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**QUALITATIVE ANALYSIS OF LEARNER RESPONSES AND EVALUATION OF QUESTION PAPERS: NSC 2021**

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| **REPORT 1: EVALUATION OF THE QUESTION PAPER AND MARKING GUIDELINE** |

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| **SUBJECT** | **MATHEMATICAL LITERACY** |
| **PAPER** | **2** |
| **DURATION OF PAPER:** | **3 hours** |

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

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| Generally, the performance in the examination appears to be better than that of the previous years. It must be noted, however, that the question paper has a new format and thus the results will be different to previous years. The composition of the paper was as follows:   |  |  | | --- | --- | | Q1 | Measurement; Maps and Plans (Only Level 1 questions) | | Q2 | Measurement | | Q3 | Maps and plans | | Q4 | Measurement; Maps and Plans | | Q5 | Measurement; Maps and Plans |      |  |  |  |  | | --- | --- | --- | --- | | **Code** | **Content areas** | **Suggested** | **Actual** | | 1 | Measurement | 85 (5) | 89 | | 2 | Maps, plans and other representations | 55 (5) | 55 | | 3 | Probability (minimum) | 7 | 6 | |  | **TOTAL** | **150** | **150** |   Although the highest mark is 147 out of 150 which is a level 7 (98%),  the lowest in the cohort obtained 5 out of 150 marks (3,33%). As usual the tail end of the sample appears to be long with too many learners at level 1. A sample of 100 scripts across various ability levels indicated interesting trends. See the analysis of the results below.    As from this sample, candidates performed reasonably well in Question 1 as was expected The surprise is the improved performance in Question 5 even though several of the questions were higher order. The sample does indicate performance hovering around 46% in all other questions, except in Question 4 where the performance is better.  Question 4 did surprisingly well. Despite the challenge with the diagrams within this question most learners we able to score marks.  Question 3 appears to have done the worst with a total of 5 sub questions scoring an average of below 40%. Maps and Plans seem to have become a challenge in this paper as very few of the candidates were able to answer it comfortably. The performance in Measurement is up slightly from 24,1 % for the June cohort, however, Question 2 still fared the second worst with 4 sub-questions having an average of below 40%.  The paper is appropriate to the grade as per CAPS requirements and the required cognitive levels. Candidates normally have a challenge with these sections and the general performance was slightly better than anticipated with a 51.3% average. There appears to be an increase in the number of levels 7’s, yet there are still too many learners achieving below 40%.  The paper was not that difficult, but the quality of the artwork was a challenge that could have put learners at a disadvantage. Learners really needed to apply their knowledge and understanding here, and higher order thinking skills were tested in interesting and novel ways.  Inputs from **220** learners from 10 districts across the province revealed that:  28/220 struggled with Q3  39/220 struggled with Q4 especially the sketches  29/220 struggled with Q5  92/ 220 had the greatest challenge with maps  78/ 220 had the greatest challenge with measurement  This trend was also revealed in the results with several learners experiencing serious challenges with their orientation in space and their approach to  3-Dimensional shapes. |

**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).**

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| **QUESTION 1** |
| 1. **General comments on the performance of learners in the specific questions. Were the questions well answered or poorly answered?** |
| Question was answered well as it was fair, learner-friendly and straightforward. Thus, it was the question that was answered best by candidates and the majority of learners managed to pass. Except for a few exceptions, learner performance ranged between 5 and 29 marks with an average performance of 61%. It must be stated that this was expected as the question contained mostly Level 1 questions.  However, the language barrier is clearly evident when learners are asked to provide definitions or explain something in a given context. (See 1.4.1 and 1.4.4) |

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| 1. **Why were some questions poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.** |
| 1.1.1 Some learners divided by the price of R100 instead of the mass 110g. |
| 1.1.2 Learners still struggle with the concept of radius and multiply 64 by 2. |
| 1.1.3 Learners are still confusing the unit for area, with that of volume.  Eg. Thus they answer mm2 instead of mm3 |
| 1.1.4 Learners were expected to know the number of days in a month for a particular year, yet they are unsure as to whether it was a leap year or not. Also, they hardly know the number of days in a month.  Eg. Some said January, February and March had 30 days each, thus adding to 90 days.  A further challenge is that they cannot distinguish the difference between “between “and “from”. “Between” meaning exclude the start and “from” meaning include the starting date.  Eg. From 11 Jan to 30 Jan: 31 – 11 = 20 days instead of including the first day which would give 21 days. |
| 1.1.5 The question asked for 2 containers of Pringles @ R100 for 6  However some learners mistook the instruction and calculated 2 promotions  E.g. R100 X 2 = R200  Other learners still do not understand that money needs to be rounded to the second decimal or they round too early which influenced the final answer.  E.g.  OR    There were also learners who confused grams with money and divided 110g by 6 to give R18,33. |
| 1.3.1 Learners still struggle with conversions.  E.g. 7,3m to cm =  Also, learners could not identify the longest side and converted all sides. |
| 1.3.3 Learners were unable to identify the height in the given information. Instead they tried to calculate the Volume. They could not comprehend that the third value in the formula is actually the height. |
| 1.4.1 The concept of a layout plan was often confused with that of a floor plan.  Simply rearranging the words does not qualify as a definition.  E.g. A plan laid out/ A plan of a house. |
| 1.4.2 The question asked for the maximum number of seats.  Several learners only counted the light-coloured seats and disregarded the dark seats, thinking that they were not available.  Other learners included the hostess seat and got to 29 seats. |
| 1.4.3 Learners struggled to interpret the sketch even though the directions were simple.  The main challenge was expressing themselves in space in order to provide the correct Grid reference for the friend.  Most learners counted passing the two rows to mean F1 instead of listing the next row as G1. |
| 1.4.4 When asking for the number of options instead of outcomes, learners were completely stumped. Most learners simply added the eats and drinks and arrived at 5 options instead of working with the probability of having a particular option.  E.g. they added the options and got 5  OR  Listed 2 options (i.e. 2 eats with a drink)  OR  They simply listed all the options instead of providing the number of options. |

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| 1. **Provide suggestions for improvement in relation to Teaching and Learning** |
| 1. The basic mathematical operations should be emphasized in earlier grades. Educators should spend the first week of the year simply addressing basic skills which will make it easier for learners to navigate the curriculum since these skills are found in different contexts throughout.  The importance of laying a thorough foundation in Grade 10 cannot be emphasized enough. |
| 2. When teaching the dimensions of objects ensure that physical objects are used in class in order for learners to familiarise themselves with the different aspects and facets of a 3D shape.  Several examples should also be done with complex shapes indicating the missing sides with variables in order for learners to gain confidence with this type of question. |
| 3. Work with grid referencing in various contexts, not just those found in textbooks so that learners can relate to the material even if it is outside of their life-world. |
| 4. Assist learners with the skills to unpack complex problems in order to make them more accessible and less intimidating. |
| 5. Educators to train learners to round off ONLY the final answer in the given context. |
| 6. Basic definitions should be taught in a clear manner. |
| 7. HOD’s should ensure that educators prepare sufficiently and execute the ATP’s with the necessary enthusiasm in order to cultivate a love for the subject and generate a thirst for knowledge. |
| 8. Question by Question analysis should be encouraged after assessments so that particular challenges can be identified and addressed as early as possible. |

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| **(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.** |
| 1. Learners have grown accustomed to simply substituting into a formula without an  understanding of what each element represents and how the formula actually works. Thus, when faced with a question where an element within a formula has to be identified, they are lost.  2. Educators should use simple memory triggers to allow learners to quickly access information like the days in a month.  3. Educators are encouraged to not simply teach blind substitution, but explain how each element works.  4. Ensure that learners are exposed to various types of layout plans in order for them to use the skill in any context.  5. Educators to access websites from different provinces in order to broaden the scope of questioning.  6. Expose learners to ALL levels of questioning during your assessment.  7. Ensure that questions are asked in local, national and international contexts so that learners can relate to content even if it is outside of the confines of their everyday lives. |

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| **QUESTION 2** |
| **a) General comments on the performance of learners in the specific questions. Were the questions well answered or poorly answered?** |
| The question was not answered too well with learner performance well below 50%. The fact that learners fared well in the first two (level one questions) created a misconception that the question was answered well. However, three questions indicated a learner performance of under 30% which is disconcerting with very few learners able to obtain the maximum marks. Most of them scoring between 40 to 60%.  Several aspects of the question were poorly answered mainly because learners were not able to express themselves adequately or misunderstood the question. This is quite evident in Questions 2.5 to 2.7. Learners experienced challenges interpreting the plan and those with a background of Geography had an advantage when it came to the orientation of the house i.e. north or south facing. Generally most learners scored their marks between 2.1 and 2.4. |

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| **(b) Why were some questions poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.** |
| 2.2 This question posed a challenge for several learners especially those who are Afrikaans speaking, since a room is mostly referred to as a “vertrek” and a bedroom a “kamer”. Thus, when learners were asked about a “kamer” they automatically assumed that it referred to a bedroom. |
| 2.3 Once again the word “front” could have been replaced by “wys” in order to make it more accessible to learners. They were not sure how to respond.  They were unable to apply the compass directions simply because the compass had been positioned differently. |
| 2. 4 First of all learners struggled with the NOT version of probability. For the most part they simply provided the probability of the interior doors.  E.g.  Many learners forgot to simplify the fraction.  Some did not read the instructions and gave it in ratio form. |
| 2.5 The question provided endless challenges as learners did not understand the orientation toward the sun is what was expected. Also the words “critically comment” were new to learners and they were unsure as to how they needed to respond. Many learners did not know that their opinion needed a justification.  They referred to the rising and the setting of the sun as determining the amount of sunlight.  It is also unclear as to what constitutes “a lot” of sunlight. Thus learners referred to afternoon sun as “a lot” of sunlight.  Further, they were unable to apply the compass directions simply because the compass had been positioned differently. |
| 2.7.1 Several learners simply copied the scale from the text as they did not understand what number format meant.  Eg. 1cm : 1000mm OR 1: 1000 |
| 2.7.2 The above response then complicated 2.7.2 as many learners now had to deal with multiplying different units.  Most learners were oblivious to the fact that they could not continue using different units without converting first.  E.g. 1: 1000  4,4cm : 4400cm  = 44m  Some even gave both the dimensions:  E.g. 3,8 X 4,4  = 380 X 440  = 3,8m X 4,4m |
| 2.7.3 This was one of the questions that was answered the worst.  Most of the learners completely misunderstood the question and referred to the machine making an exact copy and thus there should be no change in the scale.  Or they made mention of the fact that the copier is a bad option since the machine can damage the pages.  Also, many learners did not know that their opinion needed a justification. |

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| **(c) Provide suggestions for improvement in relation to Teaching and Learning** |
| 1. Expose learners to various kinds of plans, not just the simple plans with North always facing upward. Learners need to know how to rotate the map in order to orientate themselves. |
| 2. Understanding the orientation of a building towards the sun and its implications are a requirement within the CAPS document. Educators need to familiarise themselves with this section and teach it with zest as it is often neglected. |
| 3. Providing justifications for opinions is an inherent part of the syllabus and we need to encourage learners to practice this by including it in assessments. |
| 4. Using a scale is a fundamental aspect of working with maps and this can be reinforced in various fun activities, working from the known to the unknown. Ask a Geography teacher for a couple of maps and use them as a teaching tool.  Also, impress upon learners the difference between writing as a simplified ratio scale and as a unit scale. |
| 5. Educators need to practice giving directions in simple but fun ways in class so that it is not so intimidating in an examination context. |
| 6. Educators need to reinforce the importance of the word NOT when dealing with probability.  And explain that probability can be written in various forms. It is important that learners READ the instructions in order to give the probability in the correct form. |

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| **(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.** |
| 1. Educators should refer to the CAPS document when teaching and not just past papers. This was evident in the lack of understanding of the orientation of the house. |
| 2. Basic skills like converting and using a scale need to be reinforced and advisors should consider presenting maps and plans workshops to assist educators with knowledge gaps. |
| 3. Expose learners to a variety of question papers with different approaches to the topic in order to allow learners to build confidence in answering level 3 and 4 questions. |
| 4. Reinforce the fact that opinions often need a justification and that simply saying yes or no or agree or disagree will not constitute maximum marks. |

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| **QUESTION 3** |
| **(a) General comment on the performance of learners in the specific questions. Was the question well answered or poorly answered?** |
| This question fared the worst of all the questions since it required higher order thinking and reading with understanding. With a general learner performance of just 45,3%, measurement is still generally a problem and needs intervention. Looking at the statistics it is clear that learners still have various misconceptions regarding this topic. Learners fared at below 40% in 4 of the sub-questions and below 30% in question 3.1.2.  The key challenges here appear to be: Interpreting a diagram, converting measurements, using different units of measurement, packaging and even simple percentage calculations. |

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| **(b) Why were some questions poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.** |
| 3.1.1 Well answered by most learners, however, learners often did not add both the sides, they add one or the other.  E.g. 162 cm + 1,5 cm = 163,5 cm  **OR**  They added the outside measurements  E.g. 162 cm + 80 cm = 242 cm  This indicates an inability to properly read the diagram and translate the information into the given question. |

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| 3.1.2 Not well answered. In determining the height B of the top shelf, learners omitted one of the heights, or the thickness of the base. Meaning of the word “base” was also misunderstood.  E.g. B = 80 –(40 + 4,5+1,5)  = 34 cm  **OR**  B= 80 – (40+1,5+1,5)  = 37 cm |
| 3.2 Poorly answered. This question clearly indicated that learners do not understand what is meant by a conversion factor. Many of the learners simply provided the factor they remembered using in class instead of showing how they got there. They also failed to see that the notes given in the question related directly to the notes given in the text, under Measurement.  Further, many learners swopped the values around and were thus unable to attain the marks.  E.g. |
| 3.3.1 This question posed a challenge in that learners used the incorrect values to determine the area. Learners used the incorrect(internal) length or width indicating that learners do not fully understand the concept of area.  E.g. 165 x 40 = 6600cm2  **OR**  120 x 162 = 19440 cm2  **OR**  162 x 80 = 12960 cm2 |
| 3.3.2 Very poorly answered. The learners do not apply the squaring principle well. They often  forget to square the value or multiply it by 2 rather than squaring. Thus learners are unable to convert from cm2 to m 2.    E.g. = 132 cm2 (divided by 100)  **OR**  = 97,2cm2 (divided by 2) |
| 3.3.3 This was poorly answered due to the fact that learners do not fully understand how a spread rate works, forgot to multiply by the 3 coats needed or did not round the final answer. Several learners multiplied by 2 coats and not 3 as 2 coats is often given in assessments. Several learners also multiplied by 6,9 instead of dividing. It is vital that we teach learners to highlight important facts within the question so as to break it up into simpler sections.  Common errors included:  1 litre : 6,9 m2  ? : 13200 cm2 (no conversion)  Thus: = 1913,04 litres  **OR** = 19,13 litres (no conversion)  **OR** 0,2 X 3 = 0,6 litres (early rounding error)  Thus 0,6 X 2 = 1,2 litres (X by 2 and not 3) |
| 3.3.4 This question was answered well by most learners. However, conversion once again robbed learners of the necessary marks. It was obvious from the previous calculations that one 500ml can would not be enough, yet learners still tried to convert 500ml to litres and lost the marks here due to incorrect conversion.  E.g. = 50 litres  Several learners also forgot to comment on the calculations and lost unnecessary marks there. |
| 3.4. This entire question posed a challenge to our learners in that they could not differentiate between the files in the boxes and those on the shelf. |
| 3.4.1 Learners lost marks in that they used the measurement of the file instead of the box.  E.g. = 20 files  Here the answer for the number of files is used and not the number of boxes.  Another challenge, was that learners do not know when to round up and when to round down.  E.g. = 4,695 boxes, however learners round up to 5 boxes which then affects the rest of the question.  Further, learners once again forgot to convert the 345 mm resulting in a breakdown since they are then dividing by two different units.  E.g. = 0,469 boxes |
| 3.4.2 This question was probably answered the worst within Question 3. Learners could not differentiate between files in boxes and those placed independently on the shelf. Learners subtracted the boxes and not the files. Learners are to be reminded to show all calculations in order to obtain maximum marks. Simply jotting down an answer will NOT always secure full marks.  E.g. = 20 files  20 – 4 = 16 files  Learners simply subtracting 4 files instead of the 4 files in 4 boxes which gives 16 files.  **OR**  Learners did not round their answer in 3.4.1 and this resulted in a decimal.  E.g. 4,69 X 4 = 18,76 files  Thus: 20 – 18 = 2 files. |
| 3.4.3 This question was answered well |
| 3.4.4 Learners still struggle with the concept of probability and the format in which it should be written. Also, learners often counted 5 options instead of 6, gave 2 options or simply wrote down all the options available.  E.g. = 0,2 (without giving percentage)  **OR**  E.g. = 0,0625% (incorrect use of the calculator, forgot to X 100 or X by 100%) |

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| **(c) Provide suggestions for improvement in relation to Teaching and Learning** |
| 1. Teachers are to encourage learners to read questions carefully. i.e. find out whether a question should be rounded to one or two decimal places.  2. Learners should be taught to break complex problems up into smaller manageable chunks.  3. Educators are to use real life physical objects in the classroom e.g., boxes etc to show the difference between inside and outside measurements, height, width and length.  4. The concept of probability is still a tricky subject. Although we commonly speak of outcomes, in this case options has the same meaning.  5. Ensure that learners are taught that we need to work with the same unit when doing calculations. e.g. we cannot divide cm by mm.  5. Ensure that assessments include questions that ask for verification or justification in order for learners to become comfortable with these concepts.  6. When we interrogate learner scripts it becomes clear that many educators still teach in their mother tongue which creates an even bigger challenge (backlog) for learners. Even the most basic concepts are a challenge to these learners since they have not been exposed to them. |

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| **(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.** |
| 1. Measurement is a key issue within the subject and educators should spend enough time revising the basics ie, area, perimeter, surface area and volume. It should not be assumed that these have been taught to a satisfactory level in previous Grades.  2. Educators are to make use of a variety of questions at various cognitive levels in order to stimulate the processing of complex problems within written texts. i.e. Learners should understand that questions can be linked and that the answers provided in a previous question can be used in those that follow.  3. Highlighting or underlining the key concepts assists learners to find the most important information within a text, which makes it less intimidating. (Extra notes in a question are there to guide the learner. They should use them)  4. Learners should be exposed to more 3 dimensional sketches in order to stimulate their spatial awareness.  5. Do not simply request learners to convert simple units within assessments, task them to convert squared and even cubed units of measurements so that it becomes familiar practice.  6. As per the CAPS document, learners need to know in which context to round up and in which to round down.  7. When verifying an answer or statement, learners should be taught to provide all calculations followed by their stated conclusion.  8. Opinion questions are to be answered in full sentences and not merely phrases e.g. “It has more space in question 3.4.3 is not enough. |

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| **QUESTION 4** |
| **(a) General comments on the performance of learners in the specific questions. Was the question well answered or poorly answered?** |
| This question was answered better than some of the others with an average of 55%. However, learners with language barriers struggled to interpret the questions. Learners performed at less that 40% in three sub-questions of which the key content challenges included: the inability to substitute correctly; a lack of understanding of what it means to purchase a 10m roll as compared to a running meter; substitution into a formula, conversions and knowledge gaps in interpreting and assembly diagrams. |

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| **(b) Why were some questions poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.** |
| 4.1.1 This question was answered well. Learners were able to interpret the given information correctly. |
| 4.1.2 This question posed a challenge in that learners responded from their personal experiences. Thus, most answers were accepted. |
| 4.1.3 This question was also answered reasonably well, however it needed learners to respond to the diagram in question, while learners responded with structures in general. |
| 4.1.4 This was a rather simple question, yet some learners still substituted the incorrect values. They struggled to identify the height of the triangle and instead used the hypotenuse even though the height was given in the text.  E.g. |
| 4.1.5 This question proved too much for several learners.  Firstly, they could not understand that a 10m roll cannot be sold in sections, but rather as  a whole. Secondly, learners substituted the circumference incorrectly. Thirdly they did not  round 18,852 m to 19 as the wire is sold per m.  Further, they did not quite understand what economical meant and thus their opinions  did not match their calculations.  E.g. Option A: R1154 X 18,852 =R21755,21  Option B: R127,30 X 18,852 = R2399.86  Thus, option B is more economical. However, learners would still say Option A was better. |
| 4.2 This question was a challenge to learners for four reasons:  a) they could not convert from litres to cm3.  b) they could not substitute into the correct value  c) making radius the subject of the formula  d) learners are unable to find the square root. Instead they divide by 2.  E.g. 5 000 litres =  5 000 = 3.142 x x 220cm (once again different units used)    =  r =  r = 2,69cm  **OR**  5 000 litres =  5000 = 3.142 x x 220cm (once again different units used)    =  r = (divide by 2)  r = 3,62cm  **OR**  5 000 litres = 500 000 cm3  50 0000 = 3,142 x x 220 cm    r =  r = 26,89 cm |

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| 4.3.1 This question was not answered well for three reasons:  a) the incorrect values were used  b) the values were swopped  c) learners do not simplify the ratio correctly and use a unit ratio instead.  E.g. 22,5 : 42  1 : 1,87 |
| 4.3.2 This question was answered poorly since learners could not do the conversion  correctly. Most learners wanted to convert the 42 inches immediately without converting  to feet first, while others did not complete the conversion and left the answer as 3,5 ft.  E.g. mm  **OR**  3,5 x 3,2808 x 1 000= 11482,8 mm |
| 4.3.3 Most learners did well. However, learners struggled to interpret the sketch. |
| 4.3.4 Most learners did well. However, some learners struggled to interpret the sketch since they could not associate the angled stretcher Q with the sketch. |
| 4.3.5 Learners were expected to translate a 2D picture onto a 3D sketch. This was a problem as learners struggled to orientate the picture to fit the sketch. |

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| **(c) Provide suggestions for improvement in relation to Teaching and Learning** |
| 1. The basic mathematical operations should be emphasised in earlier Grades. Educators should spend the first week of the year simply addressing basic skills which will make it easier for learners to navigate the curriculum since these skills are found in different contexts throughout. The importance of laying a thorough foundation in Grade 10 cannot be emphasized enough. |
| 2. When teaching the dimensions of objects ensure that physical objects are used in class in order for learners to familiarize themselves with the different aspects and facets of a 3D shape.  Several examples should also be done with complex shapes indicating the missing sides with variables in order for learners to gain confidence with this type of question. |
| 3. Ensure that educators teach learners to manipulate formulae in order to make any variable the subject of the formula. |
| 4. Assist learners with the skills to unpack complex problems in order to make them more accessible and less intimidating. |
| 5. Educators to train learners to round off ONLY the final answer in the given context. |
| 6. Conversions need to be taught, not only at the basic level, but also in squared and cubed levels. |
| 7. Assembly diagrams are often neglected and educators are challenged to expose learners to various types of diagrams so as to simplify this section. |

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| **(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.** |
| 1. Substitution is still a challenging element. It is thus important that educators make an effort to use various formulae in order to practice this skill. |
| 2. Calculator skills are vital and learners should be encouraged to have their calculators with them in order to practice basic skills. Operations are often done incorrectly due to the fact that learners do not understand the functions. |
| 3. Rounding is still a challenge and learners must be weary of rounding too early and rounding correctly when working with money. |
| 4. Once again the importance of understanding that we cannot work with different units of measurement cannot be over emphasised. |
| 5. Conversions from imperial to metric units will have to be addressed as several learners could not master this concept. |
| 6. Working with assembly diagrams, especially in the manner in which it was assessed in this paper cannot be overlooked or neglected. Educators will have to make an effort to ensure that learners are exposed to a variety of sketches representing assembly diagrams. |
| 7. Consult a variety of resources in order to find the best methodology when working with formulae and reinforce the value of every variable within a formula so that making a variable the subject of the formula will not be as daunting. |

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| **QUESTION 5** |
| (a)General comment on the performance of learners in the specific question. Was the question well answered or poorly answered? |
| The question was answered better than expected, with an average of 47 %. However, in spite of the question being well balanced, learners appear to have a general lack of Mathematical Literacy skills as even the most basic questions seemed to draw incorrect responses. The annexure used in this question seemed complex, detail-rich and daunting initially, but learners seemed to be able to find their way around it for the most part. Because of the nature of the questions though, very few learners were able to achieve above 20 in this section. Learners struggled to sift through the information provided in 5.1.5 in order to find a solution. They often used the answer from 5.1.4 in an attempt to make sense of it all. Question 5.2 was one of the worst answered questions since this required learners to manipulate the formula, which proved too difficult for them. |

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| 1. **Why were some questions poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.** |
| 5.1.1 a) Answered well except for a few learners who struggled to convert time to a fraction  b) Answered well |
| 5.1.2 a) This was answered well except for a few learners who thought that the distances  needed to be added. Also, some learners added the time to the distances to give  their final answer.  E.g. 52+ 1:05 ??  b) Learners with language challenges did not quite understand what was expected  of them and gave a diverse set of answers. |
| 5.1.3 This question was answered well for the most part with a few learners getting the sequence of cities incorrect. |
| 5.14 This was one of the more challenging questions. Although well within the scope of the curriculum, learners had problems interpreting the information. The question posed a challenge for two reasons:  a) learners struggle to convert using metric units  b) they confused the rate per litre with the amount of litres in a gallon.  e.g. 3,785 X R15,97= R60,45 Thus the statement is true.  OR  Eg Thus the statement is true. |
| 5.1.5 This question was poorly answered for a few reasons:  a) learners could not convert  b) they struggled to find their way through all the information, especially those with a language barrier.  c) They do not grasp the concept of rate (18 mile per gallon)  d) They did not understand what was expected of them and several determined how much petrol would be left from 2 full tanks. This is a misconception as the tank still had petrol in it when it was filled again.  E.g. 49 X 10 = 490 km for the week  Thus,  But, 27,22 – 23 = 4,22 needed after 1 tank  Thus 23 – 4,22 gall = 18,78 gallons left  **OR**  49 X 2 = 98 miles  Thus, per day  5,44 X 5 days = 27,22 gallons  But, 27,22 – 23 = 4,22 needed after 1 tank  Thus 23 – 4,22 gall = 18,78 gallons left  **OR**  E.g. 1 gallon : 18 miles (2 tanks = 46 gallons)  Thus 46 gallons : 828 miles  Thus 828 miles - 490 miles = 338 miles  Therefore |
| 5.2 As with the other questions, making a variable the subject of the formula is once again a challenge. Learners substitute the wrong values in the wrong places and struggle to manipulate the formula.  E.g. °C =  =  = -21,67  **OR**  -7 – 32 = -39  Thus = 69,54 = 70 °F  **OR**  -7 =  -7 + 32 =  15 X =  8.33= |
| 1. **Provide suggestions for improvement in relation to Teaching and Learning** |
| 1. The basic mathematical operations should be emphasised in earlier grades. |
| 2. Interpreting a map that has different types of measurement on it has proven a challenge. Educators are to engage with other learning areas in order to show how integration of content across topics can be shown. |
| 3. Ensure that educators teach learners to manipulate formulae in order to make any variable the subject of the formula. |
| 4. Assist learners with the skills to unpack complex problems in order to make them more accessible and less intimidating. Highlighting or underlining the key concepts assists learners to find the most important information within a text, which makes it less intimidating. |
| 5. Educators to train learners to round off ONLY the final answer in the given context. |
| 6. Learners need to be able to convert between various units and systems of measurement at this level. Educators should not neglect these basic skills and take for granted that learners will have covered it in previous Grades. |

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| **(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.** |
| 1. Substitution is still a challenging element. It is thus important that educators make an effort to use various formulae in order to practice this skill. |
| 2. Calculator skills are vital and learners should be encouraged to have their calculators with them in order to practice basic skills. Operations are often done incorrectly due to the fact that learners do not understand the functions. |
| 3. Rounding is still a challenge and learners must be weary of rounding too early and rounding correctly when working with money. |
| 4. Once again the importance of understanding that we cannot work with different units of measurement cannot be over emphasised. |
| 5. Conversions from imperial to metric units will have to be addressed as several learners could not master this concept. |
| 6. Working with assembly diagrams, especially in the manner in which it was assessed in this paper cannot be overlooked or neglected. Educators will have to make an effort to ensure that learners are exposed to a variety of sketches representing assembly diagrams. |
| 7. Consult a variety of resources in order to find the best methodology when working with formulae and reinforce the value of every variable within a formula so that making a variable the subject of the formula will not be as daunting. |