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**SENIOR CERTIFICATE EXAMINATIONS/  
NATIONAL SENIOR CERTIFICATE EXAMINATIONS  
SENIORSERTIFIKAAT-EKSAMEN/  
NASIONALE SENIORSERTIFIKAAT-EKSAMEN**

**MATHEMATICAL LITERACY P2/WISKUNDIGE GELETTERDHEID V2**

**2022**

**MARKING GUIDELINES/NASIENRIGLYNE**

**MARKS/PUNTE: 150**

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

**These marking guidelines consist of 19 pages.  
Hierdie nasien riglyne bestaan uit 19 bladsye.**

**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.

**LET WEL:**

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sienslegs 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 het en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene nasienbeginsel is dat, indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, die kandidaat slegs EEN punt verloor.*

<b>QUESTION/VRAAG 1 [30 MARKS/PUNTE] – ANSWER ONLY ACCEPTED</b>			
<b>Q/V</b>	<b>Solution/Oplissing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
1.1.1	D ✓✓ A	2A correct option Accept 1:50 000 (2)	MP L1
1.1.2	E ✓✓ A	2A correct option (2)	M L1
1.1.3	G ✓✓ A	2A correct option Accept 1 cm = 1 m (2)	MP L1
*1.1.4	C ✓✓ A	2A correct option (2)	M L1
*1.1.5	F ✓✓ A	2A correct option (2)	M L1
1.2.1	✓✓ A B <b>OR/OF</b> (2 × 240 × 70 + 2 × 240 × 112 + 2 × 112 × 70) mm <sup>2</sup>	2A correct option (2)	M L1
*1.2.2	✓✓ A mm <sup>3</sup> <b>OR</b> Cubic millimetres/ <i>Kubieke millimeter</i>	2A correct unit (2)	M L1
1.2.3	✓ C Length/ <i>Lengte</i> = 240 ÷ 1 000 = 0,24 m ✓ A	1C conversion factor 1A simplification (2)	M L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
*1.2.4	Number of rows/ <i>Getal rye</i> $= \frac{2\,100\text{ mm}}{70\text{ mm}} \checkmark A$ $= 30 \checkmark CA$	1A height 1 A correct denominator 1CA number of rows (3)	MP L1
1.3.1	Mass of the flour (in kg)/ <i>Massa van die meel</i> $= \frac{500}{1\,000} \checkmark C$ $= \frac{1}{2}\text{ kg or/of }0,5\text{ kg} \checkmark A$	1C divide by 1 000 1A simplification (2)	M L1
1.3.2	$12\text{ scones/botterbroodjies} = 2\text{ eggs/eiers} \checkmark A$ $6\text{ scones/botterbroodjies} = 1\text{ egg/eier}$ $30\text{ scones} = 2 + 2 + 1 = 5\text{ eggs/eiers} \checkmark A$ <p style="text-align: center;"><b>OR/OF</b></p> $12\text{ scones/botterbroodjies} = 2\text{ eggs/eiers} \checkmark A$ $30\text{ scones/botterbroodjies} = \frac{30}{12} \times 2$ $= 5\text{ eggs/eiers} \checkmark A$ <p style="text-align: center;"><b>OR/OF</b></p> $30\text{ scones/botterbroodjies} = \frac{30}{12} = 2,5\text{ dozen/dosyn} \checkmark A$ $1\text{ dozen need }2\text{ eggs/1 dosyn benodig }2\text{ eiers}$ $2,5\text{ dozen/dosyn} = 2,5 \times 2 = 5\text{ eggs/eiers} \checkmark A$	1A dozen = 12 1A simplification <p style="text-align: center;"><b>OR/OF</b></p> 1A dozen = 12 1A simplification <p style="text-align: center;"><b>OR/OF</b></p> 1A dozen = 12 1A simplification (2)	M L1
1.3.3	$\text{Radius} = 7\text{ cm} \div 2 \checkmark MA$ $= 3,5\text{ cm OR/OF }35\text{ mm} \checkmark A$	1MA dividing by 2 1A radius (2)	M L1
1.3.4	$\text{Number of dozen scones/Getal dosyn botterbroodjies}$ $= \frac{500}{75} \checkmark MA$ $= 6,67 \checkmark S$ $= 6 \checkmark R$	1MA dividing by 75 1S simplification 1R rounding down (3)	M L1
*1.3.5	$10\text{ minutes past two in the afternoon.} \checkmark A$ $\text{Tien minute oor twee in die namiddag.} \checkmark A$	1A time 1A afternoon (2)	M L1
		<b>[30]</b>	

<b>QUESTION/VRAAG 2 [32 MARKS/PUNTE]</b>			
<b>Q/V</b>	<b>Solution/Oplissing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
2.1.1	14:00 ✓✓ A	2A 24-hour time format (2)	MP L1
2.1.2	8 ✓✓A	2A correct number (2)	MP L2
2.1.3	Bicycle/ <i>Fiets</i> ✓✓RT	2RT bicycle (2)	MP L1
2.1.4(a)	<p>Distance/<i>Afstand</i> = 9K + 1K = 10 km ✓✓ A</p> <p>Fraction/<i>Breuk</i> = <math>\frac{10}{42,2}</math> ✓ MCA = <math>\frac{50}{211}</math> ✓ CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Distance/<i>Afstand</i> = 1 000 × 10 = 10 000 m ✓✓ A 42,2 km = 42 200 m</p> <p>Fraction/<i>Breuk</i> = <math>\frac{10\ 000\ m}{42\ 200\ m}</math> ✓ MCA = <math>\frac{50}{211}</math> ✓ CA</p>	<p>2A 10 km</p> <p>1MCA correct order</p> <p>1CA simplification</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>2A 10 km</p> <p>1MCA correct order</p> <p>1CA simplification (4)</p>	MP L2
2.1.4 (b)	<p style="text-align: center;">✓✓ A</p> <p>The distance is less than a full marathon. <i>Die afstand is minder as 'n vol marathon.</i></p> <p style="text-align: center;"><b>OR/OF</b></p> <p>It is shorter than a standard marathon. <i>Dit is korter as 'n standaard marathon.</i></p> <p style="text-align: center;"><b>OR/OF</b></p> <p>It is a fraction of a full marathon. <i>Dit is 'n breuk van die vol marathon.</i></p>	2A explanation (2)	MP L4
2.1.5	B ✓✓ A <b>OR/OF</b> 0%	2A correct option (2)	P L2
2.2.1	Scout House/ <i>Verkennerhuis</i> ✓✓RT	2RT correct place of interest (2)	MP L2
*2.2.2	South-east <b>OR</b> SE ✓✓A <i>Suidoos OF SO</i>	2A correct direction (2)	MP L1

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
*2.2.3	Nellmapius ✓✓RT	2RT correct street (2)	MP L2
2.2.4	St Martin's Church/ <i>St Martin-Kerk</i> ✓✓RT	2RT correct church (2)	MP L2
2.2.5	Irene Library & Hall/ <i>Irene Biblioteek &amp; Saal</i> ✓✓✓RT [Accept Hall / <i>Aanvaar Saal</i> ]	3RT correct place (3)	MP L3
2.2.6	<p>Measured distance/ <i>Gemete afstand</i> = 8 cm ✓MA</p> <p>8 cm : 1,9 km ✓MCA</p> <p>8 cm : 190 000 cm ✓C</p> <p>Scale/ <i>Skaal</i> is 1 : 23 750 ✓S</p> <p>1 : 24 000 ✓R</p> <p>(Maximum distance/ <i>maksimum afstand</i>)</p> <p>Measured distance/ <i>Gemete afstand</i> = 8,4cm ✓MA</p> <p>8,4 cm : 1,9 km ✓MCA</p> <p>8,4 cm : 190 000 cm ✓C</p> <p>Scale/ <i>Skaal</i> is 1 : 22 619,05 ✓S</p> <p>1 : 23 000 ✓R</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>✓MA ✓C</p> <p>8,4cm ÷ 100 000 : 1,9 km ✓MCA</p> <p>0,000084 km : 1,9km</p> <p>1: 22 619 ✓S</p> <p>1: 23 000 ✓R</p>	<p>1MA correct measurement</p> <p>1MCA correct ratio</p> <p>1C converting km to cm</p> <p>1S simplified ratio</p> <p>1R correct rounding</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1MA correct measurement</p> <p>1C converting cm to km</p> <p>1MCA correct ratio</p> <p>1S simplified ratio</p> <p>1R correct rounding</p> <p><b>Provinces need to mark according to ± 1 mm of their provincial paper.</b></p> <p>(5)</p>	MP L3

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.2.7	<p>The traffic flow is in the opposite direction. ✓✓O  <i>Die verkeervloei in die teenoorgestelderigting.</i></p> <p style="text-align: center;"><b>OR/OF</b></p> <p>One-way traffic /The arrow shows you can only turn left.  <i>Eenrigtingverkeer/ Die pyl wys jy kan slegs links draai</i></p> <p style="text-align: center;"><b>OR/OF</b></p> <p>The driver will be facing oncoming traffic.  <i>Die bestuurder sal in aankomende verkeer inry.</i></p>	<p>2O opinion</p> <p style="text-align: right;">(2)</p>	<p>MP L4</p>
		<b>[32]</b>	

<b>QUESTION/VRAAG 3[29MARKS/PUNTE]</b>			
<b>Q/V</b>	<b>Solution/Oplissing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
3.1.1	<p>Total length/<i>Totale lengte</i>  <math>= 55 \text{ cm} + 99 \text{ cm} + 55 \text{ cm} = 209 \text{ cm}</math> ✓A</p> <p>Perimeter/<i>Omtrek</i> <math>= 2(209 \text{ cm} + 149 \text{ cm})</math> ✓SF  <math>= 2(358) \text{ cm}</math>  <math>= 716 \text{ cm}</math> ✓CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Perimeter/<i>Omtrek</i>  <math>= (149 + 55 + 99 + 55 + 149 + 55 + 99 + 55) \text{ cm}</math> ✓A ✓SF  <math>= 716 \text{ cm}</math> ✓CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Perimeter/<i>Omtrek</i> <math>= 2(149) \text{ cm} + 2(55+99+55) \text{ cm}</math> ✓A ✓SF  <math>= (298 + 418) \text{ cm}</math>  <math>= 716 \text{ cm}</math> ✓CA</p>	<p>1A total length</p> <p>1SF substitution</p> <p>1CA perimeter</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1A total length  1SF substitution  1CA perimeter</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1A total length  1SF substitution</p> <p>1CA perimeter</p> <p style="text-align: right;">(3)</p>	M L2
3.1.2	<p>Radius <math>= \frac{605}{2} = 302,5 \text{ mm}</math> ✓A  <math>= 30,25 \text{ cm}</math> ✓C</p> <p>Area/<i>Oppervlakte</i> <math>= 3,142 \times (30,25 \text{ cm})^2</math> ✓SF  <math>= 2\,875,126375 \text{ cm}^2</math> ✓CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Radius <math>= \frac{605}{2} = 302,5 \text{ mm}</math> ✓A</p> <p>Area/<i>Oppervlakte</i> <math>= 3,142 \times (302,5 \text{ mm})^2</math> ✓SF  <math>= 28\,512,6375 \text{ mm}^2</math>  <math>= 28\,751\,263,75 \div 10^2</math> ✓C  <math>= 2\,875,126375 \text{ cm}^2</math> ✓CA</p>	<p>1A radius</p> <p>1C conversion</p> <p>1SF substitution</p> <p>1CA simplification</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1A radius</p> <p>1SF substitution</p> <p>1C conversion</p> <p>1CA simplification  <b>NPR</b></p> <p style="text-align: right;">(4)</p>	M L2



Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.1.3	$P = \frac{3}{7} \quad \checkmark A$ $= 0,4285714286 \quad \checkmark CA$ <p style="text-align: center;"><b>OR/OF</b></p> $P = 1 - \frac{4}{7} = \frac{3}{7} \quad \checkmark A$ $= 0,4285714286 \quad \checkmark CA$	1A numerator 1A denominator 1CA decimal form <p style="text-align: center;"><b>OR/OF</b></p> 1M subtracting from 1 1A simplification 1CA decimal form <b>NPR</b> (3)	P L2
*3.2.1	Total area/Totale oppervlakte $= 4 \text{ m} \times 5 \text{ m} + 3 \text{ m} \times 4 \text{ m} \quad \checkmark SF$ $= 20 \text{ m}^2 + 12 \text{ m}^2$ $= 32 \text{ m}^2$	1SF substitution of correct values 1M adding <b>NPU</b> (2)	M L2
*3.2.2 TR	Area of 1 tile/Opp van 1 teël = $35 \text{ cm} \times 35 \text{ cm} \quad \checkmark SF$ $= 1\,225 \text{ cm}^2$ $= 1\,225 \div (100)^2 \text{ m}^2 \quad \checkmark C$ $= 0,1225 \text{ m}^2 \quad \checkmark CA$ <p>Number of tiles needed/Getal teëls nodig</p> $= \frac{32}{0,1225} \quad \checkmark MCA$ $= 261,2244898 \quad \checkmark CA$ <p>Number to add/Getal om by te tel</p> $= 10\% \times 261,2244898 = 26,12244898 \quad \checkmark MCA$ <p>Total number of tiles/Totale aantal teëls</p> $= 261,2244898 + 26,12244898 = 287,3469388 \quad \checkmark CA$ <p>Number of boxes/Getal bokse</p> $= \frac{287,3469388}{4} = 71,83673469 \quad \checkmark MCA$ $\therefore 72 \text{ boxes} \quad \checkmark CA$	1 SF substitution 1C conversion 1CA simplification 1MCA dividing areas 1CA simplification 1MCA calculation 10% 1CA simplification 1MCA dividing by 4 1CA rounding up	M L3
		3 marks area of tile 2 marks number of tiles 2 marks adding 10% tiles or area 2 marks number of boxes	

<p>3.2.2</p>	<p><b>OR (when rounding consistently up) /OF</b></p> <p>Area of 1 tile/<i>Opp van 1 teël</i> = <math>35 \text{ cm} \times 35 \text{ cm}</math> ✓SF  <math>= 1\,225 \text{ cm}^2</math>  <math>= 1\,225 \div (100)^2 \text{ m}^2</math> ✓C  <math>= 0,1225 \text{ m}^2</math> ✓CA</p> <p>Number of tiles needed/<i>Getal teëls nodig</i>  <math>= \frac{32}{0,1225}</math> ✓MCA  <math>= 261,2244898 \approx 262</math> ✓CA</p> <p>Number to add/<i>Getal om by tetel</i>  <math>= 10\% \text{ of } 262 = 26,2</math> ✓MCA</p> <p>Total number of tiles/<i>Totale aantal teëls</i>  <math>= 262 + 26,2 = 288,2 \approx 289</math> ✓CA</p> <p>Number of boxes/<i>Getal bokse</i> = <math>\frac{289}{4}</math> ✓MCA  <math>= 72,25</math>  <math>\therefore 73 \text{ boxes}</math> ✓CA</p> <p style="text-align: center;"><b>OR/OF</b>          ✓C ✓SF ✓CA</p> <p>Area of 1 tile/<i>Opp van 1 teël</i> = <math>(0,35)^2 = 0,1225 \text{ m}^2</math></p> <p>Area covered by tiles in a box/  <i>Opp. wat 'n boks teëls bedek</i>  <math>= 0,1225 \text{ m}^2 \times 4 = 0,49 \text{ m}^2</math> ✓MCA ✓CA</p> <p>Area to be tiled/<i>Opp wat geteël word</i>  <math>32 \times 110\% = 35,2</math> ✓MCA ✓CA</p> <p>Number of boxes needed/<i>Getal bokse nodig</i>  <math>= \frac{35,2}{0,49}</math> ✓MCA  <math>\approx 71,8</math>  <math>\therefore 72 \text{ boxes}</math> ✓CA</p>	<p><b>OR/OF</b></p> <p>1 SF substitution</p> <p>1C conversion          1CA simplification</p> <p>1MCA dividing areas          1CA simplification</p> <p>1MCA calculation 10%</p> <p>1CA simplification</p> <p>1MCA dividing by 4          1CA rounding up</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1C conversion          1 SF substitution          1CA simplification</p> <p>1MCA multiplying by 4          1CA simplification</p> <p>1MCA calculation 10%          1CA simplification</p> <p>1MCA dividing areas          1CA rounding up</p>	
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Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p style="text-align: center;"><b>OR/OF</b></p> <p>Area of tile/ <i>Opp van 'n teël</i> = <math>(35\text{cm})^2</math> = <math>1\,225\text{ cm}^2</math> ✓A</p> <p>✓A <math>32\text{ m}^2 \times 100^2 = 320\,000\text{ cm}^2</math> ✓C</p> <p>Number of tiles needed/ <i>Getal teëls nodig</i> ✓MCA <math>32\text{ m}^2 = 320\,000\text{ cm}^2 \div 1\,225\text{ cm}^2</math> = <math>261,2244898</math> ✓CA</p> <p>With extras/ <i>Met ekstras</i> = <math>261,2244898 \times 1,1</math> MCA ✓CA = <math>287,3 = 288</math> tiles /<i>teëls</i></p> <p>Number of boxes/ <i>Getal bokse</i>: <math>288 \div 4</math> ✓MCA = <math>72</math> ✓CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Number of tiles/<i>Getal teëls</i> = <math>4\text{ m} \div 0,35 \approx 11,428</math> ✓C MCA Number of tiles/<i>Getal teëls</i> = <math>5\text{ m} \div 0,35 \approx 14,2857</math> ✓A</p> <p>Total number of tiles for lounge <i>Totale getal teëls vir woonkamer</i> = <math>11,4285 \times 14,285 = 163,2641</math> ✓SF</p> <p>Number of tiles/<i>Getal teëls</i> = <math>3\text{ m} \div 0,35 = 8,5714</math> Number of tiles/<i>Getal teëls</i> = <math>4\text{ m} \div 0,35 = 11,4285</math></p> <p>Total number of tiles for dining <i>Totale getal teëls vir eetkamer</i> = <math>11,4285 \times 8,5714 = 97,9582</math></p> <p>Total for lounge and dining room <i>Totaal vir woon en eetkamer</i> = <math>163,2641 + 97,9582 = 261,22</math> tiles ✓CA</p> <p>Including extra for cuttings and breakages/ <i>Insluitend ekstra vir sny en breek</i> ✓MCA = <math>261,28 \times 110\% = 287,408</math> ✓CA ✓MCA</p> <p>Total number of boxes/<i>Getal bokse</i> = <math>287,408 \div 4</math> = <math>71,852</math> <math>\approx 72</math> ✓CA</p>	<p style="text-align: center;"><b>OR/OF</b></p> <p>1A simplification 1A factor 1C conversion</p> <p>1MCA dividing areas 1CA simplification</p> <p>1MCA calculation 10% 1CA simplification</p> <p>1MCA dividing by 4 1CA rounded up simplification</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1C conversion 1MCA dividing dimensions 1A simplification</p> <p>1 SF substitution</p> <p>1CA simplification</p> <p>1MCA calculation 10% 1CA simplification</p> <p>1MCA dividing by 4 1CA rounding up</p>	(9)

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.2.3 TR	<p>Bags of tile cement/<i>Sakke teël sement</i></p> $= \frac{32}{3} = 10,7 \approx 11 \quad \checkmark A$ <p>Cost of the cement/<i>Sementkoste</i></p> $= R99,90 \times 11 = R1\,098,90 \quad \checkmark MCA \quad \checkmark CA$ <p>Cost of the grout/<i>Koste van bryvulsel</i></p> $= R89,90 \times 4 = R359,60 \quad \checkmark CA$ <p>Cost of the tiles/<i>Teëlkode</i></p> $= R143,84 \times 72 = R10\,356,48 \quad \checkmark CA$ <p>Total cost/<i>Totalekode</i></p> $= R10\,356,48 + R1\,098,90 + R359,60 + R2\,500 \quad \checkmark MCA$ $= R14\,314,98 \quad \checkmark CA$ <p>Her budget is enough./<i>Haar begroting is genoeg.</i> <math>\checkmark O</math></p> <p style="text-align: center;"><b>OR/OF</b></p> <p><b>(using 73 boxes of tiles)</b></p> <p>Bags of tile cement/<i>Sakke teël sement</i></p> $= \frac{32}{3} = 10,7 \approx 11 \quad \checkmark A$ <p>Cost (in rand)/<i>Koste in rand</i></p> $= 143,84 \times 73 + 99,90 \times 11 + 89,90 \times 4 + 2\,500 \quad \checkmark MCA$ $= R10\,500,32 + R1\,098,90 + R359,60 + R2\,500 \quad \checkmark CA \quad \checkmark CA \quad \checkmark CA \quad \checkmark MCA$ $= R14\,458,82 \quad \checkmark CA$ <p>Her budget is enough./<i>Haar begroting is genoeg.</i> <math>\checkmark O</math></p> <p style="text-align: center;"><b>OR/OF</b></p>	<p><b>CA from Q3.2.2</b></p> <p>1A number of bags of cement</p> <p>1MCA multiplying cost with number 1CA cement cost</p> <p>1CA grout cost</p> <p>1CA tile cost</p> <p>1MCA adding 4 values 1CA simplification</p> <p>1O verification</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1A number of bags of cement</p> <p>1MCA multiplying cost with number 1CA cement cost 1CA grout cost 1CA tile cost 1MCA adding 4 values 1CA simplification</p> <p>1O verification</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>3 marks cement cost 1 mark tile cost 1 mark grout cost 2 marks adding costs 1 mark verification</p> </div>	M/F L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p style="text-align: center;"><b>OR/OF</b></p> <p>Bags of tile cement/Sakke sement</p> $\frac{32}{3} = 10,7 \approx 11 \quad \checkmark A$ <p>Budget verification/Begroting verifikasie:</p> <p style="text-align: center;"><math>\checkmark MCA \quad \checkmark CA \quad \checkmark CA</math></p> $R15\,000 - [(R143,84 \times 72) + (4 \times R89,90) + (11 \times R99,90) + R2\,500]$ <p style="text-align: center;"><math>\checkmark MCA</math></p> $= R15\,000 - (R10\,356,46 + R359,60 + R1\,098,90 + R2\,500)$ $= R15\,000 - R14\,314,98$ $= R685,02 \quad \checkmark CA$ <p style="text-align: center;"><math>\checkmark O</math></p> <p>The budget is enough with R685,02 to spare Die begroting is genoeg met R685,02 oorblywend.</p>	<p style="text-align: center;"><b>OR/OF</b></p> <p>1A number of bags of cement</p> <p>1MCA multiplying cost with number 1CA tile cost 1CA cement cost 1CA grout cost</p> <p>1MCA adding 4 values</p> <p>1CA simplification</p> <p>1O verification</p> <p style="text-align: right;">(8)</p>	
		<b>[29]</b>	

<b>QUESTION/VRAAG 4 [30 MARKS/PUNTE]</b>			
<b>Q/V</b>	<b>Solution/Oplissing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
*4.1.1	Right/Regs ✓✓RT	2RT correct direction (2)	MP L1
4.1.2 (a)	✓RT K 11 ✓RT	1RT correct row 1RT correct seat (2)	MP L2
*4.1.2 (b)	Total seats/Totale sitplekke = $10 + 16 \times 5 + 19 + 21 = 130$ ✓ A  Ratio/Verhouding = 4 : 130 ✓ MCA = 2 : 65 ✓ CA  <b>OR/OF</b>  Total seats/Totale sitplekke = $64 + 66$ (vacant) = 130 ✓ A  Ratio/Verhouding = 4 : 130 ✓ MCA = 2 : 65 ✓ CA	1A total seats  1MCA ratio in correct order 1CA simplification  <b>OR/OF</b>  1A total seats  1MCA ratio in correct order 1CA simplification (3)	MP L2
4.1.3	Total vacant seats/Totale oop sitplekke = 66 ✓ A  Percentage income lost/Persentasie inkomste verloor = $\frac{66}{130} \times 100\%$ ✓ MCA = 50,76923077 ≈ 50,77 % ✓ CA  <b>OR/OF</b>  Percentage income from occupied seats Persentasie inkomste van hierdie sitplekke = $\frac{64}{130} \times 100\% \approx 49,23\%$ ✓ CA ✓ MCA Income lost/Verlore inkomste = $100\% - 49,23\%$ = 50,77% ✓ CA	<b>CA Q4.1.2 total seats</b> 1A total vacant seats  1MCA percentage calculation 1CA simplification  <b>OR/OF</b>  1CA % occupied seats 1MCA subtracting from 100% 1CA simplification <b>NPR</b> (3)	MP L3

Q/V	Solution/Ooplossing	Explanation/Verduideliking	T/L
4.2.1	<p style="text-align: center;">✓✓ O</p> <p>To allow air inside the tank to escape as the diesel is pumped in <b>OR</b> Release air bubbles formed <b>OR</b> To let air in <b>OR</b> To protect the tank from exploding or imploding <i>Om lug wat in die tenk is, uittelaat terwyl diesel ingepomp word</i> <b>OF</b> <i>Lugborrels vry te laat</i> <b>OF</b> <i>Om lug in te laat</i> <b>OF</b> <i>Om te keer dat die tenk ontplof of inplof.</i></p>	<p>20 reason</p> <p style="text-align: right;">(2)</p>	<p>MP L4</p>
4.2.2(a)	<p>Inner diameter/<i>Binne-middellyn</i></p> <p style="text-align: center;">✓ A</p> $= 3,22 \text{ m} - 2 \times \frac{5}{1\,000} \text{ m} \quad \checkmark C$ $= 3,21 \text{ m}$ <p style="text-align: center;"><b>OR/OF</b></p> <p style="text-align: center;">✓ A</p> $5 \text{ mm} + 5 \text{ mm} = \frac{10}{1000} \text{ m} = 0,01 \text{ m} \quad \checkmark C$ <p>Inner Diameter = 3,22 - 0,01 m</p> $= 3,21 \text{ m}$	<p>1A subtracting <b>double</b> the thickness</p> <p>1C converting to m</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1A subtracting <b>double</b> the thickness</p> <p>1C converting to m</p> <p style="text-align: right;">(2)</p>	<p>M L2</p>
4.2.2 (b)	<p>Inner height/<i>Binne hoogte</i></p> <p style="text-align: center;">✓ MA</p> $= 7,25 \text{ m} - 2 \times \frac{5}{1\,000} \text{ m}$ $= 7,24 \text{ m} \quad \checkmark CA$ <p style="text-align: center;">✓ MCA</p> <p>Volume = <math>3,142 \times \left(\frac{3,21}{2}\right)^2 \times 7,24</math> ✓ SF</p> $= 3,142 \times (1,605)^2 \times 7,24$ $= 58,599622782 \text{ m}^3. \quad \checkmark CA$ <p>Filling volume/<i>Opvul volume</i></p> $= 58,599622782 \text{ m}^3 \times 95\% \quad \checkmark MCA$ $= 55,6696416429 \text{ m}^3 \quad \checkmark CA$ <p>Number of litres/<i>Hoeveelheid liter</i></p> $= 1\,000 \times 55,6696416429 \text{ m}^3$ $= 55\,669,64 \text{ l} \quad \checkmark C$	<p>1MA subtracting double the thickness</p> <p>1CA simplification</p> <p>1MCA finding radius</p> <p>1SF correct values</p> <p>1CA simplification</p> <p>1MCA percentage finding</p> <p>1CA capacity</p> <p>1C to litres</p> <p style="text-align: right;">(8)</p>	<p>M L3</p>

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.3	$SA/BO = 2 \times 3,142 \times (1,61) \times (1,61 + 7,25)$ $\approx 89,64 \text{ m}^2 \checkmark S$ <p>Total area to be painted/<i>Totale oppervlakte om te verf</i></p> $= 89,64 \text{ m}^2 - 1 \text{ m}^2 \checkmark MCA$ $= 88,64 \text{ m}^2 \checkmark CA$ <p>Litres needed/<i>Liter nodig</i> = <math>88,64 \div 3</math></p> $= 29,55 \checkmark CA$ <p>Valid <math>\checkmark O</math></p> <p style="text-align: center;"><b>OR/OF</b></p> $SA/BO = 2 \times 3,142 \times (1,61) \times (1,61 + 7,25)$ $\approx 89,64 \text{ m}^2 \checkmark S$ <p>Surface Area = <math>89,64 \text{ m}^2 - 1 \text{ m}^2 \checkmark MCA</math></p> $= 88,64 \text{ m}^2 \checkmark CA$ <p>Area that can be covered by 30 ℓ /<i>Opp wat met 30 ℓ geveerf word</i></p> $30 \text{ litres} \times 3 = 90 \text{ m}^2 \checkmark CA$ <p>Less is needed/ <i>Minder word benodig</i> <math>\checkmark O</math></p>	<p><b>CA from Q4.2.2</b></p> <p>1MCA correct radius 1SF substitution 1S simplification</p> <p>1MCA subtracting <math>1 \text{ m}^2</math> 1CA simplification 1MCA dividing by 3 1CA simplification 1O verification</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1A correct radius 1SF substitution 1S simplification 1MCA subtracting <math>1 \text{ m}^2</math> 1CA simplification 1MA multiplying by 3 1CA simplification 1O verification</p>	<p>M L4</p> <p style="text-align: right;">(8)</p> <p style="text-align: right;"><b>[30]</b></p>



<b>QUESTION/VRAAG 5 [28 MARKS/PUNTE]</b>			
<b>Q/V</b>	<b>Solution/Oplissing</b>	<b>Explanation/Verduideliking</b>	<b>T&amp;L</b>
5.1.1	✓✓ RT Front view <b>OR</b> Back view <b>OR</b> Rear view <i>Vooraansig OF Agteraansig</i>	2RT view (2)	MP L1
5.1.2	Width of the bakkie/ <i>Bakkie se breedte</i> = 1,86 m ✓ C $2D = 3,6 \text{ m} - 1,86 \text{ m}$ $= 1,74 \text{ m}$ ✓ MA $D = \frac{1,74}{2} \text{ m}$ ✓ MCA $= 0,87 \text{ m}$ ✓ CA <p style="text-align: center;"><b>OR/OF</b></p> $\checkmark C$ Width of the garage/ <i>Motorhuis se breedte</i> = 3 600 mm $2D = 3\ 600 \text{ mm} - 1\ 860 \text{ mm}$ $= 1\ 740 \text{ mm}$ ✓ MA $D = \frac{1740}{2} \text{ mm}$ ✓ MCA $= 870 \text{ mm}$ ✓ CA	1C conversion  1MA difference 1MCA dividing by 2 1CA simplification <p style="text-align: center;"><b>OR/OF</b></p> 1C conversion  1MA difference 1MCA dividing by 2 1CA simplification (4)	M L2
5.1.3	Number of choices/ <i>Getal keuses</i> = $4 \times 2$ ✓ MA $= 8$ ✓ CA	1MA multiplying 1CA number of choices. (2)	P L2
5.2.1	A map is drawn to scale while a strip chart is not. ✓✓A <i>'n Kaart word volgens skaal geteken terwyl 'n strook kaart nie.</i> <p style="text-align: center;"><b>OR/OF</b></p> A map shows the routes in a winding manner while a strip chart shows them as straight lines. <i>'n Kaart toon die kronkelende roetes terwyl die strook kaart dit in reguitlyne wys.</i>	2A statement  (2)	MP L1

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
*5.2.2	Distance/Afstand (Springbok to/na Gobabis) $= 892 \text{ km} + 203 \text{ km}$ $= 1\,095 \text{ km}$	1RT correct 892 1RT adding 1CA distance in km (3)	MP L2
5.2.3	Noordoewer	2RT correct town (2)	MP L2
5.2.4 (a)	Distance Mariental to Keetmanshoop Afstand van Mariental na Keetmanshoop $= 644 - 427 = 217 \text{ km}$ Total distance travelled/Totale afstand afgelê $= 140 \text{ km} + 289 \text{ km} + 217 \text{ km} = 646 \text{ km}$ <p style="text-align: center;"><b>OR/OF</b></p> Distance/ Afstand $= 140 \text{ km} + 289 \text{ km} + (465 \text{ km} - 248 \text{ km})$ $= 140 \text{ km} + 289 \text{ km} + 217 \text{ km}$ $= 646 \text{ km}$	1RT distances 1A simplification 1CA distance <p style="text-align: center;"><b>OR/OF</b></p> 1RT distances 1A simplification 1CA distance (3)	MP L2

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
5.2.4 (b)	<p>Time/Tyd 1 = <math>140 \text{ km} \div 80 \text{ km/h} = 1,75 \text{ hrs}</math> ✓ SF ✓ S</p> <p>Time /Tyd 2 = <math>289 \text{ km} \div 80 \text{ km/h} = 3,6125 \text{ hrs}</math> ✓ S</p> <p>Time/Tyd 3 = <math>217 \text{ km} \div 120 \text{ km/h} = 1,808333333 \text{ hrs}</math> ✓ S</p> <p>Stoppage time = <math>3 \times 25 \text{ min} = 75 \text{ min} = 1,25 \text{ hrs}</math> ✓ S</p> <p>Travelling time including breaks</p> <p>= <math>1,75 + 3,6125 + 1,808333333 + 1,25</math> ✓ MCA</p> <p>= <math>8,420833333 \text{ hrs}</math> ✓ CA</p> <p>= <math>8 \text{ h } 25</math> ✓ C</p> <p>Travelling time = <math>12:25 - 04:00</math> ✓ MA</p> <p>= <math>8 \text{ h } 25</math> ✓ A</p> <p>Letitia's statement is CORRECT/KORREK ✓ O</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Total time taken/Totale tydsduur</p> <p>= <math>12:25 - 4:00</math> ✓ MA</p> <p>= <math>8 \text{ h } 25 \text{ min}</math> ✓ A</p> <p>Driving time on gravel road/Bestuurstyl op grondpad</p> <p>= <math>\frac{429 \text{ km}}{80 \text{ km/h}}</math> ✓ S ✓ SF</p> <p>= <math>5,3625 \text{ h}</math> ✓ S</p> <p>Driving time on tarred road/Bestuurstyl op teerpad</p> <p>= <math>\frac{217 \text{ km}}{120 \text{ km/h}}</math></p> <p>= <math>1,808333 \text{ h}</math> ✓ S</p> <p>Total time/Totale tyd = <math>5,3265 \text{ h} + 1,808 \text{ hr}</math></p> <p>= <math>7,170833 \dots \text{ hours/uur}</math> ✓ CA</p> <p>= <math>7 \text{ hours} + 0,17083333 \times 60</math></p> <p>= <math>7 \text{ h } 10 \text{ min}</math> ✓ C</p> <p>∴ Total break time/Totale rustyd</p> <p>= <math>8 \text{ h } 25 \text{ min} - 7 \text{ h } 10 \text{ min} = 1 \text{ h } 15 \text{ min}</math> ✓ CA</p> <p>Duration of breaks/Rustye se duur</p> <p>= <math>3 \times 25 \text{ min}</math></p> <p>= <math>75 \text{ min}</math></p> <p>= <math>1 \text{ h } 15 \text{ min}</math> ✓ A</p> <p>Letitia is CORRECT/KORREK ✓ O</p> <p style="text-align: center;"><b>OR/OF</b></p>	<p>1SF substitution</p> <p>1S simplification</p> <p>1S simplification</p> <p>1S simplification</p> <p>1S simplification</p> <p>1MCA adding time</p> <p>1CA simplification</p> <p>1C converting time</p> <p>1MA subtracting</p> <p>1A total travelling time</p> <p>1O opinion</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1MA subtracting</p> <p>1A total travelling time</p> <p>1S total distance</p> <p>1SF substitution</p> <p>1S simplification</p> <p>1S simplification</p> <p>1CA simplification time</p> <p>1C converting time</p> <p>1CA simplification</p> <p>1A break time</p> <p>1O opinion</p> <p style="text-align: center;"><b>OR/OF</b></p>	M L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	$\begin{aligned} \text{Time/Tyd 1} &= 140 \text{ km} \div 80 \text{ km/h} = 1 \text{ h } 45 \text{ min} && \checkmark \text{ SF} && \checkmark \text{ S} \\ \text{Time/Tyd 2} &= 289 \text{ km} \div 80 \text{ km/h} = 3 \text{ h } 36 \text{ min} && && \checkmark \text{ S} \\ \text{Time/Tyd 3} &= 217 \text{ km} \div 120 \text{ km/h} = 1 \text{ h } 48 \text{ min} && && \checkmark \text{ S} \end{aligned}$ <p>Travelling time/Reis tyd</p> $\begin{aligned} &= 1 \text{ h } 45 \text{ min} + 3 \text{ h } 36 \text{ min} + 1 \text{ h } 48 \text{ min} && \checkmark \text{ MCA} \\ &= 7 \text{ h } 9 \text{ min} && \checkmark \text{ CA} \end{aligned}$ <p>Travelling time /Reis tyd = 12:25 – 04:00 <math>\checkmark</math> MA</p> $= 8 \text{ h } 25 \text{ min} \quad \checkmark \text{ A}$ <p><math>\therefore</math> Total break time/Totale rustyd</p> $= 8 \text{ h } 25 \text{ min} - 7 \text{ h } 9 \text{ min} = 1 \text{ h } 16 \text{ min} \quad \checkmark \text{ CA}$ <p>Each break/Elke rustyd</p> $= \frac{1 \text{ h } 16 \text{ min}}{3}$ $\approx 25 \text{ mins} \quad \checkmark \text{ S}$ <p>Letitia's statement is CORRECT/KORREK <math>\checkmark</math> O</p>	<p>1SF substitution 1S simplification 1S simplification 1S simplification</p> <p>1MCA adding time 1CA simplification</p> <p>1MA subtracting 1A traveling time</p> <p>1CA simplification</p> <p>1S break time</p> <p>1O opinion</p>	(11)
			[29]

**NOTES: MATHEMATICAL LITERACY PAPER 2**

**Level 4 Questions: Calculations must be evident to award the conclusion/opinion mark. When rounding it must be correctly rounded to a minimum of 2 decimal places unless stated otherwise.**

**On higher order (i.e level three to four multi-step calculations) questions no penalty for correct early rounding.**

**QUESTION 1**

1.1.4 Accept: B

1.1.5 Accept: E or B

1.2.2 Accept **cubic centimeters** (i.e.  $\text{cm}^3$ ) / Kubieke centimeter

1.2.4 **CA only apply if 1 value is correct.** That is, either 2 100 or 70 must have been used in a fraction for a **max. 2 marks**, on condition it is correctly simplified.

1.3.5 Accept, for **full marks** description:

- Ten past two in the afternoon. / *Tien oor twee in die namiddag.*
- Ten past two post meridian. / *Tien oor twee meridiaan*
- Ten past two pm / *Tien oor twee nm*

**QUESTION 2**

2.2.2 Accept East of South

2.2.3 Accept one of the following street names for full marks:

- King.
- Pioneer.

**QUESTION 3**

3.2.1 Candidates need not show  $(20 + 12)\text{m}^2$

3.2.2 **Full marks can be awarded for this solution:**

**Lounge:** Length =  $4\text{m} \div 0,35$

= 11,428

$\approx 12$

Width =  $5\text{m} \div 0,35$

= 14,285

= 15

□ Total tiles =  $12 \times 15$

= 180 tiles

**Dining:** Length =  $4\text{m} \div 0,35$

= 11,428

$\approx 12$

Width =  $3 \div 0,35$

= 8,571

$\approx 9$

□ Total tiles =  $11 \times 9$

= 108 tiles

Hence, total tiles needed =  $180 + 108$

= 288

Number to add =  $288 \times 1,1$

= 316,8

$\approx 317$

□ Number of boxes =  $317 \div 4$

= 79,25

$\approx 80$  boxes

QUESTION 4	
4.1.1	Accept: <ul style="list-style-type: none"><li>• East / Oos or E / O</li></ul>
4.1.2 (b)	Accept, for full marks ratio given as: <ul style="list-style-type: none"><li>• 4:130 or <math>\frac{4}{130}</math></li></ul> However, if given <b>4:incorrect 2<sup>nd</sup> part</b> . Did not show how incorrect 2 <sup>nd</sup> part was obtained can get max. 2 marks provided it is simplified correctly. Accept answer simplified into unit ratio.
QUESTION 5	
5.2.2	CA considered only if adding distance from strip chart other than 203km, then (max 2 marks).