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*

2022

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

Symbol/*Kode*	**Explanation/*Verduideliking***
M	Method/*Metode*
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/graph/document/diagram/*Lees vanaf tabel/grafiek/dokument/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in 'n formule*
O	Opinion/Explanation/*Opinie/Verduideliking*
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*
AO	Answer only/*Slegs antwoord*
MCA	Method with consistent accuracy/*Metode met volgehoue akkuraatheid*
RCA	Rounding consistent with accuracy/*Afronding met volgehoue akkuraatheid*
*****	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 pogingna.*
- *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.*

QUESTION/*VRAAG* 1 [30 MARKS/*PUNTE*] – ANSWER ONLY ACCEPTED			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
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	B ✓✓ A **OR/*OF*** $(2 \times 240 \times 70 + 2 \times 240 \times 112 + 2 \times 112 \times 70)$ mm^2	2A correct option (2)	M L1
*1.2.2	✓✓ A mm^3 **OR** Cubic millimetres/*Kubieke millimeter*	2A correct unit (2)	M L1
1.2.3	✓ C Length/*Lengte* = 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/*Getal rye* $= \frac{2\ 100\text{ mm}}{70\text{ mm}}$ ✓ A ✓ A = 30 ✓ CA	1A height 1 A correct denominator 1CA number of rows (3)	MP L1
1.3.1	Mass of the flour (in kg)/*Massa van die meel* $= \frac{500}{1\ 000}$ ✓ C $= \frac{1}{2}$ kg **or/*of*** 0,5 kg ✓ A	1C divide by 1 000 1A simplification (2)	M L1
1.3.2	✓ A 12 scones/*botterbroodjies* = 2 eggs/*eiers* 6 scones/*botterbroodjies* = 1 egg/*eier* 30 scones = 2 + 2 + 1 = 5 eggs/*eiers* ✓ A **OR/*OF*** ✓ A 12 scones/*botterbroodjies* = 2 eggs/*eiers* 30 scones/*botterbroodjies* = $\frac{30}{12} \times 2$ = 5 eggs/*eiers* ✓ A **OR/*OF*** ✓ A 30 scones/*botterbroodjies* = $\frac{30}{12}$ = 2,5 dozen/*dosyn* 1 dozen need 2 eggs/*1 dosyn benodig 2 eiers* 2,5 dozen/*dosyn* = 2,5× 2 = 5 eggs/*eiers* ✓ A	1A dozen = 12 1A simplification **OR/*OF*** 1A dozen = 12 1A simplification **OR/*OF*** 1A dozen = 12 1A simplification (2)	M L1
1.3.3	Radius = 7 cm ÷ 2 ✓ MA = 3,5 cm **OR/*OF*** 35 mm ✓ A	1MA dividing by 2 1A radius (2)	M L1
1.3.4	Number of dozen scones/*Getal dosyn botterbroodjies* $= \frac{500}{75}$ ✓MA = 6,67 ✓ S = 6 ✓ R	1MA dividing by 75 1S simplification 1R rounding down (3)	M L1
*1.3.5	✓ A ✓ A Ten minutes past two in the afternoon. *Tien minute oor twee in die namiddag.*	1A time 1A afternoon (2)	M L1
		[30]	

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

Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
*2.2.3	Nellmapius ✓✓RT	2RT correct street (2)	MP L2
2.2.4	St Martin's Church/ *St Martin-Kerk* ✓✓RT	2RT correct church (2)	MP L2
2.2.5	Irene Library &Hall/*Irene Biblioteek & Saal* ✓✓✓RT [Accept Hall /*Aanvaar Saal*]	3RT correct place (3)	MP L3
2.2.6	Measured distance/*Gemete afstand* = 8 cm ✓MA 8 cm : 1,9 km ✓MCA 8 cm : 190 000 cm ✓C Scale/*Skaal* is 1 : 23 750 ✓S 1 : 24 000 ✓R (Maximum distance/ *maksimum afstand)* Measured distance/*Gemete afstand* = 8,4cm ✓MA 8,4 cm : 1,9 km ✓MCA 8,4 cm : 190 000 cm ✓C Scale/*Skaal* is1 : 22 619,05 ✓S 1 : 23 000 ✓R **OR/*OF*** ✓MA ✓C 8,4cm ÷ 100 000 : 1,9 km ✓MCA 0,000084 km : 1,9km 1: 22 619 ✓S 1: 23 000 ✓R	1MA correct measurement 1MCA correct ratio 1C converting km to cm 1S simplified ratio 1R correct rounding **OR/*OF*** 1MA correct measurement 1C converting cm to km 1MCA correct ratio 1S simplified ratio 1R correct rounding **Provinces need to mark according to ± 1 mm of their provincial paper.** (5)	MP L3

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

QUESTION/*VRAAG* 3[29MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
3.1.1	Total length/*Totale lengte* = 55 cm + 99 cm + 55cm = 209 cm ✓A Perimeter/*Omtrek*= 2(209 cm +149 cm) ✓SF = 2(358) cm = 716 cm ✓CA **OR/*OF*** Perimeter/*Omtrek* = (149 + 55 + 99 + 55 + 149 + 55 + 99 + 55) cm ✓A ✓SF = 716 cm ✓CA **OR/*OF*** Perimeter/*Omtrek* = 2 (149) cm + 2(55+99+55) cm ✓A ✓SF = (298 + 418) cm = 716 cm ✓CA	1A total length 1SF substitution 1CA perimeter **OR/*OF*** 1A total length 1SF substitution 1CA perimeter **OR/*OF*** 1A total length 1SF substitution 1CA perimeter (3)	M L2
3.1.2	Radius = $\frac{605}{2}$ = 302,5 mm ✓A = 30,25 cm ✓C Area/*Oppervlakte* = 3,142 × $(30{,}25\,\text{cm})^2$ ✓SF = 2 875,126375 cm^2 ✓CA **OR/*OF*** Radius = $\frac{605}{2}$ = 302,5 mm ✓A Area/*Oppervlakte* = 3,142 × $(302{,}5\,\text{mm})^2$ ✓SF = 28 512,6375 mm^2 = 28 751 263,75 ÷ 10^2 ✓C = 2 875,126375 cm^2 ✓CA	1A radius 1C conversion 1SF substitution 1CA simplification **OR/*OF*** 1A radius 1SF substitution 1C conversion 1CA simplification **NPR** (4)	M L2

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

3.2.2	**OR (when rounding consistently up) */OF***	**OR/*OF***	
	Area of 1 tile/*Opp van 1 teël* = 35 cm × 35 cm ✓SF = 1 225 cm^2 = 1 225 ÷ $(100)^2$ m^2 ✓C =0,1225 m^2 ✓CA	1 SF substitution 1C conversion 1CA simplification	
	Number of tiles needed/*Getal teëls nodig* $= \frac{32}{0,1225}$ ✓MCA ✓CA = 261,2244898 ≈ 262	1MCA dividing areas 1CA simplification	
	Number to add/*Getal om by tetel* ✓MCA = 10% of 262 = 26,2	1MCA calculation 10%	
	Total number of tiles/*Totale aantal teëls* = 262 + 26,2 = 288,2 ≈ 289 ✓CA	1CA simplification	
	Number of boxes/*Getalbokse* = $\frac{289}{4}$ ✓MCA = 72,25 ∴ 73 boxes ✓CA	1MCA dividing by 4 1CA rounding up	
	OR/*OF* ✓C ✓SF ✓CA Area of 1 tile/*Opp van 1 teël* = $(0,35)^2$ = 0,1225 m^2	**OR/*OF*** 1C conversion 1 SF substitution	
	Area covered by tiles in a box/ *Opp. wat 'n boks teëls bedek* ✓MCA = 0,1225 m^2 × 4 = 0,49 m^2 ✓CA	1CA simplification 1MCA multiplying by 4 1CA simplification	
	Area to be tiled/*Opp wat geteël word* ✓MCA 32 × 110% = 35,2 ✓CA	1MCA calculation 10% 1CA simplification	
	Number of boxes needed/*Getal bokse nodig* $= \frac{35,2}{0,49}$ ✓MCA ≈ 71,8 ∴72 boxes ✓CA	1MCA dividing areas 1CA rounding up	

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
	OR/*OF*	**OR/*OF***	
	Area of tile/ *Opp van 'n teël* = $(35\text{cm})^2$ $= 1\ 225\ \text{cm}^2$ ✓A	1A simplification	
	$32\ \text{m}^2 \times 100^2 = 320\ 000\ \text{cm}^2$ ✓A ✓C	1A factor 1C conversion	
	Number of tiles needed/ *Getal teëls nodig* $32\ \text{m}^2 = 320\ 000\ \text{cm}^2 \div 1\ 225\ \text{cm}^2$ ✓MCA $= 261{,}2244898$ ✓CA	1MCA dividing areas 1CA simplification	
	With extras/ *Met ekstras* $=261{,}2244898 \times 1{,}1$ ✓MCA $= 287{,}3 = 288$ tiles /*teëls* ✓CA	1MCA calculation 10% 1CA simplification	
	Number of boxes/ *Getal bokse*: $288 \div 4$ ✓MCA $= 72$ ✓CA	1MCA dividing by 4 1CA rounded up simplification	
	OR/*OF*	**OR/*OF***	
	Number of tiles/*Getal teëls* = 4 m ÷ 0,35 ≈ 11,428 ✓C ✓MCA ✓A Number of tiles/*Getal teëls* = 5 m ÷ 0,35 ≈ 14,2857	1C conversion 1MCA dividing dimensions 1A simplification	
	Total number of tiles for lounge *Totale getal teëls vir woonkamer* $= 11{,}4285 \times 14{,}285 = 163{,}2641$ ✓SF	1 SF substitution	
	Number of tiles/*Getal teëls* = 3 m ÷ 0.35 = 8,5714 Number of tiles/*Getal teëls* = 4 m ÷ 0,35 = 11,4285		
	Total number of tiles for dining *Totale getal teëls vir eetkamer* $= 11{,}4285 \times 8{,}5714 = 97{,}9582$		
	Total for lounge and dining room *Totaal vir woon en eetkamer* $= 163{,}2641 + 97{,}9582 = 261{,}22$ tiles ✓CA	1CA simplification	
	Including extra for cuttings and breakages/ *Insluitend ekstra vir sny en breek* $= 261{,}28 \times 110\%$ ✓MCA $= 287{,}408$ ✓CA	1MCA calculation 10% 1CA simplification	
	Total number of boxes/*Getal bokse* = 287,408..÷ 4 ✓MCA $= 71{,}852$ ≈ 72 ✓CA	1MCA dividing by 4 1CA rounding up (9)	

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.2.3 TR		**CA from Q3.2.2**	M/F L4
	Bags of tile cement/*Sakke teël sement* $= \frac{32}{3} = 10,7 \approx 11$ ✓A	1A number of bags of cement	
	Cost of the cement/*Sementkoste* ✓MCA ✓CA = R99,90 × 11 = R1 098,90	1MCA multiplying cost with number 1CA cement cost	
	Cost of the grout/*Koste van bryvulsel* = R89,90 × 4 = R359,60 ✓CA	1CA grout cost	
	Cost of the tiles/*Teëlkoste* = R143,84 × 72 = R10 356,48 ✓CA	1CA tile cost	
	Total cost/*Totalekoste* ✓MCA = R10 356,48 + R1 098,90 + R359,60 + R2 500 = R14 314,98 ✓CA	1MCA adding 4 values 1CA simplification	
	✓O Her budget is enough./*Haar begroting is genoeg.*	1O verification	
	OR/*OF*	**OR/*OF***	
	(using 73 boxes of tiles) Bags of tile cement/*Sakke teëlsement* $= \frac{32}{3} = 10,7 \approx 11$ ✓A	1A number of bags of cement	
	Cost (in rand)/*Koste in rand* ✓MCA = 143,84 × 73 + 99,90 × 11 + 89,90 × 4 + 2 500 ✓CA ✓CA ✓CA ✓MCA = R10 500,32 + R1 098,90 + R359,60 + R2 500 = R14 458,82 ✓CA	1MCA multiplying cost with number 1CA cement cost 1CA grout cost 1CA tile cost 1MCA adding 4 values 1CA simplification	
	✓O Her budget is enough./*Haar begroting is genoeg.*	1O verification	
	OR/*OF*	3 marks cement cost 1 mark tile cost 1 mark grout cost 2 marks adding costs 1 mark verification	

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

QUESTION/*VRAAG* 4 [30 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
*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 × 5 + 19 + 21 = 130 ✓ A Ratio/*Verhouding* = 4 : 130 ✓ MCA = 2 : 65 ✓ CA **OR/*OF*** 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 **OR/*OF*** 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 **OR/*OF*** Percentage income from occupied seats *Persentasie inkomste van hierdie sitplekke* $= \frac{64}{130} \times 100\% \approx 49{,}23\%$ ✓ CA Income lost/*Verlore inkomste* = 100% – 49,23% ✓ MCA = 50,77% ✓ CA	**CA Q4.1.2 total seats** 1A total vacant seats 1MCA percentage calculation 1CA simplification **OR/*OF*** 1CA % occupied seats 1MCA subtracting from 100% 1CA simplification **NPR** (3)	MP L3

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

Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
4.2.3	✓ MCA ✓ SF SA/*BO* = 2 × 3,142 × (1,61) × (1,61 + 7,25) ≈ 89,64 m^2 ✓ S Total area to be painted/*Totale oppervlakte om te verf* = 89,64 m^2 – 1 m^2 ✓ MCA = 88,64 m^2 . ✓CA ✓ MCA Litres needed/*Liter nodig* = 88,64 ÷ 3 = 29,55 ✓ CA Valid ✓ O **OR/*OF*** ✓ A ✓ SF SA/BO = 2 × 3,142 × (1,61) × (1,61 + 7,25) ≈ 89,64 m^2 ✓ S Surface Area = 89,64 m^2 – 1 m^2 ✓ MCA = 88,64 m^2 ✓CA Area that can be covered by 30 ℓ /*Opp wat met 30 ℓ geverf word* ✓ MA 30 litres × 3 = 90 m^2 ✓CA Less is needed/ *Minder word benodig* ✓ O	**CA from Q4.2.2** 1MCA correct radius 1SF substitution 1S simplification 1MCA subtracting 1 m^2 1CA simplification 1MCA dividing by 3 1CA simplification 1O verification **OR/*OF*** 1A correct radius 1SF substitution 1S simplification 1MCA subtracting 1 m^2 1CA simplification 1MA multiplying by 3 1CA simplification 1O verification (8)	M L4
		[30]	

QUESTION/*VRAAG* 5 [28 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
5.1.1	✓✓ RT Front view **OR** Back view **OR** Rear view *Vooraansig **OF** Agteraansig*	2RT view (2)	MP L1
5.1.2	Width of the bakkie/*Bakkie se breedte* = 1,86 m ✓ C 2D = 3,6 m – 1,86 m = 1,74 m ✓ MA D = $\frac{1,74}{2}$ m ✓ MCA = 0,87 m ✓ CA **OR/*OF*** Width of the garage/*Motorhuis se breedte* = 3 600 mm ✓ C 2D = 3 600 mm – 1 860 mm = 1 740 mm ✓ MA D = $\frac{1740}{2}$ mm ✓ MCA = 870 mm ✓ CA	1C conversion 1MA difference 1MCA dividing by 2 1CA simplification **OR/*OF*** 1C conversion 1MA difference 1MCA dividing by 2 1CA simplification (4)	M L2
5.1.3	Number of choices/*Getal keuses* = 4 × 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 *'n Kaart word volgens skaal geteken terwyl 'n strook kaart nie.* **OR/*OF*** A map shows the routes in a winding manner while a stip chart shows them as straight lines. *'n Kaart toon die kronkelende roetes terwyl die strook kaart dit in reguitlyne wys.*	2A statement (2)	MP L1

Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
*5.2.2	Distance/*Afstand* (Springbok to/*na* Gobabis) = 892 km + 203 km ✓ RT ✓ RT = 1 095 km ✓ CA	1RT correct 892 1RT adding 1CA distance in km (3)	MP L2
5.2.3	Noordoewer ✓✓RT	2RT correct town (2)	MP L2
5.2.4 (a)	Distance Mariental to Keetmanshoop *Afstand van Mariental na Keetmanshoop* = 644 – 427 ✓ RT = 217 km ✓ A Total distance travelled/*Totale afstand afgelê* = 140 km + 289 km + 217 km = 646 km. ✓ CA **OR/*OF*** Distance/ *Afstand* ✓ RT = 140 km + 289 km + (465 km – 248 km) = 140 km + 289 km + 217 km ✓ A = 646 km ✓ CA	1RT distances 1A simplification 1CA distance **OR/*OF*** 1RT distances 1A simplification 1CA distance (3)	MP L2

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
5.2.4 (b)	Time/*Tyd* 1 = 140 km ÷ 80 km/h = 1,75 hrs ✓ SF ✓ S Time /*Tyd* 2 = 289 km ÷ 80 km/h = 3,6125 hrs ✓ S Time/*Tyd* 3 = 217 km ÷ 120 km/h = 1,808333333 hrs ✓ S Stoppage time = 3 × 25 min = 75 min = 1,25 hrs ✓ S Travelling time including breaks = 1,75 + 3,6125 + 1,808333333 + 1,25 ✓ MCA = 8,420833333 hrs ✓CA = 8 h 25 ✓ C Travelling time = 12:25 – 04:00 ✓ MA = 8 h 25 ✓ A Letitia's statement is CORRECT/*KORREK* ✓ O **OR/*OF*** Total time taken/*Totale tydsduur* = 12:25 – 4:00 ✓ MA = 8 h 25 min ✓ A Driving time on gravel road/*Bestuurstyd op grondpad* = $\frac{429\ km}{80\ km/h}$ ✓ S ✓ SF = 5,3625 h ✓ S Driving time on tarred road/*Bestuurstyd op teerpad* = $\frac{217\ km}{120\ km/h}$ = 1,808333h ✓ S Total time/*Totale tyd* = 5,3265 h + 1,808 hr = 7,170833… hours/*uur* ✓ CA = 7 hours + 0,17083333 × 60 = 7 h 10 min ✓ C ∴ Total break time/*Totale rustyd* = 8 h 25 min – 7 h 10 min = 1 h 15 min ✓ CA Duration of breaks/*Rustye se duur* = 3 × 25 min = 75 min = 1h 15 min ✓A **OR/*OF*** Each break/*Elke rustyd* = $\frac{1h15\,min}{3}$ = 25 min Letitia is CORRECT/*KORREK* ✓ O **OR/*OF***	1SF substitution 1S simplification 1S simplification 1S simplification 1S simplification 1MCA adding time 1CA simplification 1C converting time 1MA subtracting 1A total travelling time 1O opinion **OR/*OF*** 1MA subtracting 1A total travelling time 1S total distance 1SF substitution 1S simplification 1S simplification 1CA simplification time 1C converting time 1CA simplification 1A break time 1O opinion **OR/*OF***	M L4

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
	✓ SF ✓ S Time/*Tyd* 1 = 140 km ÷ 80 km/h = 1h 45 min Time /*Tyd* 2 = 289 km ÷ 80 km/h = 3h 36 min ✓ S Time/*Tyd* 3 = 217 km ÷ 120 km/h = 1h 48 min ✓ S Travelling time/*Reis tyd* = 1h 45 min + 3h 36 min + 1h 48 min ✓ MCA = 7 h 9 min ✓CA Travelling time /*Reis tyd* = 12:25 – 04:00 ✓ MA = 8 h 25 min ✓ A ∴ Total break time/*Totale rustyd* = 8 h 25 min – 7 h 9 min = 1 h 16 min ✓ CA Each break/*Elke rustyd* $= \frac{1h16\,\text{min}}{3}$ ≈ 25 mins ✓ S Letitia's statement is CORRECT/*KORREK* ✓ O	1SF substitution 1S simplification 1S simplification 1S simplification 1MCA adding time 1CA simplification 1MA subtracting 1A traveling time 1CA simplification 1S break time 1O opinion (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. **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)m^2
3.2.2	**Full marks can be awarded for this solution:** **Lounge:** Length = 4m ÷ 0,35 = 11,428 ≈ 12 Width = 5m ÷ 0,35 = 14,285 = 15 ∴ Total tiles = 12 × 15 = 180 tiles **Dining:** Length = 4m ÷ 0,35 = 11,428 ≈ 12 Width = 3 ÷ 0,35 = 8,571 ≈ 9 ∴ Total tiles = 11 × 9 = 108 tiles Hence, total tiles needed = 180 + 108 = 288 Number to add = 288 × 1,1 = 316,8 ≈ 317 ∴ Number of boxes = 317 ÷ 4 = 79,25 ≈ 80 boxes

QUESTION 4	
4.1.1	Accept: • East / *Oos* or E / *O*
4.1.2 (b)	Accept, for full marks ratio given as: • 4:130 or $\frac{4}{130}$ However, if given **4:incorrect 2nd part**. Did not show how incorrect 2nd 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).