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.*

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
QUESTION/*VRAAG* 1 [26 MARKS/*PUNTE*] Answer Only AO - full marks			
1.1*	1.1.1 E ✓✓A	2A correct option	M L1
	1.1.2 G ✓✓A	2A correct option	P L1
	1.1.3 F ✓✓A	2A correct option	M L1
	1.1.4 B ✓✓A	2A correct option (8)	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. *Reghoek en 'n sirkel*	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 *Dit is die maksimum spoed wat 'n motoris mag ry op die pad.* **OR/*OF*** The motorist can cover a distance of 120 km in 1 hour. *Die motoris kan 120 km aflê in 1 uur*	2A correct explanation. (2)	MP L1 M
1.3.4*	Distance/*Afstand* (Jhb – Trompsburg) = 534 – 27 ✓ RT = 507 km ✓ A	1RT both correct values 1A distance **NPU** (2)	M L1 M
1.3.5	North /N/*Noord / N* ✓✓A	2A correct direction (2)	MP L1 E
1.3.6	$\frac{90\ cm}{100}$ ✓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	South East (SE) / *Suidoos (SO)* ✓✓A	2A correct direction (2)	MP L2 M
2.1.6	Length / *Lengte* = 65 m = 65 000 mm ✓C Scale/ *Skaal*: 1 : 8 000 n : 65 000 $n = \dfrac{65\,000}{8\,000}$ ✓MA = 8,125 mm ✓CA ≈ 8 mm ✓R **OR/*OF*** Scale/*Skaal*: 1 : 8 000 n : 65 $n = \dfrac{65}{8\,000}$ ✓MA = 0,008125 m ✓CA = 8,125 mm ✓C ≈ 8 mm ✓R	1C conversion 1MA dividing 1CA simplification 1R rounding **OR/*OF*** 1MA dividing 1CA simplification 1C conversion 1R rounding (4)	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 (5)	5A correct order	MP L2 M
2.3*	✓✓O Only use the go cart on level ground. / smooth, flat, hard, tarred, road surface *Gebruik die knortjor slegs op gelyke grond/ gladde , plat, harde, pad, geteerde oppervlakte* **OR/*OF*** Do not use the vehicle on a long grassy surface. *Moet nie in lang gras ry nie.* (2)	2O Explanation for 1st picture **or** for 2nd picture	MP L4 E
2.4.1	✓MA X = 2 840 – 1 476 – 1 024 = 340 ✓CA **OR/*OF*** ✓MA X = 565 – 163 – 62 = 340 ✓CA (2)	1MA subtracting from total 1CA simplification AO	P L1 E
2.4.2	$P_{(not\ a\ horse)} = \dfrac{2\,840 + 796}{4\,996}$ ✓RT ✓RT $= \dfrac{3\,636}{4\,996}$ $= \dfrac{909}{1\,249}$ ✓A **OR/*OF*** $P_{(horse)} = \dfrac{1\,360}{4\,996}$ ✓RT $P_{(not\ a\ horse)} = 1 - \dfrac{1\,360}{4\,996}$ ✓MCA $= \dfrac{909}{1\,249}$ ✓A (3)	1RT numerator 1RT denominator 1A simplification **OR/*OF*** 1RT both values 1MCA subtracting from 1 1A simplification	P L2 M
2.4.3	✓RT $P = \dfrac{363}{796} \times 100\%$ ✓RT $= 45{,}60301508\ \%$ ✓CA (3)	1RT 1st value 1RT 2nd value correctly place 1CA simplification **NPR**	P L3 M
			[29]

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

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.1.4*	Radius $= \frac{124}{2} = 62$ ✓ A Area /*Oppervlakte* $= 3{,}142 \times (62)^2$ ✓ SF $= 12\ 077{,}848$ m^2 ✓ CA ✓ O Not valid. / *Nie geldig nie*	1A radius 1SF substitution squared 1CA simplification 1O invalid (4)	M L4 M
3.1.5	% increase/*verhoging* $= \dfrac{\overset{\checkmark \text{RT}}{5\ 000 - 800}}{800} \times 100\%$ ✓ MA ✓ A $= 525$ % ✓CA **OR/*OF*** Current percentage / *Huidige persentasie* ✓RT $= \frac{5\ 000}{800} \times 100\%$ ✓A $= 625\%$ % increase/*verhoging* $625\% - 100\%$ ✓ MA $= 525$ % ✓CA	1RT 1st correct value 1A denominator 1MA percentage 1CA simplification **OR/*OF*** 1RT 1st correct value 1A denominator 1MA percentage difference 1CA simplification (4)	M L2 M
3.1.6*	✓✓ A Generators **OR** solar power **OR** hydro-power **OR** nuclear power *Kragopwekkers OF sonkrag OF hidro-elektrisiteit OF kernkrag*	2A source (2)	M L1 E
3.2.1	Perimeter/*Omtrek* $= 2 \times \overset{\checkmark \text{RT}}{(2{,}3 + 2{,}3 + 2{,}3} + \overset{\checkmark \text{SF}}{3)}$ m ✓ MA $= 2 \times (6{,}9 + 3)$ m $= 19{,}8$ m ✓ CA **OR/*OF*** Perimeter/*Omtrek* ✓ RT ✓ SF $= 3 + 2{,}3 + 2{,}3 + 2{,}3 + 3 + 2{,}3 + 2{,}3 + 2{,}3$ m ✓MA $= 19{,}8$ m ✓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*	✓RT ✓ A $5 + 7 + 4 = 16$ boards /*planke* ✓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)	Height /*hoogte* B= $\frac{5}{7} \times 0,5$ m $\quad\quad = 0,3571428571$ m ✓ A Vol B = ($2,3 \times 3 \times 0,3571428571)m^3$ $\quad\quad = 2,464285714 m^3$ ✓ CA Vol A = $(2,3 \times 3 \times 0,5)$ m^3 ✓ SF $\quad\quad = 3,45 m^3$ ✓ A Total/*Totaal* = $2,4642514 m^3 + 3,45 m^3$ $\quad\quad = 5,914285714 m^3$ ✓ CA Capacity / *Kapasiteit* = $1\,000 \times 5,914285714$ $\quad\quad = 5\,914,285714$ litres. ✓ CA **OR/*OF*** Height of section B/ *Hoogte van boks B* $= \frac{5}{7} \times 0,5$ m $= 0,3571428571$ m ✓ A Vol = (length×width×height) + (length×width×height) $\quad\quad$ ✓ SF $\quad = (2,3 \text{ m} \times 3 \text{ m} \times 0,357\dots \text{ m}) + (2,3 \times 3 \text{ m} \times 0,5 \text{ m})$ $\quad\quad$ ✓ CA $\quad\quad$ ✓ A $\quad = (2,464285714 + 3,45) \text{ m}^3$. $\quad\quad$ ✓ CA $\quad = 5,914285714 \text{ m}^3$ Capacity / *Kapasiteit* = $1\,000 \times 5,914285714$ $\quad\quad = 5\,914,285714$ litres. ✓ CA **OR/*OF*** Volume A = length × width × height/ $\quad\quad$ *lengte × breedte ×hoogte* $\quad\quad = (3 \text{ m} \times 2,3 \text{ m} \times 0,5 \text{ m})$ ✓SF $\quad\quad = 3,45 \text{ m}^3$ ✓A $\quad \therefore 3\,450$ litres ✓C Volume B $= \frac{3\,450\,\ell}{7} \times 5$ ✓A $\quad\quad = 2\,464,285714$ litres ✓CA $\therefore Total = 3\,450 + 2\,464,285714$ $\quad\quad = 5\,914,285714\ell$ ✓ CA	1A height box B 1CA volume of B box 1SF volume of A box 1A simplification 3,45 CA total volume 1CA answer in litres **OR/*OF*** 1A height box B 1SF volume of A box 1CA volume of B box 1A 3,45m³ 1CA total volume 1CA answer in litres **OR/*OF*** 1SF volume of A box 1A simplification 3,45 1C conversion 1A ratio 1CA volume box B 1CA answer in litres **NPR**	M L3 D
		(6)	

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.3*	$^oC = \dfrac{5}{9} \times (^oF - 32^o)$ ✓ SF $70^\circ = \dfrac{5}{9} \times (^oF - 32^o)$ $70^\circ \times \dfrac{9}{5} = {}^oF - 32$ ✓ MA $126^\circ = {}^oF - 32$ ${}^oF = 158$ ✓ 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**

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.1.1	✓RT ✓RT 30 : 6 = 5 : 1 ✓A	1RT 30 1RT 6 1A simplification (3)	MP L2 E
4.1.2	✓✓A ✓A Reading room and computer lab *Leeskamer en rekenaarlokaal*	2A 1st room 1A second room (3)	MP L1 E
4.1.3	✓✓A Stairs / *trappe*	2A stairs (2)	MP L2 E
4.1.4	✓✓A ✓A Multi-media room 1 / *Multi-mediakamer 1*	2A correct room 1A correct number (3)	MP L3 M

(4.1.5)	Area/ *Opp* A = length × width /*lengte × breedte*
	     = 11 m × 3,5 m ✓SF
	     = 38,5 m² ✓ MCA
	
	Area/ *Opp* B = length × width /*lengte × breedte*
	     = 14 m × 3,5 m
	     = 49 m² ✓ MA
	
	Floor area/*Vloer opp.*
	= 38,5 m² + 49 m²
	= 87,5 m² ✓ MCA
	
	   Area of tile = length × width
	Opp van teël = lengte × breedte
	     = 600 mm × 600 mm
	     = 360 000 mm² ✓ A
	
	∴ $\frac{360\,000}{1\,000\,000}$ = 0,36 m² ✓C
	
	Number of tiles/*Getal teëls* = $\frac{87,5}{0,36}$ ✓ MCA
	
	     ≈ 243,056 tiles ✓ CA
	Number of boxes/ G*etal bokse* = $\frac{244}{5}$
	         = 48,8
	         = 49 ✓ CA
	INVALID/ *ONGELDIG.* ✓ O
	
	OR/*OF*
	     ✓ SF ✓ MA ✓ A
	Floor Area/*vloeropp* = 11m ×7 m + 3,5 m × 3 m
	     = 77 m² + 10,5 m²
	     = 87,5 m² ✓ CA
		1SF substitution
		1MCA simplification
		
		1MA simplification
		
		1MCA simplification total area
		
		1A area tile
		
		1C conversion
		
		1MCA dividing
		
		1CA number of tiles
		
		1CA number of boxes
		
		1O opinion
		     OR/*OF*
		1SF substitution
		1MA adding areas
		1A 3
		1CA area
			M
			L4
			D

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	Tiles /*Teëls* = $\dfrac{600 \text{ mm}}{1000}$ = 0,6 m ✓ C	1C conversion	
	Area of a tile / *Opp van teël* $= 0,6 \text{ m} \times 0,6 \text{ m} = 0,36 \text{ m}^2$ ✓ MCA	1MCA area of tile	
	Number of tiles/*Getal teëls* = $\dfrac{87,5}{0,36}$ ✓ MCA $\approx 243{,}056$ tiles ✓ CA	1MCA dividing areas 1CA number of tiles	
	Number of boxes/ G*etal bokse* = $\dfrac{244}{5}$ $= 48,8$ $= 49$ ✓ CA	1CA number of boxes	
	INVALID/ *ONGELDIG*. ✓ O	1O conclusion	
	OR/*OF*	**OR/*OF***	
	Floor Area/ *Vloer opp* ✓ SF $= 11\text{m} \times 7 \text{ m} + 3,5 \text{ m} \times 3 \text{ m}$ ✓ A $= 77 \text{ m}^2 \quad + 10,5 \text{ m}^2$ ✓ MA $= 87,5 \text{ m}^2$ ✓ CA	1A 3 1SF substitution 1MA adding areas 1CA area	
	Tiles / *Teëls* = $\dfrac{600 \text{ mm}}{1000}$ = 0,6 m ✓ C	1C conversion	
	Area of a tile / *Opp van 'n teël* = $0,6 \text{ m} \times 0,6 \text{ m}$ $= 0,36 \text{ m}^2$ ✓ MCA	1MCA area of tile	
	Number of tiles / *Getal teëls* = $\dfrac{87,5}{0,36}$ ✓ MCA ✓ CA $\approx 243{,}056$ tiles	1MCA dividing areas 1CA number of tiles	
	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 $200 < 244$*	1CA less than	
	INVALID./ *ONGELDIG* ✓ O	1O conclusion	
	OR/*OF*	**OR/*OF***	
	Floor Area/*vloeropp* ✓ SF = $14\text{m} \times 7 \text{ m} - 3,5 \text{ m} \times 3 \text{ m}$ ✓ A $= 98 \text{ m}^2 - 10,5 \text{ m}^2$ ✓ MA $= 87,5 \text{ m}^2$ ✓ CA	1A 3 1SF substitution 1MA subtracting areas 1CA area	
	Tiles /*Teëls* = $\dfrac{600 \text{ mm}}{1\,000}$ = 0,6 m ✓ C	1C conversion	
	Area of a tile / *Opp van teël* $= 0,6 \text{ m} \times 0,6 \text{ m} = 0,36 \text{ m}^2$ ✓ MCA	1MCA area of tile	
	Number of tiles/*Getal teëls* = $\dfrac{87,5}{0,36}$ ✓ MCA $\approx 243{,}056$ tiles ✓ CA	1MCA dividing areas 1CA number of tiles	
	Number of boxes/ G*etal bokse* = $\dfrac{244}{5}$ $= 48,8$ $= 49$ ✓ CA	1CA number of boxes	
	INVALID/ *ONGELDIG*. ✓ O	1O conclusion	

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	**OR/*OF***	
	Area A = length × width/ *lengte × breedte* $\quad$ = 11 m × 3,5 m $\quad$ ✓SF $\quad$ = 38,5 m² $\quad$ ✓ MCA	1SF substitution 1MCA simplification	
	Area B = length × width/ *lengte × breedte* $\quad$ = 14 m × 3,5 m $\quad$ = 49 m² $\quad$ ✓ MCA	1MCA simplification	
	Floor area/*Vloer opp.* = 38,5 m² + 49 m² = 87,5 m² $\quad$ ✓ MCA	1MCA simplification total area	
	Area of tile = length × width / *Opp van teël= l × b* $\quad$ = 600 mm × 600 mm $\quad$ = 360 000 mm² $\quad$ ✓ A	1A area tile	
	∴ $\frac{360\,000}{1\,000\,000}$ = 0,36 m² ✓C	1C conversion	
	Number of tiles/*Getal teëls* = $\frac{87,5}{0,36}$ $\quad$ ✓ MCA $\quad\quad\quad$ ≈ 243,056 tiles ✓ CA Number of boxes/ G*etal bokse* = $\frac{244}{5}$ $\quad\quad\quad$ = 48,8 $\quad$ ✓ CA $\quad\quad\quad$ = 49 INVALID/ *ONGELDIG.* $\quad$ ✓ O	1MCA dividing 1CA number of tiles 1CA number of boxes 1O opinion	
	OR/*OF*	**OR/*OF***	
	Area of tile / *Opp van teël* $\quad$ = 600 mm × 600 mm $\quad$ = 360 000 mm² ✓A	1A area tile	
	L = 14 m × 1 000 $\quad$ = 14 000 mm ✓C	1C conversion	
	B = 7 m × 1 000 $\quad$ = 7 000 mm		
	∴ *Area/Opp* = 14 000 *mm* × 7 000 *mm* ✓SF $\quad\quad$ = 98 000 000 mm² $\quad$ ✓ MCA	1SF substitution 1MCA simplification	
	∴ *Area/Opp* = 3 500 *mm* × 3 000 *mm* $\quad\quad$ = 10 500 000 mm² ✓ MCA	1MCA simplification	
	Total area/ *Totale opp* $\quad$ = 98 000 000 mm² – 10 500 000 mm² $\quad$ = 87 500 000 mm² ✓MCA	1MCA simplification total area	

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	Number of tiles/*Aantal teëls* $= \frac{87\,500\,000\ mm^2}{360\,000\ mm^2}$ ✓MCA = 243,0555556 tiles ✓CA	1MCA dividing 1CA number of tiles	
	Number of boxes/*Getal bokse* $= \frac{243,0555556}{5}$ $= 48,61\ \approx 49$ ✓CA	1CA number of boxes	
	∴ INVALID/*ONGELDIG* ✓O	1O opinion	
	OR/*OF*	**OR/*OF***	
	✓SF ✓A Area (Lab) = $(7 \times 14 - 3 \times 3.5)\ m^2$ $= (98 - 10,5)\ m^2$ ✓MA $= 87,5\ m^2$ ✓ MCA	1A 3 1SF substitution 1MA subtracting 1MCA simplification total area	
	Tile side / *Teël sy* = 600 ÷ 1 000 = 0,6 m ✓ C Area covered by a box of tiles *Oppervlakte bedek deur 'n boks teëls* $= (0,6 \times 0,6) \times 5$ ✓MCA $= 1,8\ m^2$ ✓ CA	1C conversion 1MCA area of 1 tile 1CA area box of tiles	
	Number of boxes / *Getal bokse* $= \frac{87,5}{1,8}$ ✓ MCA $= 48,6 \approx 49$ ✓ CA	1MCA dividing 1CA number of boxes of tiles	
	INVALID / *ONGELDIG* ✓ O	1O opinion	
	OR/OF	**OR/*OF***	

	Calculating 3 areas/*Berekening 3 opp.*
	A1 = 3,5 ×11 ✓SF
	    = 38,5m^2
	A2 = 3 × 3,5 ✓ A
	   =10.5m^2
	A3 = 3,5 × 11
	    = 38.5m^2
	TOTAL =38,5m^2+10,5m^2+38,5m^2 ✓MA
	       =8 7,5m^2 ✓MCA
		1SF substitution
		
		1A 3
		
		1MA adding
		
		1MCA simplification total area	

	Number of tiles/*Getal teëls* = $\frac{87,5}{0,36}$ ✓ MCA $\approx 243,056$ tiles ✓ CA Number of boxes/ G*etal bokse* = $\frac{244}{5}$ $= 48,8$ $= 49$ ✓ CA INVALID/ *ONGELDIG* ✓ O	1MCA dividing 1CA number of tiles 1CA number of boxes 1O opinion	
		(10)	

Q/*V*	Solution/*Oplossing*	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)	✓ SF ✓ A
	 97 km/h = 179 km ÷ tyd
	
	 Time =distance ÷ speed
	 Tyd = afstand ÷ spoed
	 $= \dfrac{179}{97}$ ✓ MCA
	 = 1,845 hours ✓ CA
	
	 Time duration / *tydsduur* = 1,845 hours./*uur*
	
	      = 1 hour/*uur* + 0,845 × 60 min
	
	      = 1 hour/*uur* 51 min
	
	 Arrival time / *Aankomstyd*:
	 = 09:55 + 1 h 51 min
	 = 11: 46 ✓ CA
		1A 179
		 1SF substitution 97
		
		 1MCA change formula
		
		 1CA time in hours
		
		 1CA answer (5)
			M L3 D

(4.2.3) (b)	✓MA
	 Distance/*Afstand* = (713 – 263) + 2(18)
	
	      = 450 + 36 ✓MA
	
	      = 486 km ✓ CA
	
	 OR/*OF*
	
	 Distance /*Afstand*
	    ✓ MA ✓ MA
	 = (713 – 552) + 18 + 18 + (552 – 263)
	
	 = 161 + 18 + 18 +289 = 486 km ✓ CA
		1MA subtracting
		    correct values
		 1MA getting 36
		
		 1CA total distance
		
		 OR/*OF*
		
		 1MA subtracting
		    correct values
		 1MA adding distances
		
		 1CA answer (3)
			M L2 M

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF* ✓MA Distance/*Afstand* = (455 – 5) + 2(18) = 450 + 36 ✓MA = 486 km ✓ CA **OR/*OF*** Distance /*Afstand* ✓ MA ✓ MA = (166 – 5) + 18 + 18 + (455 – 166) = 161 + 18 + 18 +289 = 486 km ✓ CA **OR/*OF*** Distance/*Afstand* ✓MA ✓MA = 179 + 18 + (552 – 263) km = 486 km ✓CA	**OR/*OF*** 1MA subtracting correct values 1MA getting 36 1CA total distance **OR/*OF*** 1MA subtracting correct values 1MA adding values 1CA answer **OR/*OF*** 1MA subtracting correct values 1MA adding values 1CA answer (3)	
		[33]	

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
QUESTION/*VRAAG* 5 [29 MARKS/*PUNTE*]			
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 ✓O 3rd floor and B that it is the second apartment *3de vloer en B is die tweede woonstel* **OR/*OF*** ✓0 Block B, Number 3 ✓0 *Blok B, nommer 3* **OR/*OF*** ✓0 3rd Floor, unit on the left/right ✓0 *3de vloer, die eenheid links/ regs* **OR/*OF*** ✓0 3rd Floor, B-wing ✓0 *3de 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:*
	
	          ✓RT
	$1 \text{ m} = \dfrac{58}{17,6784} = 3,28083989...$ ✓MA
	
	       $\approx 3,281$ feet ✓R
		1RT 58
		1MA simplification
		
		1R rounded answer (3)
			M L2 M

5.1.6 (b)	✓RT Width / *Breedte* $= \dfrac{40}{3,281}$ ✓MCA $= 12,191405$ m ✓CA	**CA from 5.1.6 (a)** 1RT correct width 1MCA dividing 1CA simplification	M L2 M

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF* 58 feet/*voet* = 17,6784 m 40 feet/*voet* = n $\qquad$ ✓RT $n = \frac{40}{58} \times 17,6784$　✓MA $\quad = 12,191405$ m　　✓CA	**OR/*OF*** 1RT correct width 1MA working with ratio 1CA simplification **NPR** (3)	
5.2.1	Area /*Oppervlakte* = length × width / *lengte × breedte* $\qquad\qquad = 0,614$ m × $0,474$ m　✓SF $\qquad\qquad = 0,291036$ m^2 $\qquad\qquad = 0,3$ m^2　✓R	 1SF substitution 1R simplification **NPU** (2)	M L2 E
(5.2.2*)	Area for 6 panels /*Opp van 6 panele* = 0,3 m^2 × 6 $\qquad\qquad\qquad\qquad\qquad\quad = 1,8$ m^2 ✓MCA Cost for 6 panels /*Koste van 6 panele* = 1,8 m^2 × R490/m^2　= R882 ✓MCA Mass of the 6 panels / *Massa van 6 panele* = 1,8 m^2 × 15 kg/m^2　= 27 kg　✓MCA Delivery mass / *Aflewerings massa*= 20 kg + 7 kg Cost of delivery / *Afleweringskoste* $\quad$✓MA = R820 + R53,50 × 7 kg　　✓MCA = R1 194,50　　✓CA Total cost / *Totale koste* = R882,00 + R1 194,50 $\qquad\qquad\qquad\qquad = $ R2 076,50　　✓CA INVALID/ *ONGELDIG*　✓O **OR/*OF***	**CA from Q 5.2.1** 1MCA simplification 1MCA simplification cost 1MCA simplification: mass 1MA cost of 1st 20kg 1MCA add and multiply 1CA simplification 1CA simplification 1O verification **OR/*OF***	M L4 D

Q/V	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	Using unrounded area Area for 6 panels /*Opp van 6 panele* = 0,291036 m^2 × 6 = 1,746216 m^2 ✓CA Cost for 6 panels /*Koste van 6 panele* = 1,746216 m^2 × R490/m^2 = R855,65 ✓CA Mass of the 6 panels / *Massa van 6 panele* = 1,746216 m^2 × 15 kg/m^2 = 26,19324 kg ✓CA Delivery mass / *Aflewerings massa*= 20 kg + 7 kg Cost of delivery / *Afleweringskoste* ✓MA = R820 + R53,50 × 7 kg ✓MCA = R1 194,50 ✓CA Total cost / *Totale koste* = R855,65 + R1 194,50 = R2 050,15 ✓CA INVALID/ *ONGELDIG* ✓O	 1CA simplification 1CA simplification cost 1CA simplification: mass 1MA cost for 1st 20 kg 1MCA add and multiply 1CA simplification 1CA simplification 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. *'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*	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 /*Beslis*	2 out of 2

2.2	C E D B A	5A correct order (5)

2.3	Do not drive off the road/ *Moenie van die pad af gaan nie.*	2 out of 2

3.1.4	Using 124 m as radius, but correct calculation 48 311,392 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	Using this formula correctly – no part marks $°F = (°C \times \frac{9}{5}) + 32^0$ $\quad = (70^0 \times \frac{9}{5}) + 32^0$ $\quad = 158$	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	Area for 6 panels/*Oppervlakte van 6 panele* $= 0,3 \text{ m}^2 \times 6$ $= 1,746216 \text{ m}^2$ $= 2 \text{ m}^2$ Cost for 6 panels/*Koste van 6 panele* $= 2 \text{ m}^2 \times \text{R490/m}^2 = \text{R980,00}$ Mass of the 6 panels/*Massa van die 6 panele* $= 2 \text{ m}^2 \times 15 \text{ kg/m}^2 = 30 \text{ kg}$ Delivery mass $= 20 \text{ kg} + 10 \text{ kg}$ Cost of delivery/*Afleweringskoste* $= \text{R820} + (\text{R53,50} \times 10)$ $= \text{R1 355,00}$ Total cost/*Totale koste* $= \text{R980,00} + \text{R1 355}$ $= \text{R2 335,00}$ INVALID/*ONGELDIG*	7 out of 8