Province of the
EASTERN CAPE
EDUCATION

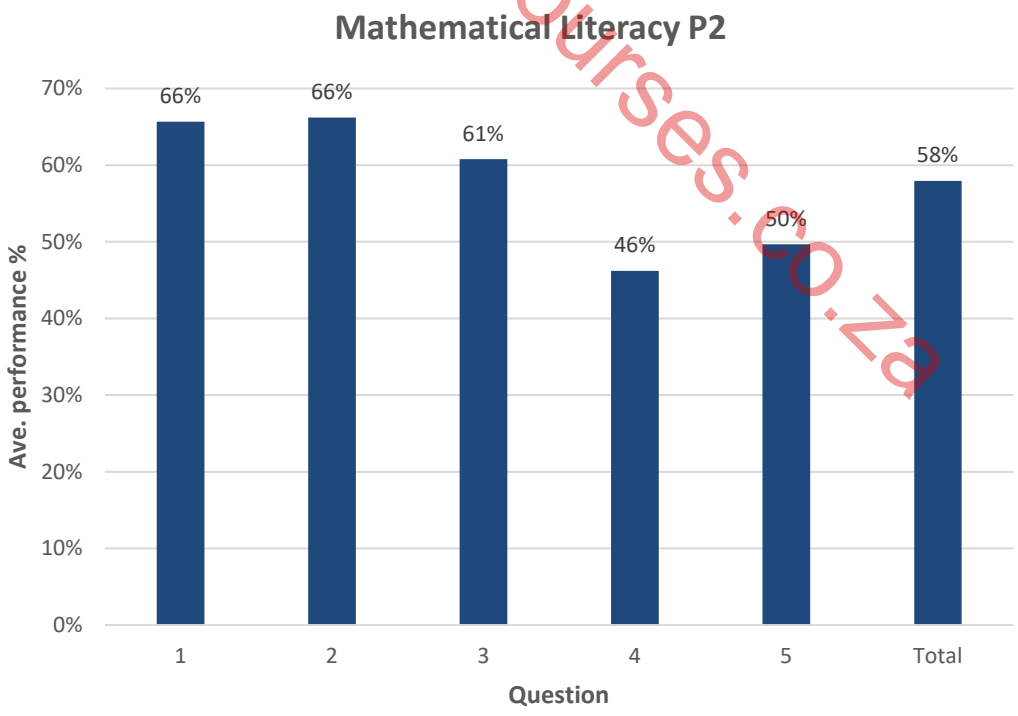
EXAMINATIONS AND ASSESSMENT CHIEF DIRECTORATE
Home of Examinations and Assessment, Zone 6, Zwelitsha, 5600
REPUBLIC OF SOUTH AFRICA, Website: www.ecdoe.gov.za

2022 NSC CHIEF MARKER'S REPORT

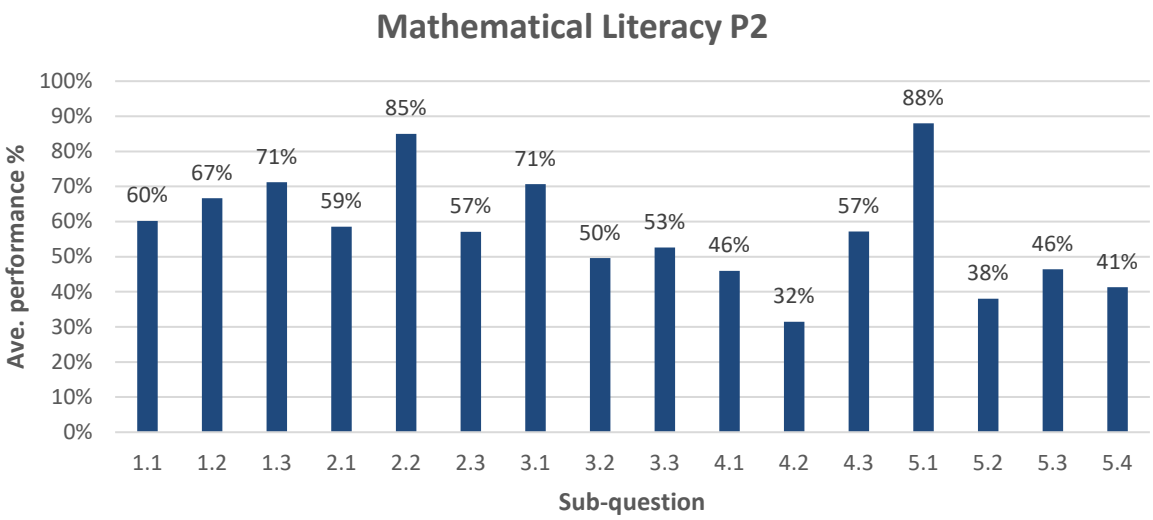
SUBJECT	**MATHEMATICAL LITERACY**
QUESTION PAPER	**2**
DURATION OF QUESTION PAPER	**3HRS**
PROVINCE	**EASTERN CAPE**
DATES OF MARKING	**9 – 22 DECEMBER 2022**

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

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 is now in its third year with the new format and thus trends are starting to form with the results. It is evident that higher order thinking skills are still a challenge as indicated by the performance in Question 4 and 5.



Question by question analysis reveals the following trends:



As noted before those questions where learners were required to explain themselves, provide solutions to multistep procedures or prove why a value is as it is given in the text, provided the greatest challenges. These questions are most prevalent in question 3, 4 and 5 and thus these questions indicate a lower average than others. It is surprising though that learners fared better in question 2 this year and that generally more learners are attempting higher order questions.

Aside from the excessive inclusion of finance in question 4, the paper is set out according to the modified structure and follows the guidelines set within the exam guidelines.

Paper is not always within the suggested amounts as indicated below:

Code	Content areas	Suggested	Actual
1	Measurement	85 (± 5)	77
2	Maps, plans and other	55 (± 5)	45
3	Probability (minimum)	7	11
	Finance		17
	TOTAL	**150**	**150**

The inclusion of finance in this manner proved a barrier to learners as several of them were thrown off by it. They could not even answer the most basic reference to break even in context.

The paper has Level 1: 31%; Level 2: 28% and Level 3: 20% and Level 4: 21% and these are in line with **CAPS** that requires level 1: 30%; Level 2: 30%; Level 3: 20%; Level 4: 20% (minimum).

QUESTION 1 is set in line with circular S1 and has 32 marks of cognitive level 1 however the allocation of 3 marks in certain questions is questionable e.g., 1.1.2.

Levels of thinking	Suggested	November 2022
1 – Knowledge	± 45	46
2 - Routine procedures	± 45	43
3 – Multi-step procedures	± 30	30
4 – Reasoning and reflecting	± 30	31

The analysis of the paper as indicated above shows a balanced paper set at CAPS requirements (**See the table**). The first one for weightings and the second one for cognitive levels.

Learners had no complaints about completing the paper on time. Thus, the time allocation was within range

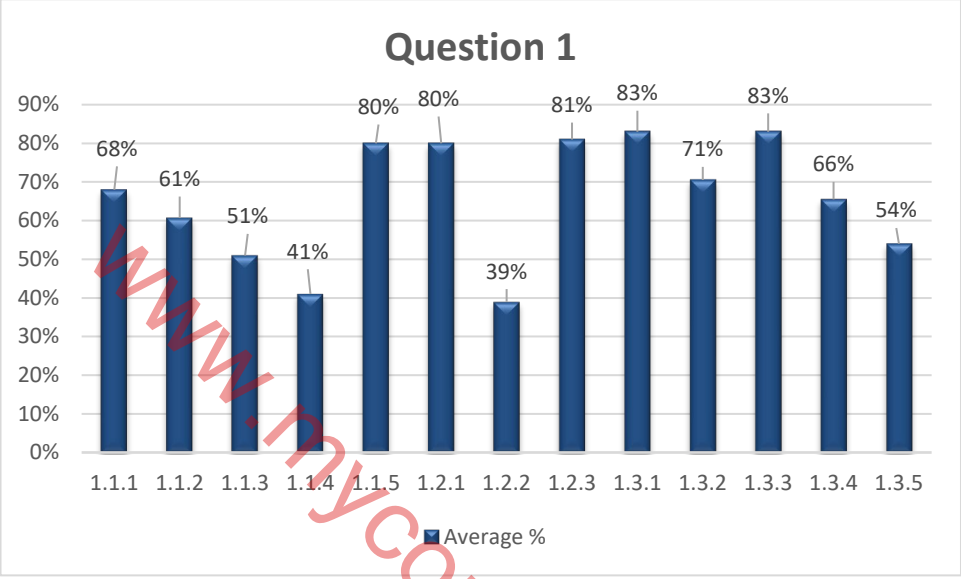
Although the paper was not that difficult, the quality of the artwork was a challenge that could have put learners at a disadvantage. Learners really needed to apply their knowledge and understanding here and higher order thinking skills were tested in interesting and novel ways.
Inputs from **220** learners form 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).

QUESTION 1

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

Generally, the best answered question. All learners attempted the question with varied levels of success. The average for this question is 66%. The higher performance could be attributed to the fact that these are all Level 1 questions.



Looking at the performance it is clear that certain sub questions were a challenge e.g. 1.1.3; 1.1.4; 1.2.2 and 1.3.5. These questions relate to working with time; deciphering an assembly diagram and simply measuring using a ruler. These has been challenges for some time now and really need the attention of the all stakeholders.

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

Although it is one of the questions that was answered the best learners still lost marks in the following ways:

1.1.2 learners referred to instruments of time and not the format.

1.1.3 most learners did not include that the time was in the afternoon and lost a mark.

1.1.4 Learners are unable to interpret the 24-hr format or wrote the times instead of just the number of times it was afternoon.

1.1.5 Conversion of time is still a problem. Learner divide by 60 instead of multiplying.

1.2.1 Incorrect interpretation led to various answers, mostly 6 bolts.

1.2.2 This was the question that was answered the worst as learners could not analyse the diagram. They often answered 4 nuts subtracting A, B, D and E from 8.

1.3.2 Learners were unable to use the compass directions accurately and answered Limpopo.

1.3.4 Instead of writing the number of towns learners wrote the names of the towns.

1.3.5 Learners are still unable to accurately measure using a ruler. This is a basic skill that should be reinforced throughout the FET phase.

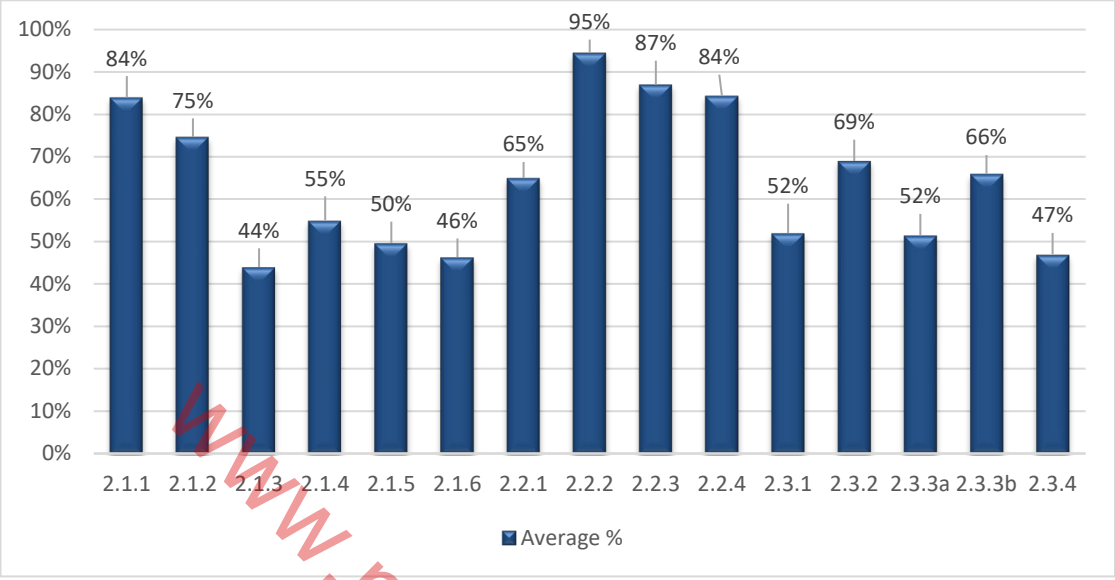
(c) Provide suggestions for improvement in relation to Teaching and Learning
1. The basic mathematical operations should be emphasized in earlier Grades. Educators should spend the first week of the year simply addressing basic skills which will make it easier for learners to navigate the curriculum since these skills are found in different contexts throughout. The importance of laying a thorough foundation in Grade 10 cannot be emphasized enough.
2. Assist learners with the skills to unpack complex problems in order to make them more accessible and less intimidating.
3. Educators to train learners to round off ONLY the final answer in the given context.
4. Basic definitions should be taught in a clear and succinct manner.
5. 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.
6. Question by Question analysis should be encouraged after assessments so that particular challenges can be identified and addressed as early as possible.

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.
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. Conversions need to be taught, not only at the basic level, but also in squared and cubed levels.
3.. Assembly diagrams are often neglected and educators are challenged to expose learners to various types of diagrams so as to demystify this section.
4. time formats and conversions with time are still a sickly point. It is imperative that these be practiced throughout the year.
5. In many cases the actual measurement of maps and sketches is neglected. Educators should make an effort to involve ALL learners in the actual measurement AS WELL AS READING IT IN VARIOUS FORMATS so that learners get acquainted with reading in cm and mm. Also, map reading skills and the interpretation of bar vs numeric scales should be a regular exercise when working with maps and scales.

QUESTION 2

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

Generally, one of the questions that were answered well with a 66% average. Within the question there are some highlights with sub questions scoring above 80%.



However, there are seven sub-questions that scored below 55% and this is worrying since the first two questions are normally where learners score marks. These areas include 2.1.3 to 2.1.6; 2.3.1; 2.3.3 and 2.3.4.

2.1.3 was the worst performing simply because it was so ambiguous. Thus, many learners responded with 6 instead of 13 seats. 2.1.3 to 2.1.6 all relate to a diagram that learners either had no point of reference for or questions where learners struggled to communicate effectively. However, 2.1.5 is simply providing directions which is a simple skill that should be mastered in Grade 10. 2.3 again provided a challenge for second language speakers as they had to explain various terms in context or use compass directions.

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

This was another question where learners fared better than the other questions. However, marks were often lost because of the following reasons:

Huge language barriers were evident in the manner in which learners had to express themselves in Q 2.1.1; 2.1.4 and 2.3.3 (a) and (b). They were often unable to sufficiently express what they meant and thus could not be allocated the marks.

2.1.2 Learners misread the numbers of seats available or rushed their answers and left out the seats at a particular table.

2.1.3 Learners and educators alike were confused by the language used and thus interpreted it as the seats directly facing the wall with no seats in between. Thus, the response given was 6 instead of 13.

2.1.4 Learners were confused as to the positioning of the couch and gave obscure reasons for its placement e.g. to visit a friend or for the elderly to sit outside.

2.1.5. Due to a challenge with their orientation in space, not reading the question properly or an inability to adequately provide the compass directions,

learners could not provide the correct directions to walk even though a sketch was provided. They used left and right or up and down instead of the compass directions.
2.1.6 This question caused great confusion in its interpretation. Several learners maintained that there were only 18 tables due to the use of the phrase "in the restaurant". Thus, learners regarded the "stoep" area as not being "in" the restaurant but outside. Thus, the claim was considered valid for the wrong reason.
2.2.1 It is clear that the topic of probability is a neglected one. Several learners did not even know that it was a tree diagram and instead called it an options diagram.
2.2.2 was answered well by those who understood the diagram
2.2.3 In many cases learners listed the actual options instead of the number of options.
2.2.4 Only listing one parameter although 3 were given really through some learners. They did not understand that they had to include all the options or alternatively only look at the option mentioned. They would disregard the option without a label and only work with the 8 options left. Also, several of the learners left the answer as a decimal instead of converting to a percentage. Thus: $P = \frac{4}{8} = 0,5$
2.3.1 The map in itself was not difficult to read, however, getting learners to explain how the bridge was indicated proved a challenge. Learners simply could not find the words to explain this as their capacity to interpret the sketch and the inability to adequately express themselves proved too much to handle. E.g. It is the map showing the route. We cannot use the word route to explain route.
2.3.2 As before, the language barrier was evident in both these cases.
2.3.3 a) For the third time in one question the language ability of learners was tested and learners fell short, listing the route numbers instead of explaining the answer.
2.3.3 b) The challenge here was that the memo provided for an answer of 4 however, learners saw the bridge at the start of the race as another option and listed 5 times instead.
2.3.4 Learners are still not able to interpret compass directions and thus east and west still get confused.

(c) 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. Assist learners with the skills to unpack complex problems in order to make them more accessible and less intimidating.
3. Basic definitions should be taught in a clear and succinct manner.
4. Educators should expose learners to various types of maps and train them to interpret them using the CORRECT mathematical language.

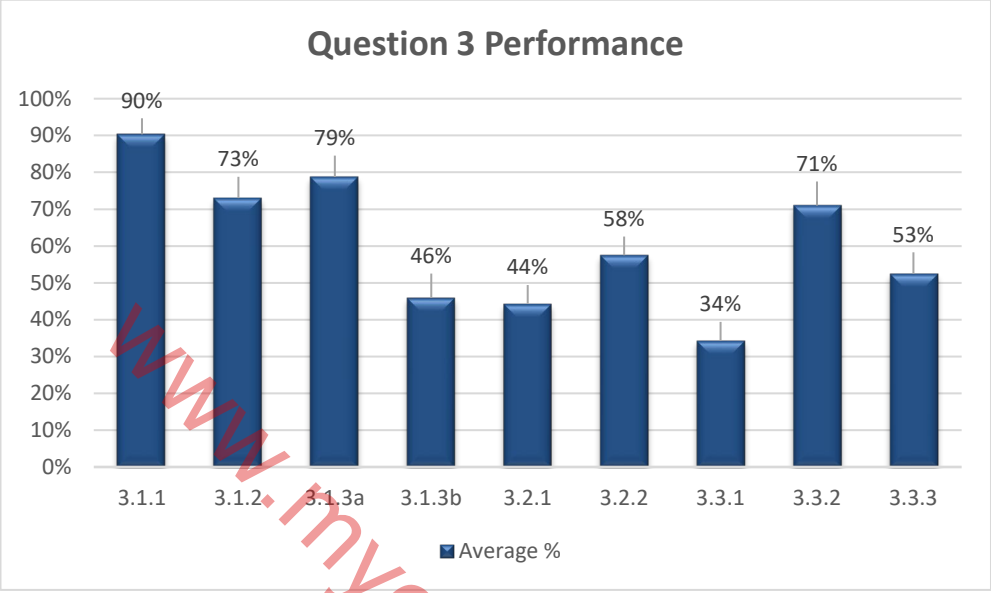
5. It is clear that probability is a neglected topic as several learners were not even able to name the tree diagram. The only way to grow comfortable with this topic is to expose learners to it by starting the drawing with relevant examples from their life-worlds. And using the fractions on the different branches as the tree progresses. Also, then converting the probability to its different forms so that learners can familiarise themselves with it. E.g. As a fraction, a decimal and a percentage.
6. Percentage calculations are an integral part of all of the elements of the ATP and should be incorporated into questions so that learners grow accustomed to using it.

(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. Percentage calculations are an integral part of all of the elements of the ATP and should be incorporated into questions so that learners grow accustomed to using it.
5. 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.
6. Question by Question analysis should be encouraged after assessments so that particular challenges can be identified and addressed as early as possible.

QUESTION 3

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

With an average of 61%, this was the last question that learners truly attempted. With the focus on measurement learners would need to have a solid knowledge of these topics in order to answer the level 3 and 4 questions. It is however clear that the level of questioning appeared to demoralise learners as they struggled to navigate the various cognitive levels.



The most challenging sub-questions in this section would be 3.1.3b); 3.2.2; 3.3.1 and 3.3.3 with percentages below 55%. The skill set that was found lacking in these questions involves: changing the subject of the formula, conversions (imperial and metric), responding to text and working with time. Once again, the issue with time is highlighted. Question 3.3.3 only had an average of 53% with learners struggling to understand basic measurement tools and converting basic units. This area needs serious attention.

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

3.1.1 Learners still struggle with perimeter, and multiply the sides instead of adding.

E.g. P = 2(89 X 239)
= 48542 mm

Further they provide the correct answer, but forget the unit or provide the incorrect unit

E.g. mm^2

OR

They forget to use the brackets when substituting:

E.g. 2 X 89 + 239 = 567mm

3.1.2 The only challenges here was the conversion to cm as some learner multiply instead of dividing or they copy the incorrect value from the picture.

Thus, 14 X 10 = 140cm

140 – 2,5 – 7cm = 130,5 cm

OR

114mm – 2,5 – 7 = 104.5mm

OR

They use 144mm instead of 114mm

3.1.3 a) question was very poorly answered as learners did not find the correct radius and then proceeded to do incorrect substitutions. Also proving the volume was a new concept to them and thus they found it difficult to attempt since the answer was already given. Alternatively, they used the diameter of the cap as 30mm or multiplied by 2 instead of squaring.

E.g. 3,142 X (28mm)2 X 8,5cm
= 20 938,288 cm^2

OR

3,142 (14mm)2 X 8,5cm
=5234,57cm^2

OR

3,142 (15mm)2 8,5cm
= 6009,075 cm^2

3.1.3 b) Several learners could substitute into the given formula but found it difficult to change the subject of the formula. Those who did change the subject, invariably substituted incorrectly. Rounding also proved a problem with learners rounding to the incorrect decimal.

E.g. 0,82 = mass ÷ 52,346

$\frac{0,82}{52,346} = 0,0157$

= 0,1g

OR

E.g. 0,82 = mass ÷ 52,346
= 0,82 X 52,346
= 42,9237g
= 42g

3.2.1. This was attempted regularly with partial answers, but several learners once again failed to substitute correctly or forgot a particular value. Some even used values from the graph.

E.g. 1,6 x 3,785 X 4 X 5 X 29(days in Feb)
= 3512,48 litres

OR

1,6 x 3,785 X 4 X 5 X 28(days in Feb)
= 3391,37 litres (rounding error)

OR

1,6 X 3,785 x 4 X 5
=121,12 litres

OR

1,6 X 3,785 x 4 X 28
= 678,79 litres

OR

4 x 5 X 28 = 560
560 X 1,6 = 896 litres

OR

4 x 5 X 28 = 560
560 X 1,6 = 896 gallons
Thus $\frac{896}{3,785}$ = 236,724 litres

3.2.2 This is the question was poorly answered. Learners completely misunderstood the context of the question and responded with ways to save water. Also, the graph was misleading as it created the impression that they needed to reduce the times they flushed. Thus several said to you must use a bucket system or flush only once a day etc.

3.3.1 This question was simply incorrectly interpreted by most learners who subtracted the preparation time as well as the baking time. Some got ridiculous values for baking the tarts but could not re-evaluate these and assess that they were incorrect.

E.g. 17:30 – 15 – (30 +40)
= 16:05

OR

17:30 – (40 X 2 + 30 X2)
= 16:30

OR

17:30 – 15 – 40X2
= 15:55

OR

Learners do the calculation of their phones and do not show their methods
E.g. 16:05 -15min ???

3.3.2 This question was answered reasonably well, however, often learner's calculator skills let them down. OR they rounded incorrectly.

E.g. Temp = (325 – 32) X $\frac{5}{9}$

= 293 °C

OR

Temp = (325 – 32) X $\frac{5}{9}$
= 162,777
= 162 °C or 162.7°C or 170°C

3.3.3 Challenges include; conversion skills, Inability to work with mixed numbers, not reading the question correctly and forgetting to divide by 2. Rounding too early or incorrect rounding.

Some candidates disregarded the quarter cup and simply worked with the 4 cups.

Other show inconsistent units ranging between ml and L in the same response.

E.g. 4 + 0,25X2 = 4,5 cups
4,5 cups X 250 = 1125ml
$\frac{1125ml}{1000} = 1{,}125litres$

OR

4,25 X 2 = 9cups
9cups X 250ml = 2250ml
2250ml X 1000 = 2250000litres

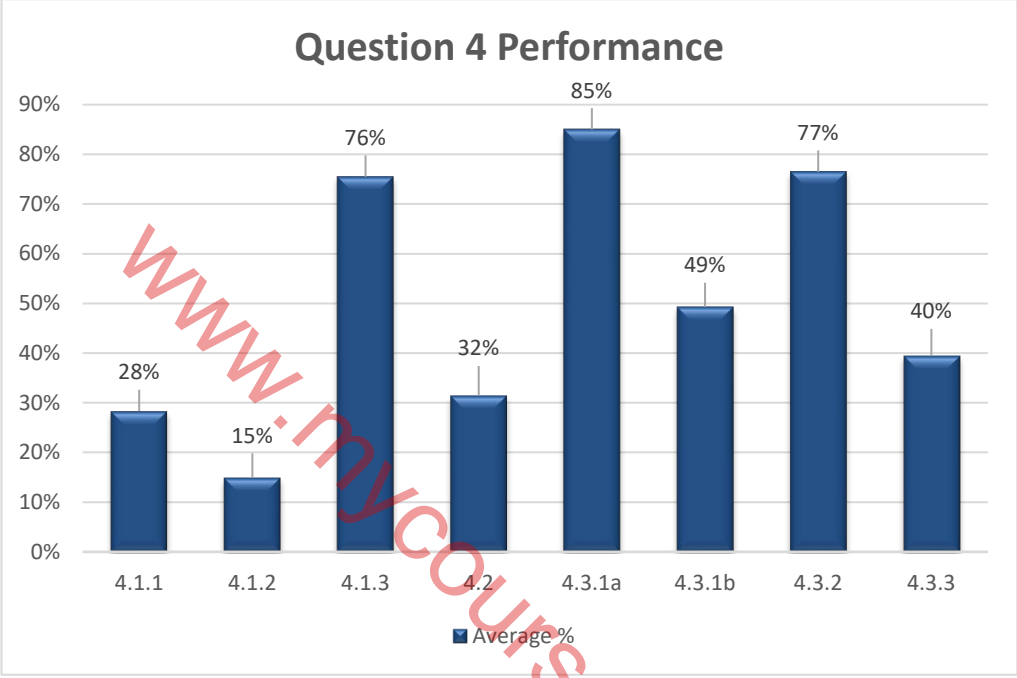
(c) Provide suggestions for improvement in relation to Teaching and Learning
1. Teachers are to encourage learners to read questions carefully. i.e. find out whether a question should be rounded to one or two decimal places.
2. Learners should be taught to break complex problems up into smaller manageable chunks.
3. Throughout the question conversion remains a challenge and thus basic skills in this area need to be revised.
4. 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. Educators need to clearly train learners to distinguish the difference between the units of area volume and perimeter.
6. Ensure that various forms of substitution are practiced and that learners understand how to make a variable the subject of the formula.
7. Calculator skills are an essential part of learner training and needs to be reinforced daily.
8. Educators need to imprint the meaning of action words in texts e.g., Show, justify etc.
9. 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.

(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 i.e., 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. Content specific Topic tests should be done after every section of work to allow teachers to speak to these specific challenges.

QUESTION 4

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

This question was the worst performing with an average of only 46%. It had several challenging areas to it including 11 marks on Finance. Several learners struggled, with only 3 out of the 8 questions performing above 70%. Unfortunately, these three questions do not carry the bulk of the marks and for 4.3.1 to answer this section and 4.2 compounded it even further.



Question 4.1.1 speaks to interpreting an assembly diagram and clearly there is a challenge in this area as this is the worst performing sub-question in the entire paper. Most of the learners could not spatially align themselves with the various aspects of the birdhouse and thus were unable to respond. Question 4.1.3 fares better since the first part of the question is basic substitution into to the area formula.

Question 4.2 was a test of the application of a changing ratio to an assembly diagram and this proved too much for learners as most did not know how to apply the second ratio. It is thus clear that the application of ratios still remains a problem.

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

4.1.1 Misinterpreting the birdhouse diagram caused learners to omit or add too many pieces.

Further conversion and rounding to the nearest hundred seemed to elude learners as the rounded to any value.

E.g. 19 + 23 + 14 + 25 + 41 + 23
= 145cm
=1,45 mm or 14500mm

OR

19 + 25 + 10 + 25 + 41 + 23
= 143 cm

OR

Rounding errors like: 19 + 25 + 10+ 231 + 41 + 23
= 141 cm
= 1410mm = 1400mm

4.1.2 The request to verify was difficult for learners as the struggle to define it in the given context.

Learners unable to understand importance of thickness. They correctly wrote:

14 cm – 10cm = 4cm and stopped there, concluding that the statement was incorrect

Spatial awareness with respect to assembly diagrams are a real issue, learners simply said that 14cm fits on 14cm otherwise there would be a gap/space, without any calculation.

4.1.3 The first part done well by most learners, however, as soon as a compound shape was introduced, they once again struggled with radius and they multiply instead of squaring.

Learners use 4,2cm instead of 2,1 cm, add instead of subtracting and round incorrectly.

E.g. Area of rectangle = 23 X 14 = 322cm^2

Size of hole = 3,142 X (4,2)^2
= 55,425 cm^2

TSA = 322 – 55.425 = 266,58 cm^2

OR

E.g. Area of rectangle = 23 X 14 = 322cm^2

Size of hole = 3,142 X (4,2)^2 = 3,142 x 8,4 = 26,393 cm^2

OR

Instead of subtracting, learners add the areas.

TSA = 322 + 13,85622 = 335,8562cm^2

Then they round incorrectly also: Thus 335,8 cm^2

Thus, learners' loose marks for random skills that should be considered as basics. Learners were penalized for incorrect rounding.

4.2. The question was just left out by many learners as this higher order application of measurement where ratio is involved provided a challenge for them. The use of ratios in its various forms confuses learners as they do not know when to multiply and when to divide. Add to that, having different spread rates and the use of the word "subsequent" and you just compounded the problem. With the result, many learners received 0 for their attempts.

Very few learners were able to navigate this question. They were not able to use the proportion and convert to ml. Some of the challenges are listed below:

Learners used 2 coats instead of 3. One for each spread rate.

E.g. 1: 10m^2

Thus, $\frac{0,2888m2}{10} = 0,02888l$

And 1: 14 m^2

Now, $\frac{0,2888m2}{14} = 0,0206285l$

Thus, 0,02888 + 0,0206285 = 0.04951 litres

No. of birdhouses with 500ml

$$\frac{0,500l}{0,04951} = 10,1\ birdhouses$$

Thus correct

Several multiplied by 10 instead of 14 for the second coat
E.g. 1: 10m²
Thus, $\frac{0,2888m2}{10} = 0,02888l$
0.02888 X 2 = 0.05776 litres
No. of birdhouses with 500ml
$$\frac{0,500l}{0,05776} = 8.67\ birdhouses$$
Thus correct
Constantly multiplied everything by 7 regardless of the context.
E.g. 1: 10m²
Thus, $\frac{0,2888m2}{10} = 0,02888l$
0.02888 X 7 = 0,202 litres
And 1: 14 m²
Now, $\frac{0,2888m2}{14} = 0,0206285l$
$0,0206285l$ X 7 = 0,1444 litres
Thus, 0,0202 + 0,1444 = 0.1646 litres

No. of birdhouses with 500ml
$$\frac{0,500l}{0,1646} = 3.04\ birdhouses$$
Thus incorrect

4.3.1 a) Answered well.

4.3 1 b) This question caused several challenges as learners tried to approximate values from the graph. The graph in itself was difficult to read and thus values used by learners ranged.
Also, learners do not divide 287,4 by 6
E.g. R287,6 + R21,40 + R10,70
= R 319,70

OR
they add all the expenses for the birdhouse
E.g. R250+ R100+R 287,5 +R 21,4 + R10,70
= R669.10

4.3.2 Learners 'especially second language learners, found this challenging as they could not express themselves adequately.
Some of the incorrect responses include "the place where graphs meet"
OR
Where cost price and selling price are the same
OR
They gave the coordinates of the break-even point

4.3.3 Some learners took the value from 4.3.1 and used it in 4.3.3.
E.g. Exp: R350 + R319.70 X 15 = R5145,50
Inc: R150 X 12 = R1800
Therefore, a loss
OR
Learners used expenses formula to calculate both profit and loss.
Exp: R350 + R80 X 15 = R1550
Inc: R350 + 150 X 12 = R2150
Thus, profit is made

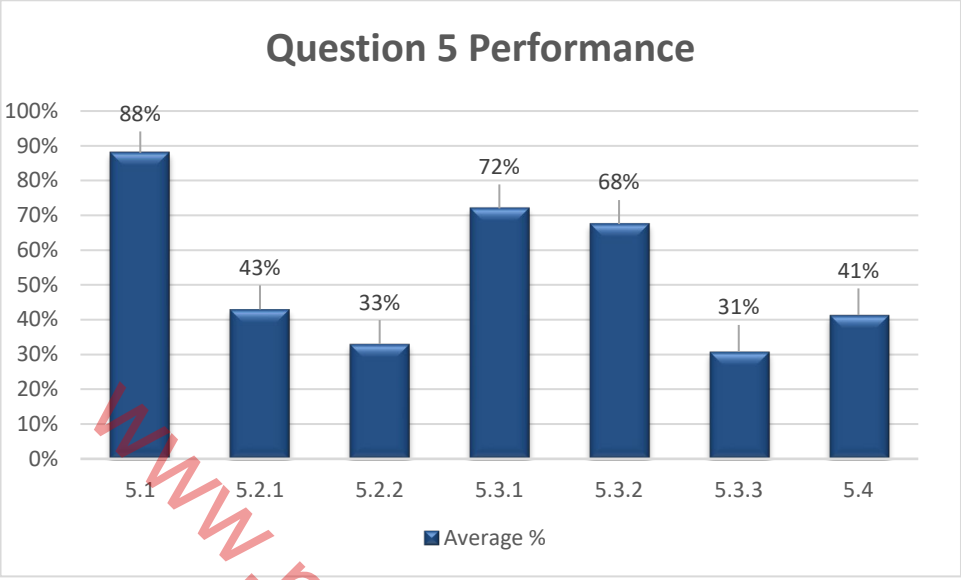
(c) Provide suggestions for improvement in relation to Teaching and Learning
1. More attention is to be given to assembly diagrams and their interpretation.
2. Simple exercises can be done to increase learner's spatial awareness by allowing them to bring 3d items to class to analyse and interpret.
3. Educators should ensure that they teach learners to interpret break-even point in context using graphs and simple text.
4. Educators need to clearly train learners to distinguish the difference between the units of area volume and perimeter.
5. Ensure that various forms of substitution are practiced and that learners understand how to make a variable the subject of the formula.
6. Calculator skills are an essential part of learner training and needs to be reinforced daily.
7. Educators need to imprint the meaning of action words in texts e.g., Show, justify etc.
8. 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.

(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 i.e., 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. 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.
4. As per the CAPS document, learners need to know in which context to round up and in which to round down.
5. When verifying an answer or statement, learners should be taught to provide all calculations followed by their stated conclusion.
6. Content specific Topic tests should be done after every section of work to allow teachers to speak to these specific challenges.

QUESTION 5

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

With an average of 50% this is the second worst performing question with only 3 out of the 7 sub-questions attaining more than 60%. The other sub-questions have a combined average of only 37%.



Once again, the questions that require the manipulation of time and/or making a variable the subject of the formula (5.2 and 5.4) suffered greatly, with 5.4 hardly attempted by some learners. Attempts at 5.3.3 (an application of percentage change) were varied with very few learners actually grasping what is expected of them. It is clear that these skills will need to be reinforced with vigour within the classroom context.

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

5.1 Answered well, but some learners responded with the names of the elements and not the numbers. We need to read the text carefully before we respond.

5.2.1 Answered well except for the common mistake of converting incorrectly or using the incorrect unit.

E.g. $\frac{315}{100} = 3{,}15\ decades$

OR

2022 – 1707 = 315 decades

5.2.2 Answered well but some learners struggled to calculate the correct number of days per month and misunderstood the concept of "between".

E.g. Nov. 30 – 11 = 19

Dec. 16 days, thus a total of 35 days

5.3.1 Answered well aside from getting the ratio in the wrong order and not simplifying completely.
E.g. 150; 250
15; 25
OR
250; 150
5 ; 3

5.3.2 This question was answered well however, rounding errors were rife.
E.g. $\frac{1092,1916}{3,281}$ = 332,8m OR 332m

5.3.3 This question was answered poorly as learners could not decide which amounts to use and they were unsure of how to manipulate them.
They often used the incorrect values and manipulated them in interesting fashions.
E.g. 1200 – 1080 = 120
Now $\frac{120}{1200} = 10\ \%$ Thus untrue
OR
$\frac{960}{1200} \times 100 = 80\%$ Thus untrue

5.4 This was one of the worst performing questions. Although it really was not that challenging learners faced 2 huge obstacles namely working with time and making a variable the subject of the formula.
First of all, they struggled to subtract time
Secondly, they often forgot the stoppage time or added it instead of subtracting it.
Thirdly, they wrote 3hrs and 25 min as 3,25 hrs.
Fourthly, even when the substitution was done making Speed the subject proved a challenge.

E.g. 12:03 – 8:06
3h 57 min
Now 4min X 8 = 32 min stoppage time
3h 57 - 32 min = 3h 25 min

Distance = speed X 3,25hrs

Speed = $\frac{816km}{3,25hrs}$
= 251,08km/h

OR
E.g. 12:03 – 8:06
3h 57 min
Now 4min X 8 = 32 min stoppage time
3h 57 -+32 min = 4h 19 min

Converted 19/60 = 4,32hrs
Speed = $\frac{816km}{4,32hrs}$
= 188,89km/h
OR

E.g. 12:03 – 8:06
3h 57 min
Now 4min X 8 = 32 min stoppage time
3h 57 - 32 min = 3h 25 min

3 h 25 min X 60 = 205 min
Speed = $\frac{816km}{205min}$
= 3,98 km/min

(c) Provide suggestions for improvement in relation to Teaching and Learning
1. Educators need to put more emphasis on the basics as well as terminology. Words like decade should not still be a challenge in Grade 12.
2. We should invest more on calculations with ratio, conversions and time as theses seem to have been neglected.
3. Changing the subject of the formulae, and substitution within formulae should be practiced across all topics throughout the year and not just with measurement.
4. 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.
5. Calculator skills are an essential part of learner training and needs to be reinforced daily.
6. Educators need to imprint the meaning of action words in texts e.g., Show, justify etc.
(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 teach learners to us their calculators to convert time as this will reduce the mistakes made.
2. As per the CAPS document, learners need to know in which context to round up and in which to round down.
3. When verifying an answer or statement, learners should be taught to provide all calculations followed by their stated conclusion.
4. Content specific Topic tests should be done after every section of work to allow teachers to speak to these specific challenges.

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2022

MARKS: 150

TIME: 3 hours

This question paper consists of 14 pages and an addendum with 5 annexures.

MLITE2

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.

2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

   ANNEXURE A for QUESTION 2.1
   ANNEXURE B for QUESTION 2.2
   ANNEXURE C for QUESTION 4.1
   ANNEXURE D for QUESTION 4.3
   ANNEXURE E for QUESTION 5.1

3. Number the answers correctly according to the numbering system used in this question paper.

4. Start EACH question on a NEW page.

5. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

6. Show ALL calculations clearly.

7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.

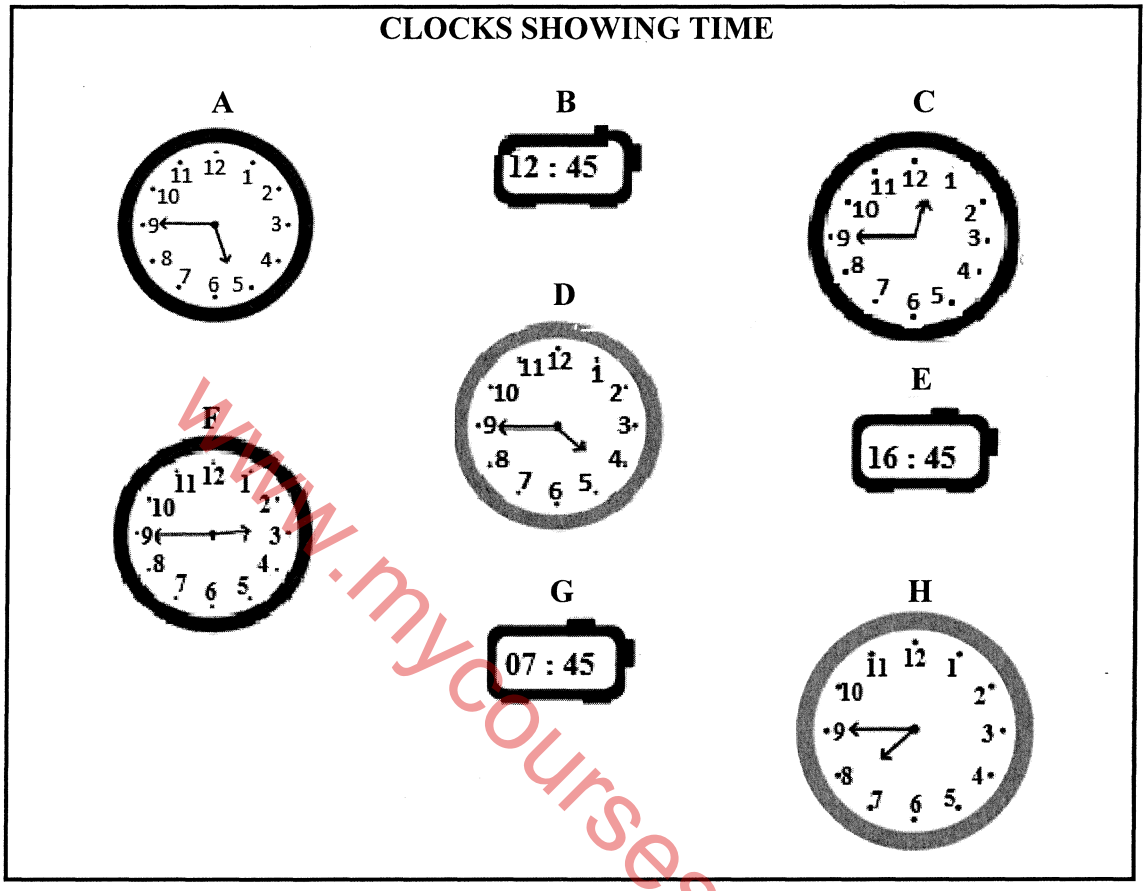
8. Indicate units of measurement, where applicable.

9. Maps and diagrams are NOT drawn to scale, unless stated otherwise.

10. Write neatly and legibly.

QUESTION 1

1.1 Various clocks indicating time are shown below.



Use the information above to answer the questions that follow.

1.1.1 Which ONE of the following (X, Y or Z) best describes the time displayed on EACH clock?

X Nine minutes to the next hour

Y Forty-five minutes to the next hour

Z A quarter to the next hour (2)

1.1.2 Name the TWO time formats used to display time on the clocks. (3)

1.1.3 Write down, in words, the time displayed on clock **B**. (2)

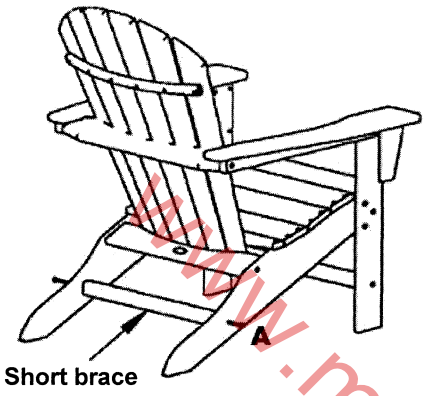
1.1.4 Write down the number of clocks that clearly indicates a time in the afternoon. (2)

1.1.5 Convert 16 hours and 45 minutes to minutes. (2)

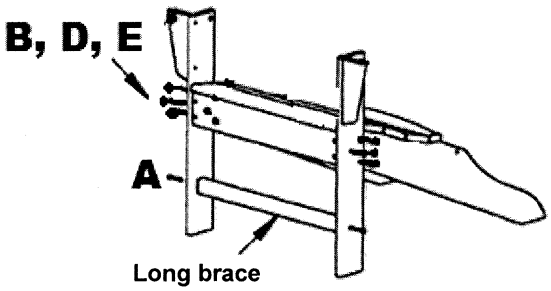
1.2 Illustrated below are steps and some instructions to assemble a deck chair. To assemble the deck chair, the wooden pieces are joined together using fasteners (screws, bolts, washers and nuts). There are 32 pieces in the packet of fasteners. Each bolt is secured by a nut and a washer.

STEPS TO ASSEMBLE A DECK CHAIR

STEP 4
COMPLETED CHAIR

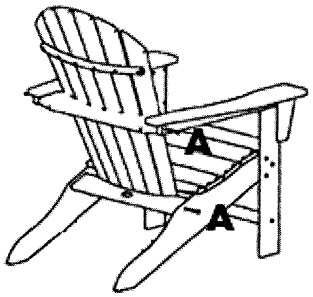


STEP 1



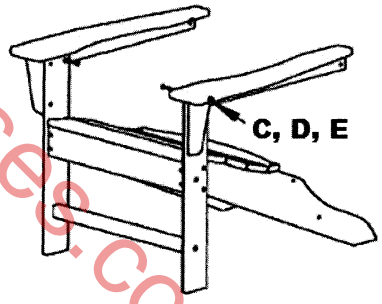
Attach the seat using bolts (**B**), nuts (**E**) and washers (**D**) to the two front legs.
Attach the long brace using the screws (**A**).

STEP 3



Attach the back to the seat and arms using the screws (**A**).

STEP 2



Attach the arms to the two front legs using the bolts (**C**), nuts (**E**) and washers (**D**).

	TYPE OF FASTENER				
	A Screw	**B Bolt**	**C Bolt**	**D Washer**	**E Nut**
					
Quantity	8	6	...	8	8

[Adapted from www.bin.com]

Use the information above to answer the questions that follow.

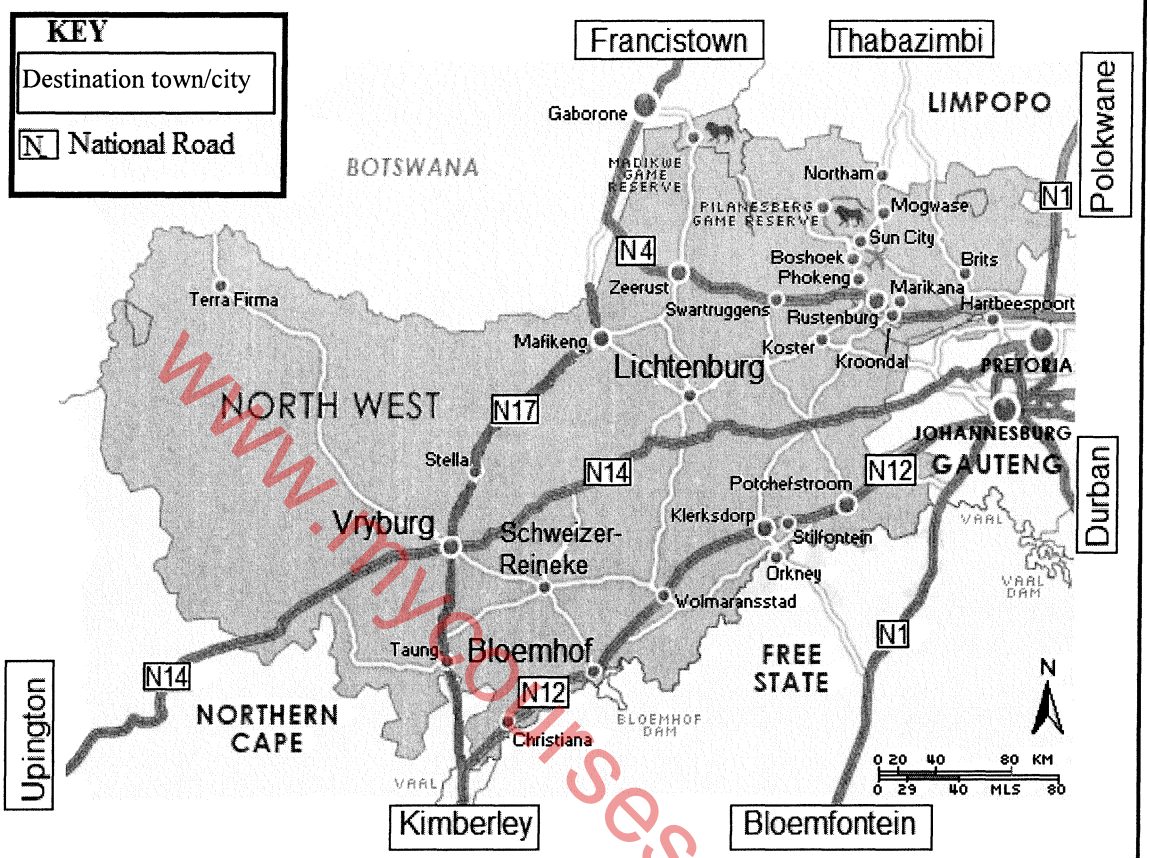
1.2.1 Determine the number of type **C** bolts used to assemble the deck chair. (2)

1.2.2 State the number of nuts left over after step **1** is completed. (2)

1.2.3 Name the last piece required to complete the assembly of the deck chair. (2)

1.3 Below is a map of North West showing destination towns/cities and interleading roads.

MAP OF NORTH WEST SHOWING NATIONAL ROADS LEADING TO TOWNS/CITIES



[Adapted from sa-venues.com 2013]

Use the map above to answer the questions that follow.

1.3.1 Identify the type of scale used in the map. (2)

1.3.2 Name the province that lies east of North West. (2)

1.3.3 Identify the national roads passing through Vryburg. (2)

1.3.4 Write down the number of destination towns/cities shown on the map. (2)

1.3.5 Measure, in mm, the direct distance (as the crow flies) from Bloemhof to Lichtenburg. (2)
[27]

QUESTION 2

2.1 ANNEXURE A shows a restaurant's seating plan for customers.

Use the information on ANNEXURE A to answer the questions that follow.

2.1.1 Give ONE possible reason why this restaurant has so many windows. (2)

2.1.2 Calculate the maximum number of chairs available for customers. (3)

2.1.3 Determine the number of seats directly facing the wall on the south side. (2)

2.1.4 Give ONE reason why the restaurant has couches at the entrance. (2)

2.1.5 A person at table 18 leaves her seat and walks towards her friend at table 4. She uses the arrow path shown on the seating plan.

Use compass directions to describe her path from table 18 to table 4. (3)

2.1.6 Norma claims that there are less than 21 tables for customers in this restaurant.

State, with a reason, whether her claim is valid. (3)

2.2 ANNEXURE B shows the choices on the set menu for a function at the restaurant.

Customers can choose:

- One protein: chicken (C), beef (B) or fish (F)
- One side order: vegetables (V) or a salad (S)
- One dessert: ice cream (I) or malva pudding(M)

Use the information on ANNEXURE B to answer the questions that follow.

2.2.1 Name the type of diagram illustrated on ANNEXURE B. (2)

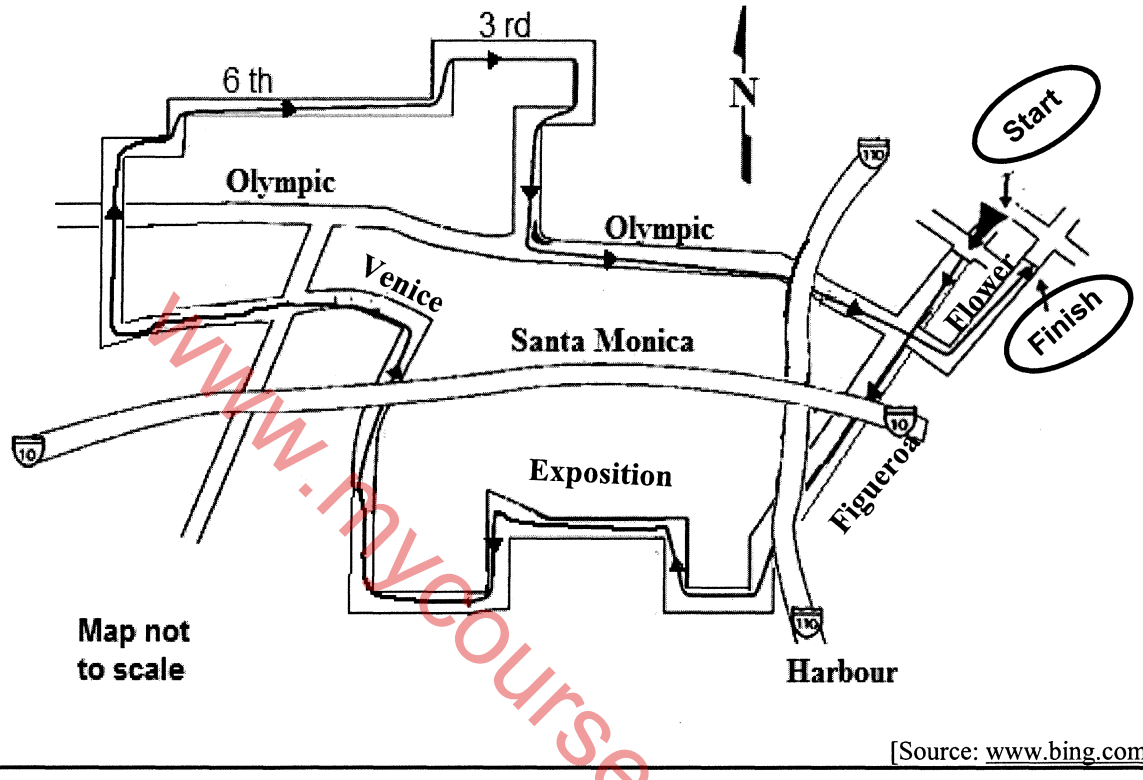
2.2.2 Write down the missing outcome at 2.2.2(a) and the protein choice at 2.2.2(b). (4)

2.2.3 State the number of combinations with beef as the protein. (2)

2.2.4 Determine, as a percentage, the probability of randomly selecting a meal with malva pudding as the dessert. (3)

2.3 Below is a simplified route map of the Los Angeles Marathon (LAM) in the United States of America. The LAM route is 26,2 miles.

ROUTE MAP OF LOS ANGELES MARATHON (LAM)



[Source: www.bing.com]

Use the information above to answer the questions that follow.

2.3.1 Explain the meaning of *route map.* (2)

2.3.2 Describe what is meant by 'Map not to scale'. (2)

2.3.3 The runners in the Los Angeles Marathon have to pass underneath a bridge at certain points during the marathon.

(a) Explain how this is indicated on the route map. (2)

(b) Write down the number of times that a runner who completes the marathon will pass underneath a bridge. (2)

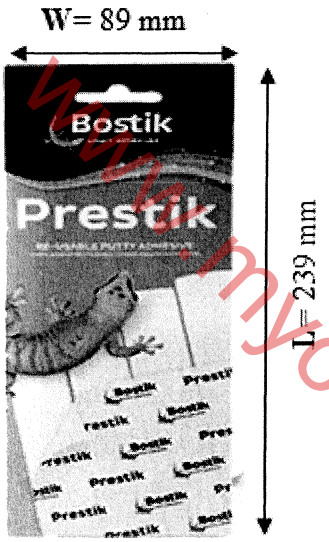
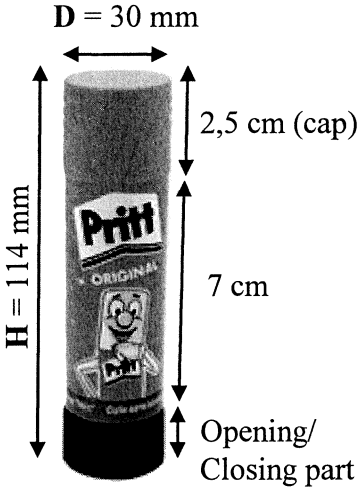
2.3.4 Write down the general direction in which the runners will face when they start in Flower Street. (2)

[36]

QUESTION 3

3.1 Every learner in a Technology class is expected to have Prestik and Pritt (glue stick). The Prestik is packed in a rectangular-shaped sleeve and the Pritt in a cylindrical container.

The dimensions of the rectangular face of the Prestik sleeve and the cylindrical Pritt container are given below.

FRONT DIMENSIONS OF THE PRESTIK SLEEVE	DIMENSIONS OF A CYLINDRICAL PRITT CONTAINER
	
Where **L** = length and **W** = width	Where **D** = diameter and **H** = height

[Source: plastilon.co.za and mcsofficesupplies.co.za]

Use the information above to answer the questions that follow.

3.1.1 Calculate the perimeter of the front of the Prestik sleeve.

You may use the formula: **Perimeter = 2 × (length + width)** (3)

3.1.2 Calculate, in cm, the height of the opening/closing part of the Pritt container. (3)

3.1.3 The actual height of the glue in the Pritt container is 8,5 cm and the volume of the glue, rounded to THREE decimal places, is 52,346 cm^3.

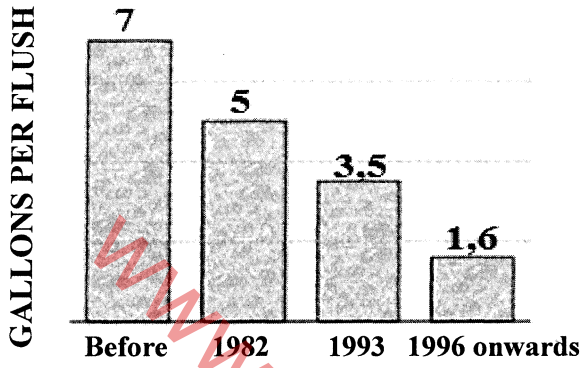
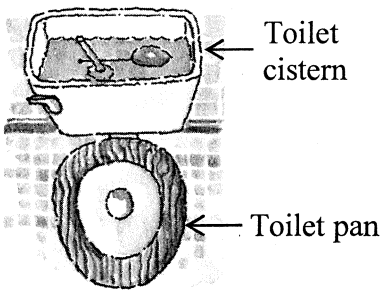
(a) Show how the volume of the glue was calculated if the diameter of the glue is 28 mm.

You may use the formula: **Volume = 3,142 × radius^2 × height** (4)

(b) Determine (rounded to the nearest gram) the mass of the glue in the Pritt container, if the density of the glue is 0,82 g/cm^3.

You may use the formula: **Density = Mass ÷ Volume** (4)

3.2 Water is a scarce resource in South Africa. The graph below shows how the volume of water in a toilet cistern has been reduced over the years. The picture next to the graph shows a toilet pan with a toilet cistern.

BAR GRAPH: TOILET FLUSH VOLUME OVER THE YEARS	TOILET PAN WITH A TOILET CISTERN
	

NOTE: 1 gallon = 3,785 litres

Use the information above to answer the questions that follow.

3.2.1 Calculate (in litres) the volume of water used during February 2022 by a family of five, if each person flushed the toilet an average FOUR times a day during the month. (3)

3.2.2 State ONE way in which a person can save water in this context. (2)

3.3 Ouma intends baking two milk tarts for her friends who will be arriving at 17:30. She uses the ingredients and information below. She can only bake one milk tart at a time. While the first milk tart is in the oven, she prepares the second milk tart in order to put it in the oven the moment the first one is taken out.

INGREDIENTS AND INFORMATION FOR ONE MILK TART

Preparation time	**Cooking time**	**Temperature**
30 minutes	40 minutes	325 °F

Serves 8 people

3 tablespoons butter, melted
1 cup white sugar
3 egg yolks
1 cup cake flour
$\frac{1}{4}$ teaspoon salt
1 teaspoon vanilla extract
$4\frac{1}{4}$ cups of milk

[Adapted from allrecipes.com]

NOTE: 1 cup = 250 ml

Use the information above to answer the questions that follow.

3.3.1 Ouma would like the second milk tart to be taken out of the oven 15 minutes before her friends arrive.

Determine the time Ouma must place the first milk tart in the oven. (3)

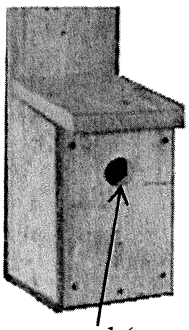
3.3.2 Convert the baking temperature to degrees Celsius (°C), rounded to the nearest 10 degrees.

You may use the following formula: $^{\circ}C = (^{\circ}F - 32^{\circ}) \times \frac{5}{9}$ (3)

3.3.3 Determine how many litres of milk Ouma needs to bake the two milk tarts. (4)
[29]

QUESTION 4

4.1

Itumeleng makes and sells birdhouses at a local flea market. ANNEXURE C shows the diagram of the parts of the birdhouse and the assembly instructions. He uses a single board that is 14 cm wide and 20 mm thick to make one birdhouse.	**Picture of a completed birdhouse**  Front exposed (part with hole)

Use the information above and ANNEXURE C to answer the questions that follow.

4.1.1 Show (rounded to the nearest hundred) that the length of the board needed for a single birdhouse is 1 500 mm. (3)

4.1.2 Itumeleng stated that in Step 2, the 10 cm side of the floor will go against the back.

Verify, showing all calculations, whether his statement is CORRECT. (4)

4.1.3 The front part of the birdhouse has a circular hole with a diameter of 4,2 cm drilled into it.

Calculate (in cm^2) the exposed surface area of the front part of the birdhouse.

You may use the following formulae:

Area of a rectangle = length × width

Area of a circle = 3,142 × (radius)^2 (6)

4.2 Itumeleng paints the exposed exterior surface area of the birdhouse.

The total surface area of the birdhouse that will be painted is 0,2888 m^2.

He applies three coats of paint according to the spread rate instructions on the paint tin, as follows:

- First coat: 10 m^2/litre
- Subsequent coats: 14 m^2/litre

Itumeleng stated that he will be able to paint seven birdhouses with 500 mℓ of paint.

Verify, showing ALL calculations, whether his statement is CORRECT. (8)

4.3 Itumeleng has the following expenses for his birdhouse business:

- Rental of the stall at the flea , R250 per week
- Transport, R100 per week
- Wooden boards, R287,40 for a bundle of six boards
- Paint, R21,40 per birdhouse
- Sundries, R10,70 per birdhouse

ANNEXURE D shows the graph representing Itumeleng's weekly income and expenses for his birdhouse business.

Use ANNEXURE D and the information above to answer the questions that follow.

4.3.1 The equation to calculate his weekly expenses can be written as follows:

Expenses = R350 + p × number of birdhouses made,
where p = variable cost for each birdhouse made

(a) Show how the value of R350 (his fixed weekly cost) was calculated. (2)

(b) Calculate the value of p, the variable cost of making one birdhouse. (3)

4.3.2 Explain *break-even point* in this context. (2)

4.3.3 During one of the weeks, Itumeleng made 15 birdhouses, but only sold 12.

Show, by means of calculations, if he made a profit or a loss for that week. (4)
[32]

QUESTION 5

Danny and Susan are on their way to visit some of the tourist locations in Japan.

ANNEXURE E shows a road infographic of their planned tour with the various tourist locations that would be visited.

Use the information above and ANNEXURE E to answer the questions that follow.

5.1 The tourist location details (in random order) for the tour are given below.

(a) Start in Tokyo
(b) Visit Mount Fuji
(c) Visit the world's largest aquarium to see the different types of fish in Osaka
(d) At Nara they plan to visit the large wooden temple and the deer park.
(e) The trip will end at Itsukushima which is known for the Great Torii Gate that is standing in water at high tide.
(f) Drive though Kamakura at a speed not exceeding 40 km/h

Complete the table below by inserting the tourist location details in the correct order.

NOTE: Location details for 01 and 06 have been given in the table.

Location	Tourist location details
01	a
02	…
03	…
04	…
05	…
06	e

(4)

5.2 Mount Fuji is an active volcano. The last volcanic eruption was on 16 December 1707 and it followed several weeks after an earthquake on 11 November 1707.

5.2.1 Calculate how many decades ago Mount Fuji erupted. (3)

5.2.2 Write down the total number of days between the earthquake and the last volcanic eruption. (3)

5.3 In Tokyo they will visit the Tokyo tower which is a communication and observation tower. The tower is 1 092,1916 feet tall and has two viewing decks. The main deck is 150 m above the ground and the top deck is 250 m above the ground.

Some of the ticket prices per person are as follows:

TOKYO TOWER VIEWING DECKS		
	MAIN DECK	**TOP DECK**
Adult (19 years and older)	1 200 yen	3 000 yen
High school (16 to 18 years old)	1 000 yen	2 800 yen
Group reservation for main deck (group of 20 people or more, but less than 50)		
Adult	1 080 yen	
High school	900 yen	
Group reservation for main deck (group of 50 people or more)		
Adult	960 yen	
High school	800 yen	

Use the information above to answer the questions that follow.

5.3.1 Write, in simplified form, the ratio of the height above the ground of the main deck to the top deck. (2)

5.3.2 Convert, in metres, the height of the tower if 1 m = 3,281 feet. (2)

5.3.3 Danny stated that if they had been in a group of 60 people observing from the main deck, they could have received 30% discount on an adult ticket.

Verify whether his statement is CORRECT showing ALL calculations. (6)

5.4 On their return journey Danny and Susan took a train from Hiroshima to Tokyo.

- The train left Hiroshima station at 08:06.
- It stopped at eight stations en route for 4 minutes at a time.
- It reached Tokyo at 12:03.
- The distance the train travelled is 816 km.

Calculate the average speed at which this train travelled.

You may use the formula: **Distance = speed × time** (6)
[26]

TOTAL: 150

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NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

ADDENDUM

NOVEMBER 2022

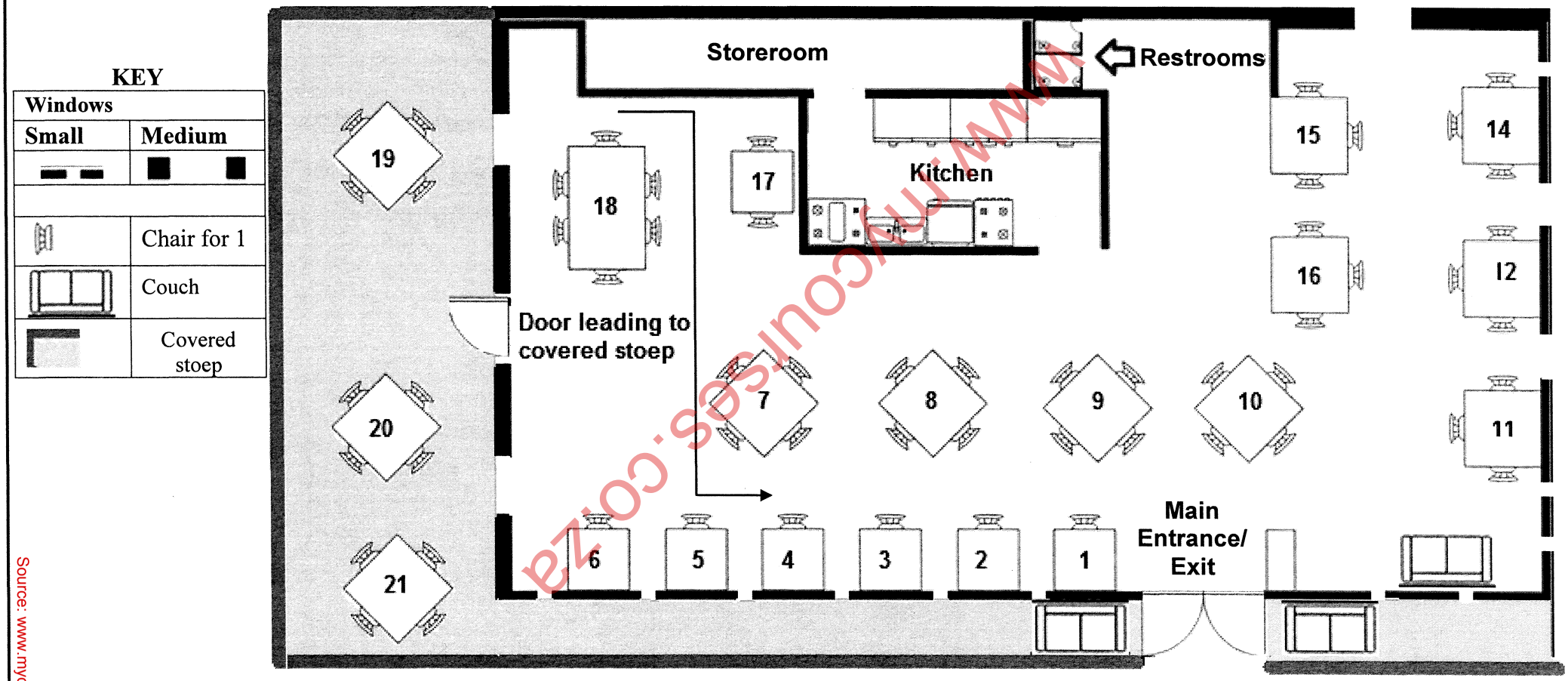
This addendum consists of 6 pages with 5 annexures.

* M L A D E 2 *

ANNEXURE A

QUESTION 2.1

SEATING PLAN OF THE RESTAURANT



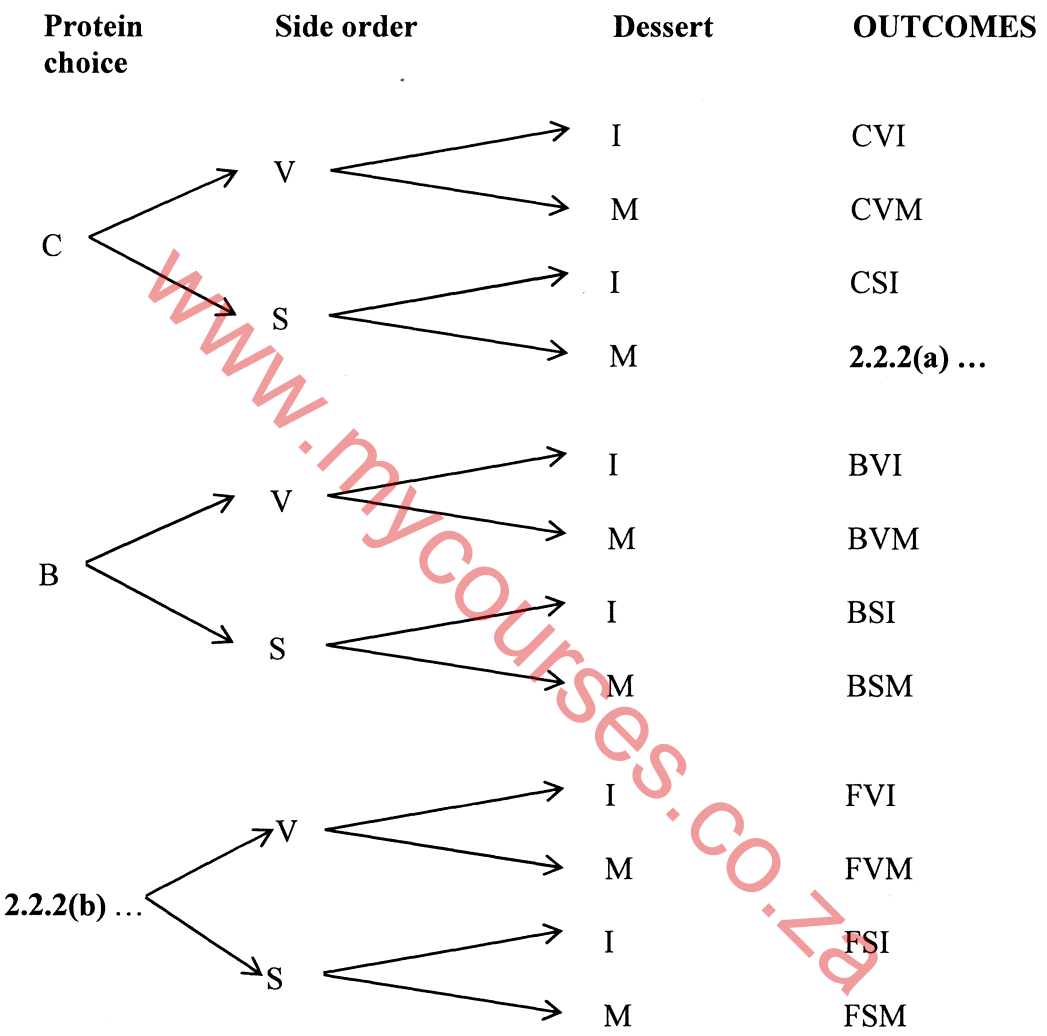
NOTE: The main entrance doors are on the south side of the building.

[Adapted from www.bing.com]

ANNEXURE B

QUESTION 2.2

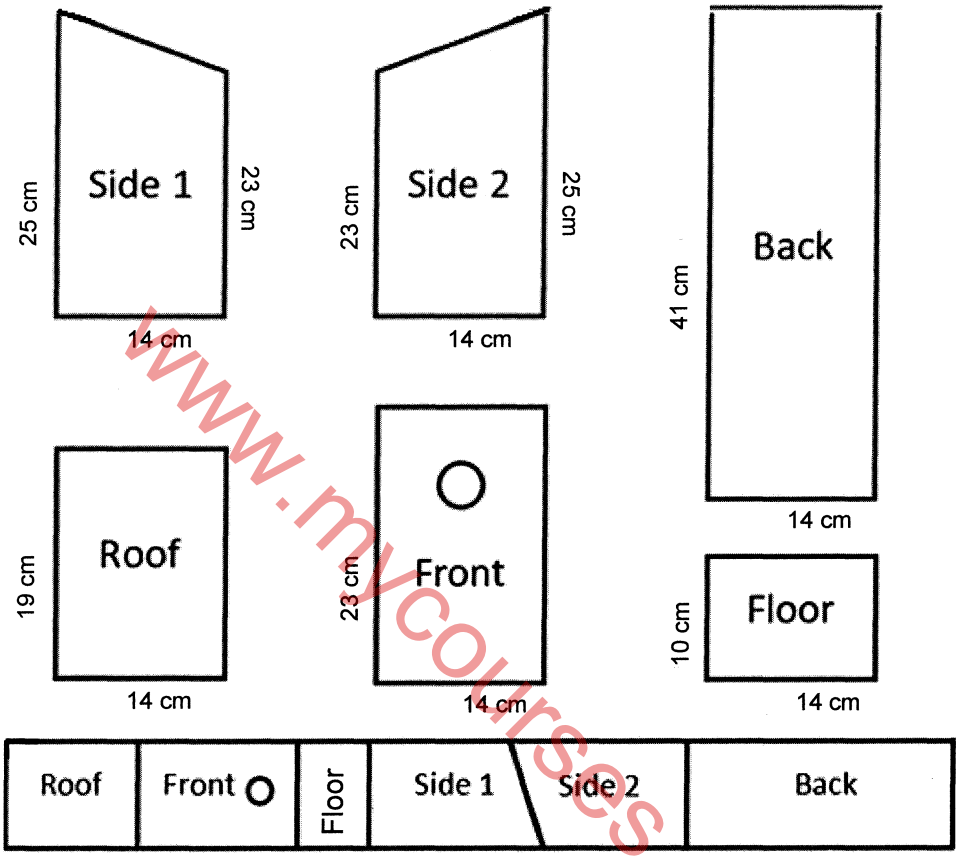
CHOICES FROM A SET MENU AT THE RESTAURANT



ANNEXURE C

QUESTION 4.1

DIAGRAM OF THE PARTS OF A BIRDHOUSE

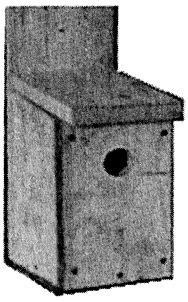


[Adapted from www.SunCatcherStudio.com]

ASSEMBLY INSTRUCTIONS FOR THE BIRDHOUSE

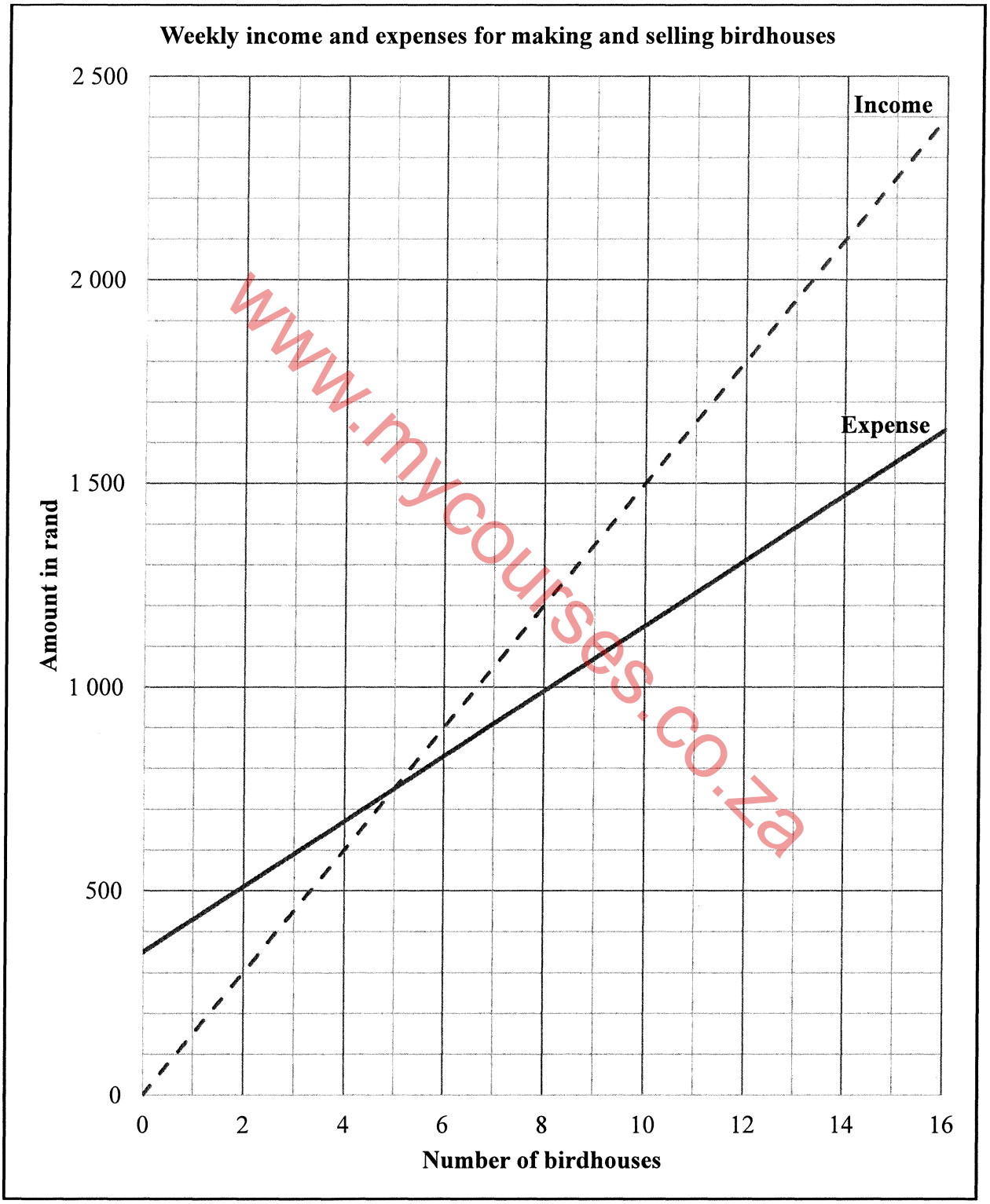
STEP	WHAT TO DO
1	Nail the longest side of side 1 and side 2 to the back.
2	Position the floor between the two sides and the back and nail it in place.
3	Nail the front on the two sides and the floor.
4	Place the roof in position and nail it.

FINAL PRODUCT



ANNEXURE D

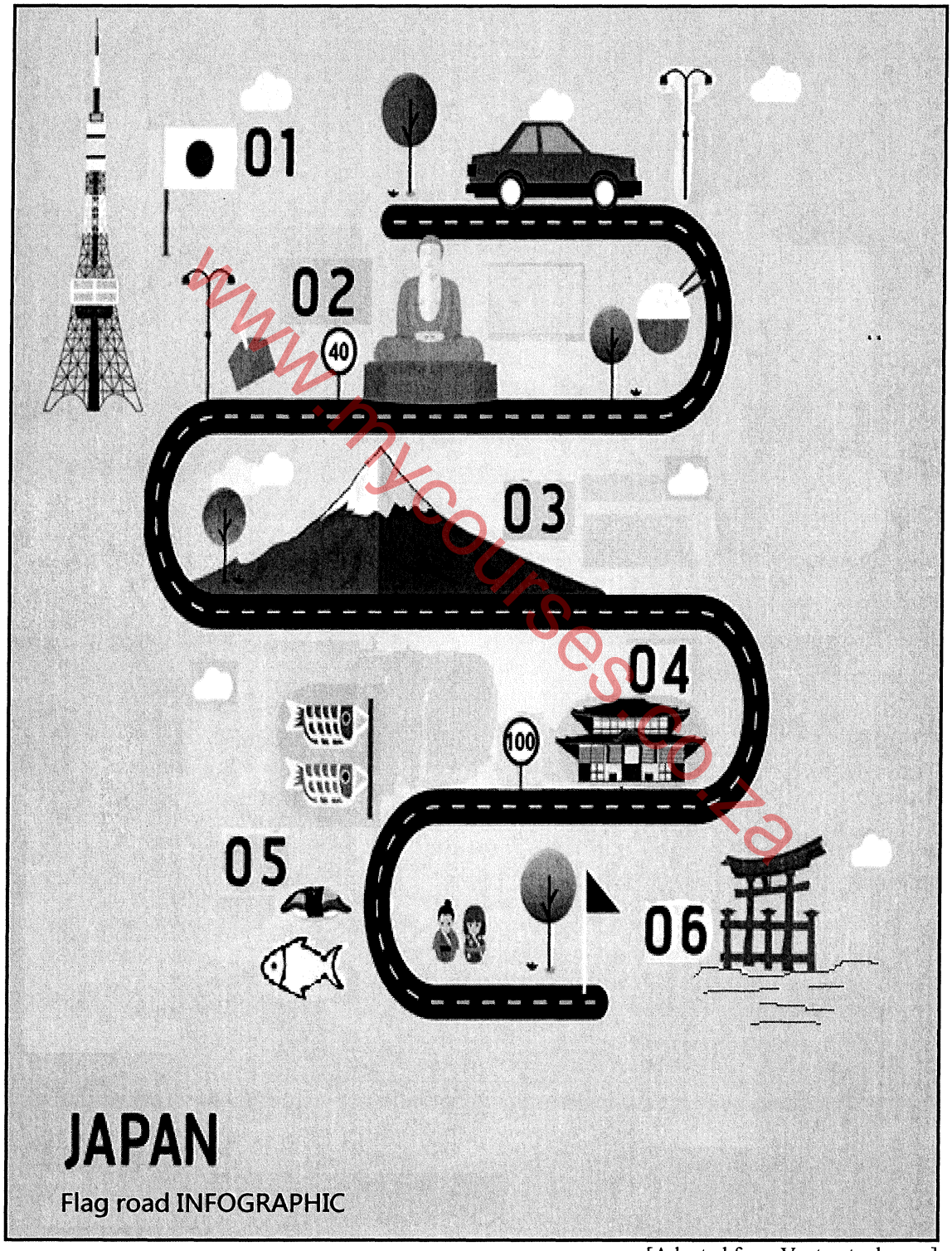
QUESTION 4.3



ANNEXURE E

QUESTION 5.1

ROAD INFOGRAPHIC OF JAPAN SHOWING TOURIST LOCATION DETAILS



[Adapted from Vectorstock.com]

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE/ *NASIONALE SENIOR SERTIFIKAAT*

GRADE 12

MATHEMATICAL LITERACY P2/ *WISKUNDIGE GELETTERDHEID V2*

NOVEMBER 2022

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

Symbol/*Kode*	Explanation/*Verduideliking*
M	Method/*Metode*
MA	Method with accuracy/*Metode met akkuraatheid*
MCA	Method with constant accuracy/*Metode met volgehoue akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/a graph/document/diagram/*Lees vanaf tabel/grafiek/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in formule*
O	Opinion/Explanation/Reasoning /*Opinie/Verduideliking/redenasie*
P	Penalty, e.g. for no units, incorrect rounding off, etc./*Penalisasie, bv. vir geen eenhede/verkeerde afronding, ens.*
NPR	No penalty for correct rounding/*Geen penalisasie vir korrekte afronding nie*
AO	Answer only/*Slegs antwoord*

These marking guidelines consist of 21 pages, an analysis grid and notes.
Hierdie nasienriglyne bestaan uit 21bladsye, 'n analiserooster en notas.

APPROVED ON 16 November 2022	External Moderators		Internal Moderator
	R I Singh	E Cronje	L R deWaal

DEPARTMENT OF BASIC EDUCATION
PRIVATE BAG X895, PRETORIA 0001
2022 -11- 16
APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION

NOTE:
- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution, mark the crossed out (cancelled) version.
- Consistent accuracy (CA) applies in ALL aspects of the marking guidelines; however, it stops at the second calculation error.
- NOTE: consistent accuracy (CA) does not apply in cases of a breakdown.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- As a general marking principle, if a candidate has incurred one mistake and there is evidence of sound mathematics thereafter, then that candidate should lose one mark only.
- Rounding is an independent mark.
- In opinion type questions marks will only be awarded if relevant calculations are shown

LET WEL:
- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout.*
- *Let wel: volgehoue akkuraatheid (CA) geld nie in die geval van 'n afbreuk nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene nasien beginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor*
- *Afronding tel as 'n afsonderlike punt.*
- *In Opinie tipe vrae sal punte slegs toegeken word indien relefante berekeninge aangetoon is.*

Note: Questions marked with * refers to the notes./*Vrae gemerk met *, verwys na die notas.*
Questions where the numbers are encircled are the ones where we have a tolerance range.
Vrae waar die nommer omkring is, is die waar ons 'n toleransie omvang het.

QUESTION/*VRAAG* 1 [27 MARKS/*PUNTE*] Answer Only AO - full marks			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
1.1.1	Z ✓✓A	2A correct time (2)	M L1 E
1.1.2*	24 hour /*uur* ✓✓A 12 hour /*uur*. ✓A	2A 1st display 1A 2nd display (3)	M L1 E
1.1.3*	✓A ✓A Quarter to one in the afternoon/ pm or post meridiam *Kwart voor een in die middag / nm* ✓A **OR/*OF*** ✓A Fifteen minutes to one in the afternoon Fifteen minutes before one in the afternoon *Vyftien minute voor een, namiddag*	1A correct time 1A afternoon **OR/*OF*** 1A correct time 1A afternoon (2)	M L1 E
1.1.4*	2 ✓✓A	2A correct number (2)	M L1 E

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
1.1.5	✓C 16 × 60 + 45 = 1 005 minutes/*minute* ✓ A	1C multiply hours by 60 1A adding correct values (2)	M L1 M
1.2.1	32 – (8 + 6 +8 + 8) ✓ MA = 2 bolts/*boute* ✓ A	1MA subtracting from 32 1A two bolts (2)	MP L1 E
1.2.2	2 nuts/*moere* ✓✓ A	2A correct number nuts (2)	MP L1 M
1.2.3*	Short brace ✓✓RT *Kort spanstuk*	2RT answer (2)	MP L1 E
1.3.1	Bar scale/*staaf skaal* ✓✓A **OR/*OF*** Line scale or linear scale / *lynskaal of liniêre skaal* **OR/*OF*** Graphic scale / *Grafiese skaal*	2A Correct scale (2)	MP L1 E
1.3.2*	Gauteng ✓✓RT	2RT correct province (2)	MP L1 E
1.3.3	N14 ✓RT N17 ✓RT	1RT 1st route 1RT 2nd route (2)	MP L1 E
1.3.4*	7 ✓✓A	2A number of destination towns (2)	MP L1 E
1.3.5	39 mm ✓✓A [allow 1 mm on both sides/*laat 1 mm weerskante toe*]	2A correct measurement (2)	MP L1 E
		[27]	

QUESTION/*VRAAG* 2 [36 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
2.1.1	✓✓ O To let in fresh air or ventilation. *Vars lug in te laat of ventilasie .* **OR/*OF*** ✓✓ O To let natural light in./Sunlight/sun rays to come in. *Om lig in te laat/sonlig/sonstrale te laat inkom.* **OR/*OF*** ✓✓ O For customers to enjoy the view outside. *Vir kliënte om die uitsig te kan geniet.* **OR/*OF*** ✓✓ O The windows are many because they are small sized. *Die vensters is klein daarom is daar so baie.* **OR/*OF*** People outside to view the inside, hence attract customers ✓✓ O *Mense kan van buite, binne toe kyk, dit trek gevolglik kliënte*	2O reason (2)	MP L4 M
2.1.2	Max. no of seats /*Maks. Getal stoele* ✓MA = 6 + 2 + 5 + 5 + 5 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 6 = 6 + 2 + 15 + 28 + 6 ✓S = 57 ✓CA **OR/*OF*** Max. no. of seats/*Maks. Getal stoele* ✓MA = 1 × 6 + 2 × 1 + 3 × 5 + 4 × 7 + 6 × 1 = 6 + 2 + 15 + 28 + 6 ✓S = 57 ✓CA	1MA adding correct numbers 1S simplification 1CA answer **OR/*OF*** 1MA multiply correct numbers 1S simplification 1CA answer **AO** (3)	MP L2 E
2.1.3*	13 seats/*stoele*. ✓✓ A	2A number of seats (2)	MP L2 E

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.1.4*	✓✓ O For people waiting to be seated. /*Vir mense wat wag vir 'n sitplek* **OR/*OF*** ✓✓ O A place you can wait for a dining table to be ready or prepared for one. / *'n Plek waar jy kan wag dat 'n tafel gereed gemaak word vir jou.* **OR/*OF*** ✓✓ O To sit on while waiting for your lift after visiting the restaurant. /*Om op te sit terwyl jy wag vir jou geleentheid nadat jy die restaurant besoek het.* **OR/*OF*** ✓✓ O Waiting area for customers who ordered take-aways. *Wag plek vir mense wat wegneemetes bestel het.* **OR/*OF*** ✓✓ O A place where customers can take pictures. / *'n Plek waar kliënte fotos kan neem.*	2O reason (2)	MP L4 E
2.1.5	✓ A Walk in an Easterly direction. ✓ A Then turn and walk in a Southerly direction. Then turn and walk in an Easterly direction. ✓ A *Loop in 'n Oostelike rigting.* *Draai en loop in 'n Suidelike rigting,* *draai weer en loop in 'n Oostelike rigting.*	1A East 1A South 1A East (3)	MP L3 M
2.1.6*	✓ A ✓ A Number 13 is left out, there are only 20 tables. *Nommer 13 is uitgelaat, daar is slegs 20 tafels.* Therefore, her claim is valid. *Daarom is haar bewering geldig.* ✓ O **OR/*OF*** Number of tables set for/ *tafels vir* 1 = 6 Number of tables set for / *tafels vir* 2 = 1 Number of tables set for / *tafels vir* 3 = 5 Number of tables set for / *tafels vir* 4 = 7 Number of tables set for / *tafels vir* 6 = 1 Total =20 ✓ A ✓ A Therefore, her claim is valid. *Daarom is haar bewering geldig.* ✓ O	2A Reasoning and reflecting 1O verification **OR/*OF*** 2A Reasoning and reflecting 1O verification (3)	MP L4 M

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.2.1	Tree diagram/*Boom diagram* ✓✓ A	2A tree diagram (2)	P L1 E
2.2.2 (a)	CSM / *HSM* ✓✓ A	2A outcome	P L2 E
2.2.2 (b)	F (Fish) / *V / Vis* ✓✓ A	2A choice (4)	
2.2.3*	4 ✓✓ A	2A correct number (2)	P L1 E
2.2.4*	P(malva) = $\frac{6}{12}$ ✓A ×100 % ✓A = 50 % ✓CA **OR/*OF*** P(malva) = $\frac{1}{2}$ ✓A × 100 % ✓A = 50 % ✓CA	1A numerator 1A denominator 1CA simplified as a % **OR/*OF*** 1A numerator 1A denominator 1CA simplified as a % **AO** (3)	P L2 M
2.3.1	It is a map showing the course that runners have to follow in a race. ✓✓ A *Dit is 'n kaart wat die pad wat hardlopers sal volg aandui.* **OR/*OF*** A map that shows the path / way / direction the runners will run. ✓✓ A *'n Kaart wat die pad / weg / rigting wat die hardlopers sal volg, aantoon.* **OR/*OF*** A map that displays the roads that make up the course of the LAM. ✓✓ A *'n Kaart wat die pad wat die LAM volg, aandui.*	2A explanation (2)	MP L1 E

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.3.2*	✓✓ A There is no relationship (or ratio) between distances on a map and the corresponding distance on the ground. *Daar is nie 'n verhouding tussen die afstande op die kaart en die ooreenstemmende afstande in die werklikheid nie.* **OR/*OF*** ✓✓ A One should not measure the length on the map and then expect to be able to calculate the "real life" distance from it. *Jy kan nie die afstande op die kaart meet en verwag dat jy die werklike afstande kan bereken nie.* **OR/*OF*** ✓✓ A No specific scale was used throughout to draw this map (Candidates might mention a scale e.g.1 : 100). *Geen spesifieke skaal was deurgaans gebruik om hierdie kaart te teken nie. (Kandidate mag 'n skaal bv. 1: 100 noem).* **OR/*OF*** ✓✓ A Not to scale means the dimensions or measurements on the map are not accurate. *Nie op skaal beteken die afmetings op die kaart is nie akkuraat nie.*	2A explanation (2)	MP L4 M
2.3.3* (a)	The road is overshadowing or hide/covering or obscuring the route course. ✓✓ O *Die roete is obskuur of versteek of nie sigbaar waar die ander deel bo-oor dit gaan nie.* **OR/*OF*** ✓✓ O There is a break in the line that shows the route. *Die lyn wat die roete aandui word onderbreek.* **OR/*OF*** ✓✓ O Arrows disappear under the road / *Pyle verdwyn onder die pad.*	2O reasoning (2)	MP L4 M
2.3.3* (b)	Four (4) times/*Vier keer.* ✓✓ A	2A correct number (2)	MP L1 E
2.3.4	South west or SW/*Suidwes* ✓✓ A	2A correct direction (2)	MP L2 M
		[36]	

QUESTION/*VRAAG* 3 [29 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
3.1.1	Perimeter/*Omtrek* ✓SF $= 2 \times (239 + 89)$ mm ✓A ✓A = 656 mm **OR/*OF*** Perimeter/*Omtrek* = 239 mm +89 mm + 239 mm + 89 mm ✓ MA ✓ A = 656 mm ✓ A	1SF substitution 1A simplification 1A unit **OR/*OF*** 1MA adding all sides 1A simplification 1A unit **AO** (3)	M L2 E
3.1.2	Height opening/closing part/*Hoogte van die oop-/ toemaak gedeelte* ✓MA = 114 mm – 2,5 cm – 7 cm ✓C = 11,4 cm – 2,5 cm – 7 cm = 1,9 cm ✓CA **OR/*OF*** Height opening/closing part/*Hoogte van die oop-/ toemaak gedeelte* ✓MA = 114 mm – (2,5 cm + 7 cm) ✓C = 11,4 cm – 9,5 cm = 1,9 cm ✓CA **OR/*OF*** Height opening/closing part/*Hoogte van die oop-/ toemaak gedeelte* ✓MA = 114 mm – 25 mm – 70 mm $= \frac{190mm}{10}$ ✓C = 1,9 cm ✓CA	1MA subtracting both values 1C converting 1CA simplification **OR/*OF*** 1MA subtracting both values 1C converting 1CA simplification **OR/*OF*** 1MA subtracting both values 1C converting 1CA simplification (3)	M L2 E

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.1.3 (a)	Radius = $\frac{28mm}{2} = 14mm$ ✓A = 1,4 cm ✓C Volume = 3,142 × (1,4 cm)^2 × 8,5 cm ✓SF ✓SF = 52,34572 cm^3 = 52,346 cm^3 **OR/*OF*** Radius = $\frac{2,8\ cm}{2}$ ✓C = 1,4 cm ✓A Volume = 3,142 × (1,4 cm)^2 × 8,5 cm ✓SF ✓SF = 52,34572 cm^3 = 52,346 cm^3	1A radius 1C converting 1SF radius squared 1SF substitution **OR/*OF*** 1C converting 1A radius 1SF substitution 1SF radius squared (4)	M L3 M
3.1.3 (b)	0,82 = Mass / *Massa* ÷ 52,346 ✓SF Mass/*Massa* = 0,82 × 52,346 ✓M = 42,92372 g ✓A = 43 g ✓R	1SF substitution 1M changing the subject of the formula 1A simplification 1R rounded (4)	M L3 M
3.2.1*	Volume = 1,6 gallon/*gelling* × 4 × 28 × 5 ✓MA = 896 gallon/*gelling* Volume = 896 × 3,785 ℓ ✓C = 3 391,36 ℓ ✓CA **OR/*OF*** 1,6 gallon/*gelling* = 1,6 × 3,785 ℓ = 6,056 ℓ ✓C Volume water = 6,056 ℓ × 4 × 28 × 5 ✓MA = 3 391,36 ℓ ✓CA	1MA multiplication 1C conversion factor 1CA simplification **OR/*OF*** 1C conversion 1MA multiplication 1CA simplification	M L3 M

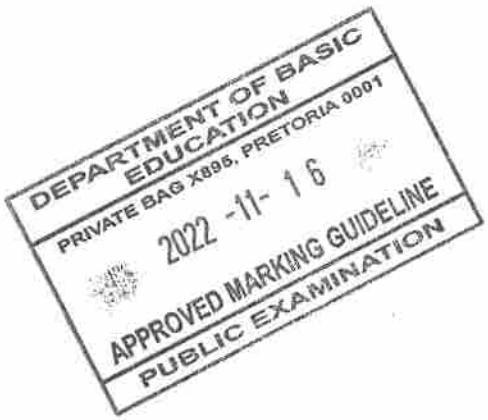
Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	**OR/*OF***	
	1 Person flushes/ *spoel* 4 × 28 = 112 times a month/*keer per maand* That is/*dit is* 112 × 1,6 gal = 179,2 gallons/*gelling* Volume = 179,2 × 3,785 = 678,272 ℓ ✓C Family of 5 volume/ *familie van 5* ✓MA Volume = 678,272 ℓ × 5 = 3 391,36 ℓ ✓CA	1C conversion 1MA multiplication 1CA simplification	
	OR/*OF*	**OR/*OF***	
	The family flushes /*die familie spoel* 4 × 5 × 1,6 gal = 32 gal / day Volume = 32gal/day × 3,785 = 121,12 gal/day ✓C For the month /*vir 'n maand* ✓MA Volume = 121,12 gal/day × 28 days = 3 391,36 ℓ ✓CA	1C conversion 1MA multiplication 1CA simplification	
	OR/*OF*	**OR/*OF***	
	Toilet flushed in Feb/ *Spoel in Feb* = 5 × 4 ×28 = 560 ✓C ✓MA Volume = 1,6 × 3,785 × 560 = 3 391,36 ℓ ✓CA	1C conversion 1MA multiplication 1CA simplification (3)	
3.2.2*	✓✓O Restrict the volume of water flowing into the cistern *Verminder die volume water wat in die spoelbak invloei* **OR/*OF*** Repair all the leaks/*Maak alle lekplekke reg* ✓✓O **OR/*OF*** ✓✓O Place a brick into the cistern/*Sit 'n baksteen in die spoelbak* **OR/*OF*** ✓✓O Install a newer model / *Installeer 'n nuwer model*	2O any valid way to reduce volume of water in the cistern (2)	M L4 E

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.3.1	✓MA ✓MA 17:30 – 15 min – 40 min – 40 min ✓CA = 15:55	1MA subtracting 15 min from 17:30 1MA subtracting two cooking times 1CA simplification **AO** (3)	M L2 M
3.3.2	$°C = (°F - 32°) \times \frac{5}{9}$ $= (325 - 32) \times \frac{5}{9}$ ✓SF = 162,777.. ✓CA ≈ 160°C ✓R	1SF correct substitution 1CA simplification 1R rounding **AO** (3)	M L2 E
3.3.3*	✓M $4\frac{1}{4} \times 2 = 8\frac{1}{2}$ cups/*koppies* ✓A 250 ml = 0,25 ℓ ✓C Number of litres/*Hoeveelheid liter* $= 8\frac{1}{2} \times 0,25$ ℓ = 2,125 ℓ ✓CA **OR/*OF*** 1 cup/*koppie* = 250 mℓ 4 cups /*koppies* = 4 × 250 mℓ = 1 000 mℓ ✓MA ¼ cup/*koppie* = ¼ × 250 mℓ = 62,5 mℓ For 1 tart she needs /*vir 1 tert benodig sy* = 1 000 + 62,5 = 1 062,5 mℓ ✓A For 2 tarts/*vir 2 terte* = 1 062,5 mℓ × 2 = 2 125 mℓ ✓C = 2,125 ℓ ✓CA **OR/*OF*** ✓MA 1 tart /*tert* : $4\frac{1}{4} \times 250$ mℓ = 1 065,5 mℓ ✓A 2 tarts /*terte*: 1 065,5 mℓ × 2 = 2 125 mℓ ✓C Total /*totaal:* 2 125 mℓ ÷ 1 000 = 2,125 ℓ ✓CA	1M multiplying with 2 1A total cups 1C convert to litre 1CA simplification **OR/*OF*** 1MA multiplying with 250 1A milk needed for 1 tart 1C convert to litre 1CA simplification **OR/*OF*** 1MA multiplying with 250 1A milk needed for 1 tart 1C convert to litre 1CA simplification	M L3 M

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	**OR/*OF***	
	$4¼ = \frac{17}{4}$ cups /*koppies*		
	For 1 tart/ *vir 1 tert*	1MA multiplying with 250 1C convert to litre 1A milk needed for 1 tart	
	$\frac{17}{4} \times 250\ m\ell = 1\,062{,}5\ m\ell = 1{,}0625\ \ell$ ✓MA ✓C ✓A		
	Milk for 2 tarts /*Melk vir 2 terte*		
	$= 1{,}0625\ \ell \times 2 = 2{,}125\ \ell$ ✓CA	1CA simplification	
	OR/*OF*	**OR/*OF***	
	$4¼ \times 2 \times 250\ m\ell = 2\,125\ m\ell$ ✓MA ✓A ✓CA $= 2{,}125\ \ell$ ✓C	1MA multiplying with 2 1A total cups 1CA simplification 1C convert to litre	
	OR/*OF*	**OR/*OF***	
	$4{,}25 \times 2 = 8{,}5$ cups/*koppies* ✓MA ✓A	1MA multiplying with 2 1A total cups	
	1 cup /*koppie* = 250 mℓ		
	8,5 cups /*koppies* = x		
	$x = \frac{8{,}5\ cups}{1\ cup} \times 250\ m\ell = 2\,125\ m\ell$ ✓CA $= 2{,}125\ \ell$ ✓C	1CA simplification 1C convert to litre	
	OR/*OF*	**OR/*OF***	
	✓MA $2(4 \times 250) = 2\,000\ m\ell$ $2(\frac{1}{4} \times 250) = 125\ m\ell$ ✓A Total/*Totaal* = 2 125 mℓ ✓CA = 2,125 ℓ ✓C	1MA multiplying with 2 1A total cups 1CA simplification 1C convert to litre	
		(4)	
		[29]	

QUESTION/*VRAAG* 4 [32 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
4.1.1	The total length/*Totale lengte* = 19 cm + 23 cm + 10 cm + 25 cm + 23 cm + 41 cm ✓MA = 141 cm ✓CA = 1 410 mm ✓C ≈ 1 500 mm	1MA adding correct values 1CA simplification 1C conversion (3)	MP L2 M
4.1.2	The 2 sides are against the back which is 14 cm wide. The thickness of the boards is 20 mm *Die 2 sykante is teen die agterkant wat 14 cm breed is.* *Die dikte van die plank is 20 mm* Floor against the Back/*Vloer teen die agterkant* = 14 cm – 20 mm – 20 mm ✓MA = 14 cm – 2 cm – 2 cm ✓C = 10 cm ✓A His statement is correct/*Sy bewering is korrek* ✓O **OR/*OF*** If the 10 cm side goes against the back: *Indien die 10cm teen die rugkant is:* 14 cm – 10 cm ✓MA = 4 cm is left on the sides/*bly oor vir die kante* 4 cm ÷ 2 ✓A = 2 cm on each side /*elke kant*. Board thickness/*plank dikte* = 20 mm = 2 cm ✓C His statement is correct./ *Sy bewering is korrek* ✓O **OR/*OF*** Thickness of the board / *dikte van die plank* = 20 mm = 2 cm ✓C 10 cm + 2 cm + 2 cm ✓MA = 14 cm ✓A His statement is correct./ *Sy bewering is korrek* ✓O	1MA subtracting 1C conversion 1A simplification 1O verification **OR/*OF*** 1MA subtracting 1A simplification 1C conversion 1O verification **OR/*OF*** 1C conversion 1MA adding 1A simplification 1O verification	MP L4 D

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF* The thickness of each side / *dikte aan elke kant* = 2 cm ✓C Floor against the back side / *Vloer teen rugkant* = (14 cm – 10 cm) ÷ 2 ✓MA = 4 cm ÷ 2 = 2 cm ✓A His statement is correct. / *Sy bewering is korrek* ✓O	**OR/*OF*** 1C conversion 1MA subtracting 1A simplification 1O verification (4)	
4.1.3	Area of rectangle/*Oppervlakte van reghoek* = 23 cm × 14 cm ✓SF = 322 cm^2 ✓A Radius of the hole /*Radius van opening* = 4,2 cm ÷ 2 = 2,1 cm ✓A Size of the hole / *Grootte van opening* = 3,142 × (2,1)^2 ✓SF = 13,85622 cm^2 ✓CA Exposed front area / *Voorste buite oppervlakte* = 322 cm^2 – 13,85622 cm^2 = 308,14378 cm^2 ✓CA	1SF correct values 1A simplification 1A radius value 1SF substitution 1CA simplification 1CA simplification **NPR** (6)	M L3 D



Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.2	Coat/*Laag* 1: 10 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{10}$ ℓ ✓MA = 0, 02888 ℓ ✓A	1MA ratio 1A simplification	M L4 D
	Coat/*Laag* 2: 14 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{14}$ ℓ = 0, 0206285… ℓ ✓A	1A simplification	
	Total for 3 coats/*Totaal vir 3 lae* = 0,02888 + 2 × 0, 0206285.. ℓ ✓MCA = 0,070137… ℓ ✓CA	1MCA adding 3 values 1CA simplification	
	Number of birdhouses with 500 m ℓ *Getal voëlhuisies met 500 mℓ* $= \frac{0,500}{0,070137}$ ✓MCA ≈ 7 ✓CA	1MCA dividing converted values 1CA simplification	
	His statement is correct/*Sy bewering is korrek* ✓O	1O conclusion	
	OR/*OF*	**OR/*OF***	
	Coat/*Laag* 1: 10 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{10}$ ℓ ✓MA = 0, 02888 ℓ ✓A	1MA ratio 1A simplification	
	Coat/*Laag* 2: 14 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{14}$ ℓ = 0, 0206285… ℓ ✓A	1A simplification	
	Total for 3 coats /*Totaal vir 3 lae* = 0,02888 + 2 × 0, 0206285.. ℓ ✓MCA = 0,070137… ℓ ✓CA	1MCA adding 3 values 1CA simplification	
	For 7 birdhouses/*Vir 7 voëlhuisies* = 0,070137 × 7 ✓MCA = 0,490959 = 490 mℓ ✓CA His statement is correct/*Sy bewering is korrek.* ✓O	1MCA multiplying by 7 1CA number of millilitres 1O conclusion	

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	**OR/*OF***	
	Total area for 7 birdhouses /*Totale oppervlakte vir 7 voëlhuisies* = $7 \times 0{,}2888\ m^2$ ✓MA $= 2{,}0216\ m^2$	1MA multiplying by 7	
	1st coat/*laag*: 1 ℓ covers/*bedek* $10\ m^2$ n ℓ covers /*bedek* $2{,}0216\ m^2$ $n = \frac{2{,}0216}{10}$ ✓MA $= 0{,}20216$ ℓ ✓A	1MA ratio 1A simplification	
	2nd coat/*laag*: 1 ℓ covers/*bedek* $14\ m^2$ x ℓ covers/*bedek* $2{,}0216\ m^2$ $x = 0{,}1444$ ℓ ✓A	1A simplification	
	and 3rd coat/*laag* = 0,1444 ℓ Total paint needed /*totale hoeveelheid verf nodig* = 0,20216 ℓ + 0,1444 ℓ + 0,1444 ℓ ✓MCA = 0,49096 ℓ ✓CA = 490,96 mℓ ✓CA Correct /*korrek* ✓O	1MCA adding 3 values 1CA simplification 1CA number of millilitres 1O conclusion (8)	
4.3.1 (a)	Rental + Transport/*Huur en vervoer* ✓RT = R250 + R100 ✓MA = R350	1RT correct values 1MA adding correct values (2)	M/F L1 E
4.3.1* (b)	Wooden boards each/*Houtplanke elk* $= \frac{R287{,}40}{6} = R47{,}90$ ✓MA Total cost for one/*Totale koste vir een* p = R47,90 + R21,40 + R10,70 ✓MCA = R80 ✓CA	1MA unit price 1MCA adding ALL correct values 1CA simplification (3)	M/F L2 M

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.3.2*	✓✓ A Break-even point is when the **expenses** for making, transporting the birdhouses and renting the stall **is equal** to the **income** from selling the birdhouses. *Gelykbreekpunt is waar die uitgawes vir die maak, vervoer en huur van die stalletjie is gelyk aan die inkomste uit die verkoop van die voëlhuisies.* **OR/*OF*** ✓✓ A Break-even point is where the number of birdhouses sold equals the expense (cost) to make the birdhouses. *Gelykbreekpunt is waar die getal voëlhuisies wat verkoop word gelyk is aan die uitgawes (kostes) om hulle te maak* **OR/*OF*** ✓✓ A In this context he must make and sell 5 birdhouses and his expense and income will both be R750 *In hierdie konteks moet hy 5 voëlhuisies maak en verkoop en sy uitgawes en inkomstes is beide R750*	2A correct explanation (2)	M/F L1 E
4.3.3*	Expense for/*Uitgawe vir* 15 is R1 550 ✓RT Income/*Inkomste* 12 is R1 800 ✓RT ✓A Profit /*Wins* = R1 800 – R1 550 = R250 ✓CA **OR/*OF*** Income from selling /*Inkomste uit verkoop van 12* = R150 × 12 = R1 800 ✓A Expense for making 15 / *Uitgawes om 15 te maak* = R350 + R80 × 15 = R1 550 ✓A ✓A He makes a profit / *Hy maak 'n wins* R1 800 – R1 550 = R250 ✓CA	1RT expense 1RT income 1A profit 1CA simplification **OR/*OF*** 1A income 1A expense 1A profit 1CA simplification (4)	M/F L3 M
		[32]	

QUESTION/*VRAAG* 5 [26 MARKS/*PUNTE*]

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
5.1	**Location/*Plek*** | **Detail/*Besonderheid*** 01 | a 02 | f ✓A 03 | b ✓A 04 | d ✓A 05 | c ✓A 06 | e **OR/*OF*** 02. Pass Kamakura /*ry deur Kamakura* ✓A 03. Visit Mount Fuji / *besoek Fuji* ✓A 04. Visit the Wooden Temple / *Hout tempel* ✓A 05. Visit the Aquarium / *grootste akwarium* ✓A **OR/*OF*** (a) – 01 (b) – 03 ✓A (c) – 05 ✓A (d) – 04 ✓A (e) – 06 (f) – 02 ✓A	1A 1st correct one 1A 2nd correct one 1A 3rd correct 1A last correct **OR/*OF*** 1A 1st correct one 1A 2nd correct one 1A 3rd correct 1A last correct **OR/*OF*** 1A 1st correct one 1A 2nd correct one 1A 3rd correct 1A last correct (4)	MP L2 M
5.2.1*	2022 – 1707 = 315 years/*jaar* ✓A Number of decades/*Getal dekades* $= \frac{315}{10}$ ✓A = 31,5 ✓CA	1A number of years 1A decade 1CA simplification (3)	M L2 M
5.2.2	Nov: 30 – 11 = 19 days/*dae* ✓A Dec: 15 days ✓A Elapsed days between/*Verloopte dae tussen* = 19 + 15 = 34 ✓CA **OR/*OF*** From/*van* 12 Nov to/*tot* 11 Dec = 30 days/*dae* ✓A From /*van* 12 Dec to /*tot* 15 Dec = 4 days *dae* ✓A Total days between /*Totale dae tussen* = 30 + 4 = 34 ✓CA	1A days in Nov 1A number of days in Dec 1CA total number of days **OR/*OF*** 1A number of days in Nov 1A days in Dec 1CA total number of days (3)	M L1 E

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
5.3.1*	150 : 250 ✓A ✓CA = 3 : 5	1A correct values and order 1CA simplification (2)	M L1 E
5.3.2	1 m = 3,281 feet/*voet* Height = $\frac{1\,092{,}1916\ feet}{3{,}281\ feet\ per\ metre}$ ✓MA ≈ 332,884 m ✓CA	1MA dividing 1CA simplification **NPR** (2)	M L2 E
5.3.3*	% discount/*afslag* = $\frac{\text{discount amount}}{\text{original price}} \times 100\%$ ✓MA = $\frac{1\,200-960}{1\,200} \times 100\%$ ✓RT ✓A = $\frac{240}{1\,200} \times 100\%$ ✓A = 20 % ✓CA His statement is incorrect/*Sy bewering is verkeerd.* ✓O **OR/*OF*** Percentage /*Persentasie* = $\frac{960}{1\,200} \times 100\%$ ✓RT ✓MA ✓A = 80% ✓A Percentage discount /*Persentasie afslag* = 100% – 80% = 20% ✓CA Incorrect / *verkeerd* ✓O **OR/*OF*** Discount /*afslag* = 30% × 1 200 = 360 yen ✓MA ✓RT ✓A Discounted amount should be /Afslag moes wees: 1 200 – 360 = 840 yen ✓MA ✓CA Incorrect / *verkeerd* ✓O	1MA percentage calculation 1RT correct values 1A denominator 1A numerator 1CA simplification 1O verification **OR/*OF*** 1MA percentage calculation 1RT correct values 1A denominator 1A simplification 1CA simplification 1O verification **OR/*OF*** 1MA percentage calculation of correct values 1RT correct values 1A simplification 1MA subtracting 1CA simplification 1O verification	M L4 M

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF* Difference in ticket price / *Verskil in kaartjie pryse* ✓RT ✓MA ✓A = 1 200 – 960 = 240 yen ✓MA ✓A Discount /*afslag* = 30% × 1 200 = 360 yen Incorrect / *verkeerd* ✓O	**OR/*OF*** 1RT correct values 1MA subtracting 1A simplification 1MA percentage calculation 1A simplification 1O verification	
	✓MA **OR/*OF*** 100% – 30% = 70% ✓A Discounted Amount /*Bedrag na afslag* ✓MA ✓RT $= \frac{70}{100} \times 1\,200$ = 840 yen ✓A His statement is incorrect, the price for adults is 960 yen ✓O *Sy bewering is nie korrek want die bedrag vir volwassenes is 960 jen*	**OR/*OF*** 1MA subtracting 1A simplification 1RT correct values 1MA percentage calculation 1A simplification 1O verification (6)	
5.4	Duration of the trip/*Duur van rit* = 12:03 – 8:06 = 3 h 57 min ✓A Total stopping time/*Totale tyd van stoppe* = 8 × 4 min = 32 min ✓A Time that the train was moving/ *Tyd wat trein beweeg* = 3 h 57 min – 32 min = 3 h 25 min ✓CA Distance = speed × time *Afstand = spoed × tyd* 816 km = speed × 3 h 25 min ✓SF Speed/*Spoed* $= \frac{816\text{ km}}{3\text{ h }25\text{ min}} = \frac{816\text{ km}}{3{,}416667h}$ ✓S = 238,83 km/h ✓CA	1A duration 1A total stopping time 1CA travelling time 1SF substitution 1S change of subject of the formula 1CA simplification	M L3 D

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	**OR/*OF***	
	Duration of the trip/*Duur van rit* = 12:03 – 8:06 = 3 h 57 min = 237 min ✓A	1A duration	
	Total stopping time/*Totale tyd van stoppe* = 8 × 4 min = 32 min ✓A	1A total stopping time	
	Time that the train was moving/ *Tyd wat trein beweeg* = 237 min – 32 min = 205 min ✓CA	1CA travelling time	
	Distance = speed × time *Afstand = spoed × tyd* 816 km = speed × 205 min ✓SF	1SF substitution	
	Speed/*Spoed* = $\frac{816\text{ km}}{205\text{ min}}$ ✓S	1S change of subject of the formula	
	≈ 3,980487.. km/min ✓CA	1CA simplification **NPR** (6)	
		[26]	
		TOTAL: 150	

Mathematical Literacy P2 Analasys Grid Nov 2022

	Maps	Meas	Prob	L1	L 2	L 3	L 4	Total		Difficulty level E	M	D
1.1.1		2		2				2		2		
1.1.2		3		3				3		3		
1.1.3		2		2				2		2		
1.1.4		2		2				2		2		
1.1.5		2		2				2			2	
1.2.1	2			2				2		2		
1.2.2	2			2				2			2	
1.2.3	2			2				2		2		
1.3.1	2			2				2		2		
1.3.2	2			2				2		2		
1.3.3	2			2				2		2		
1.3.4	2			2				2		2		
1.3.5	2			2				2	27	2		
2.1.1	2						2	2			2	
2.1.2	3				3			3		3		
2.1.3	2				2			2	36	2		

2.1.4	2						2	2		2		
2.1.5	3					3		3			3	
2.1.6	3						3	3			3	
2.2.1			2	2				2		2		
2.2.2			4		4			4		4		
2.2.3			2	2				2		2		
2.2.4			3		3			3			3	
2.3.1	2			2				2		2		
2.3.2	2						2	2			2	
2.3.3(a)	2						2	2			2	
2.3.3(b)	2			2				2		2		
2.3.4	2				2			2			2	
3.1.1		3			3			3		3		
3.1.2		3			3			3		3		
3.1.3a		4				4		4			4	
3.1.3b		4				4		4			4	
3.2.1		3				3		3			3	
3.2.2		2					2	2		2		
3.3.1		3			3			3			3	
3.3.2		3			3			3		3		
3.3.3		4				4		4	29		4	
4.1.1	3				3			3			3	
4.1.2	4						4	4				4
4.1.3		6				6		6				6
4.2.2		8					8	8				8
4.3.1a		2		2				2		2		
4.3.1b		3			3			3	32		3	
4.3.2		2		2				2		2		
4.3.3		4				4		4			4	
5.1	4				4			4			4	
5.2.1		3			3			3			3	
5.2.2		3		3				3		3		
5.3.1		2		2				2		2		
5.3.2		2			2			2		2		
5.3.3		6					6	6			6	
5.4		6				6		6	26			6
	52	87	11	44	41	34	31	150	150	64	62	24
	34.7	58.0	7.3	29.3	27.3	22.7	20.7	100.0		42.7	41.3	16.0
Target	**40%**	**55%**	**5%**	**30%**	**30%**	**20%**	**20%**	**100%**		40%	40%	20%

	NOTES	
1.1.2	Digital and Analogue *Digitaal en Analoog*	2 marks
1.1.3	Twelve forty-five in the afternoon Forty-five minutes past 12 in the afternoon	2 marks
1.1.4	If B & E is written Correct times - 12:45 & 16:45	1 mark
1.2.3	Screw/s	2 marks
1.3.2	Free State	2 marks
1.3.4	Listing only all 7 names	1 mark
2.1.3	Accept **6**	1 mark
2.1.4	Accept Decorating purposes For people to take pictures Health reasons Outside for people who smoke	2 marks
2.1.6	Accept Invalid –only when they wrote following explanation: There are 21 tables because table 18 is made up of two × 3 - seater tables (Table 13 and Table 18)	3 marks
2.2.3	Options listed BVI BVM BSI BSM	1 mark
2.2.4	$\frac{2}{4} \times 100\% = 50\ \%$	3 marks
2.3.2	Free hand sketch	2 marks
2.3.3 (a)	The bridges are indicated with the number 10 and 110 on each side of the streets.	2 marks
2.3.3 (b)	Accept 5	2 marks
3.2.1	If ONE value is missing 1,6 × 4 × 28 = 179,2 gallons; 179,2 × 3,785 = 678,272 ℓ 1,6 × 4 × 5 = 32 gallons; 32 × 3,785 = 121,12 ℓ 1,6 × 28 × 5 = 224 gallons; 224 × 3,785 = 847,84 ℓ	2 marks

3.2.2	Practical examples to restrict flow into the cistern are e.g. - Bend the arm that carries the float down - push the handle up before all the water runs out. - short flush Flush less	2 marks
3.3.3	Failure to multiply by 2	3 marks
4.3.1 (b)	Accept: Expenses = R350 + p × number R430 = R350 + p × 1 p = R430 – R350 = R80	3 marks
4.3.2	At break-even no profit or loss is made.	2 marks
4.3.3	Showing Income = R1 800 and Expense = R1 550 and concluding profit without the calculation	4 marks
5.2.1.	Accept 31 and 32	3 marks
5.3.1	Accept ratio simplified to 1:1,67 or 0,6 : 1 or $\frac{3}{5}$	2 marks
5.3.3	**Accept correct answers if multiplied with 60. E.g.** 1 200 × 60 = 72 000 yen 960 × 60 = 57 600 yen % discount / *afslag* = $\frac{72\,000 - 57\,600}{72\,000} \times 100\%$ ✓RT ✓A ✓MA ✓A = 20% ✓CA ✓O His statement is wrong / *Sy bewering is nie korrek nie* **OR/*OF*** 1 200 × 60 = 72 000 yen ✓RT 960 × 60 = 57 600 yen 30% × 72 000 yen ✓MA = 21 600 yen ✓A 72 000 yen – 21 600 yen ✓MA = 50 400 yen ✓A His statement is wrong / *Sy bewering is nie korrek nie* ✓O	6 marks