

NSC 2016 CHIEF MARKER'S REPORT

SUBJECT		Mathematics		
PAPER		Paper 2		
DATE OF EXAMINATION:		31 October 2016	DURATION:	3 hrs

SECTION 1: (General overview of Learner Performance in the question paper as a whole)

The learners performed fairly well in this question paper. If compared to previous papers I think there were fewer learners who did not attempt certain questions.

Euclidean Geometry and Trigonometry is still a huge challenge to the learners.

If we look at the graph representing the 100 script analysis it is evident that the sections on Trigonometry and Euclidean Geometry need a huge amount of intervention.

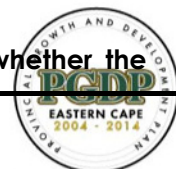
Learners who performed well seem to have interacted well with the questions. The level 4 questions were really challenging and did present quite a hurdle for the weaker learner. These questions have to form part of the question paper and it was encouraging to note that many learners attempted to find a solution.

There is a concern with regards to measurement which was the most poorly answered. Learners really battled with this question. It is then evident that learners do not deal well with questions that involve measurement.

Question 1 was the question that was answered very well, however there are still too many cases where it is evident that learners have never been exposed to the topic of Statistics.

The inability to answer the questions where calculator work is needed is glaring. This is unacceptable. Teachers must make it a point to teach learners how to use the calculator to solve the Statistics questions since these are easy marks and the majority of learners will then be able to obtain full marks for the two questions on Statistics.

The poor performance by learners in Geometry also raises a concern about whether the



Geometry is taught to the learners. Geometry requires logical thinking and setting out of solutions. It was evident from the scripts marked as well as those moderated that this was not taught to many learners.

Teachers must please ask for assistance from their subject advisor as well as teachers who are experienced in teaching Geometry to assist them in their class teaching.

SECTION 2: Comment on candidates' performance in individual questions

(It is expected that a comment will be provided for each question on a separate sheet).

QUESTION 1

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	7.37
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This question was answered fairly well by most learners. There is however still quite a few schools where learners are still unable to sketch the least squares regression line and in many cases learners just sketched a line of best fit. This question was also asked last year and it is imperative that this be taught in all schools. In this question the scatter plot was already drawn for the learners and all they had to do was to draw in the regression line.

There was a noted improvement in the use of the calculator in order to calculate the correlation coefficient as well as the values of a and b . Learners could have easily obtain full marks in this question because there were no penalties for rounding off, hence marks could be awarded in question 1.3 as well as 1.4 which is a follow up from 1.3.

- (b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

In the cases where learners did battle with this question it can only be due to the fact that they still have not been exposed to the use of the calculator when answering this question.

It seems as if learners have not been taught how to make use of the scientific calculator to assist them with the questions on statistics.

Learners still do not follow instruction with regard to rounding off to TWO decimal places unless stated otherwise, but because there was no penalty for rounding in the paper learners were able to avoid being penalised for rounding. Sketching of the least squares regression line is of utmost importance, too many learners are still drawing a line of best fit.

- (c) Provide suggestions for improvement in relation to Teaching and Learning

The importance of teaching the skill of using the calculator to answer the question in statistics cannot be over emphasized. Together with this learners must also be taught how to draw the regression line on a scatter plot.



(d) Describe any other specific observations relating to responses of learners

In 1.2, learners did not comment on the strength of the relationship instead they commented on the relationship. This shows misinterpretation of the graph and lack of understanding the difference between the two aspects.

Sketching of a best line of fit as opposed to a regression line. This begs the question; where they taught to sketch the regression line since this is the second year it has been tested and still teachers are not exposing learners.

Rounding off is still a problem. This should not be so at grade 12 level.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

Statistics is the one section where learners can obtain maximum marks. A concerted effort must be made to ensure that learners understand this topic and that they are able to interact with various types of questions related to statistics. If workshops are arranged to improve the content knowledge of the teachers then they should make a concerted effort to attend these workshops. Subject Advisors should also provide support to schools where it is needed

QUESTION 2

- (a) **General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?**

Average mark from the sample of 100 :	8.7
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This question was answered well by most learners. Problems arose where learners had to use the information provided in the Histogram to answer the questions. This presented quite a challenge to some of the learners. They found it difficult to comment on the skewedness of the graph as well as to determine the range. This was a careless error by the learner because these values were given in the question. The section that was answered poorly was the section where learners had to sketch an ogive using the given table but because the table only had the class interval in the learners did not use the frequencies from the Histogram. This shows a lack of knowledge retention from previous grades. Learners expected the frequencies to be given in the table and as a result lost unnecessary marks here.

Questions 2.5 and 2.6 were also poorly answered in some centres although there were centres where they were answered correctly. Qu2.6 was a level 4 question and as such not many learners were able to interact favourably with it.

So many learners made the common error of plotting the ogive with the midpoint or the lower boundaries. This is an error that was repeated from last year. Learners are still making the same errors with the sketching of the ogive.

- (b) **Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.**

Reasons for the question being poorly answered by some learners can mainly be attributed to a conception gap. Learners tend to want familiar questions that are straight forward and they have not revised the work from grade 11 and even have no retention of work dealt with in earlier grades which can be used to correctly answer these questions. The emphasis should be on learning for understanding not for simply regurgitating.

In Question 2.1 the learners were unable to correctly answer the skewedness of the data from the histogram. This is most probably because they are used doing it from a box whisker plot and have never been exposed to other scenarios.

In Qu2.5 the word eighty was written out in words instead of (80) as usual and as a result a simple question which needs a simple answer was incorrectly interpreted just because it was phrased differently.



The sketching of the graph was totally incorrect if learners did not correctly complete their frequency table. So many learners repeated the error of using the lower boundaries or the midpoints to sketch the graph and as a result lost marks in this question. They lost 2 marks at the sketching and if they did not lie within the range for the reading off the graph they then lost 1 more mark. This common error was highlighted last year and it should have been reinforced and corrected by teachers in their classes.

In 2.6.1 the learners misinterpreted the question and most learners did not give the value by which the mean would change. Most learners just said that the mean would just say increased or decreased. This could be because the question did not specifically ask for a value by which the mean would be influenced.

(c) Provide suggestions for improvement in relation to Teaching and Learning

Learners need to be exposed to various types of questions especially where they have to apply their knowledge to different scenarios but where they will still be answering the question using the knowledge that they acquired.

The skill of successfully plotting an ogive cannot be over emphasized. Statistics should be the section of the question paper where learners score maximum marks. This is only achievable if learners are exposed to many various types of question testing their knowledge of the sections in Statistics. There also seems to be confusion with regards to the cumulative frequency. Teachers must please emphasise to their learners that the cumulative frequency and not the frequency of the data is used to plot the ogive. This as a common error by most learners.

(d) Describe any other specific observations relating to responses of learners

Learners are still not grounding the ogive and as a result are losing a mark unnecessarily. Learners were unable to relate the information from the Histogram to the ogive and as a result the graph was incorrect. Learners also tend to join the points plotted with a ruler. They do not know that the ogive must be a smooth "S" curve.

Learners are careless when it comes to reading and understanding the questions. The values that had to be used for determining the range were given in the wording of the question yet learners still used incorrect values by using the values on the Histogram. This is ridiculously careless since it was an easy TWO (2) marks to obtain.

Learners still unable to read off information using their graphs.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

Teachers must please expose the learners to as many different examples and questions as possible. Subject advisors should make provision for workshops at the beginning of the year where the Chief Marker and Moderator's report are discussed and the information spread as far as possible. This will allow those teachers who have not had the opportunity to mark to at least have an opportunity to hear the recommendations made in these reports as well as any new developments with regards to the different sections of the work. Also make use of the teachers who were markers or senior markers at the marking centre to pass on the knowledge gained to those who were not able to mark.

Teachers should not be afraid to let the subject advisor know if they are struggling with statistics so that they can be assisted by fellow colleagues.

QUESTION 3

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	13.04
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SUB-QUESTION	TOPIC OR ASPECT TESTED	AVERAGE % FROM SAMPLE
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The question was answered well by those learners who prepared well for the examination.

Once again there are learners who did not perform favourably in this question. Learners make far too many basic mistakes with signs and operations when substituting into the formulas.

Learners still copy formulas down incorrectly from the formula sheet.

In Qu 3.4 learners did not complete the question by equating DB equal to the value of AC as a result 1 mark was lost.

Qu 3.6 and 3.8 were poorly answered. While there were many options that could be used to answer the question if the learner did not have a sound background in Euclidean geometry they struggled with this question. It must be emphasised that they could use angles of inclination to solve to problem which is part of Analytical Geometry but this is also a section that learners battled with.

Qu 3.8 was poorly answered by most of the students. This was however one of the level FOUR 4 questions in the paper so it is expected that the weaker learner will struggle with it. The much stronger learners answered it very well.

- (b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Learners were unable to transcribe a simple formula from the formula sheet. It almost seems as if they never used a formula sheet before. Qu 3.1 – 3.5 is simple Analytical geometry question and all the formulae is available on the formula sheet.

Qu 3.6 presented its challenges to learners because they had to use Euclidean Geometry as well as Trigonometry to solve for α .

Most common error in this question was the incorrect use of the formulae as well as incorrect substitution.

Qu 3.8 was the level 4 question and as a result most learners battled with it.

(c) Provide suggestions for improvement in relation to Teaching and Learning

Teachers should encourage their learners to revise and continually revise all the work from grade 11 from the start of the year.

The formulae should not only be learnt but it is important to know which formula is used in which specific question. Only continual practise will remedy this. Teachers must encourage learners to also work on their own as it is very difficult to complete all the grade 12 work as well as to revise the grade 11 work.

(d) Describe any other specific observations relating to responses of learners

Inability to recognise formulas.

Incorrect substitution into formulae.

Learners carelessly omit certain steps in their solutions. They must learn to show all their working out.

Learners do not qualify (justify) statements when asked to prove. It is important to close your argument with the reason why you have come to a specific conclusion.

Assumptions are not awarded marks and learners are penalised for this.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

Increased visibility of Subject Advisors in schools as well being involved in the development of teachers through workshops.

Teachers must provide learners with good revision material. Take time to do extra work with them and ensure that they revise gr 11 and gr 12 work before the examinations.

The Department of Education should reconsider certification in grade 7 and 9. Many learners believe that they are capable of doing Mathematics but do not have a sound background which should be given in the Primary School.

Make sure that your learners are aware of the link between Analytical and Euclidean Geometry.

QUESTION 4

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	17.23
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The scope of the work is mainly from gr 12 so it is obvious that learners focus most of their attention on grade 12 work and forget about gr 11 work.

The learners did not know the difference between parallel and perpendicular gradients and as a result did not know how to calculate the gradients of the lines.

Incorrect reason was given at 4.1 which is very basic Geometry.

In Qu 4.4.1 the question clearly asked for surd form but many learners still did not leave their answer in surd form and just simply substituted the values and did not continue.

Qu 4.3 – 4.5 became a huge challenge for learners since they did not use the correct concepts of midpoints and gradients to solve the questions.

In Qu 4.4.5 the values in the standard form were quite big and learners were either scared off by this and completely forgot their basics.

Learners have a poor knowledge of basic Trigonometric ratios.

- (b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Learners do not know the basics of Analytical Geometry and as a result they could not distinguish between the gradients of parallel and perpendicular lines.

The concept of midpoint was also not used correctly.

Large values scare learners off and they forget to just simply apply their knowledge.

Learners must read the questions properly so that they do not lose unnecessary marks for not leaving and answer in surd form.

Understand the distance formula and how it can be used in Analytical Geometry especially in Qu 4.4.5.

Learners are unable to integrate Analytical Geometry with Trigonometry and Euclidean Geometry.

(c) Provide suggestions for improvement in relation to Teaching and Learning

Teachers must make such through thorough revision that learners are able to use the correct formulas when answering questions. This can only be achieved through constant practise and revision by the learners.

Expose learners to the use of large numbers especially when it comes to the distance formula.

Make sure that learners revise the concepts of parallel line and perpendicular lines.

Learners must also be aware that Euclidean Geometry reasons will be required in the Analytical geometry questions.

(d) Describe any other specific observations relating to responses of learners

Learners lack the ability to use formulae correctly.

Learners are still substituting incorrectly.

Learners do not read the question and as a result marks were lost for not leaving the answer in surd form.

Learners cannot simplify equations when it involves large numbers.

Learners do not know the difference between parallel lines and perpendicular lines and as a result they used the same gradients to calculate the equation of the perpendicular line

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

Subject advisors should make the department aware of the damage that id not only done to the learner but also to the integrity of the subject.

Workshop teachers on the skill of setting more challenging assessment tasks for SBA. Progressing learners into grade 12 has not turned out well at all. These learners have a poor knowledge of gr 11 Mathematics and as a result have a huge backlog when they have to incorporate it with the gr 12 content when answering a question.

QUESTION 5

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	11.93
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This question was answered fairly well by some learners but the majority did not manage to score full marks for the question. The performance was very average in this question.

Some learners were unable to answer most of the questions. Learners seem to be battling with trigonometric concepts and are unable to do simple reduction formula.

Identities are on the formula sheet but still learners cannot use them correctly.

A lack of basic trigonometric knowledge is the reason for this poor performance. Learners are also careless when it came to simplifying with many forgetting to carry the square root sign until they were able to cancel it.

Learners were unable to successfully do the expansion and also could not do the reduction of negative angles which is basic trigonometry.

- (b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Learners do not have the basic knowledge to answer the trigonometry. Learners make careless errors when doing their simplification.

Learners are clearly not able to work with the double angles and compound angles.

The instruction which clearly states that a calculator may not be used is clearly ignored.

The revision of gr 11 work is clearly not considered to be important by these learners.

(c) Provide suggestions for improvement in relation to Teaching and Learning

Learners must be taught how to use the formula sheet properly.

Practise the derivation of trig formulae as well as use of double, compound angle formulae.

Learners must learn to solve trig equations using a sketch and not using a calculator because this type of question will always be there.

(d) Describe any other specific observations relating to responses of learners

Failure to make use of the formulae sheet correctly.

Unable to simplify trigonometry equations.

Unable to do reduction formulae.

Unable to work with compound and double angle equations.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

Progressing learners into grade 12 has not turned out well at all. These learners have a poor knowledge of gr 11 Mathematics and as a result have a huge backlog when they have to incorporate it with the gr 12 content when answering a question.

Subject advisors should make the department aware of the damage that is not only done to the learner but also to the integrity of the subject.

Workshop teachers on the skill of setting more challenging assessment tasks for SBA.

QUESTION 6



(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	6.06
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This question was poorly answered if you compare it with Question 5. Learners are still unable to sketch a trig graph correctly. The axes were given and all the learner had to do was draw his/her graph. The learners need to be skilled in sketching the trigonometry graphs as well as interpreting from the graph.

Learners were also unable to do the general solution since they were not sufficiently prepared in the topic and it seems as if they were expecting the normal equation and were completely stunned by the question asked.

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

The question was poorly answered because the learners are unable to draw trig graphs.

Learners struggle with the shape and some learners are still not showing a smooth wave.

The learners were also unable to solve the question on general solution. A common error is not adding $K \in \mathbb{Z}$ to their solution and as a result they will lose the final mark. This was highlighted in last year's paper and teachers should make learners aware of this.

Learners are unable to read values off the graph. Even though provision was made for CA marks in Qu6.3 from the learners graph they were still unable to read off the graph.

(c) Provide suggestions for improvement in relation to Teaching and Learning

Teachers must take note of the Chief Marker's report that is circulated at the start of each year. This report is also available on the Department website (www.ecexams.co.za) so it is easily accessible for teachers.

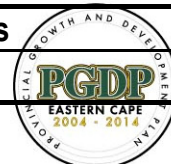
Teachers should read this report and make an effort to discuss it with teachers in the lower grades as well so that the teachers teaching in the lower grades are able to assist in preparing the learners for grade 12.

Practise sketching basic trigonometry graphs and then teach the learners all the different method that can be used to sketch these graphs.

If it is possible make use of technology to show them these graphs visually.

(d) Describe any other specific observations relating to responses of learners

Learners are unable to calculate a simple transformation of a graph.



Learners are unable to sketch trigonometric graphs accurately.

Learners are unable to interpret graphs and as such are unable to read solutions from the graph.

Learners cannot solve questions on general solution.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

Progressing learners into grade 12 has not turned out well at all. These learners have a poor knowledge of gr 11 Mathematics and as a result have a huge backlog when they have to incorporate it with the gr 12 content when answering a question.

Subject advisors should make the department aware of the damage that id not only done to the learner but also to the integrity of the subject.

Workshop teachers on the skill of setting more challenging assessment tasks for SBA.

QUESTION 7

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	5.48
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This question was poorly answered by most of the learners. It was not even attempted by some of the learners.

Learners who attempted the question were unable to score full marks but there were some learners who did score full marks because they analysed the problem and they relied on their basic knowledge of shapes. The properties of squares was crucial here if the learner wanted to score full marks.

The poor performance in this question is purely a lack of basic knowledge of shapes and the tendency of learners to avoid working with questions on measurement. The integration of the cos rule also presented a problem because the weaker learner was unable to successfully manipulate the formula. Once again the formula was on the formula sheet but still learners did not transfer in correctly to their answer books.

- (b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Learners were ill prepared for a question on measurements which involved properties of a square.

Learners tend to steer away from revising the section on measurements and in this case it was combined with the cos rule.

Once again learners needed to rely on their basic knowledge on shapes in order to effectively solve the problem.

Learners are unable to solve problems.

- (c) Provide suggestions for improvement in relation to Teaching and Learning

Teachers must ensure that this topic is revised especially in grade 11 and grade 12.

Teachers must provide learners with enough exposure to problem solving activities.

Teachers should try to incorporate these activities during the year when learners have to do the various assessment tasks required.

Try to do problem solving activities as often as possible. Incorporate it into lessons.

This is a skill which is seriously lacking in our learners but it is a skill that can be taught.

(d)	Describe any other specific observations relating to responses of learners
	<p>Learners have no basic knowledge of the properties of shapes.</p> <p>Learners are unable to problem solve.</p> <p>Learners are unable to interpret information given and then to use it to solve problems.</p> <p>Learners cannot manipulate formulae.</p> <p>Learners can also not substitute correctly into a formula.</p>
(e)	Any other comments useful to teachers, subject advisors, teacher development etc.
	<p>Teacher should make use of as many resources as possible. Make use of the internet and find as many problem solving activities as possible.</p> <p>Subject Advisors approach the universities and technical colleges for workshops to be done for teachers.</p> <p>Teachers should look for every opportunity to improve on their knowledge and especially the different techniques that are available to use when teaching problem solving especially on shapes.</p>

QUESTION 8

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	8.16
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The performance in this question was fair. Most of the learners achieved good marks in this question. The sub questions were really easy and the learners could obtain maximum marks in this question.

However, learners still struggle with Euclidean Geometry and it will take a few more years for the performance to improve.

For some teachers this topic is new since the younger generation were not all exposed to Euclidean Geometry. Performance in this section will only improve if the learners are taught by experienced teacher who were trained to teach Euclidean Geometry.

Learners must remember to provide reasons for their statements in Geometry and to write down everything.

Learners should also learn to make use of the sketches in their answer books so that their workings can be tracked.

- (b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

The question was not poorly answered, but marks were lost where learners did not provide correct or complete reasons for their statements.

In Qu 8.2.2 learners needed to qualify their statements and calculations using both triangles and as a result because of working only in one triangle they lost valuable marks.

Learners must remember that they must state their argument/solution logically so that the marker can follow the steps and the logic and award the marks appropriately.

- (c) Provide suggestions for improvement in relation to Teaching and Learning

Geometry must be practised and practised continually.

Geometry must be consolidated from grade 8 and all the properties and rules have to be continually revised.

Learners must make every effort to work on solving the problems and stating their solutions together with the correct reasons.

Make sure that all learners have a copy of the acceptable reason which can be found at the back of the exam guidelines for Gr 12.



(d)	Describe any other specific observations relating to responses of learners
	<p>Incorrect reasons for statements.</p> <p>When stating that angles are equal because lines are parallel the specific lines are not stated.</p> <p>Incorrect notation of angles. The skill of naming angles should be taught in grade 8.</p> <p>Incorrect use of the theorem of Pythagoras.</p> <p>Incorrect substitution into the Theorem of Pythagoras.</p>
(e)	Any other comments useful to teachers, subject advisors, teacher development etc.
	<p>Read the examination guidelines for grade 12.</p> <p>Make the acceptable reasons available to your learners when you start teaching Euclidean Geometry.</p> <p>Make every effort to attend workshops on Geometry especially if you are a young teacher.</p> <p>Teach learners to state their arguments clearly and logically and to provide reasons for statements made.</p> <p>Subject Advisors need to conduct workshops on Euclidean Geometry. This should be the first priority for term 1.</p>

QUESTION 9

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average mark from the sample of 100 :	5.12
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There was an increase in the amount of learners who attempted this question as opposed to former years. This was encouraging to see. Learners either obtained good marks or no marks. The learners again lost marks for not fully stating their reasons like leaving out the word converse when proving a cyclic quadrilateral.

Many learners lost marks for the incorrect notation of a composite angle ($B_1 + 2$) instead of $F\hat{B}D$.

It is important that learners are made aware of the fact that this notation is unacceptable.

It is also encouraging to note how many different correct approaches were used by learners in order to solve the problem which means there is hope that learners will start to enjoy the problem solving approach to geometry.

Many learners are still making assumptions when solving problems and they should refrain from doing this.

Learners tend to struggle with the logical process in the concept of "prove" especially where they have to use the converse of a theorem.

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Poor preparation on the part of both learner and teacher.

Lack of understanding of setting out a logical argument.

Incorrect naming of compound angles.

In ability to provide reasoning correctly.

(c) Provide suggestions for improvement in relation to Teaching and Learning

Make sure as a teacher that you familiarize yourself with the Chief Marker's report as well as with the memorandum that is drawn up. This will help the learners to know what is expected of them when setting out a logical approach.

Make sure that you thoroughly go through the exam guideline as well as the types of responses accepted.

Prepare your learners well for the examination by finishing your syllabus early so that more time can be spent on Geometry.

Get assistance and help from more experienced teachers.

Attend workshops or read up on approaches to Euclidean Geometry and capacitate yourself.



QUESTION 10	
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?	
Average mark from the sample of 100 :	10.01
<p>Qu 10.1 was poorly answered by learners because they do not know how to solve theorems. All marks were lost if they did not indicate the construction either in the diagram or in the proof. Teachers must encourage learners to study their theorems as this is easy marks. At the same time make sure that the correct proofs are taught. Learners also tend to struggle with proportionality and similarity and as such many did not answer 10.2.2. The lack of knowledge of similar triangles and the proof thereof is clear in the learners' inability to clearly set out their solutions. Some learners tried a different approach but failed to successfully prove the theorem. Learners need to be cautioned against trying to fix a proof. The best is to study it and understand what you are proving. Ratios are written down incorrectly from the triangles that have been proved similar.</p>	
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.	
<p>The question was poorly answered because learners fail to put in an extra effort when it comes to similarity and proportionality. As with the previous Geometry questions the reasons did not match the statements and the proofs were not logically set out so that they correctly argue the problem. There is no logical layout of a proof. The ratios are not correctly written down from the triangles that are similar. Incorrect notation for angles once again. Incorrect triangles and angles used to prove similarity. Constructions not indicated.</p>	
(c) Provide suggestions for improvement in relation to Teaching and Learning	
<p>Teachers should let learners practise proving theorems especially those with construction. Avoid incorrect notation of compound angles. Make sure you name the angles correctly. Make sure that the wording of your reason is correct. Make sure that focus is placed on doing quick problems which can be marked in the class and then more can be given. The more they do the more they remember. Make sure that learners have a good foundation in Geometry from the lower grades. Make use of the programmes available to teach Geometry using visual aids (Geogebra).</p>	