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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE/ NASIONALE SENIOR SERTIFIKAAT

GRADE/GRAAD 12

**MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2**

NOVEMBER 2024

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/PUNTE: 150

Symbol/Kode	Explanation/Verduideliking
MA	Method with accuracy/ <i>Metode met akkuraatheid</i>
MCA	Method with consistent accuracy/ <i>Metode met volgehoue akkuraatheid</i>
CA	Consistent accuracy/ <i>Volgehoue akkuraatheid</i>
A	Accuracy/ <i>Akkuraatheid</i>
C	Conversion/ <i>Herleiding</i>
S	Simplification/ <i>Vereenvoudiging</i>
RT	Reading from a table/graph/document/diagram/ <i>Lees vanaf tabel/grafiek/dokument/diagram</i>
SF	Correct substitution in a formula/ <i>Korrekte vervanging in 'n formule</i>
O	Opinion/Explanation/ <i>Opinie/Verduideliking</i>
P	Penalty, e.g. for no units, incorrect rounding off, etc./ <i>Penalising, bv. vir geen eenhede, verkeerde afronding, ens.</i>
NPR	No penalty for correct rounding/ <i>Geen penalising vir korrekte afronding nie</i>
NPU	No penalty for omitting unit, but wrong unit is penalised/ <i>Geen penalisinge indien die eenheid uitgelos is nie, maar wel indien 'n verkeerde eenheid gebruik word.</i>
AO	Answer only/ <i>Slegs antwoord</i>

**These marking guidelines consist of 17 pages.
*Hierdie nasienriglyne bestaan uit 17 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.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- Rounding is an independent mark.
- General principle of marking, if the candidate makes one mistake one mark is deducted.
- A conclusion mark can only be given if $\frac{1}{3}$ of the total marks for the sub-question have been awarded.
- No penalty for rounding (NPR) if the first decimal is correct.

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 egter op by die tweede berekeningsfout.
- Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart aanbied en ekstra antwoorde gee, penaliseer vir elke ekstra item.
- Afronding tel as 'n afsonderlike punt.
- Die algemene beginsel van nasien is, as 'n leerder een fout maak, word een punt afgetrek.
- 'n Gevolgtrekkingspunt kan slegs gegee word indien $\frac{1}{3}$ van die totale punte vir die subvraag toegeken is.
- Geen penalisering vir afronding (NPR) nie as die eerste desimaal korrek is.

QUESTION/VRAAG 1 [26 MARKS/26 PUNTE] ANSWER ONLY FULL MARKS			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 1.1.1	D ✓✓ A	2A correct option (2)	M L1 E
* 1.1.2	E ✓✓ A	2A correct option (2)	MP L1 E
* 1.1.3	C ✓✓ A	2A correct option (2)	M L1 E
* 1.1.4	G ✓✓ A	2A correct option (2)	M L1 E
1.2.1	✓ MA 220 mm ÷ 1 000 = 0,22 m ✓ A	1MA ÷ 1 000 1A conversion (2)	M L1 E
* 1.2.2	A ✓✓ A	2A correct option. (2)	M L1 M
* 1.2.3	Number of bricks / Aantal stene ✓RT = 2 860 mm ÷ 220 mm = 13 ✓A	1RT correct values 1MA dividing 1A number of bricks (3)	M L1 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
* 1.3.1	18 ✓✓A	2A correct number (2)	MP L1 E
* 1.3.2	Number of cross pieces / <i>Getal dwarsstutte</i> ✓RT $= 6 \times 3$ ✓A $= 18$ ✓A	1RT 6 1A multiply by 3 1A pieces (3)	MP L1 M
* 1.3.3	Chair support / <i>Rugleuningbalk</i> ✓✓RT	2RT correct option (2)	MP L1 E
1.3.4	1,9 cm ✓✓A	2A correct dimension NPU (2)	MP L1 E
1.3.5	Space between cross pieces: / <i>Opening tussen dwarsstutte:</i> ✓RT $\text{Space/Opening} = 1,27 \times 10 \text{ mm}$ $= 12,7 \text{ mm}$ ✓ MCA	1RT correct value 1MCA simplification NPU (2)	MP L1 E
		[26]	

QUESTION 2 [31 MARKS/31 PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.1	<p>View from the top. ✓✓ A Aansig van bo.</p> <p>OR/OF</p> <p>View of the landscape from a certain height above ground like from a satellite or drone. ✓✓ A Aansig van die landskap vanaf 'n seker hoogte bo die grond soos vanaf 'n satelliet of hommeltuig.</p> <p>OR/OF</p> <p>View from an elevated height. ✓✓ A Aansig vanaf 'n verhewe hoogte.</p> <p>OR/OF</p> <p>Birds-eye view. ✓✓ A Voëlperspektief.</p>	<p>2A correct explanation</p> <p>(2)</p>	MP L1 E
2.1.2	<p>Number of campers/Getal kampeerders ✓RT ✓MCA = 6 + 15 + 4 + 15 + 4 + 4 + 5 + 15 + 8 + 10 + 6 + 6 + 20 = 118 ✓CA</p> <p>OR/OF</p> <p>Number of campers/Getal kampeerders = 20 + 15(3) + 10 + 8 + 6(3) + 5 + 4(3) ✓RT ✓MCA = 118 ✓CA</p>	<p>1RT all correct values 1MCA adding values 1CA simplification AO</p> <p>OR/OF</p> <p>1RT all correct values 1MCA adding values 1CA simplification AO</p> <p>(3)</p>	MP L1 E
2.1.3	South West/SW/Suidwes SW ✓✓ A	<p>2A compass direction</p> <p>(2)</p>	MP L1 E
* 2.1.4	2 ✓✓ O	<p>2O identifying correct site</p> <p>(2)</p>	MP L2 M
2.1.5	<p>$\frac{3}{13} \times 100\%$ ✓A ✓A</p> <p>= 23,076923% ✓CA</p>	<p>1A correct numerator 1A correct denominator</p> <p>1CA simplification NPR</p> <p>(3)</p>	P L2 D
2.1.6 (a)	9 showers/storte ✓✓ A	<p>2A correct number</p> <p>(2)</p>	MP L1 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
* 2.1.6 (b)	$\checkmark A$ $90 \text{ mm} = 8,2 \text{ m}$ $\checkmark C$ $90 \text{ mm} = 8\,200 \text{ mm} (\div 90)$ $\checkmark M$ $1 : 91,11$ $1 : 91$ $\checkmark R$ <p style="text-align: center;">OR/OF</p> $\checkmark A$ $9 \text{ cm} : 8,2 \text{ m}$ $9 \text{ cm} : 820 \text{ cm}$ $\checkmark C$ $= 1 : 91,11..$ $\checkmark M$ $= 1 : 91$ $\checkmark R$ <div style="border: 1px solid black; padding: 5px;"> <p>Accept $\pm 1 \text{ mm}$ deviation on measurement per province <i>Aanvaar $\pm 1 \text{ mm}$-afwyking op meting per provinsie</i></p> </div>	 1A measured distance 1C convert to mm 1M divide by 90 1R rounded answer <p style="text-align: center;">OR/OF</p> 1A measured distance 1C convert to cm 1M divide by 9 1R rounded answer (4)	MP L2 M
2.1.6 (c)	To allow people to sit while waiting for a toilet or shower to become available. $\checkmark \checkmark O$ <i>Vir mense om op te sit terwyl hulle wag dat 'n toilet of stort beskikbaar word.</i> <p style="text-align: center;">OR/OF</p> To place your clothes or belongings on while you are showering. <i>Om jou klere of besittings neer te sit terwyl jy stort.</i> <p style="text-align: center;">OR/OF</p> To sit while you change your outfit, or getting dressed or apply body lotion or for baby nappy change. <i>Om op te sit terwyl jy jou uitrusting verander of terwyl jy aantrek of lyfroom aansmeer of babadoeke verander.</i>	 2O reason (2)	MP L4 M
2.2.1	Day 2 / Dag 2 $\checkmark \checkmark A$	2A correct description (2)	MP L2 E
* 2.2.2	D $\checkmark \checkmark RT$	2RT correct option (2)	MP L2 M
* 2.2.3	12,5 km $\checkmark \checkmark RT$	2RT correct distance (2)	MP L2 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.2.4	<p>The part shows a continuous downward slope, it is downhill. ✓✓O</p> <p><i>Die part het 'n aaneenlopende afwaartse helling getoon, dit is afdraand.</i></p> <p>OR/OF</p> <p>That part does not have many uphill.</p> <p><i>Daardie deel het nie baie opdraandes nie.</i></p>	<p>20 correct explanation</p> <p>(2)</p>	MP L4 E
* 2.2.5	<p>Difference in height/<i>Verskil in hoogte</i></p> <p>✓RT ✓RT</p> <p>Difference/<i>Verskil</i> = 1 050 m – 900 m</p> <p>= 150 m</p> <p>✓O</p> <p>He is CORRECT. / <i>Hy is KORREK</i></p>	<p>1RT 1st correct value</p> <p>1RT 2nd correct value</p> <p>10 conclusion</p> <p>(3)</p>	MP L4 M
			[31]

QUESTION/VRAAG 3 [31 MARKS/PUNTE]

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 3.1.1	\checkmark MA $= 14:13 - 12:55$ \checkmark A $= 1 \text{ hour } 18 \text{ minutes} / 1 \text{ uur } 18 \text{ minute}$ OR/OF 78 minutes OR/OF 1,3 hours/uur	1MA subtracting time 1A simplification [1hr18min] AO (2)	M L2 M
* 3.1.2	Total height of 4 pillows/ <i>Totale hoogte van 4 kussings</i> $= 11 \text{ cm} \times 4$ \checkmark MA $= 44 \text{ cm}$ \checkmark CA Difference/ <i>Verskil</i> \checkmark RT $= 48 \text{ cm} - 44 \text{ cm}$ $= 4 \text{ cm}$ \checkmark CA OR/OF \checkmark RT \checkmark MA \checkmark MA Difference = $48 \text{ cm} - 11 \text{ cm} - 11 \text{ cm} - 11 \text{ cm} - 11 \text{ cm}$ $= 4 \text{ cm}$ \checkmark CA	1MA multiplying by 4 1CA simplification 1RT height 1CA simplification OR/OF 1RT height 1MA subtracting 11 cm 1MA subtracting all the 11's 1CA simplification AO (4)	M L2 E
3.1.3	Perimeter = 2 (length + width)/ <i>Omtrek = 2 (lengte + breedte)</i> Perimeter/ <i>Omtrek</i> = 2 (46 cm + 30 cm) \checkmark SF $= 2 (76 \text{ cm})$ $= 152 \text{ cm}$ \checkmark CA Total length for 4 bags/ <i>Totale lengte vir 4 sakke</i> $= 152 \times 4$ \checkmark MA $= 608 \text{ cm}$ $= \frac{608 \text{ cm}}{100}$ $= 6,08 \text{ m}$ \checkmark C \checkmark R \therefore she must buy 6,5 m/ <i>Sy moet 6,5 m koop</i> OR/OF	1SF correct substitution 1CA simplification 1MA multiply by 4 1C simplification 1R correct rounding OR/OF	M L3 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	$30 \text{ cm} \div 100 = 0,3 \text{ m}$ $46 \text{ cm} \div 100 = 0,46 \text{ m}$ ✓C Perimeter/Omtrek = $2(0,3 \text{ m} + 0,46 \text{ m})$ ✓SF $= 1,52 \text{ m}$ ✓CA Total / Totaal = $1,52 \text{ m} \times 4$ ✓MCA $= 6,08 \text{ m}$ \therefore she must buy 6,5 m/ <i>Sy moet 6,5 m koop</i> OR/OF Using ½ metre lengths/ Gebruik ½ metre lengtes Perimeter/Omtrek = $2(46 \text{ cm} + 30 \text{ cm})$ ✓SF $= 152 \text{ cm}$ ✓CA Total length for 4 bags / Totale lengte vir 4 sakke $= 152 \times 4$ ✓MA $= 608 \text{ cm}$ $\frac{1}{2} \text{ m} = 50 \text{ cm}$ ✓C Number of half metre lengths / Getal half-meter lengtes $= 608 \text{ cm} \div 50 \text{ cm}$ $= 12,16$ ≈ 13 ✓R	1C metre 1SF correct substitution 1CA simplification 1MCA multiply by 4 1R correct rounding OR/OF 1SF correct substitution 1CA simplification 1MA multiply by 4 1C to centimetre 1R correct rounding (5)	
* 3.2.1	Circumference / Omtrek $= 3,142 \times 8 \text{ cm}$ ✓SF $= 25,136 \text{ cm}$ ✓A	1SF substitute diameter 1A simplification NPR AO (2)	M L2 E
3.2.2	Radius/Radius $= \frac{8 \text{ cm}}{2}$ ✓MA $= 4 \text{ cm}$ ✓A	1MA concept of radius 1A simplification NPU AO (2)	M L1 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.2.3	<p>Area of a circle/Area/Oppervlakte van 'n sirkel</p> $\checkmark \text{SF}$ $= 3,142 \times (4 \text{ cm})^2$ $= 3,142 \times 16 \text{ cm}^2 \quad \checkmark \text{MCA}$ $= 50,272 \text{ cm}^2 \quad \checkmark \text{CA}$ <p>Area to be painted / Oppervlakte wat geverf moet word</p> $\text{Area} = 50,272 - 0,3142 = 49,9578 \text{ cm}^2 \quad \checkmark \text{CA}$ <p>Total area / Totale opp.= $36 \times 49,9578 \text{ cm}^2$</p> $= 1\,798,4808 \text{ cm}^2. \quad \checkmark \text{MCA}$ <p>Total area in m^2 / Totale opp.in m^2</p> $= 1\,798,4808 \div 100^2$ $= 0,179848 \text{ m}^2. \quad \checkmark \text{C}$ <p>$6 \text{ m}^2 = 1 \ell = 1000 \text{ ml}$</p> $\checkmark \text{MA}$ <p>$\dots \text{ m}^2 = 50 \text{ ml}$</p> <p>$0,3 \text{ m}^2 = 50 \text{ ml}$</p> <p>$0,3 \text{ m}^2 > 0,179848 \text{ m}^2 \quad \checkmark \text{CA}$</p> <p>Therefore 50 ml will be more than sufficient. / $\checkmark \text{O}$ <i>Daarom sal 50 ml meer as genoeg wees.</i></p> <p style="text-align: center;">OR/OF</p> <p>Area of a circle/Area/Oppervlakte van 'n sirkel</p> $\checkmark \text{SF}$ $= 3,142 \times (4 \text{ cm})^2 \quad \checkmark \text{MCA}$ $= 50,272 \text{ cm}^2 \quad \checkmark \text{CA}$ <p>Area to be painted/Oppervlakte wat geverf moet word</p> $\text{Area} = 50,272 \text{ cm}^2 - 0,3142 \text{ cm}^2 = 49,9578 \text{ cm}^2 \quad \checkmark \text{CA}$ <p>Total area / Totale oppervlakte</p> $= 36 \times 49,9578 \text{ cm}^2 = 1\,798,4808 \text{ cm}^2. \quad \checkmark \text{MCA}$ $= 1\,798,4808 \div 100^2$ $= 0,179848 \text{ m}^2 \quad \checkmark \text{C}$	<p>CA from Question 3.2.2</p> <p>1SF correct substitution</p> <p>1MCA squaring</p> <p>1CA simplification</p> <p>1CA difference</p> <p>1MCA multiply by 36</p> <p>1C dividing by 10 000 or 100^2</p> <p>1MA using ratio</p> <p>1CA comparing areas.</p> <p>1O verification</p> <p style="text-align: center;">OR/OF</p> <p>1SF correct substitution</p> <p>1MCA squaring</p> <p>1CA simplification</p> <p>1CA difference</p> <p>1MCA multiply by 36</p> <p>1C dividing by 10 000 or 100^2</p>	<p>M</p> <p>L4</p> <p>M</p>

Q/V	Solution/Opplossing	Explanation/Verduideliking	T&L
	<p>Paint/ verf 6 m^2 with/met 1 ℓ $\therefore 0,17984808 \text{ m}^2$ with /met $n \ell$ $n = \frac{0,17984808}{6} \ell$ ✓MCA $= 0,02997466 \ell$ $\approx 30 \text{ m}\ell$ ✓CA</p> <p>VALID / GELDIG ✓O OR/OF</p> <p>Area of ONE circle/Oppervlakte van EEN sirkel $= 3,142 \times (4 \text{ cm})^2$ ✓SF $= 50,272 \text{ cm}^2$ ✓MCA ✓CA</p> <p>Area to be painted/Oppervlakte wat geverf moet word $= 50,272 \text{ cm}^2 - 0,3142 \text{ cm}^2 = 49,9578 \text{ cm}^2$ ✓CA</p> <p>$6 \text{ m}^2 : 1 \ell$ $60\,000 \text{ cm}^2 : 1\,000 \text{ m}\ell$ ✓C $49,9578 : ?$</p> <p>Paint needed/ Verfbenodig $\frac{49,9578 \times 1\,000}{60\,000}$ ✓MCA $= 0,83263 \text{ m}\ell$</p> <p>Paint for 36/ Verfvir 36 $= 0,83263 \text{ m}\ell \times 36$ ✓MCA $= 29,97 \text{ m}\ell$ ✓CA</p> <p>\therefore VALID / GELDIG ✓O OR/OF</p> <p>Radius $= \frac{4 \text{ cm}}{100} = 0,04 \text{ m}$ ✓SF</p> <p>Area of circle/ Opp van sirkel $= 3,142 \times (0,04)^2$ ✓MCA $= 0,0050272 \text{ m}^2$ ✓CA</p> <p>Area of circular hole/ Opp van gaatjie $= \frac{0,3142}{10\,000}$ ✓C $= 0,0000314 \text{ m}^2$</p> <p>Area to be painted $= 0,0050272 \text{ m}^2 - 0,00003142 \text{ m}^2$ $= 0,00499578 \text{ m}^2$ ✓CA</p> <p>$\therefore 0,00499578 \text{ m}^2 \times 36$ $= 0,17984808 \text{ m}^2$ ✓MCA</p> <p>Amount of paint/Hoeveelheid verf $= \frac{0,17984808}{6 \ell} \times 1\,000 \text{ m}\ell$ ✓MCA $= 29,97468 \text{ m}\ell \approx 30 \text{ m}\ell$ ✓CA $\therefore 30 \text{ m}\ell$ is less than $50 \text{ m}\ell$ VALID / GELDIG ✓O</p>	<p>1MCA using ratio 1CA paint needed 1O verification OR/OF</p> <p>1SF correct substitution 1MCA squaring 1CA simplification</p> <p>1CA difference</p> <p>1C converting ,</p> <p>1MCA using ratio</p> <p>1MCA multiply by 36 1CA paint needed 1O verification OR/OF</p> <p>1SF correct substitution 1MCA squaring 1CA simplification</p> <p>1C dividing by 10 000</p> <p>1CA difference</p> <p>1MCA multiply by 36</p> <p>1MCA using ratio 1CA paint needed 1O verification</p>	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> <p>Area of a circle / <i>Oppervlakte van 'n sirkel</i> $= 3,142 \times 4^2$ ✓SF $= 3,142 \times 16$ ✓MCA $= 50,272 \text{ cm}^2$ ✓CA</p> <p>Area to be painted / <i>Oppervlakte wat geverf moet word</i> Area / <i>Opp</i> = $50,272 - 0,3142$ $= 49,9578 \text{ cm}^2$ ✓CA</p> <p>$6 \text{ m}^2 / \ell = 60\,000 \text{ cm}^2 / \ell$ $= 60\,000 \text{ cm}^2 / 1\,000 \text{ m}\ell$ ✓C</p> <p>Amount of paint for one tag / <i>Hoeveelheid van verf per houtplaatjie</i> $= 49,9578 \div 60\,000 \times 1\,000$ ✓MCA $= 0,83263 \text{ m}\ell$</p> <p>Paint for 36 tags/ <i>Verf vir 36 houtplaatjies</i> $0,83263 \text{ m}\ell \times 36$ ✓MCA $= 29,97468 \text{ m}\ell$ ✓CA</p> <p>VALID / <i>GELDIG</i> ✓O</p>	<p style="text-align: center;">OR/OF</p> <p>1SF correct substitution 1MCA squaring 1CA simplification</p> <p>1CA difference</p> <p>1C conversion</p> <p>1MCA using ratio</p> <p>1MCA multiply by 36 1CA paint needed</p> <p>1O verification</p> <p style="text-align: right;">(9)</p>	
* 3.3.1	<p>Volume of a cube = side \times side \times side/ <i>Volume van 'n kubus</i> = $sy \times sy \times sy$ ✓SF ✓SF $2\,744 \text{ cm}^3 = \text{side} \times \text{side} \times \text{side}$ $(\text{side})^3 = 2\,744 \text{ cm}^3$ ✓MA $14 \times 14 \times 14 = 2\,744$ Side/Sy = 14 cm ✓CA</p>	<p>1SF substitution number 1SF cube unit 1 MA change subject of the formula</p> <p>1CA simplification</p> <p style="text-align: right;">(4)</p>	M L3 M
3.3.2	<p>$8 + 7 = 15$ $P = \frac{15}{35}$ ✓A $= 0,42857...$ $\approx 0,43$ ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>$P = \frac{8}{35} + \frac{7}{35}$ ✓A $= 0,22857... + 0,2$ ✓A $= 0,42857...$ $\approx 0,43$ ✓CA</p>	<p>1A numerator 1A denominator 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1A denominator 1A writing as decimals 1CA simplification NPR</p> <p style="text-align: right;">(3)</p>	P L2 E
		[31]	

QUESTION 4 [29 MARKS]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
* 4.1.1	Kerosene or lamp oil <i>/Keroseen of Lampolie</i> ✓✓ RT	2RT correct product (2)	MP L1 E
4.1.2	Gasoline or petrol/ <i>Brandstof of Petrol</i> ✓✓ RT	2RT correct product (2)	MP L1 E
* 4.1.3	$^{\circ}\text{C} = \frac{(^{\circ}\text{F} - 32)}{1,8}$ $300^{\circ}\text{C} = \frac{(^{\circ}\text{F} - 32)}{1,8}$ $^{\circ}\text{F} = 1,8 \times 300 + 32$ $= 572$	1RT correct value 300 1SF substituting information correctly 1S changing subject of the formula 1CA simplification AO (4)	M L3 M
* (4.1.4)	Surface area of an open cylinder/ <i>Buite-oppervlakte van 'n oop silinder</i> $= 3,142 \times \text{diameter} \times \text{height}$ $= 3,142 \times \text{deursnee} \times \text{hoogte}$ $= 3,142 \times 6 \text{ m} \times 54 \text{ m}$ $= 1\,018,008 \text{ m}^2$ Area of pipes/ <i>Oppervlakte van pype</i> $= \frac{2,5}{100} \times \frac{1\,018,008}{1}$ $= 25,4502 \text{ m}^2$ Total Surface Area/ <i>Totale buiteoppervlakte</i> $= 1\,018,008 \text{ m}^2 - 25,4502 \text{ m}^2 + 150,816 \text{ m}^2$ $= 1\,143,3738 \text{ m}^2$	1SF substitution 1CA simplification 1MCA percentage calculation 1CA simplification 1MCA subtracting pipe area 1MA adding A + C 1CA total surface area OR/OF	M L3 D

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p>Surface area of an open cylinder/<i>Buite-oppervlakte van 'n oop silinder</i></p> <p>SA = $3,142 \times \text{diameter} \times \text{height}$/ BO = $3,142 \times \text{deursnee} \times \text{hoogte}$</p> <p>= $3,142 \times 6 \text{ m} \times 54 \text{ m}$ ✓ SF</p> <p>= $1\,018,008 \text{ m}^2$ ✓ CA</p> <p>Excluding area of pipes/<i>Oppervlakte van pype uitgesluit</i> ✓ MA ✓ MCA</p> <p>Area (excluding)/<i>Opp(uitgesluit)</i> = $\frac{97,5}{100} \times \frac{1\,018,008}{1}$</p> <p>= $992,5578$ ✓ CA</p> <p>Total SA/<i>Totale BO</i> = $992,5578 \text{ m}^2 + 150,816 \text{ m}^2$ ✓ MA</p> <p>= $1\,143,3738 \text{ m}^2$. ✓ CA</p>	<p>1SF substitution</p> <p>1CA simplification</p> <p>1MA less 2,5%</p> <p>1MCA percentage calculation</p> <p>1CA simplification</p> <p>1MA adding A + C</p> <p>1CA total surface area</p> <p>NPR</p> <p>(7)</p>	
* 4.2.1	<p>Number of bricks in 1 row of a double brick wall <i>Getal stene in een ry van 'n dubbelsteenmuur</i></p> <p>= 19 ✓✓ RT</p> <p>Number of bricks for 1 garage door <i>Getal stene vir 1 motorhuis deur</i></p> <p>= 19×20 ✓ A = 380</p> <p>Total number of bricks needed /<i>Totale getal stene nodig</i></p> <p>= 380×2 ✓MCA</p> <p>= 760 ✓R</p> <p>∴ 2 Pallets of bricks /<i>Stapelborde met stene</i></p> <p>OR/OF</p>	<p>2RT bricks in double row</p> <p>1A number of layers</p> <p>1MCA doubling</p> <p>1R number of pallets</p> <p>OR/OF</p>	M L2 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	<p style="text-align: right;">✓ RT ✓ RT</p> <p>Single line wall/<i>Enkelmuur</i> = 20×10</p> <p style="text-align: right;">= 200 bricks/ <i>stene</i></p> <p style="text-align: right;">✓ CA</p> <p>Double line wall/<i>Dubbelmuur</i> = $2 \times 200 = 400$ bricks</p> <p>To cover space of two garage doors:/ <i>Om die spasie van twee motorhuisdeure te dek</i></p> <p>Number of bricks/<i>Getal stene</i></p> <p>= 2×400 ✓ MCA</p> <p>= 800</p> <p>Number of pallets needed/ <i>Stapelborde met stene benodig</i></p> <p>= 2 ✓ R</p>	<p>1RT bricks (height) 1RT bricks (row)</p> <p>1CA bricks on double walls</p> <p>1MCA doubling</p> <p>1R number of pallets (5)</p>	
4.2.2	<p style="text-align: right;">✓ MA ✓ SF</p> <p>Area of 2 doors/<i>Opp van 2 deure</i> = $2 \times 2,13 \times 3$</p> <p style="text-align: right;">= 12,78 m² ✓ A</p> <p>Labour cost/<i>Arbeidskoste</i> = $12,78 \text{ m}^2 \times \text{R}500$</p> <p style="text-align: right;">= R 6 390 ✓ CA</p> <p>Brick cost/<i>Steenkoste</i> = $2 \times 525 \times \text{R}6,45$</p> <p style="text-align: right;">= R 6 772,50 ✓ CA</p> <p>COST = Other material + Labour + Bricks cost/ <i>KOSTE = Ander materiaal + Arbeid + Steenkoste</i></p> <p>Total cost/<i>Totale koste</i> = $\text{R}2\,000 + \text{R}6\,390 + 6\,772,50$</p> <p style="text-align: right;">= R15 162,50 ✓ CA</p> <p>Not VALID/<i>Nie GELDIG.</i> ✓ O OR/OF</p>	<p>CA pallets from 4.2.1 1MA doubling 1SF correct values</p> <p>1A simplification</p> <p>1CA labour cost</p> <p>1CA brick cost</p> <p>1CA amount</p> <p>1O verification OR/OF</p>	<p>M/Fin L4 M</p>

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p>For one door/ <i>Vir een deur</i> Area/ <i>oppervlakte</i> = $2,13 \text{ m} \times 3 \text{ m}$ ✓ SF = $6,39 \text{ m}^2$ ✓ A Labour cost/<i>Arbeidskoste</i> = $6,39 \text{ m}^2 \times \text{R}500$ = $\text{R}3\,195$ ✓ MCA ∴ for two / <i>vir twee</i> = $2 \times \text{R}3\,195$ = $\text{R}6\,390$ ✓ CA Cost per pallet/ <i>koste per stapelbord</i> = $\text{R}6,45 \times 525$ = $\text{R}3\,386,25$ ∴ for two / <i>vir twee</i> = $2 \times \text{R}3\,386,25$ = $\text{R}6\,772,50$ ✓ CA Total cost/<i>Totale koste</i> = $\text{R}2\,000 + \text{R}6\,390 + \text{R}6\,772,50$ = $\text{R}15\,162,50$ ✓ CA Not VALID/<i>Nie GELDIG</i>. ✓ O</p> <p style="text-align: center;">OR/OF</p> <p style="text-align: right;">✓ SF</p> <p>Area of 2 doors / <i>Opp van 2 deure</i> = $2 \times 2,13 \times 3$ = $12,78 \text{ m}^2$ ✓ MA ≈ 13 m^2 (cost per m^2) ✓ CA Labour Cost / <i>Arbeidskoste</i> = $13 \times \text{R}500$ = $\text{R}6\,500$ ✓ CA Brick cost / <i>Steen koste</i> = $2 \times 525 \times \text{R}6,45$ = $\text{R}6\,772,50$ ✓ CA Total Cost / <i>Totale Koste</i> = $\text{R}6\,500 + \text{R}6\,772,50 + \text{R}2\,000$ = $\text{R}15\,272,50$ ✓ CA Not VALID / <i>Nie GELDIG nie</i> ✓ O</p>	<p>1SF correct values 1A simplification 1MCA labour cost 1CA doubling 1CA brick cost 1CA amount 1O verification</p> <p>OR/OF</p> <p>1SF substitution 1MA doubling 1CA simplification 1CA labour cost 1CA brick cost 1CA amount 1O verification</p>	(7)
4.2.3	<p style="text-align: center;">✓✓ O</p> <p>To be easily lifted by a fork lift./<i>Om maklik met 'n vorkhyser op te lig word.</i> OR/OF Storage/ loading / transportation are made easier /<i>Berging/ laai / vervoer word vergemaklik.</i> OR/OF It keeps them from breaking / <i>Dit keer dat hulle breek</i> OR/OF It makes counting easier/<i>Dit is makliker om te tel</i> To protect the bricks from damage/ <i>Dit beskerm die stene van beskadiging</i> To keep it tight and compact/ <i>Om die stene stewig en kompak te hou</i></p>	<p>2O reason</p>	<p>M L4 E</p> <p>(2)</p>
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QUESTION 5 [33 MARKS]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.1.1	✓RT Adelaide and/en Melbourne ✓RT	1RT 1 st city 1RT 2 nd city (2)	MP L1 E
* 5.1.2	✓RT ✓RT Aug, Sep, Oct, Nov ✓RT Aug, Sep, Okt, Nov	1RT first correct month 1RT second correct month 1RT ALL correct months (3)	MP L1 M
5.1.3	✓RT 14 655 – (738 + 1 062 + 922 + 1 705 + 2 850 + 1 871 + 2 811) = 14 655 – 11 959 ✓MCA = 2 696 km ✓CA	1RT all correct values 1MCA subtracting 1CA simplification AO (3)	MP L2 M
* 5.1.4	Tasmania./Tasmanië ✓✓RT	2RT correct state (2)	MP L1 E
5.1.5	Distance/Afstand = Speed × time 1 705 km = s × 20 h 40 min ✓SF 1 705 km = s × 20,67 h ✓C Speed/Spoed = $\frac{1\,705\text{ km}}{20,67\text{ h}}$ ✓S = 82,5 km/h ✓CA	1SF substitution 1C converting to hours 1S change subject of formula 1CA simplification (4)	M L2 M
5.2.1	✓RT 1 142 feet/voet = 348 m ✓RT $1\text{ foot/voet} = \frac{348}{1\,142}$ = 0,304728546 1 foot/voet ≈ 0,305 m ✓A	1RT 1 142 1RT 348 1A 0,305 (3)	M L2 M
* 5.2.2	Uluru : Eiffel Tower : Big Ben/ Uluru : Eiffeltoring : Big Ben 348 : 324 : 96 ✓RT ✓A = 29 : 27 : 8 ✓✓CA	1RT correct values 1A correct order 2CA simplified ratio (4)	M L2 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
* 5.3.1	$P = 22,5\%$ ✓✓A OR/OF $P = \frac{1\,729\,742}{7\,688\,220}$ ✓✓A $= 0,224986... \text{ or } 22,5\%$	2A correct probability (2)	P L2 E
5.3.2	$\text{Area of island/Opp van eiland} = \frac{32\,159}{64\,519}$ ✓RT ✓RT $= 0,498 \approx 0,5$ ✓CA OR/OF $\text{Half of Tasmania / Helfte van Tasmanië}$ $\frac{1}{2} \times 64\,519 = 32\,259,5 \text{ km}^2$ ✓MA $\text{Islands / Eilande} = 32\,159 \text{ km}^2$ ✓RT $\frac{64\,519}{2} : \frac{32\,159}{1} = 2 : 1$ ✓RT ✓CA OR/OF	1RT area of islands 1RT area of Tasmania 1CA simplification OR/OF 1RT Tasmania area 1MA simplification 1RT island area OR/OF 1RT area of islands 1RT area of Tasmania 1CA simplification (3)	MP L4 M
* 5.3.3 (a)	$\text{Population density/Bevolkingsdigtheid}$ $= \frac{454\,499}{2\,358}$ ✓RT ✓RT $= 192,74...$ ≈ 193 ✓R	1RT correct 454 499 1RT correct area 2 358 1R simplification rounded up (3)	M L3 D
* 5.3.3 (b)	$\text{Land \% area/Land \% opp} = \frac{2\,358}{7\,688\,220} \times 100\%$ ✓RT ✓RT $= 0,0306..%$ ✓CA $\text{Rounds off to zero/Rond af na nul.}$ ✓O	1RT correct 2 358 1RT 7 688 220 1CA simplification 1O opinion (4)	M L4 D
		[33]	