curves (homologous series) of two compounds given the molecular masses and boiling points and explaining differences i.t.o. different intermolecular forces.	9.2	Half reaction at pure copper cathode during purification of copper
4.1	Definition of cracking, identification of ratios of elements in compounds and writing of balanced equation.	9.3	Direction of flow of electrons in external circuit
4.2	Addition of HCℓ to alkene, hydrolysis of haloalkane, dehydration of secondary alcohol: definition, identification of reaction type, reagents, and products, writing of structural formula, reaction conditions.	9.4	Calculation of current needed to form a given mass of copper in a certain time
5.1	Definition of reaction rate	9.5	Explanation why Ag is not oxidised while Cu and Zn are

11.7 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

Common errors and misconceptions

(a) Multiple choice questions can cover all four cognitive levels. There seemed to be a misconception amongst teachers and subject advisors that only Level 1 and Level 2 questions could be asked in Q1.

(b) The high average for Q1.1 (90%) indicated that most candidates knew the difference between 'saturated' and 'unsaturated' hydrocarbons.

(c) In Q1.2 candidates knew that a secondary alcohol was the alcohol where the hydroxyl group was attached to a carbon that was bonded to 2 other carbons.

(d) *Hydrolysis* is a substitution reaction where H_2O must be a reactant and the other reactant a *haloalkane*. Many candidates chose option B where H_2O is the product instead of the correct answer, A.

(e) The average for Q1.4 (44%) indicated that many candidates did not fully understand the factors that affected reaction rates. Hydrochloric acid was the limiting reactant that would determine the amount of product. If more HCℓ were used, more $H_2(g)$ would be formed. The state of division of the zinc determined the rate of the reaction.

(f) In Q1.5 candidates had to use the key to determine that there was more reactant than product at equilibrium at temperature T; in other words $[NO_2] > [N_2O_4]$. If the concentration of the reactant, which was also squared in the K_c expression, was greater than that of the product, K_c would be less than one, but it can never be negative, thus $0 < K_c < 1$.

(g) Q1.6 had the lowest average of the MCQs. This was a Level 4 question. The correct answer was C, but common incorrect answers were B and D. The following equation was given:

$$4CuO(s) \rightleftharpoons 2Cu_2O(s) + O_2(g)$$

It was important to observe that O_2 was the only species that was in the gas phase. The other two species were solids and were not part of the K_c expression.
When the volume of the container was increased/pressure decreased, the number of moles of O_2 would increase as the forward reaction would be favoured. The concentration of a species is generally decreased when the volume is increased.
In this case, the concentration of the O_2 was the only species in the K_c expression and as the K_c stayed constant (temperature stays constant) the concentration of the O_2 was the same for the re-instated equilibrium.

(h) Q1.7 was also answered very poorly with an average of 33%. The concept of strong acid versus weak acid was tested.
The strength of the acids differed, so did their pH and electrical conductivity. The stronger the acid, the higher the hydronium ion concentration which causes a lower pH and a higher electrical conductivity. The moles of KOH to neutralise these two solutions are the same. (Consider the acid ionisation reversible reaction: $CH_3COOH + H_2O \rightleftharpoons CH_3COO^- + H_3O^+$. As the hydronium is removed from the equilibrium by reacting with

the base (KOH), the forward reaction will be favoured, producing more hydronium ions. Thus, even a weak acid will be totally ionised during a reaction with a base.)

(h) Candidates were unfamiliar with the titration experiment, which resulted in the poor performance for Q1.8.

(i) Q1.9 was answered fairly well with an average of 53%.
Statement (i): $E^{\ominus}_{cell} = E^{\ominus}_{cathode} - E^{\ominus}_{anode}$
$= +10 - (-10) = +20V$
(ii): Y is more negative thus the anode
(iii): X is more positive thus the cathode and will be reduced
Only i and ii were correct. Many candidates chose D.
If Y is the anode (statement (ii) correct) then Y and not X is oxidized Statements (ii) and (iii) contradict each other.

(j) The decomposition of concentrated $CuC\ell_2$ is specifically mentioned in the *Examination Guidelines* and Q1.10 should not have been a problem to candidates. However, the relatively low average suggests that this section was not taught properly.

Suggestions for improvement

(a) This section accounts for almost 13% of the total marks in the question paper and it is important for learners to practise the skill of answering multiple-choice questions. These questions can be used as a quick test to see if learners know their theory without taking a lot of time to mark. Teachers should use them as continuous assessment or as spot tests once a topic is completed to test the learners' level of understanding. Learners must be guided to eliminate the wrong answers through regular practice and assessment. They should not just be given the answers, but should be provided with the reasoning behind the answers.

(b) Good knowledge of the content is imperative. Learners must be taught how to use the clues given and their knowledge to eliminate distractors rather than guessing the answer.

(c) Subject advisors should compile a booklet of multiple-choice questions arranged according to topics for schools. These questions can be used for weekly assessments. Through discussions, learners can then be shown how to approach such questions.

(d) How Should You Tackle Your Physical Sciences Multiple-choice Questions:
1. Read and understand the questions.
2. Use the formula sheet to answer questions.
3. Evaluate all the answers.
4. Employ smart guessing.
5. Do away with the outliers.

(e) Draw the structural formula of compounds when the question gives condensed formula.
The concept of primary, secondary, and tertiary alcohols (or haloalkanes) must be explained with examples, showing the different number of carbons attached to the functional group.

(f) It is important to guide learners on what to check in organic reactions, e.g. in hydrolysis the organic reactant must be a haloalkane; the organic product must be an alcohol and there will never be one product since it is a substitution reaction.

(g) In questions involving tables with more than one column, learners must use both columns to deduce the answer, e.g. in Q1.4 column 1: they had to check that in test tube Y, Zn has smaller surface area hence lower rate. In column 2: they had to check that HCℓ in test tube Y is more than the one in test tube X, hence the one in test tube Y will result in higher yield (more H_2).

(h) Learners must be taught to first write the K_c expression before concluding whether K_c will be greater, smaller, or equal to 1. In Q1.5 $K_c = \frac{[N_2O_4]}{[NO_2]^2}$ and $[NO_2]>[N_2O_4]$, making K_c smaller than 1.

(i) Q1.6 needed an understanding of increase in volume leading to a decrease in pressure and emphasising that only temperature can change the equilibrium constant. A decrease in pressure favours a reaction yielding more moles of gas, which is the forward reaction, increasing the number of moles of O_2. The K_c remains constant because only temperature affects K_c.

(j) Emphasis on strong versus weak acid in terms of the resulting $[H_3O^+]$ after ionisation is important as it will affect the pH as well as the electrical conductivities of these acids. Q1.7 needed thorough understanding of the number of protons donated by acids to determine the number of moles of base needed for neutralisation. Since HNO_3 and CH_3COOH have different strengths, they will have different $[H_3O^+]$ leading to different pH and electrical conductivities. They are both monoprotic acids so they will require the same number of moles of base for neutralisation.

(k) Teachers should focus on the strength of acid and bases. Q1.8 required an understanding of this topic. Also, which ions are present in abundance, if any, at the endpoint. This question involved a reaction between a strong acid and a strong base which would result in $[H^+]/[H_3O^+]$ being equal to $[OH^-]$ at endpoint. However, the endpoint was exceeded leading to more acid being added, therefore higher $[H^+]/[H_3O^+]$ and as a result, the pH<7.

(l) Learners must know the terminology of *titration* (using the *Examination Guidelines*). If more HCℓ is added than what is needed to neutralise the KOH, the titration mixture will be acidic thus pH<7 and there will be more hydronium (H_3O^+) ions than hydroxide ions per unit volume. Learners must be taught that $H^+(aq)$ is the same as H_3O^+.

(m) Learners must be taught that in a galvanic cell, reactions with more positive E^θ values will undergo reduction and those with more negative E^θ values will undergo oxidation. Electrode X in Q1.9 is therefore the cathode and Y the anode resulting in the E^θ_{cell} of 0,20 V.

(n) Q1.10 involved electrolysis of concentrated $CuCℓ_2$. Learners must be taught that this is the electrolysis of Cu^{2+} and Cl^- ions. Electrolysis is a non-spontaneous reaction. At the anode there will always be an oxidation half reaction, i.e. a loss of electrons. Only C and D are therefore possible. Then since it is a concentrated copper chloride solution, the chloride ion will be oxidised before the water.

QUESTION 2: ORGANIC NOMENCLATURE

Common errors and misconceptions

(a) Due to a printing error in the condensed structural formula for compound **E** in the table, Q2.2.1 and Q2.3.3 were not marked and a conversion table was used to determine the candidates' total for the question.

(b) The average for Q2.1, which asked for the definition of the term *organic compound*, was only 48%. Extra or wrong words were added to definitions that changed the meaning of the definition, for example the word 'only'. The definition of a *hydrocarbon* was often written, which was incorrect.

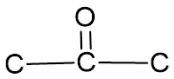
(c) In Q2.2.2, 'butone' and 'but-2-one' were common incorrect answers.

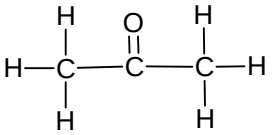
(d) In Q2.3.1, Q2.3.2 and Q2.3.4, candidates drew molecules in pencil then went over them with pen and erased the pencil. Not everything was written in pen and when erased, some bonds were omitted. Pen rewrites are unnecessary – candidates can leave molecules in pencil.

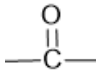
(e) In Q2.3.1, candidates took $-(CH_2)_3-$ as a side chain instead expanding it. Most identified the ester group correctly, but they swopped the alcohol and the carboxylic acid sides. Some candidates drew the structure of the substituent pentyl instead of methyl. The esters were drawn incorrectly if the number of carbons of the carboxylic acid and the alcohol were swopped. Candidates used condensed formulae instead of structural formulae.

(f) In Q2.3.2 Fl was used instead of the F for fluorine. Bonds or H atoms were often omitted.

(g) Q2.3.4 was a Level 1 question. The bonds of the ketone's functional group were omitted, or the H atoms were added; both were incorrect.





The following structure is also wrong:  This appears in ketones, aldehydes, and carboxylic acids, and so is not a functional group for any of them.
Marking Guidelines have the functional groups encircled for markers, only when that structure is required for a mark in a bigger molecule. Candidates are not required to circle parts of molecules to be awarded marks.
It was found that candidates drew the whole structure of F instead of only the functional group.

(h) In Q2.3.5 the wrong answer methan-1-ol was often seen.

(h) In Q 2.4.1 and 2.4.2 candidates did not know the different types of isomers. Many candidates clearly did not know that functional isomers have different functional groups while chain isomers have the same functional groups but different chain lengths.

Suggestions for improvement

(a) Teachers should emphasise the difference in closely related organic chemistry definitions. They should assess different definitions in daily assessments and informal tests.

(b) For IUPAC naming, it is important to emphasise the following sequence:
1. Identify the longest carbon chain which gives the correct parent name (but-).
2. Start numbering from the side giving the functional group the smallest number (2-one when starting from left and 3-one when starting from right so the correct one is 2-one).
3. To complete the name there must be 'an' after the 'but' of the parent name. It is important to emphasise that the 'an' is always included for all organic compounds except hydrocarbons, haloalkanes and esters.
4. If changing the position of the functional group does not change the IUPAC name, then it is not necessary to include the number indicating the position of the functional group.

(c) Learners should familiarise themselves on how to draw functional groups from the table in the *Examination Guidelines*. Learners should know the difference between an ester and a carboxylic acid functional group. If -COOH is at the end of the structure, then it is a carboxylic acid. Swopping the 'CO' and 'O' changes the compound, e.g. in this case methyl pentanoate was given and if swopped, it becomes butyl ethanoate.

(d) The importance of the use of a periodic table to identify symbols of elements, especially halogens must be emphasised. As they are mainly taught in Grade 10, they must be revised in Grade 12. The number of bonds that each atom must have (valency) must be revised since it is also only done in Grade 10.

(e) Structural formula of the functional group must show all bonds around the C and O atoms but should not show any H-atoms.

(f) The number of carbon atoms on the side attached to the 'O' in the ester must be used to determine the number of carbons (and hence the IUPAC name) of the alcohol used to produce the ester.

(g) Types of isomerism must be thoroughly taught, with examples of each being provided. It must also be emphasised that one compound cannot be an isomer, but two or more different molecules can be isomers.

QUESTION 3: PHYSICAL PROPERTIES OF ORGANIC COMPOUNDS

Common errors and misconceptions

(a) Even though the definition in Q3.1 was well answered, some common mistakes were: Atmospheric pressure 'of a substance'; omitting the word 'temperature'; and only mentioning 'pressure' instead of 'vapour pressure'.

(b) In Q3.2 a conclusion had to be drawn to express the relationship between the x-axis and y-axis for curve P. It was important that the dependent and independent variables were not swopped. The statement had to be when the molecular mass was higher the boiling point would be higher. If the candidate wrote: 'if the boiling point is higher, the molecular mass is higher', the mark was forfeited. The graph was not going through

the origin and therefore the relationship was only proportional and not directly proportional.

(c) In Q3.3 the candidates failed to make comparisons of the three curves shown on the graph. Candidates were not able to analyse the information given in graph to make the connection between dependent and independent variables. Their answers were focused in general on the reason why carboxylic acids would have the highest boiling point. Some candidates omitted either the comparison of the strength of the intermolecular forces or the energy needed to overcome these forces. Often the candidates incorrectly stated that the molecule was stronger. The intermolecular forces were stronger.

(d) In Q3.4.1 it was clearly stated that curve R was for alcohols. Candidates who stated that curve S was for alcohols clearly did not read the question properly. At the beginning of the question, it is was stated that the curves were for alcohols, aldehydes, and carboxylic acids so it was unacceptable for candidates to answer alkanes or alkenes.

(e) In Q3.4.2 some candidates referred to *bonds* instead of *intermolecular forces* and the mark was forfeited. When comparing the strength of intermolecular forces or boiling points, the words/terms ‘weaker’/‘stronger’/‘weakest’/‘strongest’ were necessary or the mark for comparison was forfeited.

(f) Q 3.5 was a Level 3 question that expected candidates to read the molecular mass from the graph corresponding with a boiling point of 97 ^{o}C and to use this information to determine the IUPAC name. The molecular mass in Q3.5.1 was correctly determined from the graph but most candidates could not deduce its IUPAC name in Q3.5.2. The general formula for an alcohol is $C_nH_{2n+2}O$ thus C_3H_8O and this is propan-1-ol.

(g) In Q3.6 candidates did not understand that P, R and S were curves, and that A and B were different molecules. Some candidates explained the differences in boiling point in terms of isomerism instead of the correct structure. Some used the words ‘branched’ although the question introduction stated that the molecules were straight chain molecules.
A and B were from two different homologous series because they were on two different curves. In this question candidates were supposed to check 74 g·mol-1 from the graph, then they had to determine to which homologous series compounds belonged and explain why they had the same molecular mass but different boiling points.

(h) Concepts of comparison between two compounds in Q3.6. and three compounds in Q 3.4 made it difficult for candidates. The degrees of comparison should have been used – when comparing two compounds the comparative degree should be used, such as ‘bigger’, ‘stronger’ and ‘higher’. When comparing three compounds the superlative degree should be used, such as ‘the compound has the ‘biggest’/’strongest’/’highest’.

Suggestions for improvement

(a) When teaching this topic of physical properties, teachers must make sure that they revise Grade 11 intermolecular forces. Teachers should make sure learners are able to identify types of intermolecular forces from different compounds, i.e. London forces, dipole-dipole, induced dipole-dipole, induced dipole-induced dipole, ion-dipole, hydrogen bonds. The teacher must make sure learners are able to compare the strength of intermolecular forces.

(b) Words in a definition cannot be changed or omitted because that changes the meaning of the definition or makes the whole definition meaningless.

(c) Identification of dependent, independent, and controlled variables as well as formulation of hypothesis, investigation question and conclusion must be assessed from Grade 10 and must form part of formal and informal practical tasks. When drawing a conclusion from a graph, learners must use the labels of the axes and refer to the graph.

(d) Teachers should emphasise the difference between bonds between atoms in molecules (intramolecular) and forces between molecules (intermolecular) and that the strength of the intermolecular forces are responsible for the different phases. Inter-atomic or intramolecular forces which are much stronger that intermolecular forces are formed or broken during chemical reactions, when new compounds are formed. Intermolecular forces are overcome, not broken, during phase change.

(e) Careful reading of questions, including going back to the statement at the beginning of the question must be emphasised.

(f) When writing explanations related to physical properties of compounds, learners should be taught to follow the following steps:
Comparing compounds from the same homologous series:
1. Compare the surface areas of the compounds.
2. Compare the strength of the intermolecular forces.
3. Compare the energy needed to overcome the intermolecular force.

Comparing compounds from different homologous series:
1. State the type of intermolecular force in each compound.
2. Compare the strength of the intermolecular forces.
3. Compare the energy needed to overcome the intermolecular force.

(g) There are centres that still use the phrase ‘break bonds’ in place of ‘overcome intermolecular forces’. This should be brought to the attention of teachers as this leads to loss of marks. The learners learn this phrase from their teachers and use it in their explanations. Discourage learners from focusing on YouTube videos from foreign countries because they refer to ‘breaking the bonds’ instead of ‘overcoming the intermolecular forces’.

(h) Graph interpretation questions and explanations using a graph, must be thoroughly assessed and discussed so that learners get enough practice. When a question asks for an explanation, it is important to follow a logical outline of the thinking process and write down each step of the logic.

QUESTION 4: REACTIONS OF ORGANIC COMPOUNDS

Common errors and misconceptions

(a) The definition of *cracking* in Q4.1.1 was poorly answered. This is a Level 1, recall definition, question. An important word like ‘longer’ was omitted. Candidates used ‘larger’ or ‘bigger’ instead of ‘longer’ and ‘smaller’ instead of ‘shorter’ in the definition. Words were added that made the definition wrong, for example, alkanes and alkenes are formed. Many candidates omitted the word ‘hydrocarbon/alkane’.

(b) In Q4.1.2 most candidates only got the mark for y=2. If the candidate used x=14, y=2 and z = 3 it added up to 16 carbon atoms and 34 hydrogen atoms, but then the

candidate should have deduced that it would have been impossible to form molecules of C_2H_3.

(c) Q4.1.3 was a standard question that candidates should have been able to answer. Many candidates were unable to write the correct reactants and did not give the correct products as water and carbon dioxide. Some candidates left the equation with coefficients that were fractions, some changed the subscripts on the hexane, i.e. they wrote $C_{12}H_{28}$. Many candidates lost the final mark for balancing the equation.

(d) In Q4.2 it was important to read the whole question to understand what molecules A and B were. The reaction conditions were very important in Q4.2.

(e) Q4.2.1 was well answered but some candidates made the mistake of not specifying different positions of side chains, substituents, or functional groups. Candidates wrote 'general formula' instead of 'molecular formula' and 'positional' or 'positional group' instead of 'positions'.

(f) The concept of addition of hydrogen halides to form products that are positional isomers was a challenge for most candidates. In Q4.2.2 some candidates wrote 'hydrogenation/addition' thus losing marks. They should have learnt to start with the general type of reaction before the specific reaction.

(g) In Q4.2.3 it was not possible to determine the main product and minor product in this reaction by using Markovnikov's rule as both carbons on either side of the double bond had the same number of hydrogen atoms. Candidates had to use deductive reasoning from the second reaction to deduce that A must be 2-chloropentane to be able to form pentan-2-ol making B 3-chloropentane. Many candidates drew the structural formula of A instead of B, i.e. Cℓ was at C1 instead of C3. Some candidates omitted bonds especially on the functional group, some had Br instead of Cℓ. A few candidates wrote the ℓ in the symbol of chlorine incorrectly in caps (CL instead of Cℓ) and a mark was forfeited.

(h) Q4.2.4, 4.2.5 and 4.2.6 were fair questions. As in past years, candidates were confused with the reaction conditions. Quite a few candidates could not differentiate between dilute/concentrated weak/strong bases. They omitted 'concentrated' and only wrote 'strong base' or they omitted the term 'strong' and wrote only 'concentrated base'. In Q4.2.5 'reagent' was used as a synonym for 'reactant'.

(i) In Q 4.2.7 some candidates wrote 'dehydration' instead of 'dehydrohalogenation'.

Suggestions for improvement

(a) When marking tests and examinations during the year, teachers should not award full marks for definitions that are not written as specified in the *Examination Guidelines.*

(b) Teachers should focus on teaching the combustion reaction.

(c) Learners must count the number of bonds after they draw the structural formulae.

(d) Teachers should emphasise the difference between structural-, condensed structural- and molecular formulae.

(e) Learners need a thorough knowledge of the different prescribed organic reactions and their conditions to analyse flow diagrams. They must be prepared to analyse given data and devise steps to prepare a given compound using the reactants supplied;

being able to go from one reaction to the next. They should also be able to work backwards (work out the reactant) when given a product. Subject advisors should assist teachers in compiling summaries of the different types of reactions and their conditions to enable candidates to memorise the required facts.

(f) An intense study is needed to master questions on reaction conditions.

(g) The concept of minor and major products which are positional isomers must be taught and assessed thoroughly. In reaction I in Q4.2, HCℓ reacted with pent-2-ene to form two haloalkanes, compounds A and B, that were positional isomers. Learners must be taught how to use given information (e.g. reaction II) to deduce what is needed in starting reactions (e.g. reaction I).
In reaction II, compound A undergoes hydrolysis to form pentan-2-ol, so compound A must be 2-chloropentane. Hydrolysis is a substitution reaction. The -OH in the product is on C-2 so it means it substituted the Cℓ that was on C-2, hence compound B is 3-chloropentane (positional isomer).
Reaction III is dehydration since a saturated hydrocarbon forms an unsaturated hydrocarbon and water.

(h) Reaction conditions must also be emphasised. These are marks that learners can easily get, if taught and assessed well.

QUESTION 5: REACTION RATE

Common errors and misconceptions

(a) Candidates either did really well or really poorly in this question. Q5.1 and Q5.6 were the most correctly answered.

(b) Many candidates could not understand the experiment although it was given as an informal experiment in the ATP.

(c) Q5.1 was poorly answered as many candidates omitted the words concentration/volume/mass/number of moles while others included both ‘rate’ and ‘per unit time’ in the definition of ‘rate’.

(d) Identification of an independent variable in Q5.2 was not well answered. Common errors were volume and concentration of HCℓ. The independent variable was incorrectly identified as ‘volume’ instead of ‘concentration’.

(e) Q 5.3 was the second worst performing question with an average of 12%. Candidates had difficulty in interpreting the information given in the table. They did not realise that this was a dilution. The calculation of the final concentration of $Na_2S_2O_3$ when diluted with water was a huge challenge. Many candidates subtracted the run concentrations and in both Q5.3 and Q5.4 they attempted to use V_M and N_A.

(f) The average for Q5.4 was 39%. Common errors included the use of number of moles, volume, or concentration of HCℓ to calculate rate. Most were, however, able to divide the change in mass with a time of 20,4s. Candidates failed to calculate the reaction rate in $g.s^{-1}$. They calculated moles and hence the reaction rate in $mol.s^{-1}$. Candidates calculated the number of moles of sulphur correctly, but they could not use them to calculate the number of moles of $Na_2S_2O_3$. They used the ratio (n)HCℓ : (n) $Na_2S_2O_3$ instead of n(S) : (n) $Na_2S_2O_3$. The majority of candidates only received marks for the substitution of the molar mass of $Na_2S_2O_3$ and the time.

(g) The drawing of the *Maxwell-Boltzmann* distribution curve at different temperatures in Q5.5 was relatively poorly answered.
Common mistakes made included:
- axes labelled incorrectly;
- both curves not starting at the origin;
- peak of curve B higher than curve A; and
- curves not labelled.

(h) The explanation using the collision theory in Q5.6 was better answered than the drawing of the *Maxwell-Boltzmann* distribution curve. Incorrect terminology and vague answers caused candidates to lose marks. Many candidates omitted key words like 'more'/'effective'/'per unit time'. Some candidates did not mention whether they were writing about an increase or a decrease in temperature.

Suggestions for improvement

(a) Definitions must form part of daily activities as well as class tests and must be marked exactly as in the final examination. It is important that teachers use previous diagnostic reports to eliminate errors commonly made.

(b) Emphasis should be placed on the difference between reversible and non-reversible reactions. Reversible reactions can reach equilibrium, while non-reversible reactions take place in one direction and cannot reach equilibrium. Furthermore, a reversible reaction can only reach equilibrium in a closed system. When written, equilibrium reactions are indicated with double arrows. Single arrows indicate non-reversible reactions.

(b) Identification of independent, dependent, and controlled variables as well as formulation of hypothesis, investigation question and conclusion must be assessed from Grade 10 and must form part of formal and informal practical tasks. Learners must be taught how to identify these variables, e.g. it is clearly stated that the concentration of HCℓ used is 1 $mol \cdot dm^{-3}$ which means it is one of the controlled variables, therefore it cannot be an independent variable. An independent variable is the one that is changed during each run, in the case of Q5.3 more water is added to $Na_2S_2O_3$ from run 2 to 3. The addition of water decreases the concentration of $Na_2S_2O_3$ making the concentration of $Na_2S_2O_3$ an independent variable.

(c) Prescribed experiments must be done and assessed. The volume of $Na_2S_2O_3$ solution used in each run is kept constant (50 cm^3). This means the concentration of $Na_2S_2O_3$ used was decreased in run 2 and further decrease in run 3. The 30, 40 and 50 cm^3 solutions are taken from the sample with concentration of 0,13 $mol \cdot dm^3$ then diluted to give a new concentration that was supposed to be calculated by candidates. Dilution calculations must be taught and assessed thoroughly. It must be clearly explained to learners that when diluting, only water is added so the number of moles of what is diluted remains constant.

(d) Stoichiometric calculations must be done thoroughly from Grade 10 and revised thoroughly in Grade 12 (especially the ones involving limiting reagents and reagents in excess). A reagent in excess does not all react, but we use the limiting reagent to determine how much of the one in excess will react. Learners must be taught how to use the unit given for calculation of rate to check which physical quantities must be used, e.g. in Q5.4 rate in $g \cdot s^{-1}$ was mentioned, so mass must be divided by the time.

(e) When drawing any graph, learners must be taught to include all basics, including labelling axes. The graph must be used to explain the collision theory, e.g. learners can explain that at high temperature more particles have sufficient kinetic energy, but their diagram shows the opposite. This is incorrect.

(f) The labels in the *Maxwell-Boltzmann* distribution curve are important, e.g. when temperature is increased:
- The kinetic energy of particles increases.
- Then the NUMBER OF PARTICLES with sufficient kinetic energy increases. If a learner says particles have more kinetic energy, they are still mentioning what is mentioned in bullet 1.
- There will be more effective collisions per unit time. The word 'effective' is important because if not effective then no reaction occurs. 'Per unit time' is also important to indicate the frequency.
- The reaction rate increases.

(g) Candidates are using the formula $n = \frac{V}{V_M}$ totally out of context, and in any question in which volume is mentioned. The formula $c = \frac{m}{MV}$ cannot be used in every stoichiometry question and careful consideration is needed before using it. The formula, $n = \frac{V}{V_M}$, is only applicable when calculations of gases are done.

(h) When teaching *reaction rates,* it has to be explained that rates can be calculated in terms of mass, volume, amount of substance (moles) and concentration. Conversions from cm^3 to dm^3 need to be practised.

QUESTION 6: CHEMICAL EQUILIBRIUM

Common errors and misconceptions

(a) Q6.1 was well answered but some candidates just mentioned 'products form reactants'. Candidates confused reversible reaction with dynamic equilibrium and rates of reaction.

(b) Stating Le Chatelier's principle was well answered (Q6.2). However, some candidates still did not use the definition provided in the *Examination Guidelines*. Words such as 'closed system' and 'new equilibrium' were omitted and caused candidates to lose marks. The phrase, 'in an isolated system' was used instead of 'in a closed system', which was incorrect. The correct phrase, 'by favouring the reaction that would oppose the disturbance', was often omitted.

(c) In Q6.3.1 candidates were not specific in their answers. They just wrote 'number of moles increase'. When stating a change, candidates should answer the following.
- What physical quantity, e.g. concentration, surface area, etc. changed;
- What substance was affected, e.g. the acid or the solid or the compound?

(d) In Q6.3.2 candidates misread that the only one change made to the mixture was at 80 s and the other species changed after 80 s. Candidates did not apply Le Chatelier's principle correctly to explain the system's reaction to the change. Le Chatelier's principle was only stated and not used in the explanation.

(e) So much focus is placed on filling in a table when answering a K_c question that candidates tried to force data into a table in Q6.4. When writing the K_c expression

candidates used round brackets instead of square brackets. They clearly did not know that [ ] indicated the concentration of the substances. The wrong ratio of [reactants] to [products] was used. Candidates omitted the K_c expression, and the mark was forfeited. Many candidates, including high achievers, only substituted the moles, instead of concentration, which deprived them of 2 marks. The subscripts for A_2 and B_2 were omitted in the K_c expression.

(f) In Q6.5.1 the potential energy graph's axes needed to be correct. They were supposed to be 'potential energy' on the y-axis and 'course of reaction' on the x-axis. The drawing of the potential energy diagram was a challenge as it assessed a concept which was usually included in Question 5. Many candidates could not understand how this question fit in at Question 6. Many candidates offered sections of the given equilibrium graph as their answer. Errors included incorrect labels, drawing the energy diagram for an exothermic reaction or the Maxwell-Boltzmann distribution curve.

(g) There was an average performance in Q6.5.2. Most candidates were able to state that K_c would be less, but failed to explain why. Candidates stated that the temperature caused an increase or decrease in Kc but did not explain the effect of temperature on the reaction, and how that then influenced the Kc value.

(h) Q6.6 was the worst answered question in the paper. Most candidates explained the effect of the catalyst and did not apply this to an observation on the graph. Candidates did not refer to the graph in their explanation as was asked: 'What is the observed change on the graph?' The word 'gradient' was often left out in their explanation. There were 3 curves on the graph, so the candidates had to refer to them using plurals: 'gradients', 'curves'. The entire diagram was the graph, so candidates should not have referred to the graphs when they meant the curves or lines on the graph. They did not state that the same equilibrium was reached.

Suggestions for improvement

(a) Definitions from this section should be considered important as there are very few definitions in this topic and even weaker learners can score marks easily. Learners must state definitions, laws, principles as in the *Examination Guidelines*.

(b) Graph interpretation questions must be assessed, and learners must be taught to provide complete answers. The graph clearly shows the amount of A_2 increasing. The curves for three substances are plotted on the graph, so it is important to mention which substance increased. It is also important to show learners the importance of the labels. The label on the y-axis of the graph states number of moles, so it is important for learners to say number of moles/amount of A_2 was increased. The application of Le Chatelier's principle is very abstract, even for high achievers.

(c) When explaining in terms of *Le Chatelier's principle*, learners should be taught to use the following steps:
- Identify the disturbance.
- State that the system will act to oppose this disturbance.
- State which reaction (forward or reverse) will be favoured when opposing the disturbance.
- State the effect on, for example, the number of moles of products, etc.

(d) Precise reading of values from a graph is important. The K_c expression has to be written and then substitution is needed of 'concentrations' not 'mole values'.

If the subscripts of the products A_2 and B_2 in the numerator of the K_c expression are wrong, it is marked as an incorrect K_c expression.

(e) Learners must be taught that only temperature changes affect Kc values. They incorrectly infer from this that K_c is directly proportional to temperature. Whether K_c increases or decreases with an increase of temperature depends on the specific reaction. If the reverse reaction is favoured when temperature is decreased, it means [reactants] increases and [products] decreases. This decrease and increase in concentrations mentioned was in fact implied in the graph since when 'n' decreases 'c' decreases at constant 'V'.

QUESTION 7: ACIDS AND BASES

Common errors and misconceptions

(a) In Q7.1 definitions for *Arrhenius* and *Bronsted Lowry* were given instead of the definition of a *strong base*. Many candidates did not use the word 'dissociate' and instead used 'dissolve' or 'decomposed'. They then confused the concept and spoke about hydronium ions and not HIGH concentration of hydroxide ions. Candidates used the word 'incomplete' quite often.

(b) Q7.2.1 was answered fairly well. Candidates should have written equations from the data sheet as given. They should not have manipulated and then substituted.
Candidates did not convert the volume to dm^3.
If no units were indicated, no marks were awarded. This needed to be emphasised.

(c) Q7.2.2 was poorly answered. Most of the candidates only received marks for the pH formula. Candidates lost a mark if they only wrote the pH formula and did not use it. Some candidates wrote the formula incorrectly (e.g. pH = -log(H_3O); pH = -log[HNO3]; or without the negative sign in the formula).
The moles should have been substituted into the formula, instead of the concentration. Some candidates added the volumes together because the question mentioned 'Assume the volumes are additive'.

(d) Q7.3 was very poorly answered with an average of 29%. This question tested the skill of logically organising information to do multi-step calculation and was a Level 4 question. Candidates could not visualise this problem. The calculation to determine the pure mass was done incorrectly. Errors included the use of $m(MCO_3)_{impure}$ to calculate $M(MCO_3)$, using $n(HNO_3)_{initial}$ to calculate $n(MCO_3)_{reacted}$, incorrect calculation of $m(MCO3)_{pure}$ even though 85% is used, not subtracting $M(CO_3)$ from $M(MCO_3)$.

Suggestions for improvement

(a) Definitions and stating of principles must form part of daily activities as well as class tests and must be marked exactly as in the final examination. A complete definition must be given (check the *Examination Guidelines*).

(b) Conversion of units to correct *SI* units must be incorporated in daily activities from Grade 10. Writing formulae exactly as they appear on the formula sheet must be emphasised. Learners must be made aware that final calculation answers must have units except those without units like pH and K_C and if omitted, learners must be penalised.

(c) *Stoichiometric* calculations must be done thoroughly from Grade 10 and revised thoroughly in Grade 12. Learners should be taught to label formulae when doing

multistep calculations so that they can make correct substitutions. Identify the species in calculations, for example c($Ba(OH)_2$), V($Ba(OH)_2$), n(HNO_3). Writing of formulae exactly as they appear on the formula sheet must be emphasised; manipulations and rearrangements of formulae can be done in the second step so that they can at least get the formula mark.

(d) A reagent in excess does not all react, but we use the limiting reagent to determine how much of the one in excess will react. This means that if an acid is in excess, it will not react completely in the 1st step It will only be neutralised completely in the 2nd step. The two bases (step 1 & 2) therefore, become limiting reagents and the one with more information will be used to determine how much acid reacted in that step then the excess (acid) reacts in the other step.

(e) Teachers should ask questions without scaffolding during the year to practise multi-step calculations.

(f) One of the marking rules is that no marks will be awarded for only writing a formula without attempting to use it. Learners should be taught to substitute any value – even if it is wrong – so that a mark can be awarded for the formula.
E.g., pH = -log[H_3O^+] X compared to pH = -log[H_3O^+] ✓
= -log(3) X

QUESTION 8: REDOX REACTIONS AND GALVANIC CELLS

Common errors and misconceptions

(a) The average for this question dropped by 17% to only 40% making it, together with Question7, one of the worst answered questions in the paper. The significant drop in the average can be explained by the fact that the familiar question such as calculating the $E^{\ominus}_{cell}$ or the cell notation was not asked. This was a common and easy question that was poorly answered by many candidates. The two half reactions involved were basic ones used as examples in many textbooks. Candidates used words like 'better/higher' reducing agents instead of ‘stronger’. Some candidates struggled to use *oxidise, oxidation* and *oxidising ability* in the correct sentence construction, i.e. struggling to use it as verb/noun. For example, candidates, wrote ’Cu has a strong oxidise’.

(b) In Q8.1.1 the term ‘observation’ (observable) was not understood clearly. Cu does not dissolve. Candidates’ responses included: copper changed colour, bubbles formed, copper dissolved, copper became silver, solution turned blue. In Q8.1.2 Ag was written instead of Ag^+. The answers given by many candidates showed a total lack of giving observable changes and prove that the candidates did not see this in real life.

(c) Q8.2 was very poorly answered with an average of 26%. The redox table of reduction potentials was not read correctly. Candidates did not grasp that it was only possible to compare the strength of two oxidising or two reducing agents with one another. There was confusion about reducing agents and oxidizing agents. Candidates did not understand the difference. Candidates still compared the positions of two substances on the table by referring to one substance being beneath the other to compare the reducing or oxidising ability.

Some candidates used abbreviations like RA or OA. Most candidates did not understand the difference between Ag and Ag-ion, that Ag could only be a reducing agent and that Ag-ion could only be an oxidising agent. They used the words ‘silver’

and 'copper' for both the ion and the neutral atom. They also used a common incorrect expression: 'silver is a better oxidising agent than copper'.

(d) In Q8.3.1 some candidates wrote Ag^+ instead of Ag. The electrode was clearly a solid.

(e) Candidates could not identify the electrolyte in this galvanic cell in Q8.3.2. Some were not able to write the formula correctly. The II, in copper(II)sulphate, was omitted.

(f) Q8.3.3 was poorly answered. Candidates wrote 'cell notation' or 'calculating $E^{\ominus}_{cell}$'. The balancing of the overall equation was also a problem.

(g) The low average for Q8.4 (20%) supported the statement that 90% or more of candidates were not able to explain why K^+ from the salt bridge moved towards the Ag half-cell. They were able to write that K^+ ensured electrical neutrality and received a mark but could not explain why.

Suggestions for improvement

(a) Language remains an issue and needs to be addressed.

(b) When teaching redox reactions, teachers should start with direct electron transfer and from there go over to galvanic cells that are the indirect transfer of electrons.

(c) The redox reaction asked in the paper, as well as the reaction between copper sulphate and zinc, should be done practically in class. Silver nitrate is extremely expensive and can be the reason for schools not performing the experiment. As an alternative, the use of simulations is highly recommended for this section. Simulations help candidates to visualise the migration of electrons through the external circuit and the migration of ions through the salt bridge.

(d) The foundation for the use of the standard reduction potential table should be laid in Grade 11. The concepts of reducing and oxidising agents should already be grasped by learners in Grade 11 and only be revised before starting with galvanic cells.

(e) When the strengths of oxidising agents are compared, ions must be compared with ions and not atoms. Similarly, when the strengths of reducing agents are compared, learners should compare the atoms with atoms and not with ions.

(f) The function of the salt bridge and how exactly it ensures electrical neutrality should receive more attention when teaching this topic.

QUESTION 9: ELECTROLYTIC CELLS

Common errors and misconceptions

(a) Q9.1 and Q9.3 were well answered with averages of 69% and 70% respectively, but Q9.5, with an average of only 24%, was very often not even answered. Q 9.4, which carried 5 out of 12 marks, performed at only 39%.

(b) In Q9.1 mechanical energy still crept into the answers of some candidates. The electrical energy and chemical energy were often swopped. Another common error was that candidates just wrote 'electrical' to 'chemical' and did not refer to energy. Some candidates wrote the definition for an electrolyte, and some gave the energy conversion of a galvanic cells.

(c) In Q9.2 the wrong half reaction was written down. The reduction reaction was asked. This is a prescribed electrolysis process in the curriculum. Due to the phrasing of Q9.2 candidates were given the benefit of the doubt and both the correct half reaction and the word 'reduction' were accepted.

(d) In Q9.3 the electron flow direction was often incorrect.

(e) The equation $n = \frac{m}{M}$ was used correctly in Q9.4 but candidates could not identify the $Q=I\Delta t$ equation. Most candidates just converted the given gram of silver to moles and failed to relate this to the number of moles of electrons needed. Conversion from hours to seconds was wrong. The use of the Cu ion ratio to the number of electrons was left out in the calculation.

(f) Q9.5 assessed why silver was not oxidised. A substance that undergoes oxidation is a reducing agent. Candidates needed to check the reducing strength of silver against that of zinc and copper to explain why zinc and copper were oxidised but not silver. As the question stated that 'silver is not oxidised', candidates went straight to oxidising ability to explain the answer. Candidates were confused and could not differentiate between oxidising agent and reducing agent when comparing elements. The interpretation of the standard reduction potential table was not understood as seen in the answers to this question.

Suggestions for improvement

(a) The required time allocated in the *ATP* must be used when teaching this topic.
'Understanding the processes and redox reactions taking place in electrolytic cells' in the *Examination Guidelines*, should be taught using experiments prescribed in the *CAPS* document.

(b) Teaching of *the standard reduction potential table* is vital, and learners must be encouraged to refer to the table to avoid the mistakes of unbalanced equations when writing the half-reactions.

(c) The difference between galvanic cells and electrolytic cells must be emphasised. It is recommended that the construction and demonstration of both cells should be an integral part of teaching electrochemical cells, where the energy conversion will be visible to candidates.

(d) Learners must be prepared with *stoichiometric chemistry* calculations in Grade 12, although these calculations are taught in Grades 10 and 11. Learners must understand that *stoichiometric chemistry* concepts form an integral part of chemistry and could be assessed in any topics in the curriculum.

(e) The electron direction (only in the wires/external circuit) is always from the oxidation reaction to the reduction reaction. Ions move through solutions, not free/delocalised electrons.

(f) *Electrochemistry* involves current, therefore, questions related to current like Q9.4 can be asked. These kinds of questions must be taught and assessed. Grade 10 stoichiometric calculations must be revised as many candidates failed to calculate the number of copper atoms. Learners must be able to clearly explain the difference between moles of electrons and number of electrons.
Teachers should emphasise the links in electrochemistry from <u>number of moles of copper</u>, then looking at the half reaction to <u>number of electrons</u> to <u>amount of charge</u> to

current to follow the logic of the calculation. Study the examples from previous exam papers.

It must be clear that the n in $n = \frac{m}{M}$ and $n = \frac{N}{N_A}$ represents mole but the n in $n = \frac{Q}{q_e}$ represents amount/number of electrons.

(g) The use of the table of reduction potentials must be thoroughly explained and assessed. The reason that silver/platinum is not oxidised in copper refining needs to be explained to learners. The voltage of the power source is set to a value so as not to oxidise these metals.

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