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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

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

**MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2**

MAY/JUNE/MEI/JUNIE 2024

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/PUNTE: 150

Symbol/Kode	Explanation/Verduideliking
MA	Method with accuracy/Metode met 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.
R	Rounding off/Afronding
NPR	No penalty for correct rounding/Geen penalisasie vir korrekte afronding nie
NPU	No penalty for omitting correct unit/Geen penalisasie vir die uitlos van die korrekte eenheid nie
AO	Answer only/Slegs antwoord
MCA	Method with constant accuracy/Metode met volgehoue akkuraatheid
RCA	Rounding consistent with accuracy/Afronding met volgehoue akkuraatheid

**These marking guidelines consist of 20 pages.
Hierdie nasienriglyne bestaan uit 20 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 did NOT redo 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 or 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.
- A conclusion mark can only be given if relevant calculations precede it (at least 1 mark before conclusion).
- Rounding is an independent mark.
- No penalty for rounding (NPR) if the first decimal is correct, except questions involving money.

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 of afbreuk 'break down' nie
- Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem 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, dat die kandidaat slegs een punt verloor
- 'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekeninge dit voorgaan (ten minste een punt voor die gevolgtrekking).
- Afronding tel as 'n onafhanklike punt.
- Geen penalisering vir ronding (NPR) as die eerste desimaal korrek is nie, behalwe as vrae geld insluit.

QUESTION/VRAAG 1 [26 MARKS/PUNTE] Answer Only AO - full marks			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.1*	1.1.1 E ✓✓A 1.1.2 G ✓✓A 1.1.3 F ✓✓A 1.1.4 B ✓✓A	2A correct option 2A correct option 2A correct option 2A correct option (8)	M L1 P L1 M L1 M L1
1.2.1	✓✓A Numerical /Number/ ratio scale. Numeriese- /Nommer- /Getalle- /syfer-/verhouding-skaal.	2A type of scale (2)	MP L1 E
1.2.2	✓✓A 1 unit on the map is equivalent to 50 000 units in real life. 1 eenheid op die kaart is gelykstaande aan 50 000 eenhede in werklikheid OR/OF The map is 50 000 times smaller than real life. Die kaart is 50 000 keer kleiner as werklikheid	2A relationship (2)	MP L1 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.2.3*	1: 25 000 ✓✓ A	2A correct scale (Accept B) (2)	MP L1 E
1.3.1*	✓A ✓A Rectangle and a circle. <i>Reghoek en 'n sirkel</i>	1A rectangle 1A circle (2)	M L1 E
1.3.2	✓✓A 144 km	2A correct answer Accept 144 (2)	MP L1 E
1.3.3*	It is the maximum speed a motorist can travel on the road. ✓✓A <i>Dit is die maksimum speed wat 'n motoris mag ry op die pad.</i> OR/OF The motorist can cover a distance of 120 km in 1 hour. <i>Die motoris kan 120 km aflê in 1 uur</i>	2A correct explanation. (2)	MP L1 M
1.3.4*	Distance/ <i>Afstand</i> (Jhb – Trompsburg) = 534 – 27 ✓ RT = 507 km ✓ A	1RT both correct values 1A distance NPU (2)	M L1 M
1.3.5	North /N/ <i>Noord</i> / N ✓✓A	2A correct direction (2)	MP L1 E
1.3.6	$\frac{90 \text{ cm}}{100}$ ✓MA = 0,9 m ✓A	1MA dividing by 100 1A simplification (2)	M L1 E
			[26]

QUESTION/VRAAG 2 [29 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.1.1	2 ✓✓A	2A correct number (2)	MP L1 E
2.1.2	6 ✓✓A	2A correct road (2)	MP L1 M
2.1.3*	7 ✓✓A	2A correct number (2)	MP L1 E
2.1.4*	C ✓✓A	2A correct choice (2)	P L2 M
2.1.5	✓✓A South East (SE) / Suidoos (SO)	2A correct direction (2)	MP L2 M
2.1.6	<p>Length / Lengte = 65 m = 65 000 mm ✓C</p> <p>Scale/ Skaal: 1 : 8 000 n : 65 000</p> <p>$n = \frac{65\,000}{8\,000}$ ✓ MA = 8,125 mm ✓CA ≈ 8 mm ✓R</p> <p style="text-align: center;">OR/OF</p> <p>Scale/Skaal: 1 : 8 000 n : 65</p> <p>$n = \frac{65}{8\,000}$ ✓ MA = 0,008125 m ✓CA = 8,125 mm ✓C ≈ 8 mm ✓R</p>	<p>1C conversion</p> <p>1MA dividing</p> <p>1CA simplification</p> <p>1R rounding</p> <p style="text-align: center;">OR/OF</p> <p>1MA dividing</p> <p>1CA simplification</p> <p>1C conversion</p> <p>1R rounding (4)</p>	MP L3 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.2*	2.2.1 C ✓A 2.2.2 E ✓A 2.2.3 D ✓A 2.2.4 B ✓A 2.2.5 A ✓A	5A correct order (5)	MP L2 M
2.3*	Only use the go cart on level ground. / smooth, flat, hard, tarred, road surface <i>Gebruik die knortjor slegs op gelyke grond/ gladde, plat, harde, pad, geteerde oppervlakte</i> OR/OF Do not use the vehicle on a long grassy surface. <i>Moet nie in lang gras ry nie.</i>	2O Explanation for 1 st picture or for 2 nd picture (2)	MP L4 E
2.4.1	$X = 2\,840 - 1\,476 - 1\,024 = 340 \quad \checkmark\text{MA} \quad \checkmark\text{CA}$ OR/OF $X = 565 - 163 - 62 = 340 \quad \checkmark\text{MA} \quad \checkmark\text{CA}$	1MA subtracting from total 1CA simplification AO (2)	P L1 E
2.4.2	$P_{(\text{not a horse})} = \frac{2\,840 + 796}{4\,996} \quad \checkmark\text{RT} \quad \checkmark\text{RT}$ $= \frac{3\,636}{4\,996}$ $= \frac{909}{1\,249} \quad \checkmark\text{A}$ OR/OF $P_{(\text{horse})} = \frac{1\,360}{4\,996} \quad \checkmark\text{RT}$ $P_{(\text{not a horse})} = 1 - \frac{1\,360}{4\,996} \quad \checkmark\text{MCA}$ $= \frac{909}{1\,249} \quad \checkmark\text{A}$	1RT numerator 1RT denominator 1A simplification OR/OF 1RT both values 1MCA subtracting from 1 1A simplification (3)	P L2 M
2.4.3	$P = \frac{363}{796} \times 100\% \quad \checkmark\text{RT} \quad \checkmark\text{RT}$ $= 45,60301508\% \quad \checkmark\text{CA}$	1RT 1 st value 1RT 2 nd value correctly place 1CA simplification NPR (3)	P L3 M
			[29]

QUESTION/VRAAG 3 [33 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.1.1	2 000 kW ✓✓RT	2RT correct kW NPU (2)	M L1 E
3.1.2	<p>To allow rotor blade to produce more energy. ✓✓O <i>Om met die rotorlem meer energie op te wek.</i> OR/OF</p> <p>Advanced technology to have material that can allow a big structure to stand firm on the ground. <i>Verbeterde tegnologie om materiaal te hê wat toelaat dat so 'n groot struktuur standvastig kan staan</i> OR/OF</p> <p>Larger rotor diameters allow wind turbines to sweep more area, capture more wind and produce more electricity <i>Groter rotormiddellyne laat die windturbines 'n groter area dek, meer wind vang en so meer krag opwek</i> OR/OF</p> <p>Demand for electricity increased/ demand for cleaner electricity <i>Verhoogde aanvraag vir elektrisiteit/ aanvraag vir skoner elektisiteit</i></p>	<p>2O reason (more electricity)</p> <p>(2)</p>	M L4 E
3.1.3	<p>Max. height (in m) = Poles height + radius of rotor <i>Maks. Hoogte (in m) = Paal hoogte + radius van rotor</i> $= 114 + \frac{124}{2} \quad \checkmark \text{RT} \quad \checkmark \text{MA}$ $= 114 + 62$ $= 176 \quad \checkmark \text{CA}$ OR/OF Pole + rotor/ <i>Paal + rotor</i> $= 124 + 114 \quad \checkmark \text{RT}$ $= 238$ Maximum height /<i>Maksimum hoogte</i> in m $= 238 - (124 \div 2) \quad \checkmark \text{MA}$ $= 238 - 62$ $= 176 \quad \checkmark \text{CA}$ </p>	<p>1RT both correct values 1MA divide by 2 to determine the radius</p> <p>1CA simplification</p> <p>OR/OF</p> <p>1RT both correct values</p> <p>1MA divide by 2 to determine the radius 1CA simplification AO</p> <p>(3)</p>	M L2 M

Q/V	Solution/Opplossing	Explanation/Verduideliking	T/L
3.1.4*	$\text{Radius} = \frac{124}{2} = 62 \quad \checkmark \text{ A}$ <i>Area /Oppervlakte</i> $= 3,142 \times (62)^2 \quad \checkmark \text{ SF}$ $= 12\,077,848 \text{ m}^2 \quad \checkmark \text{ CA}$ $\checkmark \text{ O}$ Not valid. / Nie geldig nie	1A radius 1SF substitution squared 1CA simplification 1O invalid (4)	M L4 M
3.1.5	$\% \text{ increase/verhoging} = \frac{5\,000 - 800}{800} \times 100\% \quad \checkmark \text{ RT} \quad \checkmark \text{ MA}$ $\checkmark \text{ A}$ $= 525\% \quad \checkmark \text{ CA}$ OR/OF <i>Current percentage / Huidige persentasie</i> $\checkmark \text{ RT}$ $= \frac{5\,000}{800} \times 100\% \quad \checkmark \text{ A}$ $= 625\%$ $\% \text{ increase/verhoging}$ $625\% - 100\% \quad \checkmark \text{ MA}$ $= 525\% \quad \checkmark \text{ CA}$	1RT 1 st correct value 1A denominator 1MA percentage 1CA simplification OR/OF 1RT 1 st correct value 1A denominator 1MA percentage difference 1CA simplification (4)	M L2 M
3.1.6*	$\checkmark \checkmark \text{ A}$ Generators OR solar power OR hydro-power OR nuclear power <i>Kragopwekkers OF sonkrag OF hidro-elektrisiteit OF kernkrag</i>	2A source (2)	M L1 E
3.2.1	$\checkmark \text{ RT} \quad \checkmark \text{ SF}$ $\text{Perimeter/Omtrek} = 2 \times (2,3 + 2,3 + 2,3 + 3) \text{ m}$ $\checkmark \text{ MA}$ $= 2 \times (6,9 + 3) \text{ m}$ $= 19,8 \text{ m} \quad \checkmark \text{ CA}$ OR/OF <i>Perimeter/Omtrek</i> $\checkmark \text{ RT} \quad \checkmark \text{ SF}$ $= 3 + 2,3 + 2,3 + 2,3 + 3 + 2,3 + 2,3 + 2,3 \text{ m} \quad \checkmark \text{ MA}$ $= 19,8 \text{ m} \quad \checkmark \text{ CA}$	1RT correct values 1SF substitution 1MA 6,9 1CA answer OR/OF 1RT correct values 1SF substitution 1MA 6,9 1CA answer (4)	M L2 E
3.2.2*	$\checkmark \text{ RT} \quad \checkmark \text{ A}$ $5 + 7 + 4 = 16 \text{ boards /planke} \quad \checkmark \text{ CA}$	1RT correct numbers 5 and 7 1A on 4 1CA simplification adding AO (3)	M L3 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
(3.2.3)	<p>Height /hoogte B = $\frac{5}{7} \times 0,5 \text{ m}$ $= 0,3571428571 \text{ m}$ ✓ A</p> <p>Vol B = $(2,3 \times 3 \times 0,3571428571) \text{ m}^3$ $= 2,464285714 \text{ m}^3$ ✓ CA</p> <p>Vol A = $(2,3 \times 3 \times 0,5) \text{ m}^3$ ✓ SF $= 3,45 \text{ m}^3$ ✓ A</p> <p>Total/Totaal = $2,464285714 \text{ m}^3 + 3,45 \text{ m}^3$ $= 5,914285714 \text{ m}^3$ ✓ CA</p> <p>Capacity / Kapasiteit = $1\,000 \times 5,914285714$ $= 5\,914,285714 \text{ litres.}$ ✓ CA</p> <p style="text-align: center;">OR/OF</p> <p>Height of section B/ Hoogte van boks B $= \frac{5}{7} \times 0,5 \text{ m}$ $= 0,3571428571 \text{ m}$ ✓ A</p> <p>Vol = (length×width×height) + (length×width×height) ✓ SF $= (2,3 \text{ m} \times 3 \text{ m} \times 0,357... \text{ m}) + (2,3 \times 3 \text{ m} \times 0,5 \text{ m})$ $= (2,464285714 + 3,45) \text{ m}^3$ ✓ CA $= 5,914285714 \text{ m}^3$ ✓ CA</p> <p>Capacity / Kapasiteit = $1\,000 \times 5,914285714$ $= 5\,914,285714 \text{ litres.}$ ✓ CA</p> <p style="text-align: center;">OR/OF</p> <p>Volume A = length × width × height/ <i>lengte × breedte × hoogte</i> $= (3 \text{ m} \times 2,3 \text{ m} \times 0,5 \text{ m})$ ✓ SF $= 3,45 \text{ m}^3$ ✓ A $\therefore 3\,450 \text{ litres}$ ✓ C</p> <p>Volume B = $\frac{3\,450 \ell}{7} \times 5$ ✓ A $= 2\,464,285714 \text{ litres}$ ✓ CA</p> <p>$\therefore \text{Total} = 3\,450 + 2\,464,285714$ $= 5\,914,285714 \ell$ ✓ CA</p>	<p>1A height box B</p> <p>1CA volume of B box</p> <p>1SF volume of A box 1A simplification 3,45 CA total volume</p> <p>1CA answer in litres</p> <p style="text-align: center;">OR/OF</p> <p>1A height box B</p> <p>1SF volume of A box</p> <p>1CA volume of B box 1A $3,45 \text{ m}^3$</p> <p>1CA total volume</p> <p>1CA answer in litres</p> <p style="text-align: center;">OR/OF</p> <p>1SF volume of A box 1A simplification 3,45 1C conversion</p> <p>1A ratio</p> <p>1CA volume box B</p> <p>1CA answer in litres NPR</p>	<p>M L3 D</p>

(6)

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.3*	$^{\circ}\text{C} = \frac{5}{9} \times (^{\circ}\text{F} - 32^{\circ})$ \checkmark SF $70^{\circ} = \frac{5}{9} \times (^{\circ}\text{F} - 32^{\circ})$ $70^{\circ} \times \frac{9}{5} = ^{\circ}\text{F} - 32 \quad \checkmark$ MA $126^{\circ} = ^{\circ}\text{F} - 32$ $^{\circ}\text{F} = 158 \quad \checkmark$ CA	1SF substituting in formula 1MA changing subject 1CA answer (3)	M L2 M
		[33]	

QUESTION/VRAAG 4 [33 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
4.1.1	$\checkmark_{RT} 30 : 6 = 5 : 1 \checkmark_A$	1RT 30 1RT 6 1A simplification (3)	MP L2 E
4.1.2	$\checkmark\checkmark_A$ Reading room and computer lab <i>Leeskamer en rekenaarlokaal</i>	2A 1 st room 1A second room (3)	MP L1 E
4.1.3	$\checkmark\checkmark_A$ Stairs / <i>trappe</i>	2A stairs (2)	MP L2 E
4.1.4	$\checkmark\checkmark_A \checkmark_A$ Multi-media room 1 / <i>Multi-mediakamer 1</i>	2A correct room 1A correct number (3)	MP L3 M
4.1.5	<p>Area/ <i>Opp A</i> = length \times width / <i>lengte \times breedte</i> $= 11 \text{ m} \times 3,5 \text{ m} \checkmark_{SF}$ $= 38,5 \text{ m}^2 \checkmark_{MCA}$</p> <p>Area/ <i>Opp B</i> = length \times width / <i>lengte \times breedte</i> $= 14 \text{ m} \times 3,5 \text{ m}$ $= 49 \text{ m}^2 \checkmark_{MA}$</p> <p>Floor area/<i>Vloer opp.</i> $= 38,5 \text{ m}^2 + 49 \text{ m}^2$ $= 87,5 \text{ m}^2 \checkmark_{MCA}$</p> <p>Area of tile = length \times width <i>Opp van teël</i> = <i>lengte \times breedte</i> $= 600 \text{ mm} \times 600 \text{ mm}$ $= 360\,000 \text{ mm}^2 \checkmark_A$</p> <p>$\therefore \frac{360\,000}{1\,000\,000} = 0,36 \text{ m}^2 \checkmark_C$</p> <p>Number of tiles/<i>Getal teëls</i> = $\frac{87,5}{0,36} \checkmark_{MCA}$ $\approx 243,056 \text{ tiles} \checkmark_{CA}$</p> <p>Number of boxes/ <i>Getal bokse</i> = $\frac{244}{5}$ $= 48,8$ $= 49 \checkmark_{CA}$</p> <p>INVALID/ <i>ONGELDIG.</i> \checkmark_O</p> <p style="text-align: center;">OR/OF</p> <p>Floor Area/<i>vloeropp</i> = $11 \text{ m} \times 7 \text{ m} + 3,5 \text{ m} \times 3 \text{ m} \checkmark_A$ $= 77 \text{ m}^2 + 10,5 \text{ m}^2$ $= 87,5 \text{ m}^2 \checkmark_{CA}$</p>	<p>1SF substitution 1MCA simplification</p> <p>1MA simplification</p> <p>1MCA simplification total area</p> <p>1A area tile</p> <p>1C conversion</p> <p>1MCA dividing</p> <p>1CA number of tiles</p> <p>1CA number of boxes</p> <p>1O opinion</p> <p style="text-align: center;">OR/OF</p> <p>1SF substitution 1MA adding areas 1A 3 1CA area</p>	M L4 D

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	<p>Tiles /Teëls = $\frac{600 \text{ mm}}{1000} = 0,6 \text{ m}$ ✓ C</p> <p>Area of a tile / Opp van teël $= 0,6 \text{ m} \times 0,6 \text{ m} = 0,36 \text{ m}^2$ ✓ MCA</p> <p>Number of tiles/Getal teëls = $\frac{87,5}{0,36}$ ✓ MCA $\approx 243,056 \text{ tiles}$ ✓ CA</p> <p>Number of boxes/ Getal bokse = $\frac{244}{5}$ $= 48,8$ $= 49$ ✓ CA</p> <p>INVALID/ ONGELDIG. ✓ O</p> <p>OR/OF</p> <p>✓ SF ✓ A</p> <p>Floor Area/ Vloer opp = $11 \text{ m} \times 7 \text{ m} + 3,5 \text{ m} \times 3 \text{ m}$ $= 77 \text{ m}^2 + 10,5 \text{ m}^2$ ✓ MA $= 87,5 \text{ m}^2$ ✓ CA</p> <p>Tiles / Teëls = $\frac{600 \text{ mm}}{1000} = 0,6 \text{ m}$ ✓ C</p> <p>Area of a tile / Opp van 'n teël = $0,6 \text{ m} \times 0,6 \text{ m}$ $= 0,36 \text{ m}^2$ ✓ MCA</p> <p>Number of tiles / Getal teëls = $\frac{87,5}{0,36}$ ✓ MCA $\approx 243,056 \text{ tiles}$ ✓ CA</p> <p>tiles in 40 boxes / teels in 40 bokse = $40 \times 5 = 200$ 40 boxes is not enough or $200 < 244$ ✓ CA 40 bokse is nie genoeg nie of $200 < 244$ INVALID./ ONGELDIG ✓ O</p> <p>OR/OF</p> <p>✓ SF ✓ A</p> <p>Floor Area/vloeropp = $14 \text{ m} \times 7 \text{ m} - 3,5 \text{ m} \times 3 \text{ m}$ $= 98 \text{ m}^2 - 10,5 \text{ m}^2$ ✓ MA $= 87,5 \text{ m}^2$ ✓ CA</p> <p>Tiles /Teëls = $\frac{600 \text{ mm}}{1000} = 0,6 \text{ m}$ ✓ C</p> <p>Area of a tile / Opp van teël $= 0,6 \text{ m} \times 0,6 \text{ m} = 0,36 \text{ m}^2$ ✓ MCA</p> <p>Number of tiles/Getal teëls = $\frac{87,5}{0,36}$ ✓ MCA $\approx 243,056 \text{ tiles}$ ✓ CA</p> <p>Number of boxes/ Getal bokse = $\frac{244}{5}$ $= 48,8$ $= 49$ ✓ CA</p> <p>INVALID/ ONGELDIG. ✓ O</p>	<p>1C conversion</p> <p>1MCA area of tile</p> <p>1MCA dividing areas</p> <p>1CA number of tiles</p> <p>1CA number of boxes</p> <p>1O conclusion</p> <p>OR/OF</p> <p>1A 3</p> <p>1SF substitution</p> <p>1MA adding areas</p> <p>1CA area</p> <p>1C conversion</p> <p>1MCA area of tile</p> <p>1MCA dividing areas</p> <p>1CA number of tiles</p> <p>1CA less than</p> <p>1O conclusion</p> <p>OR/OF</p> <p>1A 3</p> <p>1SF substitution</p> <p>1MA subtracting areas</p> <p>1CA area</p> <p>1C conversion</p> <p>1MCA area of tile</p> <p>1MCA dividing areas</p> <p>1CA number of tiles</p> <p>1CA number of boxes</p> <p>1O conclusion</p>	

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p style="text-align: center;">OR/OF</p> <p>Area A = length \times width/ <i>lengte \times breedte</i> $= 11 \text{ m} \times 3,5 \text{ m} \checkmark \text{SF}$ $= 38,5 \text{ m}^2 \checkmark \text{MCA}$</p> <p>Area B = length \times width/ <i>lengte \times breedte</i> $= 14 \text{ m} \times 3,5 \text{ m}$ $= 49 \text{ m}^2 \checkmark \text{MCA}$</p> <p>Floor area/<i>Vloer opp.</i> $= 38,5 \text{ m}^2 + 49 \text{ m}^2$ $= 87,5 \text{ m}^2 \checkmark \text{MCA}$</p> <p>Area of tile = length \times width / <i>Opp van teël = $l \times b$</i> $= 600 \text{ mm} \times 600 \text{ mm}$ $= 360\,000 \text{ mm}^2 \checkmark \text{A}$</p> <p>$\therefore \frac{360\,000}{1\,000\,000} = 0,36 \text{ m}^2 \checkmark \text{C}$</p> <p>Number of tiles/<i>Getal teëls</i> = $\frac{87,5}{0,36} \checkmark \text{MCA}$ $\approx 243,056 \text{ tiles} \checkmark \text{CA}$</p> <p>Number of boxes/ <i>Getal bokse</i> = $\frac{244}{5}$ $= 48,8$ $= 49 \checkmark \text{CA}$</p> <p>INVALID/ <i>ONGELDIG.</i> $\checkmark \text{O}$</p>	<p style="text-align: center;">OR/OF</p> <p>1SF substitution 1MCA simplification</p> <p>1MCA simplification</p> <p>1MCA simplification total area</p> <p>1A area tile</p> <p>1C conversion</p> <p>1MCA dividing 1CA number of tiles</p> <p>1CA number of boxes 1O opinion</p>	
	<p style="text-align: center;">OR/OF</p> <p>Area of tile / <i>Opp van teël</i> $= 600 \text{ mm} \times 600 \text{ mm}$ $= 360\,000 \text{ mm}^2 \checkmark \text{A}$</p> <p>L = $14 \text{ m} \times 1\,000$ $= 14\,000 \text{ mm} \checkmark \text{C}$</p> <p>B = $7 \text{ m} \times 1\,000$ $= 7\,000 \text{ mm}$</p> <p>$\therefore \text{Area/Opp} = 14\,000 \text{ mm} \times 7\,000 \text{ mm} \checkmark \text{SF}$ $= 98\,000\,000 \text{ mm}^2 \checkmark \text{MCA}$</p> <p>$\therefore \text{Area/Opp} = 3\,500 \text{ mm} \times 3\,000 \text{ mm}$ $= 10\,500\,000 \text{ mm}^2 \checkmark \text{MCA}$</p> <p>Total area/ <i>Totale opp</i> $= 98\,000\,000 \text{ mm}^2 - 10\,500\,000 \text{ mm}^2$ $= 87\,500\,000 \text{ mm}^2 \checkmark \text{MCA}$</p>	<p style="text-align: center;">OR/OF</p> <p>1A area tile</p> <p>1C conversion</p> <p>1SF substitution 1MCA simplification</p> <p>1MCA simplification</p> <p>1MCA simplification total area</p>	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	<p>Number of tiles/Aantal teëls $= \frac{87\,500\,000\text{ mm}^2}{360\,000\text{ mm}^2} \checkmark \text{MCA} = 243,0555556 \text{ tiles} \checkmark \text{CA}$</p> <p>Number of boxes/Getal bokse $= \frac{243,0555556}{5}$ $= 48,61 \approx 49 \checkmark \text{CA}$</p> <p>$\therefore$ INVALID/ONGELDIG $\checkmark \text{O}$ OR/OF</p> <p>$\checkmark \text{SF} \quad \checkmark \text{A}$ Area (Lab) = $(7 \times 14 - 3 \times 3,5) \text{ m}^2$ $= (98 - 10,5) \text{ m}^2 \checkmark \text{MA}$ $= 87,5 \text{ m}^2 \checkmark \text{MCA}$</p> <p>Tile side / Teël sy = $600 \div 1\,000 = 0,6 \text{ m} \checkmark \text{C}$ Area covered by a box of tiles <i>Oppervlakte bedek deur 'n boks teëls</i> $= (0,6 \times 0,6) \times 5 \checkmark \text{MCA}$ $= 1,8 \text{ m}^2 \checkmark \text{CA}$</p> <p>Number of boxes / Getal bokse $= \frac{87,5}{1,8} \checkmark \text{MCA}$ $= 48,6 \approx 49 \checkmark \text{CA}$</p> <p>INVALID / ONGELDIG $\checkmark \text{O}$ OR/OF</p> <p>Calculating 3 areas/Berekening 3 opp. $A1 = 3,5 \times 11 \checkmark \text{SF}$ $= 38,5 \text{ m}^2$ $A2 = 3 \times 3,5 \checkmark \text{A}$ $= 10,5 \text{ m}^2$ $A3 = 3,5 \times 11$ $= 38,5 \text{ m}^2$ TOTAL = $38,5 \text{ m}^2 + 10,5 \text{ m}^2 + 38,5 \text{ m}^2 \checkmark \text{MA}$ $= 87,5 \text{ m}^2 \checkmark \text{MCA}$</p> <p>Number of tiles/Getal teëls = $\frac{87,5}{0,36} \checkmark \text{MCA}$ $\approx 243,056 \text{ tiles} \checkmark \text{CA}$</p> <p>Number of boxes/ Getal bokse = $\frac{244}{5}$ $= 48,8$ $= 49 \checkmark \text{CA}$</p> <p>INVALID/ ONGELDIG $\checkmark \text{O}$</p>	<p>1MCA dividing 1CA number of tiles</p> <p>1CA number of boxes</p> <p>1O opinion OR/OF</p> <p>1A 3 1SF substitution 1MA subtracting 1MCA simplification total area 1C conversion</p> <p>1MCA area of 1 tile 1CA area box of tiles</p> <p>1MCA dividing 1CA number of boxes of tiles 1O opinion OR/OF</p> <p>1SF substitution 1A 3</p> <p>1MA adding 1MCA simplification total area 1MCA dividing 1CA number of tiles</p> <p>1CA number of boxes 1O opinion</p>	(10)

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
4.2.1*	4 ✓✓ A	2A number of countries (2)	MP L1 E
4.2.2	Harare ✓✓ A	2A correct town (2)	MP L1 E
4.2.3* (a)	<p>✓ SF ✓ A $97 \text{ km/h} = 179 \text{ km} \div \text{tyd}$</p> <p>Time = distance \div speed <i>Tyd = afstand \div spoed</i> $= \frac{179}{97}$ ✓ MCA $= 1,845 \text{ hours}$ ✓ CA</p> <p>Time duration / <i>tydsduur</i> = 1,845 hours./uur $= 1 \text{ hour/uur} + 0,845 \times 60 \text{ min}$ $= 1 \text{ hour/uur } 51 \text{ min}$</p> <p>Arrival time / <i>Aankomstyd</i>: $= 09:55 + 1 \text{ h } 51 \text{ min}$ $= 11: 46$ ✓ CA</p>	<p>1A 179 1SF substitution 97</p> <p>1MCA change formula 1CA time in hours</p> <p>1CA answer (5)</p>	M L3 D
4.2.3 (b)	<p>✓MA Distance/<i>Afstand</i> = $(713 - 263) + 2(18)$ $= 450 + 36$ ✓MA $= 486 \text{ km}$ ✓ CA</p> <p>OR/OF</p> <p>Distance /<i>Afstand</i> ✓ MA ✓ MA $= (713 - 552) + 18 + 18 + (552 - 263)$ $= 161 + 18 + 18 + 289 = 486 \text{ km}$ ✓ CA</p>	<p>1MA subtracting correct values 1MA getting 36 1CA total distance</p> <p>OR/OF</p> <p>1MA subtracting correct values 1MA adding distances 1CA answer (3)</p>	M L2 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	<p style="text-align: center;">OR/OF</p> <p style="text-align: center;">✓MA</p> $\text{Distance/Afstand} = (455 - 5) + 2(18)$ $= 450 + 36 \quad \checkmark \text{MA}$ $= 486 \text{ km} \quad \checkmark \text{CA}$ <p style="text-align: center;">OR/OF</p> Distance /Afstand $= (166 - 5) + 18 + 18 + (455 - 166)$ $= 161 + 18 + 18 + 289 = 486 \text{ km} \quad \checkmark \text{CA}$ <p style="text-align: center;">OR/OF</p> Distance/Afstand $= 179 + 18 + (552 - 263) \text{ km}$ $= 486 \text{ km} \quad \checkmark \text{CA}$	<p style="text-align: center;">OR/OF</p> <p>1MA subtracting correct values 1MA getting 36 1CA total distance</p> <p style="text-align: center;">OR/OF</p> <p>1MA subtracting correct values 1MA adding values 1CA answer</p> <p style="text-align: center;">OR/OF</p> <p>1MA subtracting correct values 1MA adding values 1CA answer</p> <p style="text-align: right;">(3)</p>	
		[33]	

QUESTION/VRAAG 5 [29 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.1.1*	8 ✓✓A	2A correct number (2)	MP L1 E
5.1.2	Front entrance portal /Voorste ingangsportaal ✓MA ✓RT ✓RT = $58 - (11 \times 4 + 2 \times 4)$ ✓A = 6 feet/ voet ✓CA	1MA subtracting from 58 1RT room dimensions 1RT wall thickness 1A multiplying with 4 1CA simplification (5)	MP L3 M
5.1.3	There are no walls separating the kitchen, dining room and living room. ✓✓O Daar is geen mure wat die kombuis, eetkamer en woonvertrek skei nie	2O reason (2)	MP L4 E
5.1.4*	Toilet OR bath OR basin or sink ✓✓A Toilet OF bad OF wasbak	2A correct feature (2)	MP L1 E
5.1.5	✓O 3 rd floor and B that it is the second apartment ✓O 3 ^{de} vloer en B is die tweede woonstel OR/OF ✓O Block B, Number 3 ✓O Blok B, nommer 3 OR/OF ✓O 3 rd Floor, unit on the left/right ✓O 3 ^{de} vloer, die eenheid links/ regs OR/OF ✓O 3 rd Floor, B-wing ✓O 3 ^{de} vloer, B -vleuel	1O numbering of the floors 1O numbering of the apartments (2)	MP L4 M
5.1.6 (a)	17,6784 m = 58 feet/voet Conversion factor/ Herleidings faktor: $1 \text{ m} = \frac{58}{17,6784} = 3,28083989... \text{ ✓RT}$ ✓MA $\approx 3,281 \text{ feet}$ ✓R	1RT 58 1MA simplification 1R rounded answer (3)	M L2 M
5.1.6 (b)	Width / Breedte = $\frac{40}{3,281} \text{ ✓RT}$ ✓MCA $= 12,191405 \text{ m}$ ✓CA	CA from 5.1.6 (a) 1RT correct width 1MCA dividing 1CA simplification	M L2 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p style="text-align: center;">OR/OF</p> <p>58 feet/voet = 17,6784 m 40 feet/voet = n</p> <p style="text-align: center;">✓RT</p> $n = \frac{40}{58} \times 17,6784 \quad \checkmark \text{MA}$ $= 12,191405 \text{ m} \quad \checkmark \text{CA}$	<p style="text-align: center;">OR/OF</p> <p>1RT correct width 1MA working with ratio 1CA simplification NPR</p> <p style="text-align: right;">(3)</p>	
5.2.1	<p>Area /Oppervlakte = length \times width / lengte \times breedte $= 0,614 \text{ m} \times 0,474 \text{ m} \quad \checkmark \text{SF}$ $= 0,291036 \text{ m}^2$ $= 0,3 \text{ m}^2 \quad \checkmark \text{R}$</p>	<p>1SF substitution 1R simplification NPU</p> <p style="text-align: right;">(2)</p>	M L2 E
5.2.2*	<p>Area for 6 panels /Opp van 6 panele = $0,3 \text{ m}^2 \times 6$ $= 1,8 \text{ m}^2 \quad \checkmark \text{MCA}$</p> <p>Cost for 6 panels /Koste van 6 panele $= 1,8 \text{ m}^2 \times \text{R}490/\text{m}^2 = \text{R}882 \quad \checkmark \text{MCA}$</p> <p>Mass of the 6 panels / Massa van 6 panele $= 1,8 \text{ m}^2 \times 15 \text{ kg}/\text{m}^2 = 27 \text{ kg} \quad \checkmark \text{MCA}$</p> <p>Delivery mass / Aflewerings massa = $20 \text{ kg} + 7 \text{ kg}$</p> <p>Cost of delivery / Afleweringskoste ✓MA $= \text{R}820 + \text{R}53,50 \times 7 \text{ kg} \quad \checkmark \text{MCA}$ $= \text{R}1\,194,50 \quad \checkmark \text{CA}$</p> <p>Total cost / Totale koste = $\text{R}882,00 + \text{R}1\,194,50$ $= \text{R}2\,076,50 \quad \checkmark \text{CA}$</p> <p>INVALID/ ONGELDIG ✓O</p> <p style="text-align: center;">OR/OF</p>	<p>CA from Q 5.2.1</p> <p>1MCA simplification</p> <p>1MCA simplification cost</p> <p>1MCA simplification: mass</p> <p>1MA cost of 1st 20kg 1MCA add and multiply 1CA simplification</p> <p>1CA simplification</p> <p>1O verification</p> <p style="text-align: center;">OR/OF</p>	M L4 D

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	Using unrounded area Area for 6 panels /Opp van 6 panele $= 0,291036 \text{ m}^2 \times 6$ $= 1,746216 \text{ m}^2$ ✓CA	1CA simplification	
	Cost for 6 panels /Koste van 6 panele $= 1,746216 \text{ m}^2 \times \text{R}490/\text{m}^2 = \text{R}855,65$ ✓CA	1CA simplification cost	
	Mass of the 6 panels / Massa van 6 panele $= 1,746216 \text{ m}^2 \times 15 \text{ kg}/\text{m}^2 = 26,19324 \text{ kg}$ ✓CA	1CA simplification: mass	
	Delivery mass / Afleverings massa = 20 kg + 7 kg Cost of delivery / Afleveringskoste ✓MA $= \text{R}820 + \text{R}53,50 \times 7 \text{ kg}$ ✓MCA $= \text{R}1\,194,50$ ✓CA	1MA cost for 1 st 20 kg 1MCA add and multiply 1CA simplification	
	Total cost / Totale koste = $\text{R}855,65 + \text{R}1\,194,50$ $= \text{R}2\,050,15$ ✓CA	1CA simplification	
	INVALID/ ONGELDIG ✓O	1O verification	(8)
		[29]	
		TOTAL/TOTAAL: 150	

NOTE/LET WEL:

1.1	1.1.1 Circumference	E	The boundary that surrounds the circular shape.	Full marks for written explanations
	1.1.2 Probability	G	The likelihood that something may happen.	
	1.1.3 One hour	F	A time measurement equivalent to three thousand six hundred seconds.	
	1.1.4 Temperature	B	The measure of hotness or coldness.	
1.2.3	B			2 out of 2
1.3.1	Accept round (for circle)			2 out of 2
1.3.3	A motorist can only travel up to 120 km/h on the road. <i>'n Motoris mag net tot 120km/h ry op die pad, 120 km/h is the speed limit./ Do not exceed 120 km/h on this road 120km/h is die spoedbeperking/ Jy mag nie 120km/h oorskry op die pad nie</i>			2 out of 2
1.3.4	For candidates writing $534 - 144 = 390$			1 out of 2
2.1.3	Listing all seven correct: 1, 5, 8, 9, 10, 11, 12 Vehicle entrance, cattle vehicle, etc.			1 out of 2
2.1.4	Accept Certain / <i>Beslis</i>			2 out of 2
2.2	C E D B A			5A correct order (5)
2.3	Do not drive off the road/ <i>Moenie van die pad af gaan nie.</i>			2 out of 2
3.1.4	Using 124 m as radius, but correct calculation $48\,311,392\text{ m}^2$ and conclusion			2 out of 4
3.1.6	The following words can be used: Water, coal, sun, inverters			2 out of 2
3.2.2	12			3 out of 3
3.2.2	15			2 out of 3

3.3	<p>Using this formula correctly – no part marks</p> $^{\circ}\text{F} = (^{\circ}\text{C} \times \frac{9}{5}) + 32^{\circ}$ $= (70^{\circ} \times \frac{9}{5}) + 32^{\circ}$ $= 158$	3 out of 3
4.2.1	Zambia, Zimbabwe, South Africa, Botswana	1 out of 2
4.2.3 (a)	Accept 11:45	5 out of 5
5.1.1	6 or 2	1 out of 2
5.1.4	Accept door	2 out of 2
5.2.2	<p>Area for 6 panels/<i>Oppervlakte van 6 panele</i></p> $= 0,3 \text{ m}^2 \times 6$ $= 1,746216 \text{ m}^2$ $= 2 \text{ m}^2$ <p>Cost for 6 panels/<i>Koste van 6 panele</i></p> $= 2 \text{ m}^2 \times \text{R}490/\text{m}^2 = \text{R}980,00$ <p>Mass of the 6 panels/<i>Massa van die 6 panele</i></p> $= 2 \text{ m}^2 \times 15 \text{ kg}/\text{m}^2 = 30 \text{ kg}$ <p>Delivery mass = 20 kg + 10 kg</p> <p>Cost of delivery/<i>Afleweringkoste</i></p> $= \text{R}820 + (\text{R}53,50 \times 10)$ $= \text{R}1\,355,00$ <p>Total cost/<i>Totale koste</i></p> $= \text{R}980,00 + \text{R}1\,355$ $= \text{R}2\,335,00$ <p>INVALID/<i>ONGELDIG</i></p>	7 out of 8