



# **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2022**

## **MATHEMATICAL LITERACY P2 MARKING GUIDELINE**

**MARKS: 150**

<b>Symbol</b>	<b>Explanation</b>
M	Method
MA	Method with accuracy
CA	Consistent accuracy
RCA	Rounding consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
SF	Correct substitution in a formula
J	Justification
O	Opinion/Example/Definition/Explanation/Justification/Verification
RT/RG/RM	Reading from a table/graph/map
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding off
NPR	No penalty rounding or omitting units
AO	Answer only, full marks

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This marking guideline consists of 12 pages.

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**MARKING GUIDELINES****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.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra incorrect item presented.

**LET WEL:**

- *As 'n kandidaat 'n vraag TWEE keer beantwoord, merk slegs die EERSTE poging.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyn toegepas, maar dit hou by die tweede berekeningsfout op.*
- *Wanneer 'n kandidaat aflees van 'n grafiek, tabel, uitlegplan en kaart en ekstra antwoorde gee, penaliseer vir elke ekstra item.*

**KEY TO TOPIC SYMBOL:**

**F = Finance; M = Measurement; MP = Maps, plans and other representations; P= Probability**

**QUESTION 1 [30 MARKS]**

Quest	Solution	Explanation	Level
1.1.1	1,56 kg to g $1,56 \times 1\,000 \checkmark M$ $= 1\,560 \text{ g} \checkmark A$	1M multiply by 1 000 1A correct answer (2)	M L1
1.1.2	125 g : 625 g $\checkmark MA$ $1 : 5 \checkmark$	1M divide by 125 1MA answer (2)	M L1
1.1.3	Convert 8 kg to g $8 \times 1\,000 = 8\,000 \text{ g} \checkmark C$ 6,25 cups: 5 000 g $\text{No. of cups} = \frac{8\,000 \times 6,25}{5\,000} \checkmark M$ $= \frac{50\,000}{5\,000}$ $= 10 \checkmark MA$	1C convert 8 kg to g 1M using ratio format 1MA correct answer (3)	M L1
1.1.4	Mass of raisins = $\frac{450 \text{ g} \times 125 \text{ g}}{5\,000 \text{ g}} \checkmark \checkmark MA$ $= 11,25 \text{ g} \checkmark A$	2MA 450 multiply correct value and divide by 5 000 1A answer (3)	M L1
1.2.1	Diameter is a line through the centre of the circle that touches the circumference of the circle at two points. $\checkmark \checkmark A$ (Accept any relevant explanation.)	2A correct explanation (2)	M L1
1.2.2	Difference = $8,04 - 0,9025 \checkmark RT \checkmark MA$ $= 7,1375 \times 100 \checkmark C$ $= 713,75 \text{ mm}^2 \checkmark A$ <p style="text-align: center;"><b>OR</b></p> $0,9025 \times 100 = 90,25 \text{ mm}^2 \checkmark C$ $8,04 \times 100 = 804 \text{ mm}^2 \checkmark C$ Difference = $804 - 90,25 \checkmark M$ $= 713,75 \text{ mm}^2 \checkmark A$	1RT correct values 1MA subtract correct values 1C convert to mm 1A correct answer 2C convert cm to mm 1M subtract correct values 1A correct answer (4)	M L1

1.2.3	$\% = \frac{0,9025}{8,04} \times 100 \checkmark M$ $= 11,225 \% \checkmark A$	1M multiply by 100  1A correct percentage  NPR (2)	M L1
1.2.4	Mass in kg = $28,25 \div 1\ 000 \checkmark MA$  $= 0,02825 \text{ kg} \checkmark A$	1MA dividing by 1 000 1A answer  (2)	M L1
1.2.5	Radius = $32 \div 2 \checkmark MA$ $= 16 \text{ mm} \checkmark A$	1MA dividing by 2 1A correct radius  (2)	M L1
1.2.6	Weight = $15 \times 28,25 \checkmark MA$  $= 423,75 \text{ g} \checkmark A$	1MA multiplying by 15  1A mass in g  (2)	M L1
1.2.7	Time: $11:15 + 4:50 = 15:65 \checkmark M$  $\checkmark C \checkmark A$ $= 16\text{h}05 \text{ minutes}$	1M adding time  1C convert minutes to hrs  1A correct time  (3)	M L1
1.3.1	Dimensions on drawing are portrayed smaller than in real life. $\checkmark \checkmark A$  <p style="text-align: center;"><b>OR</b></p> Dimensions on drawing are portrayed bigger in real life. $\checkmark \checkmark A$	2A correct explanation   (2)	MP L1
1.3.2	Perimeter = sum of all sides  Length C = $8,9 \text{ m} - (2,7 + 1,70 + 1)$  $= 8,9 \text{ m} - 5,4 \text{ m} \checkmark M$  $= 3,5 \text{ m} \checkmark A$	1M add sides and subtract  1A correct answer  (2)	M L1
		<b>[31]</b>	

QUESTION 2 [31 MARKS]			
Quest.	Solution	Explanation	Level
2.1.1	A3. ✓✓ RT	2RT correct answer (2)	MP L1
2.1.2	R572 ✓✓ RT	RT correct answer (2)	MP L2
2.1.3	N1 ✓✓ RT	2RT correct answer (2)	MP L1
2.1.4	NW or North West ✓✓ RT	2RT correct direction (2)	MP L2
2.1.5	<ul style="list-style-type: none"> <li>• Drive from Pretoria and take the N1 North to Polokwane</li> <li>• in Polokwane CBD take the R521 to Dendron,</li> <li>• approximately 60 km to Vivo, approximately 40 km to join Alldays</li> <li>• and drive approximately 46 km and another 23 km to Mapungubwe National Park entrance and reception. ✓✓✓ RT</li> </ul> <p style="text-align: center;"><b>AND</b></p> <ul style="list-style-type: none"> <li>• Take the N1 from Pretoria to Polokwane for approximately 260 km to Makhado</li> <li>• for approximately 107 km join with Musina for approximately 92 km and</li> <li>• turn left, take the R572 for another 68 km to Mapungubwe National Park entrance and reception. ✓✓✓ RT</li> </ul>	3RT for using R521, N1 with explanation.          3RT for using N1, R572 with explanation          (6)	MP L2
2.2.1	Actual distance Beitbridge – Musina:  $= \frac{1,3 \times 3\,000\,000}{100\,000} \quad \checkmark \checkmark \text{ M}$ $= 39 \text{ km } \checkmark \text{ A}$	1M conversion ratio 1M divide by 100 000   1A correct answer (3)	MP L2
2.2.2	Pretoria to Mapungubwe: Distance = 260 + 60 + 40 + 50 + 22 + 23 + 23 ✓ M = 478 km ✓ A	1M for adding correct values 1A correct answer (2)	MP L2

2.2.3	<p><math>D = \text{Average Speed} \times \text{Time}</math></p> <p><math>478 = 120 \times T \checkmark \text{SF}</math></p> <p><math>T = \frac{478}{120}</math></p> <p><math>= 3,983333333 \checkmark \text{A}</math></p> <p><math>= 0,9833 \times 60 \checkmark \text{C}</math></p> <p><math>= 58.998 \text{ min OR } 3\text{'59'00''}</math></p> <p><math>\approx 59 \text{ min} + 3\text{hrs} + 45 \text{ min} + 15 \text{ min} \checkmark \text{M}</math></p> <p><math>\approx 4 \text{ hr } 59 \text{ min} \checkmark \text{S}</math></p> <p>Departure time: <math>4 \text{ hr } 30 \text{ min} + 4 \text{ hr } 59 \text{ min}</math></p> <p>Arrival time: <math>= 08\text{h}89 \text{ min} \checkmark \text{S}</math></p> <p><math>\approx 09\text{h}29 \text{ min} \checkmark \text{CA}</math></p> <p>Yes, they will make it in time. <math>\checkmark \text{J}</math></p>	<p>1SF substitute correct values 1A correct answer</p> <p>1C convert time</p> <p>1M adding time</p> <p>1S simplification</p> <p>1S simplified time</p> <p>1CA arrival time</p> <p>1J conclusion</p> <p>(8)</p>	MP L3
2.2.4 (a)	<p>Distance from Pretoria to Mapungubwe National Park: <math>= 478 \text{ km} \checkmark \text{CA}</math></p> <p><math>\checkmark \text{M}</math> <math>\checkmark \text{M}</math></p> <p>Total litres = <math>\frac{478 \text{ km}}{10 \text{ km}} \times 0,79 = 37,76 \text{ litres} \checkmark \text{A}</math></p>	<p>CA from 2.2.2 1CA correct distance</p> <p>1M multiplying by 0,79 1M dividing by 10 1A correct answer</p> <p>(4)</p>	MP L2
2.2.4 (b)	<p>Cost of petrol: 1 litre = R23,90</p> <p>Cost = <math>R23,90 \times 37,76 \checkmark \text{M}</math> <math>= R902,46 \checkmark \text{CA}</math></p>	<p>CA from Q2.2.4 (a)</p> <p>1M multiply correct values. 1CA correct answer</p> <p>(2)</p>	MP L1
<b>[33]</b>			

QUESTION 3 [31 MARKS]			
Quest	Solution	Explanation	Level
3.1.1	Circumference = $2 \times 3,142 \times \text{radius}$ $\checkmark$ SF $= 2 \times 3,142 \times 14 \checkmark$ C $= 87,976 \text{ cm} \checkmark$ MA	1SF for radius value 14 1C correct values 1MA correct answer (3)	M L2
3.1.2	Volume = $3,142 \times r^2 \times h$ $\checkmark$ SF $3\,079,16 \text{ cm}^3 = 3,142 \times 14 \times 14 \times \text{height} \checkmark$ M $\checkmark$ C Height (H) = $3\,079,16 \text{ cm}^3 \div 615,832 \text{ cm}^2 \checkmark$ MA $= 5 \text{ cm} \checkmark$ CA	1M finding radius of 140 mm. 1C convert 140 mm to cm 1SF for radius value 14 1MA divide by area of cylinder baking pan 1CA correct answer (5)	M L3
3.1.3	$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1,8$ $= (430 - 32) \div 1,8 \checkmark$ SF $= 398 \div 1,8 \checkmark$ S $= 221,11 \text{ }^{\circ}\text{C} \checkmark$ A	1SF correct substitution 1S simplification 1A correct answer (3)	M L2
3.2.1	1 g of sugar = 4 calories $A = \frac{57,3 \times 4}{1} \checkmark$ MA $= 229,2 \text{ calories} \checkmark$ A $B = \frac{169,2 \times 1}{4} \checkmark$ MA $= 42,3 \text{ grams} \checkmark$ A	1MA finding value A 1A correct answer 1MA finding value B 1A correct answer (4)	M L2
3.2.2	Total amount in sugar = $57,3 \text{ g} \times 3 \checkmark$ MA $= 171,9 \text{ grams} \checkmark$ MA	1MA multiply 57,3 by 3 1MA correct answer (2)	M L1

3.2.3	<p>Daily consumption sugar intake:</p> <p>Vitamin water = <math>5,5 \times 2</math> = 11 g ✓MA</p> <p>Per week = <math>11 \times 7</math> ✓M = 77 + 20 g = 97 g ✓ CA</p> <p>% Sugar intake = <math>\frac{97 \text{ g}}{171,9 \text{ g}} \times 100 = 56,4\%</math> ✓M ✓ C</p> <p>Her statement is valid. ✓J</p>	<p><b>CA from 3.2.2</b></p> <p>1MA correct value 1M finding weekly intake</p> <p>1CA correct answer</p> <p>1M finding percentage 1CA correct answer</p> <p>1J justification</p> <p>(6)</p>	M L4
3.2.4	<p><math>2 \times 35 \text{ g} = 70 \text{ g}</math> ✓MA</p> <p>1 year = <math>70 \times 365</math> ✓M    <math>(70 \times 366) \div 1\,000</math> = 25 550 g <math>\div 1\,000</math> ✓C = 25,55 kg <b>OR</b> 25,62 kg ✓CA</p>	<p>1MA divide by 4 g</p> <p>1M multiply by 365 or 366 1C convert gram to kg 1CA correct answer</p> <p>(4)</p>	M L2
3.2.5	<p>She must look for ‘unsweetened products’. ✓✓ R</p> <p>Consume more healthy fats. ✓✓ R</p> <p style="text-align: center;"><b>OR</b></p> <p>She should change her daily drinks to a bottle of vitamin water. ✓✓ R</p>	<p>2R reason 1</p> <p>2R reason 2</p> <p>(4)</p>	M L4
<b>[31]</b>			



QUESTION 4 [34 MARKS]			
Quest	Solution	Explanation	Level
4.1.1	There is no wall separating the kitchen and living room ✓✓	2A correct explanation (2)	MP L1
4.1.2	2 and 3 ✓✓ A	2A correct explanation (2)	MP L1
4.1.3	South ✓✓ RT	2RT correct answer (2)	MP L2
4.1.4	11 ✓✓ RT	2RT correct answer (2)	MP L1
4.2.1	<p>Total length in feet = <math>14 + 12</math> = 26 feet</p> <p>Total length in inches = <math>5 + 2</math> ✓ = 7</p> <p>Feet to cm = <math>26 \times 30,48</math> ✓ = 792,48</p> <p>To m = <math>792,48 \div 100</math> = 7,9248 ✓</p> <p>Inches to m = <math>7 \times 0,0254</math> = 0,1778 ✓</p> <p>Total length = <math>7,9248 + 0,1778</math> ✓ = 8,1 m ✓</p>	<p>1A total length in feet and inches</p> <p>1M converting feet</p> <p>1 CA length in metres</p> <p>1 MA length from inches to metres</p> <p>1M adding values</p> <p>1 CA answer</p> <p>(6)</p>	MP L3

4.2.2	<p>Bedroom 2 length = <math>14 \times 30,48</math></p> <p><math>= 426,72 \div 100</math></p> <p><math>= 4,2672 \checkmark</math></p> <p>Inches <math>= 5 \times 0,0254</math></p> <p><math>= 0,127</math></p> <p>Total <math>= 4,3942\text{m} \checkmark</math></p> <p>Width <math>= 10 \times 30,48</math></p> <p><math>= 304,8 \div 100</math></p> <p><math>= 3,048 \text{ m}</math></p> <p>Inches <math>= 9 \times 0,0254</math></p> <p><math>= 0,2286</math></p> <p>Total <math>= 3,048 + 0,2286</math></p> <p><math>= 3,2766 \checkmark</math></p> <p>Area <math>= \text{length} \times \text{width}</math></p> <p><math>= 4,3942 \times 3,2766 \checkmark</math></p> <p><math>= 14,398 \text{ m}^2 \checkmark</math></p> <p>Litres paint <math>= 14,398 \div 6 \checkmark</math></p> <p><math>= 2,399 \text{ litres} \checkmark</math></p> <p>Statement valid <math>\checkmark</math></p>	<p>1 A length in metres</p> <p>1 CA total length</p> <p>1 CA total width</p> <p>1 M calculating area</p> <p>1 CA area</p> <p>1M dividing by 6</p> <p>1CA no of litres</p> <p>1O Statement valid</p>	<p>M L4</p> <p>(8)</p>
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4.3.1	<p>Length of one side = <math>\sqrt{2025} \text{ cm}^2</math> ✓ M</p> <p style="text-align: center;"><math>S = 45 \text{ cm}</math> ✓ A</p> <p>Perimeter = Side <math>\times</math> 4  <math>= 45 \text{ cm} \times 4</math> ✓ SF  <math>= 180 \text{ cm}</math> ✓ MA</p> <p>Conversion = <math>180 \text{ cm} \div 100</math>  <math>= 1,8 \text{ m}</math> ✓ C</p> <p>Her statement is valid ✓ O</p>	<p>1M finding one side 1A correct answer</p> <p>1SF substitute correct values 1MA for 180 cm</p> <p>1C convert to cm</p> <p>1O justification</p> <p style="text-align: right;">(6)</p>	M L3
4.3.2	<p>Length of fabric = 270 cm</p> <p>Number of cushions = <math>270 \div 45 \text{ cm}</math> ✓ MCA  <math>= 6</math> ✓ CA</p> <p>Width of fabric = 180 cm  Number of cushions = <math>180 \div 45 \text{ cm}</math>  <math>= 4</math> ✓ CA</p> <p>Cushions faces = <math>6 \times 4</math> ✓ S  <math>= 24</math> ✓</p> <p>Total cushions faces = <math>24 \div 2</math>  <math>= 12</math> ✓ CA</p>	<p><b>CA cushion length from 4.3.1</b></p> <p>1MCA dividing fabric by 45 cm</p> <p>1CA correct value 1CA correct value 1S simplify</p> <p>1CA total number of cushions</p> <p style="text-align: right;">(6)</p>	M L3
		[34]	

QUESTION 5 [21 MARKS]			
Quest	Solution	Explanation	Level
5.1.1	Width of car = $1\,860 \div 1\,000$ ✓C $= 1,86$ m Remaining space = $3,5 - 1,86$ ✓M $= 1,64$ Space on both sides = $1,64 \div 2$ ✓M $= 0,82$ m ✓CA Statement is valid ✓O	1C mm to m 1 M subtraction 1 M dividing by 2 1 CA answer 1 O statement valid (5)	M L4
5.1.2	$P(\text{Grey SUV}) = \frac{5}{20}$ ✓ ✓ M $= 0,25$ ✓ A	2M for correct numerator and denominator 1A correct answer (3)	P L2
5.1.3	$\text{Probability}_{(\text{non-metallic})} = (11 \div 20) \times 100\%$ ✓ A ✓ M $= 55\%$ ✓ CA ✓ A $\therefore$ It is less than 56%. ✓ O <b>OR True OR valid.</b>	1A correct fraction 1M percentage 1CA answer 1O conclusion (4)	P L4
5.2.1	Length of Model $= 482,5 \text{ cm} \div 8$ ✓M $= 60,3125 \text{ cm}$ ✓A Width of Model $= 186 \text{ cm} \div 8$ ✓M $= 23,25 \text{ cm}$ ✓A Area of Model $= 60,3125 \times 23,25$ $= 1\,402,265625 \text{ cm}^2$ ✓CA 35% of table area = $\frac{35}{100} \times 3\,716,1216 \text{ cm}^2$ ✓M $= 1\,300,64256 \text{ cm}^2$ ✓CA The scale of 1 : 8 will not be suitable ✓O	1M divide by 8 1A correct answers 1M divide by 8 1A correct answer 1M finding area 1CA correct answer 1M finding table area 1CA correct answer 1O reason (9)	MP L4
		[21]	
		<b>TOTAL: 150</b>	