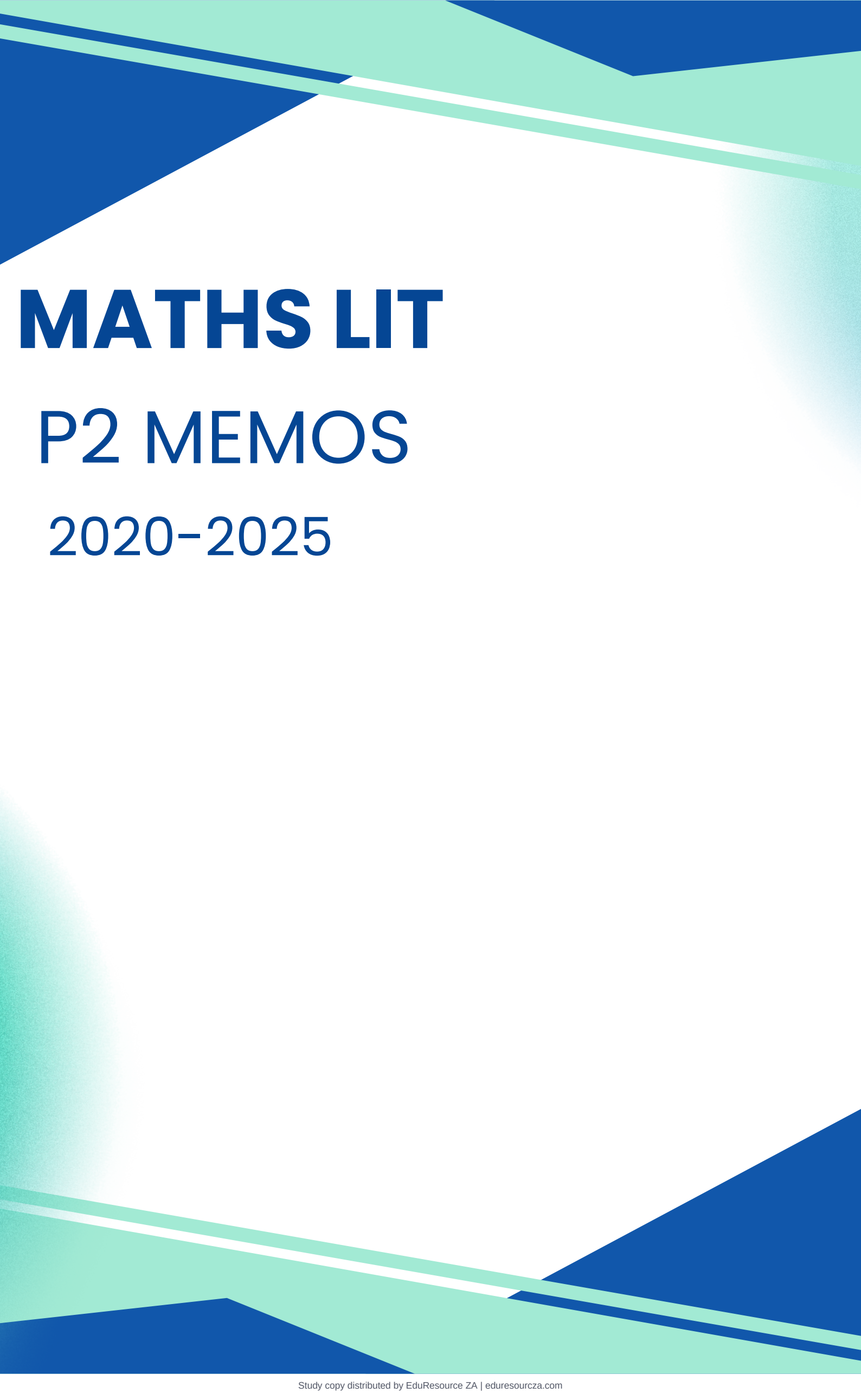




MATHS LIT

P2 MEMOS

2020–2025



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE/SENIOR SERTIFIKAAT
NATIONAL SENIOR CERTIFICATE/
NASIONALE SENIOR SERTIFIKAAT

GRADE/GRAAD 12

MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2

NOVEMBER 2020

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/PUNTE: 150

Symbol/Kode	Explanation/Verduideliking
M	Method/Metode
MA	Method with accuracy/Metode met akkuraatheid
CA	Consistent accuracy/Volgehoueakkuraatheid
A	Accuracy/Akkuraatheid
C	Conversion/Herleiding
S	Simplification/Vereenvoudiging
RT	Reading from a table/a graph/document/diagram/Lees vanaftabel/grafiek/diagram
SF	Correct substitution in a formula/Korrektevervanging in formule
O	Opinion/Explanation/Opinie/Verduideliking
P	Penalty, e.g. for no units, incorrect rounding off, etc./Penalisasie, bv. virgeeneenhede/verkeerde afronding, ens.
R	Rounding off/Afronding
NPR	No penalty for rounding/Geenpenalisasievirafrondingnie
AO	Answer only/Slegsantwoord
MCA	Method with consistent accuracy/Metode met volgehoueakkuraatheid

These marking guidelines consist of 22 pages.
Hierdienasienriglyne bestaan uit 22 bladsye.

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.4	% increase(Turkey)/% verhoging (Turkye) $= \frac{1\,221\,165 - 1\,064\,190}{1\,064\,190} \times 100\% \quad \checkmark M$ $= \frac{156\,975}{1\,064\,190} \times 100\%$ $= 14,75\% \quad \checkmark CA$ % increase(United Kingdom) /% verhoging (Verenigde Koninkryk) $= \frac{2\,248\,162 - 1\,596\,803}{1\,596\,803} \times 100\% \quad \checkmark MA$ $= 40,79\% \quad \checkmark CA$ United Kingdom has the biggest percentage increase/Verenigde Koninkryk het die grootste persentasie verhoging. $\checkmark CA$ OR/OF Turkey: $(1\,221\,165 \div 1\,064\,190) \times 100\% \quad \checkmark MA$ $= 114,75\%$ % increase (Turkey) = $114,75\% - 100\% \quad \checkmark M$ $= 14,75\% \quad \checkmark CA$ (United Kingdom): $(2\,248\,162 \div 1\,596\,803) \times 100\% \quad \checkmark MA$ $= 140,79\%$ % increase United Kingdom = $140,79\% - 100\%$ $= 40,79\% \quad \checkmark CA$ United Kingdom has the biggest percentage increase/Verenigde Koninkryk het die grootste persentasie verhoging. $\checkmark CA$	1M using correct formula 1MA subtracting correct values 1CA simplification 1MA subtracting correct values 1CA simplification as a percentage 1CA county OR/OF 1MA subtracting correct values 1M using correct formula 1CA simplification 1MA subtracting correct values 1CA simplification as a percentage 1CA county NPR (6)	D L3
1.1.5	Probability (decline 2015-2016) /Waarskynlikheid $= \frac{3}{11} \quad \checkmark A$ $\approx 0,27 \quad \checkmark CA$	1A numerator 1A denominator 1CA as decimal NPR (3)	P L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.1.6	Denmark cost/Denemark koste $= €520,83 \times 284\,655$ ✓RT $= €148\,256\,863,70$ ✓A Slovenia cost /Slovenië koste $= €350 \times 85\,407 = €29\,892\,450$ ✓RT ✓A $€148\,256\,863,70 : €29\,892\,450$ $4,959... : 1$ ✓CA ✓O The statement is NOT VALID/Bewering is NIE GELDIG NIE OR/OF Accept per year or per month /Aanvaar per jaar of per maand 2016 Denmark : 2016 Slovenia $284\,655 \times 520,83 \times 12 : 85\,407 \times 350 \times 12$ $1\,779\,082\,364 : 358\,709\,400$ $4,959... : 1$ ✓CA ✓O The statement is NOT VALID/Bewering is NIE GELDIG NIE OR/OF Denmark: $€520,83 \times 12 = €6249.96$ per year /per jaar $€6\,249,96 \times 284\,655$ ✓RT $= €1\,779\,082\,364$ ✓A Slovenia : $€350 \times 12 = €4\,200$ per year /per jaar $€4\,200 \times 85\,407$ ✓RT $= €358\,709\,400$ ✓A Denmark: Slovenia $€1\,779\,082\,364 : €358\,709\,400$ $(€1\,779\,082\,364 \div €358\,709\,400) : (€358\,709\,400 \div €358\,709\,400)$ ✓CA $= 4,9596 : 1$ The statement is NOT VALID ✓O	1RT correct values 1A cost 1RT correct values 1A cost 1CA simplified ratio in correct order 1O verification OR/OF 1RT Denmark values 1RT Slovenia values 1A cost 1A cost 1CA simplified ratio in correct order 1O verification OR/OF 1RT correct values 1A cost 1RT correct values 1A cost 1CA simplified ratio in correct order 1O verification NPR	D L4 (6)

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.2.1	Profit/<i>Wins</i> = R30 × 120% = R36 ✓MA Profit per marble / <i>Wins per albaster</i> = $\frac{R36}{100} = R0,36$ ✓CA Cost price per marble/<i>Kosprys per albaster</i> = $\frac{R30}{100} = R0,30$ ✓A Selling price/<i>Verkoopprys</i> = R0,36 + R0,30 = R0,66 per marble/<i>albaster</i> ✓MCA OR/OF R30 per 100 marbles/<i>albasters</i> is 100% ✓MA Profit on 100 marbles to yield 120% per pack <i>Wins op 100 albasters om 120% per pakte gee</i> = $\frac{R30 \times 120\%}{100\%}$ = R36 per pack Price of selling 1 marble is/<i>Verkoopprys per albaster is:</i> $\frac{R30 + R36}{100}$ ✓MCA ✓M = R0,66 ✓CA OR/OF Selling price/<i>verkoopprys</i> = R30 × 220% = R66 ✓MA ✓MCA Price per marble/<i>Prys per albaster</i> = $\frac{R66}{100} = R0,66$ ✓M ✓CA OR/OF Price per marble/<i>Prys per albaster</i> = $\frac{30}{100} = R0,30$ ✓MA Selling price/<i>verkoopprys</i> = 0,3 × 2,2 ✓M ✓MCA = R0,66 ✓CA OR/OF Selling price /<i>verkoopprys</i> = 30 × 2,2 ✓MA ✓MCA = R66 Price per marble/<i>Prys per albaster</i> = $\frac{66}{100}$ ✓M = R0,66 ✓CA	1MA calculating profit 1CA profit per marble 1A price per marble 1MCA simplification OR/OF 1MA calculating profit 1MCA cost plus profit 1M dividing by 100 1CA simplification OR/OF 1MA calculating % increase 1MCA selling price 1M dividing by 100 1CA simplification OR/OF 1MA dividing by 100 1M calculating % increase 1MCA selling price 1CA simplification OR/OF 1MA calculating % increase 1MCA selling price 1M dividing by 100 1CA simplification NPR	F L3 (4)

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.2.2	Radius container/houer = $\frac{6,4}{2}$ ✓C = 3,2 cm ✓MCA Volume of a cylinder/ <i>Volume van 'n silinder</i> = $\pi \times \text{radius}^2 \times \text{height}$ ✓SF = $3,142 \times (3,2 \text{ cm})^2 \times 30 \text{ cm}$ = $965,2224 \text{ cm}^3$ ✓CA Volume of 2 bags of marbles/<i>volume van 2 sakke albasters</i> = $2 \times 2 \text{ cm}^3 \times 100$ ✓MA = 400 cm^3 ✓CA Vol. Water to fill container/<i>Vol. water om houertevul</i> = $965,2224 \text{ cm}^3 - 400 \text{ cm}^3$ ✓MCA = $565,2224 \text{ cm}^3$ ✓CA $\frac{1}{2} \ell = 500 \text{ cm}^3$ Statement is valid/<i>Bewering is geldig</i> ✓O OR/OF Radius of container/houer = $\frac{6,4}{2} = 3,2 \text{ cm}$ ✓C ✓MCA Volume of a cylinder/ <i>Volume van 'n silinder</i> ✓SF = $\pi \times \text{radius}^2 \times \text{height} = 3,142 \times 3,2 \text{ cm} \times 3,2 \text{ cm} \times 30 \text{ cm}$ = $965,2224 \text{ cm}^3$ OR/OF 0,9652224 litres ✓CA Volume of 2 bags of marbles/<i>volume van 2 sakke albasters</i> = $2 \times 2 \text{ cm}^3 \times 100$ ✓MA = 400 cm^3 OR/OF 0,4 litres ✓CA Vol. Water to fill container/<i>Vol. water om houertevul</i> = $965,2224 \text{ cm}^3 - 400 \text{ cm}^3$ ✓MCA = $565,2224 \text{ cm}^3$ ✓CA OR/OF = $0,9652224 \ell - 0,4 \ell = 0,5652224 \ell$ More than 0,5 ℓ VALID / <i>meer as 0,5 ℓ GELDIG</i> ✓O	1C conversion 1MCA finding the radius 1SF both radius and height 1CA simplification 1MA Vol. of total marbles 1CA simplification 1MCA subtraction 1CA simplification 1O conclusion OR/OF 1C conversion 1MCA finding the radius 1SF both radius and height 1CA simplification 1MA Vol. of total marbles 1CA simplification 1MCA subtraction of volumes 1CA simplification 1O conclusion	M L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Radius of container/houer = $\frac{6,4}{2} = 3,2$ cm ✓C ✓MCA Volume of a cylinder/ <i>Volume van 'n silinder</i> $= \pi \times \text{radius}^2 \times \text{height}$ $= 3,142 \times 3,2 \text{ cm} \times 3,2 \text{ cm} \times 30 \text{ cm}$ ✓SF $= 965,2224 \text{ cm}^3$ OR/ OF 0,9652224 litres ✓CA Volume of 2 bags of marbles/<i>volume van 2 sakke albasters</i> = $2 \times 2 \text{ cm}^3 \times 100$ ✓MA ✓CA $= 400 \text{ cm}^3$ OR/OF 0,4 litres ✓MCA ✓CA $400 \text{ cm}^3 + 500 \text{ cm}^3 = 900 \text{ cm}^3$ This is less than $965,2224 \text{ cm}^3$ of the cylinder , VALID ✓O <i>Minder as 965,2224 cm³ van die silinder, GELDIG</i>	OR/OF 1C conversion 1MCA finding the radius 1SF both radius and height 1CA simplification 1MA Vol. of total marbles 1CA simplification 1MCA addition 1CA simplification 1O conclusion (9)	
1.2.3	Outer diameter/<i>Buitemiddellyn</i> $= 64 \text{ mm} + 2 \times 0,5 \text{ mm} = 65 \text{ mm}$ ✓ MA Circumference = $\pi \times \text{diameter}$ / <i>Omtrek = $\pi \times \text{middellyn}$</i> $= 3,142 \times (6,5) \text{ cm}$ ✓ SF $= 20,423 \text{ cm}$ ✓CA OR/OF Radius = $32 \text{ mm} + 0,5 \text{ mm} = 32,5 \text{ mm}$ ✓ MA $= 3,25 \text{ cm}$ Circumference/<i>omtrek</i> = $2 \times \pi \times \text{radius}$ ✓ SF $= 2 \times 3,142 \times 3,25 \text{ cm}$ $= 20,423 \text{ cm}$ ✓ CA	1MA increased diameter 1SF substitution 1CA simplification OR/OF 1MA increased radius 1SF substitution 1CA simplification NPR (3)	M L2
		[39]	

QUESTION/VRAAG2 [38 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.1	$\text{Total/Totaal} = 2 \times (79 \times R244,35) \quad \checkmark A$ $= R38\,607,30 \quad \checkmark CA$ OR/OF Amount claimed per person/Bedrag geeis per persoon: $CM/HM = 79 \times R244,35 = R19\,303,65 \quad \checkmark A$ $IM = 79 \times R244,35 = R19\,303,65 \quad \checkmark A$ $\text{Total/Totaal} = R19\,303,65 + R19\,303,65$ $= R38\,607,30 \quad \checkmark CA$	1A number of personnel 1A tariff 1CA simplification OR/OF 1A CM amount 1A IM amount 1CA simplification (3)	F L2
2.1.2	$A \text{ (Hours worked by SM)/}A(\text{Ure gewerk deur SM})$ $= \frac{R13\,763,75}{R211,75/h} \quad \checkmark MA$ $= 65 \text{ hours/ure} \quad \checkmark CA$	1MA numerator and denominator 1CA simplification (2)	M L2
2.1.3 (a)	Number of marking hours/Getal nasien ure $= \frac{2\,808 \times 28}{23 \times 60} \quad \checkmark SF$ $= 56,97391303 \text{ hours/ure} \approx 57 \text{ hours/ure} \quad \checkmark CA$ 1st day (Monday/Maandag): 14:00 to 20:00 = 5 hours/ure $\checkmark A$ Tuesday to Saturday/Dinsdag tot Saterdag: 50 hours/ure Sunday/Sondag = 2 hours/ure $\checkmark A$ $\text{Total/Totaal } 5 + 50 + 2 = 57 \text{ hrs./ure}$ $\checkmark CA$ Finish at 10:00 on Sunday. Eindig Sondag om 10:00 OR/OF Number of marking hours/ Getal nasien ure $= \frac{2\,808 \times 28}{23 \times 60} = 56,97391303 \text{ hours} \approx 57 \text{ hours} \quad \checkmark CA$ $\checkmark SF$ Actual marking time per day/ Werklike merkyd per dag $= 12 \text{ hrs} - 2 \text{ hrs} = 10 \text{ hrs}$ Start/Begin Mon + Tue + Wed + Thu + Fri + Sat + Sun $\checkmark A$ $= 5h + 10h + 10h + 10h + 10h + 10h + 2h$ $= 57 \text{ hours/ure}$ Sunday/Sondag = $\checkmark A$ $= 08:00 + 2h$ $= 10:00 \quad \checkmark CA$	1SF correct numerator 1SF correct denominator 1CA simplification/hours 1A hours of 1 st day 1A hours of complete days to last day 1CA day & time OR/OF 1SF correct numerator 1SF correct denominator 1CA simplification/hours 1A hours of 1 st day 1A hours of complete days to last day 1CA day and time	M L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Number of marking hours/ <i>Getal nasien ure</i> $= \frac{2\,808 \times 28}{23 \times 60} \quad \checkmark \text{SF}$ $= 56,97391303 \text{ hours/ure} \approx 57 \text{ hours/ure} \quad \checkmark \text{CA}$ 57 hours: Monday/<i>Maandag</i> = 5 hrs/<i>uur</i> $\checkmark \text{A}$ Rest of the days/<i>Res van die dae</i> = 57 hrs – 5 hrs = 52 hrs/<i>uur</i> Full marking days/<i>Vol merk dae</i> = $\frac{52}{10}$ = 5,2 days/<i>dae</i> Therefore/<i>dus</i> 5 days + 0,2 days 5 days Tuesday to Saturday / 5 <i>dae is Dinsdag tot Saterdag</i> 0,2 days/<i>dae</i> $\times 10$ = 2 hrs for Sunday/<i>uur vir Sondag</i> $\checkmark \text{A}$ Ends / <i>eindig</i> Sunday/<i>Sondag</i> 10:00 $\checkmark \text{CA}$ OR/OF Number of marking hours/ <i>Getal nasien ure</i> $= \frac{2\,808 \times 28}{23 \times 60} \quad \checkmark \text{SF}$ $\approx 57 \text{ hours/uur} \quad \checkmark \text{CA}$ 14:00 to 14:00 = 10 working hours /<i>werks ure</i> $\checkmark \text{A}$ Monday 14:00 to Saturday 14:00 = 50 hours <i>Maandag 14:00 tot Saterdag 14:00 = 50 uur</i> Saturday 14:00 to Sunday 10:00 = 7 hours <i>Saterdag 14:00 tot Sondag 10:00 = 7 uur</i> $\checkmark \text{A}$ Finish at 10:00 on Sunday $\checkmark \text{CA}$ <i>Eindig Sondag 10:00</i>	OR/OF 1SF correct numerator 1SF correct denominator 1CA simplification/hours 1A hours of 1st day 1A hours of complete days to last day 1CA day & time OR/OF 1SF correct numerator 1SF correct denominator 1CA simplification/hours 1A full day's work 1A hours of complete days to last day 1CA day and time (6) [Accept Tues 10:00]	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.3 (b)	✓ MCA 57 – 52 hours/ure = 5 working hours earlier/werksurevroeër 2 hrs of Sunday and last 3 hrs of Saturday not worked 2 uur van Sondagen die laaste 3 ure van Saterdagiegewerk 20:00 – 16:00 = 3 hrs excluding supper/uur sonder aandete ✓ CA ✓ CA Finish at 16:15 on Saturday./Eindig Saterdag om 16:15 (Including tea break/teepouseingesluit) OR/OF ✓ A ✓ MA 52 hours claimed = 5 (Monday) + 40 (Tue to Fri) + 7 (Sat) 52 uregeëis = 5 (Maandag) + 40 (Di tot Vry) + 7 (Sat) Finish Saturday/Eindig Saterdag ✓ CA 8:00 + 7 hours + 15 min (tea 1) + 45 min (lunch) + 15 min (tea 2) = 16:15 ✓ CA [also accept 16:00 since they are not paid for tea time] [aanvaarook 16:00 aangesien hulle nie vir teepouse betaal word nie]	1 MCA hrs less from marking [CA from 2.1.3 (a)] 1 A separation of hrs 1 CA time 1 CA day OR/OF 1 MA breaking up the time 1 A the hours per day 1 CA day 1 CA time AO (4)	M L3
2.1.3 (c)	✓✓ O Some candidates omitted some questions or sub-sections. Sommige kandidaatelaatvrae of onderafdelingsuit. OR/OF ✓✓ O Some candidates wrote short answers (skipping other steps or lines or sentences). Sommige kandidates kryf verkorte antwoorde (laatstappe uit) OR/OF Responses were very clear to follow. ✓✓ O Antwoorde was baie maklik omtevolg OR/OF ✓✓ O Some markers mark fast. Sommige nasieners kon vinnig nasien. OR/OF ✓✓ O Markers took shorter breaks Merkers het korter pouses geneem	2 O reason (2)	M L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.4	Transport/Vervoer = 11 542 km × R3,26 / km ✓ MA = R 37 626,92 ✓ CA Marking/Nasien: = 2 × 79 × R244,35 + 5 × 65 × R211,75 + 23 × 52 × R195,50 = 2 × R19 303,65 + 5 × R13 763,75 + 23 × R10 166 ✓ MCA = R38 607,3 + R68 818,75 + R233 818 = R341 244,05 ✓ CA Total/Totaal = R341 244,05 + R 37 626,92 = R378 870, 97. ✓ CA R400 000 budget will be enough/begroting is genoegsaam. ✓ O	1MA calculation 1CA amount 1MCA multiply correct number of persons by amount claimed 1CA simplification 1CA total 1O conclusion (6)	F L4
2.2.1	Diameter = 1 m + 0,8 m + 0,8 m = 2,6 m ✓ A Area of big circle/Oppervlakte van grootsirkel = $3,142 \times \left(\frac{2,6 \text{ m}}{2}\right)^2$ ✓ SF = 5,30998 m² ✓ CA Area of the small circle/kleinsirkel = $3,142 \times (0,5 \text{ m})^2$ = 0,7855 m² ✓ MA Area of the wood/Oppervlakte van hout = 2,7 m × 2,7 m = 7,29 m² ✓ A Cut-off/Afgesny = 7,29 m² – 5,30998 m² + 0,7855 m² ✓ MCA = 1,98002 m² + 0,7855 m² ≈ 2,77 m² ✓ CA Statement is NOT valid/Bewering is NIE geldig NIE ✓ O OR/OF Cut-off wood (in m²) /Afgesnyde hout (in m²) = Area_(square) – [Area_(big circle) – Area_(small circle)] ✓ A = $2,7 \times 2,7 - [3,142 (0,8 + 0,5)^2 - 3,142 (0,5)^2]$ ✓ SF ✓ A ✓ CA ✓ MA = 7,29 – [5,30998 – 0,7855] = 7,29 – 4,52448 ✓ M = 2,76552. ✓ CA ✓ O Which is more than 2,01. Hence, the statement is not valid Dit is meer as die 2,01, gevolglik is die bewering nie geldig nie.	1A diameter 1SF circle formula 1CA area big circle 1MA area small circle 1A area of the wood 1MCA subtracting total circles from square area wood 1CA area 1O conclusion OR/OF 1A radius big circle 1SF circle formula 1CA area big circle 1MA area small circle 1A area of the wood 1M subtracting total circles from square area wood 1CA area 1O conclusion	M L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Area of semi-circle = $\frac{1}{2} \pi \times r^2$ ✓A Outer circle/<i>Buite sirkel</i> = $\frac{1}{2} \times 3,142 \times (1,3 \text{ m})^2$ ✓SF = 2,65499 m² ✓CA Inner circle/<i>Binne sirkel</i> = $\frac{1}{2} \times 3,142 \times (0,5 \text{ m})^2$ = 0,39275 m² ✓MA Desk/<i>tafel</i> = 2,65488 m² – 0,39275 m² = 2,26224 m² ✓CA Total area/<i>Totale oppervlak</i> = 2,26224 m² × 2 = 4,52448 m² ✓MCA Cut-off Area/<i>Afsny hout</i> = 7,29 m² – 4,452448 m² = 2,7552 m² ✓CA Statement not valid /<i>Bewering is nie GELDIG nie</i> ✓O OR/OF Area of big semi-circle /<i>Oppervlakte van groot halfsirkel</i> = $3,142 \times 1,3^2 \div 2 = 2,65499 \text{ m}^2$ ✓A ✓SF ✓CA Area of small semi-circle /<i>Oppervlakte van klein halfsirkel</i> = $3,142 \times 0,5^2 \div 2 = 0,3927 \text{ m}^2$ ✓MA One semi-circular top/ <i>Een halfsirkel bo-kant</i> = 2,65499 – 0,3927 = 2,26224 m² Area of two semi-circular tops/<i>Oppervlakte van 2 halfsirkels</i> = 2,26224 × 2 = 4,52448 m² ✓MCA Square Board/<i>Vierkantige hout</i> = 2,7 × 2,7 = 7,29 m² ✓A Cut-off /<i>Afsny</i> = 7,29 m² – 4,52448 m² ≈ 2,77 m² ✓CA Statement not valid/<i>Bewering is nie GELDIG nie</i> ✓O	OR/OF 1A diameter/ radius 1SF circle formula 1CA area big circle 1MA area small circle 1CA area of the wood 1MCA total circles area 1CA area 1O conclusion OR/OF 1A diameter/ radius 1SF circle formula 1CA area big circle 1MA area small circle 1MCA total circles area 1A area of the wood 1CA area 1O conclusion	(8)

Q/V	Solution/Ooplossing	Explanation/Verduideliking	T&L
2.2.2	$\text{Volume wood/hout} = 2,7 \text{ m} \times 2,7 \text{ m} \times 0,038 \text{ m} = 0,27702 \text{ m}^3$ Price of one piece of wood excl.VAT <i>Prys van een stuk hout BTW uitgesluit</i> $= 0,27702 \text{ m}^3 \times \text{R1 215} = \text{R336,58}$ Price including VAT/<i>Prys BTW ingesluit</i> = $\text{R336,58} \times 1,15 = \text{R387,07}$ 12 semi-circles cut form 6 boards/<i>12 halfrondes word uit 6 borde gesny</i> $\text{Cost/Koste} = \text{R387,07} \times 6$ $= \text{R2 322,40}$ OR/OF $\text{Volumewood/hout} = 2,7 \text{ m} \times 2,7 \text{ m} \times 0,038 \text{ m} = 0,27702 \text{ m}^3$ Volume of 6 woodenboards <i>Volume vir 6 houtborde</i> = $0,27702 \text{ m}^3 \times 6 = 1,66212 \text{ m}^3$ Cost of 6 boards/<i>Koste van 6 borde</i> = $1,66212 \times \text{R1 215} = \text{R2 019,48}$ Cost with VAT/<i>Koste met BTW</i> $= \text{R2 019,48} + (15\% \times \text{R2 019,48})$ $= \text{R2 322,40}$ OR/OF Price of wood including VAT/<i>Prys van hout BTW ingesluit</i> $= \text{R1 215} \times 1,15 = \text{R1 397,25}$ $\text{Volume wood/hout} = 2,7 \text{ m} \times 2,7 \text{ m} \times 0,038 \text{ m} = 0,27702 \text{ m}^3$ Cost/<i>Koste</i> = $\text{R1 397,25} \times 0,27702 = \text{R387,07}$ Cost for 12 semicircles/<i>Koste vir 12 halvesirkels</i> $= \text{R387,07} \times 6$ $= \text{R2 322,40}$	1SF volume of wood 1C conversion 1CA simplification 1MA calculating cost 1MCA adding 15% 1A 6 boards 1CA cost OR/OF 1SF volume of wood 1C conversion 1CA simplification 1A 6 boards 1MA calculating cost 1MCA adding 15% 1CA simplification OR/OF 1MCA adding 15% 1SF volume of wood 1C conversion 1CA simplification 1MA calculating cost 1A 6 boards 1CA simplification	F L3
		(7) [38]	

QUESTION/VRAAG3 [39 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.1.1	✓ A The data is discrete./Die data is diskreet ✓✓ O Percentages run from 0 to 100 and depends on the total of the test and the mark obtained. It is presented as whole numbers. <i>Persentasies is van 0 tot 100 en hang af van die totaal van die toets en die punt behaal. Hier is dit aangebied as heelgetalle.</i>	1A discrete 2O opinion (3)	D L4
3.1.2	Median score test 2/mediaan $= \frac{66+67}{2}$ ✓ RT ✓ M $= 66,5$ ✓ CA	1RT correct value 1M median concept 1CA simplification (3)	D L2
3.1.3	Mean/Gemiddeld = $\frac{Y (\% \text{ mark}) + 1\,443}{18} = 84$ ✓ MA $Y (\% \text{ mark}) = 18 \times 84 - 1\,443$ ✓ M $= 69\%$ ✓ CA OR/OF $18 \times 84 = 1\,512$ ✓ MA ✓ MA $Y + 1443 = 1\,512$ $Y = 1\,512 - 1\,443$ ✓ M $= 69\%$ ✓ CA	1MA adding all known % marks 1MA mean concept 1M changing the subject 1CA simplification OR/OF 1MA mean concept 1MA adding all known % marks 1M changing the subject 1CA simplification (4)	D L3
3.1.4	✓✓ RT Helen : $87\% - 57\% = 30\%$ ✓ RT Kevin : $97\% - 67\% = 30\%$ [Note: Afrikaans scripts the answers will be Paul & Oscar]	2RT candidate 1RT candidate (3)	D L3
3.1.5	$Q_3/K_3 = 71\%$ ✓ A $Q_1/K_1 = 61\%$ ✓ A $IQR = Q_3 - Q_1 / IKO = K_3 - K_1$ $= 71\% - 61\%$ ✓ MCA $= 10\%$ ✓ CA	1A quartile 3 1A quartile Q_1 1MCA IQR concept 1CA simplification (4)	D L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L										
3.1.6	$P_{(\text{non distinction/nie onderskeiding})} = \frac{8}{18} \quad \checkmark A$ $= \frac{4}{9} \quad \checkmark CA$ OR/OF $P_{(\text{distinction/onderskeiding})} = \frac{10}{18} = \frac{5}{9} \quad \checkmark A$ $P_{(\text{not distinction/nie onderskeiding})} = 1 - \frac{5}{9} = \frac{4}{9} \quad \checkmark CA$	CA value of Y from 3.1.3 1A numerator 1A denominator 1CA simplification OR/OF 1A numerator 1MA subtracting from 1 1CA simplification (3)	P L3										
3.1.7	Mode/Modus = 73% $\checkmark\checkmark A$	2A modal value (2)	D L2										
3.2.1	View Terrace OR/OF View OR/OF Terrace $\checkmark\checkmark RT$	2RT Reading from the map (2)	MP L2										
3.2.2	$\checkmark\checkmark O$ Facing oncoming traffic/Sy gaan in aankomende verkeer vasry OR/OF $\checkmark\checkmark O$ One way road/Dit is 'n eenrigtingpad	2O reason (2)	MP L4										
3.2.3	North west/Noordwes or/of NW $\checkmark\checkmark A$	2A correct direction (2)	MP L2										
3.2.4	$\checkmark A$ 21 mm = 110 yards/jaart $\checkmark A$ $XY = \frac{50 \times 110}{21} \quad \checkmark M$ $XY = 261,904 \dots \text{yards/jaart} \quad \checkmark CA$ $\approx 262 \text{ yards/jaart}$ [Bar scale accept measurements in the range 20 mm to 23 mm For XY measurements in the range 47 mm to 53 mm]	1A measuring scale 1A measuring distance 1M working with scale 1CA answer NPR (4)	MP L3										
3.2.5 (a)	<table><tr><td>Parking offence</td><td>Parkeer boete $\checkmark\checkmark O$</td></tr><tr><td>Street parking is limited to 1 hour before 5 pm</td><td>Parkering is beperk tot 1 uur voor 5nm.</td></tr><tr><td>Exceeded allowable duration of parking.</td><td>Oorskryding van toegelate parkering</td></tr><tr><td>Free parking time was over</td><td>Gratis parkeering het verstryk</td></tr><tr><td>Parked for more than 1 hour.</td><td>Parkeer vir meer as 1 uur</td></tr></table>	Parking offence	Parkeer boete $\checkmark\checkmark O$	Street parking is limited to 1 hour before 5 pm	Parkering is beperk tot 1 uur voor 5nm.	Exceeded allowable duration of parking.	Oorskryding van toegelate parkering	Free parking time was over	Gratis parkeering het verstryk	Parked for more than 1 hour.	Parkeer vir meer as 1 uur	2O Reason for charge (2)	MP L4
Parking offence	Parkeer boete $\checkmark\checkmark O$												
Street parking is limited to 1 hour before 5 pm	Parkering is beperk tot 1 uur voor 5nm.												
Exceeded allowable duration of parking.	Oorskryding van toegelate parkering												
Free parking time was over	Gratis parkeering het verstryk												
Parked for more than 1 hour.	Parkeer vir meer as 1 uur												

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
3.2.5 (b)	From/Vanaf 12:00 - 15:25 = $(3 - 1) + \frac{25}{60}$ ✓M ✓C = 2,4166666667 hours/uur ✓CA Rate per hour/Koers per uur = $\frac{£79,75}{2,4166666667}$ ✓M = £33 ✓CA OR/OF From/Vanaf 12:00 - 15:25 = 3 h 25 min Hours she was charged for /Ure waarvoor sy beboet is 3 h 25 min – 1 h = 2 h 25 min ✓M ✓CA 2h 25 min = 145 min ✓C Rate per hour/Koers per uur = $\frac{79,75 \times 60}{145}$ ✓M = $\frac{4\,785}{145}$ = £33 ✓CA	1M subtracting free hour 1C conversion minutes into hours 1CA total charged hours 1M division by hours 1CA simplification rounded to the nearest pound OR/OF 1M subtracting free hour 1CA total charged hours 1C conversion hours into minutes 1M division by minutes 1CA simplification rounded to the nearest pound (5)	F L3
		[39]	

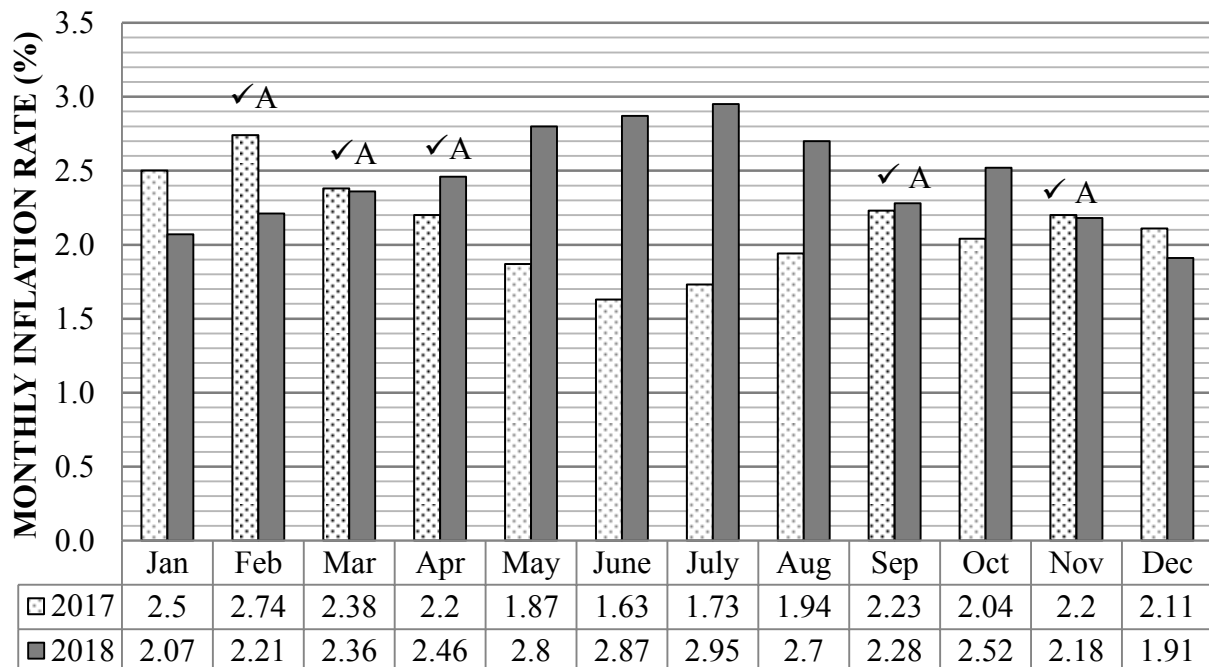
QUESTION/VRAAG4 [34 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1.1	$P_{(\text{odd seat/oneve})} = \frac{2}{288} \times 100\%$ $= 0,69\%$	1A numerator 1A total seats 1CA simplification (3)	L2 P
4.1.2	$\checkmark$ RT D10 $\checkmark$ RT	1RT row 1RT seat (2)	L2 MP
4.1.3	Person at D7: - Turn left walk towards the corridor./<i>Draai links en loop na die gang.</i> - Turn right walk towards the stage./<i>Draai regs en loop na die verhoog.</i> - At end of the corridor turn left./<i>Aan die einde van die gang draai links.</i> - Walk towards the last seat in the front of section B./<i>Loop na die laastesitplek in afdeling B.</i>	1A turn left and walk 1A turn right towards stage 1A turn left end of corridor 1A last seat; section B (4)	L3 MP
4.1.4	Collection/Insameling: $\text{Adults/Volwasseenes: } 150 \times \$28,60 = \$4\,290$ $\text{Students/Studente: } 57 \times \$26,40 = \$1\,504,80$ $\text{Kids/Kinders: } 33 \times \$17,60 = \$580,80$ Total collection/Totaalingesamel $= \$4\,290 + \$1\,504,80 + \$580,80$ $= \$6\,375,60$ Excluding VAT/Sonder BTW $= \frac{\$6\,375,60}{1,10} = \$5\,796$ Claim is CORRECT/Opmerking is KORREK	1MA multiply tariff by relevant total patrons. 1CA amount 1CA amount 1CA amount 1MCA total collection 1MCA dividing by 1,10 1CA amount excl. VAT 1O conclusion	F L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF Adults/volwasseenes = $53 + 57 + 40 = 150$ Cost/Koste = $\\$28,60 \times 150 = \\$4\,290$ ✓ MA Cost excl VAT /Koste BTW uitgesluit = $\\$4\,290 \div 1,10 = \\$3\,900$ ✓ MCA ✓ CA Students/Studente = $15 + 32 + 10 = 57$ Cost/Koste = $\\$26,40 \times 57 = \\$1\,504,80$ Cost excl VAT /Koste BTW uitgesluit = $\\$1\,504,80 \div 1,10 = \\$1\,368$ ✓ CA Children = $9 + 15 + 9 = 33$ Cost/Koste = $\\$17,60 \times 33 = \\$580,80$ Cost excl VAT /Koste BTW uitgesluit = $\\$580,80 \div 1,10 = \\$528$ ✓ CA Total/Totaal = $\\$3\,900 + \\$1\,368 + \\$528 = \\$5\,796$ ✓ MCA ✓ CA The claim is correct/ Opmerking is KORREK ✓ O OR/OF Section A/Afdeling A: ✓ MA = $53 \times 28,60 + 15 \times 26,40 + 9 \times 17,60$ = $1\,515,80 + 396,00 + 158,40 = 2\,070,20$ ✓ CA Section B/ Afdeling B: = $57 \times 28,60 + 32 \times 26,40 + 15 \times 17,60$ = $1\,630,20 + 844,80 + 264,00 = 2\,739,00$ ✓ CA Section C/ Afdeling C: = $40 \times 28,60 + 10 \times 26,40 + 9 \times 17,60$ = $1\,144,00 + 264,00 + 158,40 = 1\,566,40$ ✓ CA Total amount of Sections = $2\,070,20 + 2\,739,00 + 1\,566,40 = \\$6\,375,60$ ✓ MCA Excluding VAT/Sonder BTW = $\frac{\\$6\,375,60}{1,10} = \\$5\,796$ ✓ MCA ✓ CA or/of $\\$5\,796 \times 1,1 = \\$6\,375,60$ which equals total collection Claim is CORRECT/Opmerking is KORREK ✓ O	OR/OF 1MA multiply tariff by relevant total patrons. 1MCA dividing by 1,10 1CA amount 1CA amount 1CA amount 1MCA total collection 1CA amount excl. VAT 1O conclusion OR/OF 1MA multiply tariff by relevant total patrons. 1CA amount 1CA amount 1CA amount 1MCA total collection 1MCA dividing by 1,10 1CA amount excl. VAT 1O conclusion	

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Adult / <i>Volwasse nes</i> Price excl. VAT/<i>Prys sonder BTW</i> = $\\$28,60 \times \frac{100}{110} = \\$26$ ✓ MCA ✓ MA Total amount/<i>Totale bedrag</i> = $26 \times 150 = \\$3\,900$ ✓ CA Student /<i>Studente</i> Price excl. VAT /<i>Prys sonder BTW</i> = $\\$26,40 \times \frac{100}{110} = \\$24$ Total amount/<i>Totale bedrag</i> = $\\$24 \times 57 = \\$1\,368$ ✓ CA Children/<i>Kinders</i> Price excl. VAT/ <i>Prys sonder BTW</i> = $\\$17,60 \times \frac{100}{110} = \\$16$ Total amount/<i>Totale bedrag</i> = $\\$16 \times 33 = \\$528$ ✓ CA Total collection/ <i>Totale insameling</i> = $3\,900 + 1\,368 + 528 = \\$5\,796$ ✓ MCA ✓ CA Claim is CORRECT/<i>Opmerking is KORREK</i> ✓ O	OR/OF 1MCA dividing by 1,10 1MA multiply tariff by relevant total patrons. 1CA amount 1CA amount 1CA amount 1MCA total collection 1CA amount excl. VAT 1O conclusion (8)	
4.1.5	Cost in USD/<i>Koste in VSD</i> ✓ RT = $\\$30,50 \times 0,71$ = 21,655 USD/<i>VSD</i> ✓ MCA Cost in rand/<i>Koste in rand</i> = $\\$21,655 \times R14,43/\\$ = R312,48 ✓ MCA OR/OF Conversion factor ZAR to AUD /<i>Herleidingsfaktor</i> : $R14,43 \times 0,71 = R10,2453$ ✓ A ✓ RT $\\$30,50 \times R10,2453$ = R312,48 ✓ MCA OR/OF Conversion to ZAR/ <i>Herlei na ZAR</i> ✓ RT = $\\$30,50 \times 0,71 \times R14,43$ ✓ MCA = R312,48 ✓ MCA	1RT ticket price 1MCA answer in USD 1MCA answer in rand OR/OF 1A Conversion factor 1RT ticket price 1MCA answer in rand OR/OF 1RT ticket price 1MCA Conversion 1MCA answer in rand (3)	L2 F

4.2.1

AUSTRALIAN INFLATION RATE FOR 2017 AND 2018

L2
D

5 × A for each correct bar

(5)

4.2.2

✓ A
June/*Junie*

✓ MCA

Difference/*Verskil* = 2,87% – 1,63% = 1,24% ✓ CA1A correct month
1MCA subtracting values
1CA simplification

(3)

L3
F

4.2.3

Inflation Nov/*Inflasie Nov* = AUD 156 831,36 × 2,18 %
= AUD 3418,92 ✓ RTDec cost of car /*Des koste* = AUD 156 831,36 + AUD 3418,92
= AUD 160 250,28 ✓ MCA
✓ CAInflation Dec/*Inflasie Des* = AUD 160 250,28 × 1,91 %
= AUD 3 060,78Jan. cost of car/*Koste in Jan.*
= AUD 160 250,28 + AUD 3 060,78
= AUD 163 311,06 ✓ CAIncrease/*Verhoging* = AUD 163 311,06 – AUD 156 831,36
= AUD 6 479,70 ✓ CAHe is incorrect/*Hy is NIE korrek NIE* ✓ O1RT correct rate
1MCA Increasing
1CA simplification1CA simplification second
month cost

1CA increase

1O opinion

F
L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.2.3	OR/OF Inflation Nov/<i>Inflasie Nov</i> = $\\$156\,831,36 \times 2,18\%$ ✓ RT = \$3418,92 Dec. cost of car /<i>Des koste</i> = $\\$156\,831,36 + \\$3418,92$ ✓ MCA = \$160 250,28 ✓ CA Inflation Dec/<i>Inflasie Des</i> = $\\$160\,250,28 \times 1,91\%$ = \$3 060,78 ✓ CA Price increase = Inflation Nov + Inflation Dec <i>Prysverhoging</i> = <i>Inflasie Nov</i> + <i>Inflasie Des</i> = \$3418,92 + \$3 060,78 = \$6 479,70 ✓ CA He is incorrect/<i>Hy is NIE korrek NIE</i> ✓ O OR/OF December/ <i>Desember</i>: ✓ RT Cost of car/<i>Koste van motor</i> = $\\$156\,831,36 \times 102,18\%$ ✓ MCA = \$160 250,28 ✓ CA January/<i>Januarie</i> Cost of car/<i>Koste</i> = $\\$160\,250,28 \times 101,91\%$ = \$163 311,06 ✓ CA Increase/<i>Verhoging</i> = $\\$163\,311,06 - \\$156\,831,36$ = \$6 479,70 ✓ CA He is incorrect/<i>Hy is verkeerd</i> ✓ O OR/OF Price in January /<i>Prys in Januarie</i> ✓ RT ✓ MCA ✓ CA = AUD $156\,831,36 \times 1,0218 \times 1,0191$ = AUD 163 311,0641 ✓ CA Increase/<i>Verhoging</i> = AUD $163\,311,06 - 156\,831,36$ = AUD 6 479,70 ✓ CA Incorrect/ <i>Nie korrek nie</i> ✓ O	OR/OF 1RT correct rate 1MCA Increasing 1CA simplification 1CA simplification second month inflation 1CA increase 1O opinion OR/OF 1RT correct rate 1MCA Increasing by % 1CA simplification 1CA simplification 1CA increase 1O opinion OR/OF 1RT correct rate 1MCA Increasing 1CA Increasing 1CA simplification 1CA increase 1O opinion	F L4



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

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

**MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2**

MARKING GUIDELINES/NASIENRIGLYNE

2021

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/a graph/document/diagram/Lees vanaf tabel/grafiek/diagram
SF	Correct substitution in a formula/Korrekte vervanging in 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 rounding/Geen penalisasie vir afronding nie
AO	Answer only/Slegs antwoord
MCA	Method with constant accuracy/Metode met volgehoue akkuraatheid
*	An asterisk next to a question indicates reference to the notes.

**These marking guidelines consist of 21 pages.
Hierdie nasienriglyne bestaan uit 21 bladsye.**

NOTE:

- If a candidate answers a question TWICE, mark only 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.
- No CA mark follows after 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.
- General principal of marking, if the candidate makes one mistake he loses one mark.

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 op by die tweede berekeningsfout.*
- *Geen CA-punt volg na 'n afbreking nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *Die algemene beginsel van merk as 'n leerder een fout maak verloor hy een punt.*

QUESTION/VRAAG1 [37 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.1.1	$\text{Number of tins /Getal blikke} = 12 \times 10 = 120 \quad \checkmark\text{MA}$ $\text{No of tins each member gets/Getal wat elke lid kry} = 120 \div 15 \quad \checkmark\text{MA}$ $= 8 \quad \checkmark\text{CA}$	1MA multiplying by 10 1MA dividing by 15 1CA simplification AO (3)	M L2
* 1.1.2	$12,5 \text{ kg} \times 15 = 187,5 \text{ kg} \quad \checkmark\text{M}$ $5 \text{ kg} \times 30 = 150 \text{ kg}$ $0,125 \text{ kg} \times 48 \times 15 = 90 \text{ kg} \quad \checkmark\text{C}$ $10 \text{ kg} \times 15 = 150 \text{ kg}$ $12 \times 0,4 \text{ kg} \times 10 = 48 \text{ kg} \quad \checkmark\text{M}$ $6 \times 15 \text{ kg} = 90 \text{ kg} \quad \checkmark\text{C}$ $10 \times 0,05 \text{ kg} \times 15 = 7,5 \text{ kg}$ $\text{Total/Totaal} = 723 \text{ kg} \quad \checkmark\text{CA}$ $\text{Half ton} = 500 \text{ kg} \quad \checkmark\text{A}$ $\text{Not valid cannot fit into a half-ton bakkie.} \quad \checkmark\text{O}$ $\text{Nie geldig, dit is meer as die half-ton.}$ OR/OF $12,5 \text{ kg} \times 15 = 187,5 \text{ kg}$ $5 \text{ kg} \times 30 = 150 \text{ kg} \quad \checkmark\text{M}$ $10 \text{ kg} \times 15 = 150 \text{ kg}$ $6 \times 15 \text{ kg} = 90 \text{ kg} \quad \checkmark\text{C}$ $\text{Total Weight} = 577,5 \text{ kg}$ $125 \text{ g} \times 48 \times 15 = 90\,000 \text{ g}$ $400 \text{ g} \times 12 \times 10 = 48\,000 \text{ g}$ $50 \text{ g} \times 10 \times 15 = 7\,500 \text{ g}$ $\text{Total Weight} = 145\,500 \text{ g}$ $= 145,5 \text{ kg} \quad \checkmark\text{C}$ $\text{Total} = 577,5 \text{ kg} + 145,5 \text{ kg} \quad \checkmark\text{M}$ $= 723 \text{ kg} \quad \checkmark\text{CA}$ $\text{Half Ton} = 500 \text{ kg} \quad \checkmark\text{A}$ $\text{NotValid.} \quad \checkmark\text{O}$	1M multiplying by quantity 1C conversion g to kg 1M adding all values 1C conversion ℓ to kg 1CA simplification 1A half ton value 1O conclusion OR/OF 1M multiplying by quantity 1C conversion ℓ to kg 1C conversion g to kg 1M adding all values 1CA simplification 1A half ton value 1O conclusion(7)	M L4

* 1.1.3	Total cost of items where VAT must be added <i>Totale koste van items waar BTW bygevoeg moet word</i> ✓MA = R1274,85 + R689,70 + R4 154,85 + R1499,85 = R7 619,25 ✓A ✓MCA VAT amount /BTW-bedrag = R7 619,25 × 15% = R1 142,89 ✓A Total amount/Totale bedrag = R7 619,25 + R1 142,89 + R1679,85 + R1 559,50 + R1049,85 ✓MCA = R13 051,34 ✓CA ✓A Wholesaler A/Groothandelaar A OR/OF Total cost of items where VAT must be added <i>Totale koste van items waar BTW bygevoeg moet word</i> ✓MA = R1274,85 + R689,70 + R4 154,85 + R1499,85 = R7 619,25 ✓A ✓✓MA R7 619,25 × 1,15 = R8 762,14 ✓MCA R8 762 + R1 679,85 + R1 559,50 + R1 049,85 = R13 051,34 ✓CA Wholesaler A/Groothandelaar A ✓A OR/OF	1MA adding items that are subject to VAT 1A simplification 1MCA multiplying by 15% 1A simplification 1MCA adding all values 1CA simplification 1A choosing wholesale A OR/OF 1MA adding items that are subject to VAT 1A simplification 2MA multiplying by 115% 1MCA adding all values 1CA simplification 1A conclusion OR/OF	F L3
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Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Total cost of items $= R1\ 679,85 + R689,70 + R4\ 154,85 + R1\ 274,85 +$ $R1\ 559,50 + R1\ 049,85 + R1\ 499,85 \quad \checkmark A$ $= R11\ 908,45$ Excluding VAT exempted items $= R11\ 908,45 - R4\ 289,20 \quad \checkmark MA$ $= R7\ 619,25 \quad \checkmark A$ VAT amount $= R7\ 619,25 \times 15\% \quad \checkmark MA$ $= R1\ 142,89 \quad \checkmark A$ Total amount $= R11\ 908,45 + R1\ 142,89$ $= R13\ 051,34 \quad \checkmark CA$ Wholesaler A/<i>Groothandelaar A</i> $\checkmark A$ OR/OF Items that attract VAT: $\checkmark MA$ Without VAT + 15% VAT = Including VAT $R1\ 274,85 + R191,23 = R1\ 466,08$ $R689,70 + R103,46 = R\ 793,16$ $R4\ 154,85 + R623,23 = R4\ 778,08 \quad \checkmark A$ <u>$R1\ 499,85 + R244,98 = R1\ 724,83$</u> $R7\ 619,25 + R1\ 142,89 = R8\ 762,14 \quad \checkmark CA$ VAT exempted items $= R1\ 679,85 + R1\ 559,50 + R1\ 049,85$ $= R4\ 289,20 \quad \checkmark A$ Total including VAT $= R8\ 762,14 + R4\ 289,20 \quad \checkmark MCA$ $= R13\ 051,34 \quad \checkmark CA$ Wholesaler A/<i>Groothandelaar A</i> $\checkmark A$	OR/OF 1A simplification 1MA subtracting items that have VAT 1A simplification 1MA multiplying by 15% 1A simplification 1CA simplification 1A conclusion OR/OF 1MA multiplying by 15% 1A simplification 1CA simplification 1A simplification 1MCA adding all values 1CA simplification 1A conclusion	(7)

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 1.1.4	2020 price /prys = R659,70 $\checkmark$RT 2021 price /prys = R659,70 $\times$ 105,17% $\checkmark$M = R693,80649 $\checkmark$S 2022 price /prys= R693,80649 $\times$ 105,3% $\checkmark$MCA = R730,57823.. = R730,58 $\checkmark$CA OR/OF 2020 price /prys = R659,70 $\checkmark$RT 2021 increase/verhoging = R659,70 $\times$ 5,17% = R34,10649 2021 price /prys= R659,70 + R34,10649 $\checkmark$M = R693,80649 $\checkmark$S 2022 increase/verhoging= R693,80649 $\times$ 5,3% = R36,77714397 $\checkmark$M 2022 price /prys= R693,80649 + R36,77714397 $\approx$ R730,58 $\checkmark$CA OR/OF $\checkmark$RT $\checkmark$M $\checkmark$MCA $\checkmark\checkmark$CA R659,30 $\times$ 1,0517 $\times$ 1,053 = R730,58 OR/OF 2020 Unit price/Eenheidsprys $= \frac{R659,70}{30} = R21,99$ $\checkmark$RT 2021 price /prys = R21,99 $\times$ 105,17% $\checkmark$M = R23,126883 $\checkmark$S 2022 price /prys = R23,126883 $\times$ 105,3% $\checkmark$MCA = R24,3526... = R24,35 $\checkmark$CA or R24, 352607799 $\times$ 30 = R730, 58	1RT price 1M multiplying by 105,17% 1S simplification 1MCA increasing with 5,3% 1CA simplification OR/OF 1RT price 1M adding 5,17% 1S simplification 1M increasing with 5,3% 1CA simplification OR/OF 1RT price 1M multiplying by 105,17% 1MCA increasing with 5,3% 2CA simplification OR/OF 1RT price 1M multiplying by 105,17% 1S simplification 1MCA increasing with 5,3% 1CA simplification (5)	M L3

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 1.2.1 (a)	Outer diameter /<i>buitemiddellyn</i> = 73 mm = 7,3 cm ✓C Circumference of a circle/<i>Omtrek van 'n sirkel</i> = $7,3 \times 3,142$ ✓SF = 22,9366 cm ✓CA Surface area of the label / <i>Buite oppervlak van die etiket</i> = circumference $\times$ height/<i>Omtrek $\times$ hoogte</i> = $22,9366 \text{ cm} \times 10,6 \text{ cm}$ = <u>243,12796</u> cm² ✓CA OR/OF ✓C ✓SF ✓MCA Surface area = $7,3 \times 3,142 \times 10,6$ = <u>243,12796</u> cm² ✓CA OR/OF ✓SF ✓MA Surface area = $73 \times 3,142 \times 106$ = 24312,796 mm² ✓CA = <u>243,12796</u>.. cm² ✓C	1C conversion 1SF substitution 1CA simplification 1CA simplification OR/OF 1C conversion 1SF substitution 1MCA multiply with 10,6 1CA simplification OR/OF 1SF substitution 1MA multiply with 106 1CA simplification 1C conversion NPR (4)	M L2
1.2.1 (b)	Total length = circumference + overlap <i>Totale lengte = omtrek + oorslag</i> = 22,9366 cm + 0,6 cm ✓MCA = 23,5366 cm ✓CA	CA from 1.2.1 (a) 1MCA adding to circumference 1CA simplification (2)	M L2

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 1.2.2	Number of packs lengthwise / <i>Getal pakke in lengte</i> $= \frac{117}{29,2} \quad \checkmark \text{MA}$ $\approx 4 \quad \checkmark \text{R}$ Number of packs width-wise / <i>Getal pakke in breedte</i> $= \frac{66}{21,9}$ $\approx 3 \quad \checkmark \text{CA}$ Number of layers of packs height-wise / <i>Getal lae</i> $= \frac{50}{10,8}$ $= 4,63$ $\approx 4 \quad \checkmark \text{CA}$ The first layer will have / <i>Onderste laag het</i> No packs / <i>pakke</i> $4 \times 3 = 12$ cans in a pack / <i>blikke in 'n pak</i> $= 12 \times 12$ $= 144$ cans / <i>blikke</i> $\checkmark \text{CA}$ Number of cans in a crate / <i>Getal blikke in 'n krat</i> $= 144 \times 4$ $= 576 \quad \checkmark \text{CA}$ Mass / <i>Massa</i> $= 576 \times 440 \text{ g}$ or $576 \times 400 \text{ g}$ $= 253\,440 \text{ g} \quad = 230\,400$ $= 253,44 \text{ kg} \quad = 230,4 \text{ kg} \quad \checkmark \text{CA}$ Mass of the crate / <i>Massa van die krat</i> $= 280 \text{ kg} - 253,44 \text{ kg}$ or $280 \text{ kg} - 230,4$ $= 26,56 \text{ kg} \quad = 49,6 \text{ kg} \quad \checkmark \text{MCA}$ Not valid / <i>Nie geldig nie</i> $\checkmark \text{O}$	1MA dividing 29,2 1R round down 1CA simplification 1CA simplification 1CA simplification 1CA number of cans 1CA mass of the shipment 1MCA crate mass 1O conclusion	MP L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF Number of packs lengthwise / <i>Getal pakke in lengte</i> $= \frac{117}{29,2} \approx 4 \quad \checkmark \text{MA} \quad \checkmark \text{S}$ Number of packs width-wise / <i>Getal pakke in breedte</i> $= \frac{66}{21,9} \approx 3 \quad \checkmark \text{CA}$ Number of layers of packs height-wise / <i>Getal lae</i> $= \frac{50}{10,8} = 4,63 \approx 4 \quad \checkmark \text{CA}$ Number of packs in a crate / <i>Getal pakke in 'n krat</i> $= 4 \times 3 \times 4 = 48 \quad \checkmark \text{CA}$ Number of tins in a crate / <i>Getal blikke in 'n krat</i> $= 48 \times 12 = 576 \quad \checkmark \text{CA}$ Mass / <i>Massa</i> = $576 \times 440 \text{ g}$ or $576 \times 400 \text{ g}$ $= 253\,440 \text{ g} \quad = 230\,400$ $= 253,44 \text{ kg} \quad = 230,4 \text{ kg} \quad \checkmark \text{CA}$ Mass of the crate / <i>Massa van die krat</i> $= 280 \text{ kg} - 253,44 \text{ kg} \quad \text{or} \quad 280 \text{ kg} - 230,4 \text{ kg}$ $= 26,56 \text{ kg} \quad = 49,6 \text{ kg} \quad \checkmark \text{MCA}$ Not valid / <i>Nie geldig nie</i> $\checkmark \text{O}$	OR/OF 1MA dividing 29,2 1S round down 1CA simplification 1CA simplification 1CA simplification 1CA number of cans 1CA mass of the shipment 1MCA crate mass 1O conclusion (9)	
		[37]	

QUESTION/VRAAG2 [41 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.1	South East or SE/ <i>Suidoos of SO</i>	2A correct direction (2)	MP L2
* 2.1.2	Distance/ <i>Afstand</i> = 6,8 km – (0,19 + 3,2 + 2,1) km = 1,31 km ✓RT ✓M ✓CA	1RT all correct values 1M subtracting from 6,8 km 1CA simplification (3)	MP L2
2.1.3	Fort Street/ <i>Fortstraat</i> ✓✓A	2A correct street (2)	MP L2
* 2.1.4	12 min = $\frac{12}{60}$ hour/ <i>uur</i> = 0,2 hour/ <i>uur</i> ✓C Distance/ <i>Afstand</i> = Speed/ <i>spoed</i> × time/ <i>tyd</i> 6,8 km = speed/ <i>spoed</i> × 12 min ✓SF Speed/ <i>spoed</i> = $\frac{6,8 \text{ km}}{0,2 \text{ hour}}$ = 34 km/h ✓S ✓CA	1C convert min to hour 1SF substitution 1S changing subject of the formula 1CA simplification (4)	MP L3
2.1.5	Distance/ <i>Afstand</i> = Speed/ <i>spoed</i> × time/ <i>tyd</i> = 36,5 km/h × $\frac{11}{60}$ h ✓SF = 6,69166667 km ✓A Difference/ <i>Verskil</i> = 6,8 km – 6,69 km = 0,1083333 km ≈ 108,3 m ✓CA	1SF correct values 1A distance CA simplification NPR if answer is in metre (3)	MP L3
* 2.2.1	Length = $(26 + \frac{10}{12})$ feet/ <i>voet</i> = 26,83333... feet/ <i>voet</i> ✓M ✓C ✓CA Area = 26,8333... × 4 feet/ <i>voet</i> ✓SF = 107,333... feet ² / <i>voet</i> ² ✓CA LESS THAN / <i>MINDER AS</i> ✓O OR/OF Area/ <i>Opp</i> = 26 feet/ <i>voet</i> 10 inches/ <i>duim</i> × 4 feet/ <i>voet</i> ✓SF = 104 feet/ <i>voet</i> 40 inches ✓CA 40 inches/ <i>duim</i> = $\frac{40}{12}$ = 3 feet/ <i>voet</i> 4 inches/ <i>duim</i> ✓C Total area = 104 feet/ <i>voet</i> + 3 feet 4 inches/ <i>duim</i> ✓M = 107 feet/ <i>voet</i> 4 inches/ <i>duim</i> ✓CA LESS THAN / <i>MINDER AS</i> ✓O	1M adding 1C conversion 1CA simplification 1SF substitution 1CA simplification 1O conclusion OR/OF 1SF substitution 1CA simplification 1C conversion 1M adding 1CA simplification 1O conclusion	M L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF $L = 26 \times 12 + 10 = 322 \text{ in/dm}$ $W = 4 \times 12 = 48 \text{ in/dm}$ ✓C Area = 322×48 ✓SF $= 15\,456 \text{ in}^2/\text{dm}^2$ $= \frac{15\,456}{12^2}$ ✓CA $= 107,733 \text{ feet}^2/\text{voet}^2$ ✓O LESS THAN / MINDER AS OR/OF ✓M $L = 26 \times 12 + 10 = 322 \text{ in/dm}$ ✓CA $W = 4 \times 12 = 48 \text{ in/dm}$ ✓C Area = 322×48 ✓SF $= 15\,456 \text{ in}^2/\text{dm}^2$ $109 \text{ feet}^2/\text{voet}^2 \times 12^2 = 15\,696 \text{ in}^2/\text{dm}^2$ ✓CA Area = $15\,456 \text{ in}^2/\text{dm}^2$ which is LESS THAN/Minder as ✓O	OR/OF 1M adding 1CA simplification 1C conversion 1SF substitution 1CA simplification 1O conclusion OR/OF 1M adding 1CA simplification 1C conversion 1SF substitution 1CA simplification 1O conclusion (6)	
2.2.2	Measured distance/<i>gemete afstand</i> = $82 \text{ mm} = 8,2 \text{ cm}$ ✓A Scale/<i>Skaal</i> : $8,2 \text{ cm} : 25 \text{ feet/voet}$ ✓M $1 \text{ cm} : \frac{25}{8,2}$ $1 \text{ cm} : 3,05 \text{ feet/voet}$ ✓CA [Accept distances from 8cm to 8,6 cm]	1A measurement 1 M scale 1CA simplification (3)	MP L3
2.2.3	Rate per square foot /<i>koers per vierkante voet</i> $= \frac{2188,71}{1045}$ ✓RT ✓M $= \text{C\\$ } 2,09445\dots$ $\approx \text{C\\$ } 2,09 / \text{foot}^2$ ✓CA	1RT correct values M dividing by 1 045 1CA simplification NPR (3)	F L2
2.3.1	Annual rent = $\text{C\\$ } 6000 \times 4 = \text{C\\$ } 24\,000$ ✓MA Price to rent ratio/<i>huurprysverhouding</i> $= \frac{\text{Average Property Price}}{\text{Average Annual Rent}} / \frac{\text{Gemiddelde Eiendom Prys}}{\text{Gemiddelde Jaarlikse huur}}$ $= \frac{\text{C\\$ } 300\,000}{\text{C\\$ } 24\,000}$ ✓SF $= 12,5$ ✓CA Tumi should buy. / <i>Tumi moet koop</i> ✓O	1MA calculating annual rent 1SF substitution 1CA simplification 1O conclusion (4)	F L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L												
	OR/OF Quarterly price=$\frac{300\ 000}{4}=75\ 000$ ✓MA Price to rent ratio $\frac{75\ 000}{6\ 000}$ ✓SF = 12,5 Tumi should buy. <i>Tumi moet koop.</i> ✓O	OR/OF 1MA calculating quarterly price 1SF substitution 1CA simplification 1O conclusion (4)													
2.3.2 (a)	$P = \frac{3}{12}$ ✓RT ✓RT $= \frac{1}{4}$ ✓CA	1RT numerator 1RT denominator 1CA simplification (3)	P L2												
* 2.3.2 (b)	$IQR = Q_3 - Q_1 / IKO = K_3 - K_1$ ✓M $14,25 = 17,89 - Q_1$ $Q_1 = 17,89 - 14,25$ ✓SF $= 3,64$ ✓CA	1M IQR formula 1SF substitution 1CA simplification (3)	D L3												
* 2.3.2 (c)	Minimum: North America is lower than Africa ✓A <i>Minimum: Noord-Amerika is laer as Afrika</i> Maximum: North America is lower than Africa ✓A <i>Maksimum: Noord-Amerika is laer as Afrika</i> ✓A Median North America (7,59) is lower than Africa ✓A <i>Mediaan: Noord-Amerika(7,59) is laer as Afrika</i> It is better to own/buy a house in North America. <i>Dit is beter om 'n huis te koop in Noord-Amerika</i> ✓O OR/OF <table><tr><td></td><td>North America</td><td>Africa</td></tr><tr><td>Min</td><td>2,11</td><td>2,36</td></tr><tr><td>Max</td><td>15,26</td><td>27,41</td></tr><tr><td>Median</td><td>7,59 ✓A</td><td>12,19</td></tr></table> ✓A ✓A ✓A It is better to own/buy a house in North America. <i>Dit is beter om 'n huis te koop in Noord-Amerika</i> ✓O		North America	Africa	Min	2,11	2,36	Max	15,26	27,41	Median	7,59 ✓A	12,19	1A minimum 1A maximum 1A median of North America 1A median 1O conclusion OR/OF 1A minimum 1A maximum 1A median of North America 1A median 1O conclusion (5)	D L4
	North America	Africa													
Min	2,11	2,36													
Max	15,26	27,41													
Median	7,59 ✓A	12,19													
		[41]													

QUESTION/VRAAG3 [32 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduidelik	T&L
* 3.1.1	$C = -16\,302 + 15\,030 + 577\,196 + 297\,012 + 783\,526$ $= 1\,656\,462 \quad \checkmark A$	1MA adding all correct values 1A simplification AO (2)	F L2
* 3.1.2	$57\,730 \text{ million} = 57\,730\,000 \quad \checkmark C$ $P = \frac{4\,917\,029}{57\,730\,000} \approx 0,085 \quad \checkmark CA$ OR/OF $P = \frac{4,917029}{57,73} \approx 0,085 \quad \checkmark CA$	1C converting to number 1RT numerator 1CA denominator 1CA simplification OR/OF 1C taxpayers to millions 1RT numerator 1A denominator 1CA simplification P for rounding (4)	P L3
* 3.1.3	$\text{Mean/Gemiddelde} = \frac{577\,196\,000\,000}{2\,856\,043} \quad \checkmark MA$ $= R202\,096,397$ Monthly mean/Maandelikse gemiddelde $= \frac{202\,096,397}{12} \quad \checkmark MA$ $\approx R16\,841,37 \quad \checkmark CA$	1RT correct values 1C conversion 1MA dividing by 2 856 043 1MA dividing by 12 1CA simplification (5)	D L3
* 3.1.4	$\text{Percentage assessed} = \frac{16 \text{ million}}{356\,199 \text{ million}} \times 100\% \quad \checkmark M$ $= 0,00449\% \quad \checkmark CA$ Rounded this will be 0,0% $\checkmark O$ $\text{Persentasie aangeslaan} = \frac{16 \text{ miljoen}}{356\,199 \text{ miljoen}} \times 100\%$ $= 0,00449\%$ Afgerond sal dit 0,0% wees	1RT correct values 1M percentage calculation 1CA simplification 1O explanation (4)	D L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.2.1	Monthly taxable income / <i>Maandelikse belasbare inkomste</i> $= R26\,904,22 \times \frac{100 - 7,5}{100} \quad \checkmark \text{MA}$ $= R26\,904,22 \times 92,5\% \quad \checkmark \text{MA}$ $= R24\,886,40 \quad \checkmark \text{A}$ Annual taxable income/<i>Jaarlikse belasbare inkomste</i> $= R24\,886,40 \times 12$ $= R298\,636,80 \quad \checkmark \text{CA}$ OR/OF Monthly pension payable/<i>Maandelikse pensioen</i> $= R26\,904,22 \times \frac{7,5}{100} \quad \checkmark \text{MA}$ $= R2017,82 \quad \checkmark \text{A}$ Monthly taxable income / <i>Maandelikse belasbare inkomste</i> $= R26\,904,22 - R2017,82$ $= R24\,886,40 \quad \checkmark \text{MA}$ Annual taxable income/<i>Jaarlikse belasbare inkomste</i> $= R24\,886,40 \times 12$ $= R298\,636,80 \quad \checkmark \text{CA}$ OR/OF Annual gross salary/<i>Jaarlikse bruto inkomste</i> $= R26\,904,22 \times 12$ $= R322\,850,64 \quad \checkmark \text{A}$ Annual pension payable/<i>Jaarlikse pensioen</i> $= R322\,850,64 \times \frac{7,5}{100} \quad \checkmark \text{MA}$ $= R24\,213,80 \quad \checkmark \text{CA}$ Annual taxable income/<i>Jaarlikse belasbare inkomste</i> $= R322\,850,64 - R24\,213,80$ $= R298\,636,84 \quad \checkmark \text{CA}$	1MA subtracting 7,5% 1MA calculating % 1A simplification 1CA simplification OR/OF 1MA calculating percentage 1A calculating % 1MA simplification 1CA simplification OR/OF 1A simplification 1MA calculating percentage 1CA calculating % 1CA simplification (4)	F L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.2.2	April price without VAT/prys sonder BTW $= \frac{R172,50}{1,15} = R150 \quad \checkmark CA$ VAT in March/BTW in Maart $= R150 \times 14\% = R21 \quad \checkmark MCA$ March price with VAT/Maart prys met BTW $= R150 + R21 = R171 \quad \checkmark CA$ OR/OF March Price with VAT/Maart prys met BTW $= \frac{R172,50}{1,15} \times 1,14 \quad \checkmark MCA$ $= R171 \quad \checkmark CA$	1MA dividing by 115% 1CA simplification 1MCA 14 % VAT 1CA simplification OR/OF 2MA dividing by 115% 1MCA 114 % VAT 1CA simplification (4)	F L3
* 3.2.3 (a)	Gauteng, WCape, KZN, ECape, Mpumalanga, Limpopo, NWest, Free State, NCape $\checkmark \checkmark RT$ Gauteng, WKaap, KZN, OKaap, Mpumalanga, Limpopo, NWes, Vrystaat, NKaap $\checkmark \checkmark A$	2RT All Correct provinces 2A correct order (4)	D L2
3.2.3 (b)	It is to show that all provinces are different (tax payers' population/filers and tax due to income), or Tax collected per province differ due to a number of factors (e.g. tax payers and percentage, tax assessed and percentage; tax payers salary). $\checkmark \checkmark A$ <i>Dit is om aan te toon dat al die provinsies verskil (belastingbetalers en belasting betaalbaar)</i> Of <i>Belasting ingevorder verskil per provinsie as gevolg van verskeie faktore (b.v. belastingbetalers en persentasie, aangeslaande belasting en persentasie, belastingbetalers se salaris).</i>	2A reason (2)	D L4
* 3.2.3 (c)	$\checkmark O$ Not valid, percentage of North West is higher than that of Free State but the arrow is shorter $\checkmark \checkmark O$ Or Free State tax assessed and percentage is lower than that of the North West, however the Free State arrow is taller. Or the arrow lengths vary according to the number of tax payers. <i>Nie geldig nie, persentasie van Noordwes is hoër as Vrystaat maar die pyl is korter of Vrystaat se aangeslane belasting en persentasie is laer as Noordwes maar die Vrystaat pyltjie is hoër of die pyl lengtes varieer volgens die getal belastingbetalers.</i>	1O not valid 2O reason (3)	D L4
		[32]	

QUESTION 4/VRAAG [40 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduidelik	T&L
4.1.1	Number of busses/ <i>Getal busse</i> $= \frac{250\,000}{13,2} \quad \checkmark \text{MA}$ $= 18\,939,39394 \quad \checkmark \text{A}$ $\approx 19\,000 \quad \checkmark \text{R}$	1MA dividing by 13,2 1A simplification 1R rounding (3)	D L2
4.1.2 (a)	Exchange rate A: <i>Wisselkoers A</i> $\frac{R50\,000\,000\,000}{R15,97} = 3\,130\,870\,382 \quad \checkmark \text{MA} \quad \checkmark \text{A}$ Exchange rate B: <i>Wisselkoers B</i> $\frac{R50\,000\,000\,000}{R15,966728} = 3\,131\,511\,979 \text{ euro} \quad \checkmark \text{MA} \quad \checkmark \text{A}$ Difference/ <i>Verskil</i> $= (3\,131\,511\,979 - 3\,130\,870\,382) \text{ euro} \quad \checkmark \text{MCA}$ $= 641\,597 \text{ Euro} \quad \checkmark \text{CA}$ OR/OF Exchange rate A: <i>Wisselkoers A</i> $\frac{R50 \text{ billion}}{R15,97} = 3,130870382 \text{ billion/miljard} \quad \checkmark \text{MA} \quad \checkmark \text{A}$ Exchange rate B: <i>Wisselkoers B</i> $\frac{R50 \text{ billion}}{R15,966728} = 3,131511979 \text{ billion/miljard} \quad \checkmark \text{MA} \quad \checkmark \text{A}$ Difference/ <i>Verskil</i> $= (3,131511979 - 3,130870382) \text{ billion/miljard} \quad \checkmark \text{MA}$ $= 641\,597 \text{ Euro} \quad \checkmark \text{CA}$	1MA dividing by exchange rate 1A simplification 1MA dividing by exchange rate 1A simplification 1MCA subtracting 1CA simplification OR/OF 1MA dividing by exchange rate 1A simplification 1MA dividing by exchange rate 1A simplification 1MA subtracting 1CA simplification (6)	F L3

Q/V	Solution/Oplissing	Explanation/Verduidelik	T&L
4.1.2 (b)	✓O Exchange rate B, it gives a higher value (€641 597 ✓✓O more)/shows more money will be made for the taxis <i>Wisselkoers B, dit gee 'n hoër waarde ((€641 597 meer)</i> OR/OF Exchange rate B, it is stronger against the Euro. <i>Wisselkoers B, dit is sterker teen die Euro</i>	CA FROM 4.1.2(a) 1O choice 2O reason (3)	F L4
4.1.3	Total parts/ <i>Totale dele</i> = 4 + 5 + 75 = 84 ✓MA Using/Gebruik taxi = 15 000 000 $\frac{75}{84} \times \text{total number of commuters} = 15\,000\,000$ ✓MA $\frac{75}{84} \times \text{totale aantal pendelaars} = 15\,000\,000$ Total number of commuters /<i>totale aantal pendelaars</i> = $15\,000\,000 \times \frac{84}{75} = 16\,800\,000$ ✓A Number not using a taxi / <i>Getal wat nie 'n taxi gebruik nie</i> = 16 800 000 – 15 000 000 = 1 800 000 ✓CA OR/OF Train : Bus : Taxi / <i>Trein : Bus : Taxi</i> 4 : 5 : 75 Not using a taxi/<i>Nie taxi gebruik nie</i> = 4 + 5 = 9 ✓MA ✓A Number not using taxi/ <i>Getal wat nie 'n taxi gebruik nie</i> = $\frac{15\,000\,000}{75} \times 9$ ✓MA = 1 800 000 ✓CA	1MA simplification 1MA working with ratio 1A simplification 1CA simplification OR/OF 1MA adding 1A simplification 1MA working with ratio 1CA simplification	D L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Not using a taxi/<i>Nie taxi gebruik nie</i> = $4 + 5 = 9$ ✓MA ✓A Using ratio/<i>Gebruik verhouding</i>: 9 : 75 n: 15 million/<i>miljoen</i> $\therefore 75n = 9 \times 15$ million/<i>miljoen</i> ✓MA n = 1,8 million/<i>miljoen</i> or/of 1 800 000 ✓CA OR/OF Not using a taxi/<i>Nie taxi gebruik nie</i> = $4 + 5 = 9$ ✓MA ✓A Using ratio/<i>Gebruik verhouding</i>: 9 : 75 $15\,000\,000 \div 75 = 200\,000$ ✓MA $200\,000 \times 9 = 1\,800\,000$ ✓CA	OR/OF 1MA adding 1A simplification 1MA working with ratio 1CA simplification OR/OF 1MA adding 1A simplification 1MA working with ratio 1CA simplification (4)	
* 4.1.4	Distance to moon and back / <i>Afstand maan toe en terug</i> = $384\,402 \times 2$ ✓MA = 768 804 km ✓A Number of trips/<i>aantal ritte</i> = $\frac{19\,000\,000\,000}{768\,804}$ ✓MCA = 24 713,71117 ✓CA Valid, more than 24 000 ✓O <i>Geldig, dit is meer as 24 000</i> OR/OF Distance travelled for 24 000 trips to moon and back <i>Afstand afgelê vir 24 000 ritte maan toe en terug</i> = $24\,000 \times 384\,402$ km ✓MA ✓MA = 18 451 296 000 km ✓✓A Taxis travel/ry 19 000 000 000 km Valid, it will more than 24 000 trips ✓O <i>Geldig, dit sal meer as 24 000 ritte wees</i> OR/OF Kilometres travelled per trip/ <i>Kilometer per rit</i> = $19\,000\,000\,000 \div 24\,000 = 791\,666,6$ ✓MA ✓A One way distance /<i>Eenrigting afstand</i> = $791\,666,6 \div 2 = 395\,833$ km ✓MA ✓CA It is more than the distance to the moon. <i>Dit is meer as die afstand na die maan toe.</i> ✓O	1MA multiplying with 2 1A simplification 1MCA dividing 1CA simplification 1O conclusion OR/OF 1MA multiplying with 2 1MA multiplying 2A simplification 1O conclusion OR/OF 1MA dividing by 24 000 1A simplification 1MA dividing by 2 1CA simplification 1O conclusion (5)	M L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.1	9 Jan 2015 to 9 Jan 2016 – 365 days/dae ✓A 9 Jan 2016 to 9 Jan 2017 – 366 days/dae 9 Jan 2017 to 9 Jan 2019 – 730 days/dae 9 Jan 2019 to 3 Jan 2020 – 359 days /dae ✓A Total days/ Totale dae ✓MCA $= 365 + 366 + 730 + 359 = 1\,820$ ✓CA OR/OF Total days / Totale dae ✓A ✓A ✓MCA $= 365 \times 5 + 1 - 6$ $= 1\,820$ ✓CA	1A number of days in full year 1A days till 3 Jan 1MCA adding 1CA simplification OR/OF 1A number of days in full year 1A days till 3 Jan (subtracting 6) 1MCA adding 1 1CA simplification (4)	M L2
4.2.2	Share price in cent/ aandeel prys in sent $= 2063 - 1268$ ✓MA $= 795$ ✓CA	1MA subtracting converted amount 1CA simplification (2)	F L2
4.2.3 (a)	Percentage change/Persentasie verandering $= \frac{\text{New} - \text{old}}{\text{old}} \times 100\%$ $= \frac{2\,063 - 2\,138}{2\,138} \times 100\%$ ✓RT ✓SF ✓MA $= -3,50795\% \dots$ ✓CA ✓O Correct, it went down by 3,51% rounded to 2 decimal places. <i>Korrek, dit het getal met 3,51% afgerond tot 2 desimale plekke</i> OR/OF Percentage change/ Persentasie verandering ✓RT $= \frac{2063}{2138} \times 100\% \approx 96,49\%$ ✓A ✓M ✓CA $100\% - 96,49\% = 3,51\%$ ✓O ✓O Correct, it went down by 3,51% <i>Korrek, dit het getal met 3,51%</i>	1RT correct values 1SF into the % change formula 1MA % change calculation 1CA simplification 1O conclusion OR/OF 1RT correct values 1A simplification 1M % change calculation 1CA simplification 1O conclusion	F L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF ✓RT Amount /bedrag = $2\ 138\text{c} \times 3,51\%$ ✓MA $= 75\text{ c}$ ✓A Decrease / Afname = $2\ 138\text{ c} - 75\text{ c}$ ✓CA $= 2\ 063\text{ c}$ Correct, it went down by 3,51% ✓O <i>Korrek, dit het gedaal met 3,51%</i> OR/OF ✓M Percentage change = $100\% - 3,51\% = 96,49\%$ $\checkmark\text{RT}$ Share price = $2\ 138\text{c} \times 0,9649$ $= 2\ 062,9562 = 2\ 063\text{c}$ ✓CA ✓O It is correct. It was rounded to the nearest cent. <i>Dit is korrek. Dit is afgerond tot die naaste sent</i>	OR/OF 1RT correct values 1MA % change calculation from previous balance 1A simplification 1CA simplification 1O conclusion OR/OF 1M % change calculation 1RT correct values 1A simplification 1CA simplification 1O conclusion (5)	
* 4.2.3 (b)	Went down/Daal 2016, 2017, 2019, and 2020 ✓O Hence/Gevolgtlik $\frac{4}{5} \times 100\% = 80\%$ ✓O Statement is correct. ✓O <i>Bewering is korrek.</i> OR/OF ✓O Correct, share prices went down in 2016, 2017, 2019 and 2020 but went up 2018 ✓O $\frac{4}{5} \times 100\% = 80\%$ ✓O <i>Korrek, aandeel pryse het gedaal in 2016, 2017, 2019 en 2020 maar styg in 2018</i> $\frac{4}{5} \times 100\% = 80\%$	1O reasoning 4 years going down 1O verifying the percentage 1O conclusion OR/OF 1O conclusion award with justification 1O reasoning 4 years going down 1O verifying the percentage (3)	D L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.4	Buying / <i>koop</i> $= 5\,000 \times 1\,611 \overset{\checkmark\text{RT}}{=} 8\,055\,000 \text{ c} \overset{\checkmark\text{A}}{=} \overset{\checkmark\text{C}}{\text{R}80\,550}$ Sell/ <i>verkoop</i> $= 5\,000 \times 2\,350 = 11\,750\,000 \text{ c} = \text{R}117\,500 \overset{\checkmark\text{CA}}{}$ Profit / <i>Wins</i> = $\text{R}117\,500 - \text{R}80\,550 = \text{R}36\,950 \overset{\checkmark\text{CA}}{}$ OR/OF Difference in price / <i>Verskil in prys</i> $= 2\,350 - 1\,611 \overset{\checkmark\text{RT}}{\text{c}}$ $= 739 \text{ c} \overset{\checkmark\text{A}}{}$ $= \text{R}7,39 \overset{\checkmark\text{C}}{}$ Profit / <i>Wins</i> = $\text{R}7,39 \times 5\,000 \overset{\checkmark\text{MCA}}{}$ $= \text{R}36\,950 \overset{\checkmark\text{CA}}{}$	1RT correct values 1A buy 1C converting to rand 1CA sell 1CA simplification OR/OF 1RT correct values 1A difference 1C converting to rand 1MCA multiplying 1CA simplification (5)	F L3
		[40]	
	TOTAL/TOTAAL: 150		



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 2021

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/PUNTE: 150

SYMBOL/KODE	EXPLANATION/VERDUIDELIKING
M	Method/ <i>Metode</i>
MA	Method with accuracy/ <i>Metode met 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/map/diagram/ <i>Lees vanaftabel/kaart/grafiek/diagram</i>
SF	Correct substitution in a formula/ <i>Korrekte vervanging in formule</i>
O	Opinion/Explanation/Reasoning / <i>Opinie/Verduideliking/Redenasie</i>
P	Penalty, e.g. for no units, incorrect rounding off, etc./ <i>Penalisering, bv. vir geen eenhede/verkeerde afronding, ens.</i>
R	Rounding off/ <i>Afronding</i>
NPR	No penalty for correct rounding minimum two decimal places/ <i>Geenpenalisering vir korrekte afronding tot twee desimale plekke nie</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with constant accuracy/ <i>Metode met volgehoue akkuraatheid</i>

**These marking guidelines consist of 19 pages.
*Hierdienasienriglyne 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, merk slegs die EERSTE poging.
- As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.
- 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 en ekstra antwoorde gee, penaliseer vir elke ekstra item.
- 'n Algemene merkbeginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor.

QUESTION/VRAAG 1 [29 MARKS/PUNTE] Answer Only AO - full marks			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.1.1	Total mass/Totale massa $= 6 \times 110\text{g}$ ✓MA $= 660\text{ g}$ ✓A	1MA multiply mass by 6 1A mass (2)	M L1
1.1.2*	Radius = 32 mm ✓✓A	2A radius (2)	M L1
1.1.3	A ✓✓A	2A correct letter [accept: mm ³] (2)	M L1
1.1.4*	Total No. of days/Totale getal dae = 11 Jan to 31 Mar ✓ MA $= (31 - 10) + 28 + 31$ ✓ MCA $= 21 + 28 + 31 = 80$ ✓CA	1MA days in Jan 1MCA adding days in 3 months 1CA simplification (3)	M L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.1.5*	Price for 2 Pringles/Prys vir 2 Pringles $= 2 \left(\frac{R100}{6} \right)$ ✓ MA $= 2 \times R16,666$ $= R33,33$ ✓ CA	1MA dividing price by 6 and multiplying by 2 1CA simplification NPR (2)	M/F L1
1.2.1	A ✓✓ A	2A correct letter (2)	M L1
1.2.2	D ✓✓ A	2A correct letter Accept 60 km/h (2)	M L1
1.3.1	7,3 m = $7,3 \times 100$ cm ✓ MA = 730 cm ✓ A	1MA multiplying correct value by 100 1A simplification (2)	M L1
1.3.2*	D = 7,3 m – 5,2 m ✓ MA = 2,1 m ✓ CA	1MA difference of correct lengths 1CA simplification (2)	M L1
1.3.3	0,5m ✓✓ A	2A height (2)	M L1
1.4.1*	✓A A layout plan is a top view that shows the arrangement of features. ✓A <i>'n Uitlegplan is die bo-aansig wat die rangskikking van die voorwerpe aantoon.</i> OR/OF A layout plan is the structural arrangement of items within a certain space. <i>'n Uitlegplan is die strukturele rangskikking van items binne 'n bepaalde ruimte.</i> OR/OF Plan of the entire inside cabin, showing location of seats, exit doors etc. <i>'n Plan van die hele binnekant van die kajuut wat die posisie van sitplekke, uitgang, deure ens. aantoon</i> OR/OF Drawing to scale showing physical arrangements of all resources that consume space within facilities. <i>'n Skaaltekening wat die fisiese posisies van al die items van spasie in beslag neem binne die fasiliteit</i>	2A explanation (2)	MP L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.4.2*	28 ✓✓ A	2A number of seats (2)	MP L1
1.4.3	✓ A ✓ A G1	1A correct seat 1A correct row (2)	MP L1
1.4.4*	6 ✓✓ A	2A correct number (2)	P L1
		[29]	

QUESTION/VRAAG 2 [24MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.1	3 ✓✓A	2A correct number (2)	MP L2
2.2	Living room/Woonkamer ✓✓A	2A correct room (2)	MP L1
2.3	North East or NE/Noordoos of NO ✓✓A	2A direction (2)	MP L2
2.4*	$P_{\text{not interior/nie binne}} = P_{\text{exterior/buite}}$ $= \frac{2}{6} \quad \checkmark\checkmark\text{RT}$ $= \frac{1}{3} \quad \checkmark\text{A}$ $= \frac{1}{3} \quad \checkmark\text{CA}$ OR/OF $P_{\text{not interior/nie binne}} = 1 - \frac{4}{6} \quad \checkmark\text{MA}$ $= 1 - \frac{4}{6} \quad \checkmark\text{RT}$ $= \frac{2}{6} \quad \checkmark\text{A}$ $= \frac{1}{3} \quad \checkmark\text{CA}$	2RT numerator 1A denominator 1CA simplification OR/OF 1MA probability of NOT 1RT numerator 1A denominator 1CA simplification (4)	P L2
2.5	$\checkmark\text{A}$ Jan is wrong, the kitchen is on the Southern side. In South Africa it does not get a lot of sun. <i>Jan is verkeerd. Die kombuis is aan die suidlike kant. In Suid-Afrika kry dit nie baie son nie.</i>	1A wrong 2O reasoning (3)	MP L4
2.6	It cannot be the view showing the kitchen and dining room, as it does not show the extra window for the bathroom. ✓✓O <i>Dit kannie die kombuis en eetkamer wees nie want dit wys nie die venster van die badkamer nie.</i> It does not show the other rooms on both sides of the windows. <i>Dit wys nie die ander kamers weerskante van die vensters nie.</i> OR/OF It shows the veranda, door, bedroom and livingroom windows. <i>Dit wys die stoep, deur en slaapkamer en woonkamervensters.</i> OR/OF	2O reason	MP L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	OR/OF Because there is no veranda on the side of the kitchen and the picture shows the veranda. <i>Daar is nie 'n stoep aan die kombuis se kant nie en die prent toon 'n stoep</i> OR/OF The drawing shows the SE elevation and the kitchen is on the SW side. <i>Die prent toon die SO aansien die kombuis is aan die SW kant.</i> OR/OF The windows shown does not look like kitchen windows, they are too big. <i>Die vensters wat aangetoon word lyk nie soos kombuisvensters nie, hulle is te groot</i> OR/OF The drawing represents the front view. <i>Die prent is die vooraansig</i> OR/OF Kitchen should be on the left-hand side with the window and door / The door knob is on the right-hand side and not on the left-hand side of the door adjacent to the kitchen window. <i>Kombuis moet aan die linkerkant met die vensterendeur wees / Die deurknop is aan die regterkant en nie aan die linkerkant van die deur wat grens aan die kombuisvenster nie.</i>	(2)	
2.7.1*	10 mm : 1 000 mm ✓A = 1 : 100 ✓CA OR/OF 1 cm : 100 cm ✓A = 1 : 100 ✓CA	1A correct ratio and conversion 1CA simplification OR/OF 1A correct ratio and conversion 1CA simplification AO	MP L2 (2)
2.7.2	✓A Length on floor plan/<i>Lengte op die vloerplan</i> = 4,4 cm 1 cm = 100 cm 4,4 cm = 4,4 × 100 cm ✓MCA = 440 cm ✓CA = 4,4 m ✓C OR/OF	CA from 2.7.1 1A correct measurement 1MCA using the scale 1CA simplification 1C conversion Accept 4,3 m to 4,5 m	MP L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	1 cm is 1 000 mm ✓A 4,4 cm is 4 400 mm ✓MCA ✓CA 4 400 mm = 4,4 m ✓C OR/OF 1 cm : 1 000 mm ✓MCA 1 cm : 1 m ✓C ✓A 4,4 cm : 4,4 m ✓CA	1A correct measurement 1MCA using the scale 1CA simplification 1C conversion OR/OF 1MCA using the scale 1C conversion 1A correct measurement 1CA simplification (4)	
2.7.3	Jan is correct. ✓A ✓✓O When a photocopy is made the size of the plan may change while the number scale remains the same. <i>Jan is korrek.</i> <i>Wanneer jy 'n fotostaat maak, kan die grootte van die plan verander en die getalskaal bly dieselfde</i>	1A opinion 2O verification (3)	MP L4
		[24]	

QUESTION/VRAAG 3 [35 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.1.1	$\begin{aligned} & \checkmark\text{RT} \quad \checkmark\text{MA} \\ \mathbf{A} &= 162 \text{ cm} + 1,5 \text{ cm} + 1,5 \text{ cm} \\ &= 162 \text{ cm} + (1,5 \text{ cm} \times 2) \\ &= 165 \text{ cm} \quad \checkmark\text{CA} \end{aligned}$	1RT inside length 1MA adding both sides 1CA simplification (3)	M L1
3.1.2*	$\begin{aligned} & \checkmark\text{RT} \quad \checkmark\text{MA} \\ \mathbf{B} &= 80 \text{ cm} - (40 \text{ cm} + 4,5 \text{ cm} + 1,5 \text{ cm} + 1,5 \text{ cm}) \\ &= 32,5 \text{ cm} \quad \checkmark\text{CA} \end{aligned}$	1RT both heights 1MA subtracting 1CA simplification (3)	M L1
3.2	$\begin{aligned} 31,496 \text{ inches/duim} &= 80 \text{ cm} \quad \checkmark\text{RT} \\ 1 \text{ inch/duim} &= \frac{80}{31,496} \text{ cm} \quad \checkmark\text{MA} \\ &= 2,54 \text{ cm} \quad \checkmark\text{A} \end{aligned}$	1RTheight 80 cm 1MA dividing by 31,496 1A simplification (3)	M L2
3.3.1	$\begin{aligned} \text{Area of a rectangle} &= \text{length} \times \text{width} \\ \text{Opp van 'n reghoek} &= \text{lengte} \times \text{breedte} \\ &= 165 \text{ cm} \times 80 \text{ cm} \quad \checkmark\text{MCA} \\ &= 13\,200 \text{ cm}^2 \quad \checkmark\text{CA} \end{aligned}$	CA from 3.1.1 1MCA substitution 1CA simplification (2)	M L2
3.3.2*	$\begin{aligned} \text{Area of a rectangle} &= 13\,200 \text{ cm}^2 \\ &= \frac{13\,200}{(100)^2} \text{ m}^2 \quad \checkmark\text{MCA} \\ &= 1,32 \text{ m}^2 \quad \checkmark\text{CA} \end{aligned}$ or Area $= 1,65 \times 0,8$ $= 1,32 \text{ m}^2$	CA from 3.3.1 1MCA dividing by 100^2 or 10 000 1CA simplification AO (2)	M L2
3.3.3	$\begin{aligned} 1 \ell \text{ covers/bedek} & 6,9 \text{ m}^2 \\ n \ell \text{ covers/bedek} & 1,32 \text{ m}^2 \\ n &= \frac{1,32}{6,9} \quad \checkmark\text{MA} \\ &= 0,1913... \ell \quad \checkmark\text{CA} \\ \text{To paint three coats/ Om drie lae te verf} & \\ & \checkmark\text{MA} \\ 0,1913... \ell \times 3 &= 0,57 \ell \quad \checkmark\text{CA} \\ & \checkmark\text{R} \end{aligned}$	CA from 3.3.2 1MA dividing by 6,9 1CA simplification 1MA multiplying with 3 1CA simplification 1R rounding	M L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF Total area to cover / <i>Totale oppervlakte om te dek</i> $\checkmark\text{MA}$ $= 1,32 \text{ m}^2 \times 3 = 3,96 \text{ m}^2 \quad \checkmark\text{CA}$ 1 ℓ covers/<i>bedek</i> $6,9 \text{ m}^2$ $x \text{ ℓ covers /bedek } 3,96 \text{ m}^2$ $\checkmark\text{MA}$ $x = \frac{3,96}{6,9} = 0,57 \text{ ℓ} \quad \checkmark\text{CA} \quad \checkmark\text{R}$ OR/OF Paint needed/<i>Verf benodig</i> $\checkmark\text{MA}$ $= \frac{1,32 \times 2}{6,9} \text{ ℓ} + \frac{1,32}{6,9} \text{ ℓ} \quad \checkmark\text{MA}$ $\checkmark\text{CA} \quad \checkmark\text{CA}$ $= 0,38 \text{ ℓ} + 0,19 \text{ ℓ}$ $= 0,57 \text{ ℓ} \quad \checkmark\text{R}$ OR/OF Total area to cover / <i>Totale oppervlakte om te dek</i> $\checkmark\text{MA} \quad \checkmark\text{CA}$ $= 1,32 \text{ m}^2 \times 3 = 3,96 \text{ m}^2$ Spread rate/ <i>Spreikoers</i> = $\frac{1 \text{ ℓ}}{6,9 \text{ m}^2} \quad \checkmark\text{MA}$ $= 0,144... \text{ ℓ/m}^2$ Total amount of litres / <i>Totale aantal liters</i> $= 0,144 \times 3,96 \quad \checkmark\text{CA}$ $= 0,57 \text{ ℓ} \quad \checkmark\text{R}$ OR/OF Spread rate/ <i>Spreikoers</i> = $\frac{1 \text{ ℓ}}{6,9 \text{ m}^2} \quad \checkmark\text{MA}$ $= 0,144... \text{ ℓ/m}^2$ Paint needed for 1 coat/ <i>Verf nodig vir 1 laag</i> $= 0,144 \times 1,32 = 0,19... \text{ ℓ} \quad \checkmark\text{CA}$ Paint needed for 3 coats/ <i>Verf nodig vir 3 lae</i> $\checkmark\text{MA}$ $= 0,19... \times 3 \quad \checkmark\text{CA}$ $= 0,57 \text{ ℓ} \quad \checkmark\text{R}$	1MA multiplying with 3 1CA simplification 1MA dividing by 6,9 1CA simplification 1R rounding OR/OF 1MA dividing by 6,9 1MA adding the 2 coats and 1 1CA simplification 1CA simplification 1R rounding OR/OF 1MA multiplying with 3 1CA simplification 1MA dividing by 6,9 1CA simplification 1R rounding OR/OF 1MA dividing by 6,9 1CA simplification 1MA multiplying with 3 1CA simplification 1R rounding (5)	
3.3.4	$0,57 \text{ ℓ} \times 1\,000 \quad \checkmark\text{MCA}$ $= 570 \text{ ml} \quad \checkmark\text{CA}$ Not valid $\checkmark\text{O}$ <i>Nie geldig nie</i>	1MCA (from Q3.3.3 multiply by 1 000) 1CA simplification 1O verification	M L4

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	OR/OF 500 ml ÷ 1 000 ✓MCA = 0,5 l less than 0,57l ✓CA Tsidi's statement is invalid ✓O OR/OF 1 l covers/bedek 6,9 m² 500 ml covers/bedek $\frac{6,9}{2} = 3,45 \text{ m}^2$ ✓MCA ✓CA Area to paint / Opp om te verf = $1,32 \text{ m}^2 \times 3 = 3,96 \text{ m}^2$ The paint is not enough / invalid ✓O Die verf is nie genoeg / nie geldig OR/OF Coverage per coat/Dekking per laag = $\frac{500 \text{ ml}}{3} = \frac{0,5 \text{ l}}{3} = 0,166..$ ✓MCA Coverage /Dekking = $0,166 \times 6,9 = 1,15 \text{ m}^2$ ✓CA 1,32 m² needs to be covered per coat/moet per laag gedek word. Not valid / Nie geldig nie ✓O	OR/OF 1MCA (from Q3.3.3 dividing by 1 000) 1CA simplification 1O verification OR/OF 1MCA area 1CA simplification 1O verification OR/OF 1MCA dividing 1CA simplification 1O verification (3)	
3.4.1*	Number of boxes/ Getal bokse = $\frac{162 \text{ cm}}{34,5 \text{ cm}}$ ✓MA ✓C = 4,695... ✓CA ∴ 4 boxes ✓R OR/OF Number of boxes/ Getal bokse = $\frac{1\,620 \text{ mm}}{345 \text{ mm}}$ ✓C ✓MA = 4,695... ✓CA ∴ 4 boxes ✓R	1MA dividing 1C conversion 1CA simplification 1R rounding down OR/OF 1C conversion 1MA dividing 1CA simplification 1R rounding down (4)	M L2 #

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.4.2	Number of single files/ <i>Getal enkel lêers</i> $= \frac{162 \text{ cm}}{8,1 \text{ cm}} \quad \checkmark \text{MA}$ $= 20 \quad \checkmark \text{A}$ Number of files in boxes / <i>Getal lêers in 'n boks</i> $= 4 \times 4 \quad \checkmark \text{RT}$ $= 16 \quad \checkmark \text{CA}$ Difference in the number of files/ <i>Verskil in getal lêers</i> $= 20 - 16$ $= 4 \quad \checkmark \text{CA}$	CA number of boxes from 3.4.1 1MA dividing 1A simplification 1RT number of files in a box 1CA simplification 1CA difference in files (5)	M L3
3.4.3	Neater storage/ <i>Netjieser berging</i> $\checkmark \checkmark \text{O}$ OR/OF Files stand up straight/ <i>Die lêers staan regop</i> OR/OF Prevents dust on documents in the files/ <i>Verhoed dat stof op die dokumente in die lêers kom.</i> OR/OF It is easier to separate the files accordingly. <i>Dit is makliker om haar lêers te verdeel</i> OR/OF To categorise /organise her files/ <i>Dit is om haar lêers te katagoriseer /organiseer</i> OR/OF Prevent files from breaking/ damage/protect files <i>Verhoed dat lêers breek of beskadig/beskerm lêers</i>	2O reason (2)	M L4
3.4.4	$P = \frac{1}{16} \times 100\% \quad \checkmark \text{A}$ $= 6,25\% \quad \checkmark \text{MCA}$ $= 6,25\% \quad \checkmark \text{CA}$	CA denominator from 3.4.2 1A numerator 1MCA denominator 1CA simplification (3)	P L2
		[35]	

QUESTION/VRAAG 4 [33 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1.1	✓✓A Perennial garden bed./Meerjarige tuinbeddings OR/OF Compost / Kompos	2A correct feature (2)	MP L2
4.1.2	Water is scarce/Water is skaars OR/OF Rain water is free compared to tap water ✓✓O Reënwater is gratis in vergelyking met kraanwater OR/OF Pay less water bills/Betaal minder vir water OR/OF Water storage/om water te stoor OR/OF To save water for future use Om water te spaar vir toekomstige gebruik OR/OF To harvest rain water Om reënwater op te gaar	2A Reason (2)	MP L4
4.1.3	Greenhouserroof/ gutters / Kweekhuis dak/geute ✓O OR/OF Livestock Barnroof/ gutters / Veestoor dak/geute ✓O OR/OF Solar greenhouserroof / gutters/ Sonkrag kweekhuis	1A correct structure 1A 2nd correct structure Accept roof and gutter /pipe full marks (Any 2 structures) (2)	MP L4
4.1.4	✓RT ✓RT Area/Oppervlakte = $\frac{1}{2} \times 17,024 \text{ m} \times 19,5 \text{ m}$ = 165,984 m² ✓CA	1RT correct height 1RT correct base 1CA area of a triangle NPR (3)	M L2
4.1.5	Option/Opsie A = R1 154 × 2 ✓MA = R2 308 ✓CA Option/Opsie B = R127,30 × 19 ✓MA = R2 418,70 ✓CA Option A. ✓O Opsie A.	1MA multiply by 2 1CA option A cost 1MA multiply by 19 1CA option B cost 1O best option (5)	MF L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2	$\text{Volume} = 3,142 \times r^2 \times \text{height/hogte}$ $\checkmark\text{SF}$ $5000 \ell = 3,142 \times r^2 \times 220 \text{ cm}$ $\checkmark\text{C}$ $5000\,000 = 691,24 \times r^2$ $\frac{5\,000\,000}{691,24} = r^2 \quad \checkmark\text{M}$ $7233,377698 = r^2 \quad \checkmark\text{S}$ $\sqrt{7233,377698} = r \quad \checkmark\text{M}$ $85,05 \text{ cm} = r \quad \checkmark\text{CA}$	1SF substituting 5000 1C converting ℓ to cm^3 1M dividing by 691,24 1S simplification 1M finding square root 1CA radius value NPR (6)	M L3
4.3.1*	$18 : 42 \quad \checkmark\text{A}$ $= 3 : 7 \quad \checkmark\text{CA}$	1A correct order and values 1CA only if one value is correct or reversed order (2)	MP L1
4.3.2	$\text{Height/hogte} = \frac{42''}{12''} = 3,5 \text{ feet/voet} \quad \checkmark\text{MA}$ $3,28084 \text{ feet/voet} = 1\,000 \text{ mm}$ $\therefore 3,5 \text{ feet/voet} = \frac{3,5}{3,28084} \times 1\,000 \quad \checkmark\text{C}$ $= 1\,066,799\dots\text{mm} \quad \checkmark\text{CA}$ OR/OF $3,28084 \text{ feet} = 1\,000 \text{ mm}$ $1 \text{ foot} = n \quad \checkmark\text{MA}$ $n = 304,79999 \text{ mm}$ $1 \text{ foot} = 12 \text{ inches}$ $\text{Then } 12 \text{ inches} = 304,79999 \text{ mm}$ $1 \text{ inch} = \frac{304,79999 \text{ mm}}{12} \quad \checkmark\text{C}$ $= 25,39999 \text{ mm}$ $\text{Therefore } 42 \text{ inches} = 42 \times 25,39999 \text{ mm}$ $= 1066,7999 \text{ mm}$ $= 1\,066,8 \text{ mm} \quad \checkmark\text{CA}$	1MA converting to feet 1C converting to mm 1CA simplification OR/OF 1MA converting to feet 1C converting to mm 1CA simplification NPR (3)	M L2

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.3.3	(a) iii ✓A (b) i ✓A (c) ii ✓A	3A correct Roman numeral (3)	MP L1
4.3.4	Q ✓✓A	2A correct letter (2)	MP L1
4.3.5*	✓✓A The notch labelled S is placed against B and the notch labelled R is placed against C ✓A <i>Die sitplek word bo-op die kantspanstukke geplaas</i> <i>Die uitkeping S word op B geplaas en die uitkeping R word teen C geplaas.</i>	2A mentioning the position of the 1st notch 1A second notch (3)	MP L4
		[33]	

QUESTION/VRAAG 5 [29MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
5.1.1 (a)	W ✓✓A	2A correct letter Accept $\left(\frac{50}{60}\right)$ (2)	M L1
5.1.1 (b)	Z ✓✓A	2A correct letter Accept Plymouth (2)	MP L2
5.1.2* (a)	Providence to Boston = 52 miles ✓✓RT Springfield to Worcester = 55 miles ✓RT	2RT distance 1RT distance (3)	MP L2
5.1.2 (b)	Conditions or nature of the roads/<i>Toestand van die paaie</i> OR/OF Permissible speed or differing speed limits <i>/Toelaatbare spoed of verskillende spoedbepelings</i> OR/OF ✓✓O Volume of traffic on the road/<i>Hoeveelheid verkeer op die pad</i> OR/OF Number of Traffic lights/<i>Aantal verkeers ligte</i> OR/OF Speed humps / Animals / Riots/Unrest/Protest <i>Spoedhobbels /diere / oproer/ onrus/ protes aksies</i>	2A opinion (2)	MP L4
5.1.3	A Newburyport ✓A B Lawrence ✓A C Boston ✓A D Worcester ✓A	1A Newburyport 1A Lawrence 1A Boston 1A Worcester (4)	MP L2

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
5.1.4	Number of litres in 23 gallons/<i>Getal liter in 23 gelling</i> $= 3,785 \times 23$ ✓ C $= 87,055$ litre ✓ S Cost of 87,055 litre/ <i>Prys vir 87,055 liter</i> $= 87,055 \times R15,97$ $= R1\ 390,27$ ✓ CA Valid/ <i>Geldig</i>. ✓ O OR/OF Number of litres / <i>Getal liter</i> $= \frac{R1400}{R\ 15,97}$ $= 87,664..$ litre ✓ S Number of gallons / <i>Getal gellings</i> $= \frac{87,664}{3,785}$ ✓ C $= 23,16$ gallons ✓ CA Can buy more with R1 400/<i>Kan meer koop met R 1400</i> Valid / <i>Geldig</i> ✓ O	1C gallons to litre 1S simplification 1CA cost of fuel 1O conclusion OR/OF 1S simplification 1C gallons to litre 1CA cost of fuel 1O conclusion NPR (4)	MF L4

Q/V	Solution/Oplossing	Explanation/Verduidelik	T/L
5.1.5	1 full tank of fuel/ 1 vol tenk = 23 gallons /gelling ✓ A He can travel/ Hykan reis = $23 \times 18 = 414$ miles Distance/afstand ✓ RT Greenfield - Fitchburg = 49 miles/myl Number of trips on 1 full tank /Getalritte met 1 voltenk $= \frac{414}{49} = 8,448..$ ✓ MA ✓ CA $\therefore$ 8 trips on 1 full tank / 8 ritte met 1 voltenk So, then he will fill tank back to 23 gallons Dan hervulhy die tenk tot 23 gelling Amount of fuel for 1 return trip/ brandstofvir lheen-en-weer reis $= \frac{98}{18} = 5,44$ gallon ✓ MA ✓ CA Left in a tank is $23 - 5,44 = 17,56$ gallons. ✓ MA ✓ CA Oor in die tenk is $23 - 5,44 = 17,56$ gelling OR/OF ✓ RT Distance/afstand_(Greenfield and Fitchburg) = 49 miles/myl Weekly must travel/ moet weekliks ry $= 5 \times 2 = 10$ trips ✓ MA He can travel = $23 \times 18 = 414$ miles with a full tank. ✓ MA Hy kan 414 myl ry met 'n vol tenk, 8 trips is $49 \times 8 = 392$ miles – now he needs to refill after Thursday's trips 8 ritte is 392 myl – dan hervul hy na Donderdag se terugkeer. With the full tank he only needs to travel Friday return trip / Hyrydanslegs Vrydagheen-en-weer ✓ A Friday trip: $49 \times 2 = 98$ miles / myl Used/Gebruik $= \frac{98}{18} = 5,44$ gallons/ gelling ✓ MA ✓ CA Left in a tank is $23 - 5,44 = 17,56$ gallons. ✓ MA ✓ CA Daar is $23 - 5,44 = 17,56$ gelling in die tenk oor	1A travel distance 1RT trip distance 1MA dividing 1CA number of trips 1MA dividing 1CA simplification 1MA subtracting 1CA simplification OR/OF 1RT trip distance 1MA weekly miles 1MA multiply 1A travel distance 1MA dividing 1CA usage on last day 1MA subtracting 1CA diff. between capacity and used gallons	M L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	18 miles on 1 gallon / 18 myl op 1 gelling ✓ RT 49 miles on x gallon / 49 myl op x gelling $x = \frac{48}{18} = 2,722\ldots$ gallon per trip / gelling per rit ✓ MA ✓ A Number of trips on 1st full tank / Getalritte met 1st voltenk $= \frac{23}{2,722\ldots} = 8,44\ldots$ ✓ CA ∴ 8 trips before he fills up again / 8 rittevoorhyweervolmaak ∴ 2 trips with second full tank/ 2 ritte met die 2de voltenk Fuel used / Brandstofverbruik ✓ MA ✓ CA $= 2,722\ldots \times 2 = 5,44\ldots$ gallon / gelling Left in the tank / Oor in die tenk ✓ MA ✓ CA $= 23 - 5,44\ldots = 17,56$ gallon / gelling. OR/OF Single Trip/Enkelrit = 49 miles /myl ✓ RT Number of gallons for 1 trip/ Getal gelling vir 1 rit $= 49 \div 18 = 2,72$ ✓ MA ✓ A Number of gallons for return trip/ virretoerrit $= 2,72 \times 2 = 5,44$ ✓ CA 23 gallons/gelling $\div 5,44 = 4,22$ days/dae ✓ MA ✓ CA ≈ 4 days/dae No of gallons left / Hoeveelheid gelling oor $= 23 - 5,44 = 17,56$ gallons ✓ MA ✓ CA OR/OF	1RT trip distance 1MA dividing 1A travel distance 1CA number of trips 1MA multiplying 1CA simplification 1MA subtracting 1CA simplification OR/OF 1RT trip distance 1MA dividing 1A travel distance 1CA number of trips 1MA dividing 1CA simplification 1MA subtracting 1CA simplification OR/OF	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	$23 \times 18 = 414 \text{ miles/myl}$ ✓A ✓ RT ✓ MA Monday/Maandag : $49 \times 2 = 98 \text{ miles/myl}$ Tuesday/Dinsdag : 98 miles/myl Wednesday/Woensdag: 98 miles/myl Thursday/ Donderdag 98 miles/myl Totaal = 392 miles/myl ✓CA Fill up the tank on Thursday / <i>Maak die tenk vol petrol op Donderdag</i> Used per day /<i>Gebruik per dag</i> ✓ MA ✓ CA $= 98 \div 18 = 5,44 \text{ gallons}$ Petrol left in tank/<i>Petrol oor in tenk</i> $= 23 - 5,44$ ✓ MA 		



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/ <i>Kode</i>	Explanation/ <i>Verduideliking</i>
M	Method/ <i>Metode</i>
MA	Method with accuracy/ <i>Metode met 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>Penalisasie, bv. vir geen eenhede, verkeerde afronding, ens.</i>
R	Rounding off/ <i>Afronding</i>
NPR	No penalty for correct rounding/ <i>Geen penalisasie vir korrekte afronding nie</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with consistent accuracy/ <i>Metode met volgehoue akkuraatheid</i>
RCA	Rounding consistent with accuracy/ <i>Afronding met volgehoue akkuraatheid</i>
*	Asterisk means refer to attached notes

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

NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution, mark the crossed out (cancelled) version.
- Consistent accuracy (CA) applies in ALL aspects of the marking guidelines; however it stops at the second calculation error.
- Note: Consistent accuracy (CA) does NOT apply in cases of a breakdown.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- As a general marking principle, if a candidate has incurred one mistake and there is evidence of sound mathematics thereafter, then that candidate should lose ONE mark only.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sienslegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout.*
- *Let wel: Volgehoue akkuraatheid (CA) geld NIE in die geval van 'n afbreuk NIE.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem het en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene nasienbeginsel is dat, indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, die kandidaat slegs EEN punt verloor.*

QUESTION/VRAAG 1 [30 MARKS/PUNTE] – ANSWER ONLY ACCEPTED			
Q/V	Solution/Oplissing	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	✓✓ A B OR/OF (2 × 240 × 70 + 2 × 240 × 112 + 2 × 112 × 70) mm ²	2A correct option (2)	M L1
*1.2.2	✓✓ A mm ³ OR Cubic millimetres/ <i>Kubieke millimeter</i>	2A correct unit (2)	M L1
1.2.3	✓ C Length/ <i>Lengte</i> = 240 ÷ 1 000 = 0,24 m ✓ A	1C conversion factor 1A simplification (2)	M L1

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

QUESTION/VRAAG 2 [32 MARKS/PUNTE]			
Q/V	Solution/Oplissing	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. <i>Die afstand is minder as 'n vol marathon.</i> OR/OF It is shorter than a standard marathon. <i>Dit is korter as 'n standaard marathon.</i> OR/OF It is a fraction of a full marathon. <i>Dit is 'n breuk van die vol marathon.</i>	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 <i>Suidoos OF SO</i>	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/ <i>St Martin-Kerk</i> ✓✓RT	2RT correct church (2)	MP L2
2.2.5	Irene Library & Hall/ <i>Irene Biblioteek & Saal</i> ✓✓✓RT [Accept Hall / <i>Aanvaar Saal</i>]	3RT correct place (3)	MP L3
2.2.6	Measured distance/ <i>Gemete afstand</i> = 8 cm ✓MA 8 cm : 1,9 km ✓MCA 8 cm : 190 000 cm ✓C Scale/ <i>Skaal</i> is 1 : 23 750 ✓S 1 : 24 000 ✓R (Maximum distance/ <i>maksimum afstand</i>) Measured distance/ <i>Gemete afstand</i> = 8,4cm ✓MA 8,4 cm : 1,9 km ✓MCA 8,4 cm : 190 000 cm ✓C Scale/ <i>Skaal</i> is 1 : 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/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T/L
2.2.7	The traffic flow is in the opposite direction. ✓✓O <i>Die verkeervloei in die teenoorgestelderigting.</i> OR/OF One-way traffic /The arrow shows you can only turn left. <i>Eenrigtingverkeer/ Die pyl wys jy kan slegs links draai</i> OR/OF The driver will be facing oncoming traffic. <i>Die bestuurder sal in aankomende verkeer inry.</i>	2O opinion (2)	MP L4
		[32]	

QUESTION/VRAAG 3[29MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.1.1	Total length/<i>Totale lengte</i> $= 55 \text{ cm} + 99 \text{ cm} + 55 \text{ cm} = 209 \text{ cm}$ ✓A Perimeter/<i>Omtrek</i> $= 2(209 \text{ cm} + 149 \text{ cm})$ ✓SF $= 2(358) \text{ cm}$ $= 716 \text{ cm}$ ✓CA OR/OF Perimeter/<i>Omtrek</i> $= (149 + 55 + 99 + 55 + 149 + 55 + 99 + 55) \text{ cm}$ ✓A ✓SF $= 716 \text{ cm}$ ✓CA OR/OF Perimeter/<i>Omtrek</i> $= 2 (149) \text{ cm} + 2(55+99+55) \text{ cm}$ ✓A ✓SF $= (298 + 418) \text{ cm}$ $= 716 \text{ cm}$ ✓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 $= \frac{605}{2} = 302,5 \text{ mm}$ ✓A $= 30,25 \text{ cm}$ ✓C Area/<i>Oppervlakte</i> $= 3,142 \times (30,25 \text{ cm})^2$ ✓SF $= 2\,875,126375 \text{ cm}^2$ ✓CA OR/OF Radius $= \frac{605}{2} = 302,5 \text{ mm}$ ✓A Area/<i>Oppervlakte</i> $= 3,142 \times (302,5 \text{ mm})^2$ ✓SF $= 28\,512,6375 \text{ mm}^2$ $= 28\,751\,263,75 \div 10^2$ ✓C $= 2\,875,126375 \text{ cm}^2$ ✓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/Oplissing	Explanation/Verduideliking	T/L
3.1.3	$P = \frac{3}{7} \quad \checkmark A$ $= 0,4285714286 \quad \checkmark CA$ OR/OF $P = 1 - \frac{4}{7} = \frac{3}{7} \quad \checkmark A$ $= 0,4285714286 \quad \checkmark CA$	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 $= 4 \text{ m} \times 5 \text{ m} + 3 \text{ m} \times 4 \text{ m} \quad \checkmark M \quad \checkmark SF$ $= 20 \text{ m}^2 + 12 \text{ m}^2$ $= 32 \text{ m}^2$	1SF substitution of correct values 1M adding NPU (2)	M L2
*3.2.2 TR	Area of 1 tile/Opp van 1 teël = $35 \text{ cm} \times 35 \text{ cm} \quad \checkmark SF$ $= 1\,225 \text{ cm}^2$ $= 1\,225 \div (100)^2 \text{ m}^2 \quad \checkmark C$ $= 0,1225 \text{ m}^2 \quad \checkmark CA$ Number of tiles needed/Getal teëls nodig $= \frac{32}{0,1225} \quad \checkmark MCA$ $= 261,2244898 \quad \checkmark CA$ Number to add/Getal om by te tel $\checkmark MCA$ $= 10\% \times 261,2244898 = 26,12244898$ Total number of tiles/Totale aantal teëls $= 261,2244898 + 26,12244898 = 287,3469388 \quad \checkmark CA$ Number of boxes/Getal bokse $= \frac{287,3469388}{4} \quad \checkmark MCA$ $= 71,83673469$ $\therefore 72 \text{ boxes} \quad \checkmark CA$	1 SF substitution 1C conversion 1CA simplification 1MCA dividing areas 1CA simplification 1MCA calculation 10% 1CA simplification 1MCA dividing by 4 1CA rounding up 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 Area of 1 tile/<i>Opp van 1 teël</i> = $35 \text{ cm} \times 35 \text{ cm}$ ✓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/<i>Getal teëls nodig</i> $= \frac{32}{0,1225}$ ✓MCA $= 261,2244898 \approx 262$ ✓CA Number to add/<i>Getal om by tetel</i> $= 10\% \text{ of } 262 = 26,2$ ✓MCA Total number of tiles/<i>Totale aantal teëls</i> $= 262 + 26,2 = 288,2 \approx 289$ ✓CA Number of boxes/<i>Getal bokse</i> = $\frac{289}{4}$ ✓MCA $\therefore 73 \text{ boxes}$ ✓CA OR/OF ✓C ✓SF ✓CA Area of 1 tile/<i>Opp van 1 teël</i> = $(0,35)^2 = 0,1225 \text{ m}^2$ Area covered by tiles in a box/ <i>Opp. wat 'n boks teëls bedek</i> $= 0,1225 \text{ m}^2 \times 4 = 0,49 \text{ m}^2$ ✓MCA ✓CA Area to be tiled/<i>Opp wat geteël word</i> $32 \times 110\% = 35,2$ ✓MCA ✓CA Number of boxes needed/<i>Getal bokse nodig</i> $= \frac{35,2}{0,49}$ ✓MCA $\approx 71,8$ $\therefore 72 \text{ boxes}$ ✓CA	OR/OF 1 SF substitution 1C conversion 1CA simplification 1MCA dividing areas 1CA simplification 1MCA calculation 10% 1CA simplification 1MCA dividing by 4 1CA rounding up OR/OF 1C conversion 1 SF substitution 1CA simplification 1MCA multiplying by 4 1CA simplification 1MCA calculation 10% 1CA simplification 1MCA dividing areas 1CA rounding up	
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Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF Area of tile/ <i>Opp van 'n teël</i> = $(35\text{cm})^2$ $= 1\,225\text{ cm}^2$ ✓A $32\text{ m}^2 \times 100^2 = 320\,000\text{ cm}^2$ ✓A Number of tiles needed/ <i>Getal teëls nodig</i> $32\text{ m}^2 = 320\,000\text{ cm}^2 \div 1\,225\text{ cm}^2$ ✓MCA $= 261,2244898$ ✓CA With extras/ <i>Met ekstras</i> = $261,2244898 \times 1,1$ MCA $= 287,3$ = 288 tiles /teëls ✓CA Number of boxes/ <i>Getal bokse</i>: $288 \div 4$ ✓MCA $= 72$ ✓CA OR/OF Number of tiles/ <i>Getal teëls</i> = $4\text{ m} \div 0,35 \approx 11,428$ ✓C MCA ✓A Number of tiles/ <i>Getal teëls</i> = $5\text{ m} \div 0,35 \approx 14,2857$ Total number of tiles for lounge <i>Totale getal teëls vir woonkamer</i> $= 11,4285 \times 14,285 = 163,2641$ ✓SF Number of tiles/ <i>Getal teëls</i> = $3\text{ m} \div 0,35 = 8,5714$ Number of tiles/ <i>Getal teëls</i> = $4\text{ m} \div 0,35 = 11,4285$ Total number of tiles for dining <i>Totale getal teëls vir eetkamer</i> $= 11,4285 \times 8,5714 = 97,9582$ Total for lounge and dining room <i>Totaal vir woon en eetkamer</i> $= 163,2641 + 97,9582 = 261,22$ tiles ✓CA Including extra for cuttings and breakages/ <i>Insluitend ekstra vir sny en breek</i> $= 261,28 \times 110\% = 287,408$ ✓MCA ✓CA Total number of boxes/ <i>Getal bokse</i> = $287,408 \div 4$ $= 71,852$ ≈ 72 ✓MCA ✓CA	OR/OF 1A simplification 1A factor 1C conversion 1MCA dividing areas 1CA simplification 1MCA calculation 10% 1CA simplification 1MCA dividing by 4 1CA rounded up simplification OR/OF 1C conversion 1MCA dividing dimensions 1A simplification 1 SF substitution 1CA simplification 1MCA calculation 10% 1CA simplification 1MCA dividing by 4 1CA rounding up	(9)

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

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF Bags of tile cement/Sakke sement $\frac{32}{3} = 10,7 \approx 11 \quad \checkmark A$ Budget verification/Begroting verifikasie: $\checkmark MCA \quad \checkmark CA \quad \checkmark CA$ $R15\,000 - [(R143,84 \times 72) + (4 \times R89,90) + (11 \times R99,90) + R2\,500]$ $\checkmark MCA$ $= R15\,000 - (R10\,356,46 + R359,60 + R1\,098,90 + R2\,500)$ $= R15\,000 - R14\,314,98$ $= R685,02 \quad \checkmark CA$ The budget is enough with R685,02 to spare $\checkmark O$ <i>Die begroting is genoeg met R685,02 oorblywend.</i>	OR/OF 1A number of bags of cement 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/Oplissing	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 $= 10 + 16 \times 5 + 19 + 21 = 130$ ✓ A Ratio/Verhouding $= 4 : 130$ ✓ MCA $= 2 : 65$ ✓ CA OR/OF Total seats/Totale sitplekke $= 64 + 66 \text{ (vacant)} = 130$ ✓ 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 $= 50,76923077$ $\approx 50,77\%$ ✓ CA OR/OF Percentage income from occupied seats Persentasie inkomste van hierdie sitplekke $= \frac{64}{130} \times 100\% \approx 49,23\%$ ✓ CA ✓ MCA Income lost/Verlore inkomste $= 100\% - 49,23\%$ $= 50,77\%$ ✓ CA	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/Ooplossing	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 <i>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.</i>	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 $5 \text{ mm} + 5 \text{ mm} = \frac{10}{1000} \text{ m} = 0,01 \text{ m}$ ✓ C Inner Diameter $= 3,22 - 0,01 \text{ m}$ $= 3,21 \text{ m}$	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 $= 7,25 \text{ m} - 2 \times \frac{5}{1\,000} \text{ m}$ $= 7,24 \text{ m}$ ✓ CA ✓ MCA Volume $= 3,142 \times \left(\frac{3,21}{2}\right)^2 \times 7,24$ ✓ 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 $= 1\,000 \times 55,6696416429 \text{ m}^3$ $= 55\,669,64 \text{ l}$ ✓ 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	$SA/BO = 2 \times 3,142 \times (1,61) \times (1,61 + 7,25)$ $\approx 89,64 \text{ m}^2 \checkmark S$ Total area to be painted/<i>Totale oppervlakte om te verf</i> $= 89,64 \text{ m}^2 - 1 \text{ m}^2 \checkmark MCA$ $= 88,64 \text{ m}^2 \checkmark CA$ Litres needed/<i>Liter nodig</i> = $88,64 \div 3$ $\checkmark MCA$ $= 29,55 \checkmark CA$ Valid $\checkmark O$ OR/OF $SA/BO = 2 \times 3,142 \times (1,61) \times (1,61 + 7,25)$ $\approx 89,64 \text{ m}^2 \checkmark S$ Surface Area = $89,64 \text{ m}^2 - 1 \text{ m}^2 \checkmark MCA$ $= 88,64 \text{ m}^2 \checkmark CA$ Area that can be covered by 30 ℓ /<i>Opp wat met 30 ℓ geverf word</i> $30 \text{ litres} \times 3 = 90 \text{ m}^2 \checkmark CA$ Less is needed/ <i>Minder word benodig</i> $\checkmark O$	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	M L4 (8) [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 <i>Vooraansig OF Agteraansig</i>	2RT view (2)	MP L1
5.1.2	Width of the bakkie/ <i>Bakkie se breedte</i> = 1,86 m ✓ C $2D = 3,6 \text{ m} - 1,86 \text{ m}$ $= 1,74 \text{ m}$ ✓ MA $D = \frac{1,74}{2} \text{ m}$ ✓ MCA $= 0,87 \text{ m}$ ✓ CA OR/OF Width of the garage/ <i>Motorhuis se breedte</i> = 3 600 mm ✓ C $2D = 3\,600 \text{ mm} - 1\,860 \text{ mm}$ $= 1\,740 \text{ mm}$ ✓ MA $D = \frac{1740}{2} \text{ mm}$ ✓ MCA $= 870 \text{ mm}$ ✓ CA	1C conversion 1MA difference 1MCA dividing by 2 1CA simplification OR/OF 1C conversion 1MA difference 1MCA dividing by 2 1CA simplification (4)	M L2
5.1.3	Number of choices/ <i>Getal keuses</i> = 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 <i>'n Kaart word volgens skaal geteken terwyl 'n strook kaart nie.</i> OR/OF A map shows the routes in a winding manner while a strip chart shows them as straight lines. <i>'n Kaart toon die kronkelende roetes terwyl die strook kaart dit in reguitlyne wys.</i>	2A statement (2)	MP L1

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

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
5.2.4 (b)	Time/Tyd 1 = $140 \text{ km} \div 80 \text{ km/h} = 1,75 \text{ hrs}$ ✓ SF ✓ S Time /Tyd 2 = $289 \text{ km} \div 80 \text{ km/h} = 3,6125 \text{ hrs}$ ✓ S Time/Tyd 3 = $217 \text{ km} \div 120 \text{ km/h} = 1,808333333 \text{ hrs}$ ✓ S Stoppage time = $3 \times 25 \text{ min} = 75 \text{ min} = 1,25 \text{ hrs}$ ✓ S Travelling time including breaks = $1,75 + 3,6125 + 1,808333333 + 1,25$ ✓ MCA = $8,420833333 \text{ hrs}$ ✓ CA = $8 \text{ h } 25$ ✓ C Travelling time = $12:25 - 04:00$ ✓ MA = $8 \text{ h } 25$ ✓ A Letitia's statement is CORRECT/KORREK ✓ O OR/OF Total time taken/Totale tydsduur = $12:25 - 4:00$ ✓ MA = $8 \text{ h } 25 \text{ min}$ ✓ A Driving time on gravel road/Bestuurstyd op grondpad = $\frac{429 \text{ km}}{80 \text{ km/h}}$ ✓ S ✓ SF = $5,3625 \text{ h}$ ✓ S Driving time on tarred road/Bestuurstyd op teerpad = $\frac{217 \text{ km}}{120 \text{ km/h}}$ = $1,808333 \text{ h}$ ✓ S Total time/Totale tyd = $5,3265 \text{ h} + 1,808 \text{ hr}$ = $7,170833... \text{ hours/uur}$ ✓ CA = $7 \text{ hours} + 0,17083333 \times 60$ = $7 \text{ h } 10 \text{ min}$ ✓ C ∴ Total break time/Totale rustyd = $8 \text{ h } 25 \text{ min} - 7 \text{ h } 10 \text{ min} = 1 \text{ h } 15 \text{ min}$ ✓ CA Duration of breaks/Rustye se duur OR/OF Each break/Elke rustyd = $3 \times 25 \text{ min}$ = $\frac{1 \text{ h } 15 \text{ min}}{3}$ = 75 min = 25 min = $1 \text{ h } 15 \text{ min}$ ✓ A 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
	$\checkmark$ SF $\checkmark$ S Time/Tyd 1 = $140 \text{ km} \div 80 \text{ km/h} = 1 \text{ h } 45 \text{ min}$ Time /Tyd 2 = $289 \text{ km} \div 80 \text{ km/h} = 3 \text{ h } 36 \text{ min}$ $\checkmark$ S Time/Tyd 3 = $217 \text{ km} \div 120 \text{ km/h} = 1 \text{ h } 48 \text{ min}$ $\checkmark$ S	1SF substitution 1S simplification 1S simplification 1S simplification	
	Travelling time/Reis tyd = $1 \text{ h } 45 \text{ min} + 3 \text{ h } 36 \text{ min} + 1 \text{ h } 48 \text{ min}$ $\checkmark$ MCA = $7 \text{ h } 9 \text{ min}$ $\checkmark$ CA	1MCA adding time 1CA simplification	
	Travelling time /Reis tyd = $12:25 - 04:00$ $\checkmark$ MA = $8 \text{ h } 25 \text{ min}$ $\checkmark$ A	1MA subtracting 1A traveling time	
	$\therefore$ Total break time/Totale rustyd = $8 \text{ h } 25 \text{ min} - 7 \text{ h } 9 \text{ min} = 1 \text{ h } 16 \text{ min}$ $\checkmark$ CA	1CA simplification	
	Each break/Elke rustyd = $\frac{1 \text{ h } 16 \text{ min}}{3}$ $\approx 25 \text{ mins}$ $\checkmark$ S	1S break time	
	Letitia's statement is CORRECT/KORREK $\checkmark$ O	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. cm³) / 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. / <i>Tien oor twee in die namiddag.</i> • Ten past two post meridian. / <i>Tien oor twee meridiaan</i> • Ten past two pm / <i>Tien oor twee nm</i>
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 = $4m \div 0,35$ $= 11,428$ ≈ 12 Width = $5m \div 0,35$ $= 14,285$ $= 15$ □ Total tiles = 12×15 $= 180$ tiles Dining: Length = $4m \div 0,35$ $= 11,428$ ≈ 12 Width = $3 \div 0,35$ $= 8,571$ ≈ 9 □ Total tiles = 11×9 $= 108$ tiles Hence, total tiles needed = $180 + 108$ $= 288$ Number to add = $288 \times 1,1$ $= 316,8$ ≈ 317 □ Number of boxes = $317 \div 4$ $= 79,25$ ≈ 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).



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE/ NASIONALE SENIOR SERTIFIKAAT

GRADE 12

MATHEMATICAL LITERACY P2/ WISKUNDIGE GELETTERDHEID V2

NOVEMBER 2022

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/PUNTE: 150

Symbol/Kode	Explanation/Verduideliking
M	Method/Metode
MA	Method with accuracy/Metode met akkuraatheid
MCA	Method with constant accuracy/Metode met volgehoue 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.
NPR	No penalty for correct rounding/Geen penalisasie vir korrekte afronding nie
AO	Answer only/Slegs antwoord

These marking guidelines consist of 21 pages, an analysis grid and notes.

Hierdie nasienriglyne bestaan uit 21 bladsye, 'n analiserooster en notas.

APPROVED ON 16 November 2022	External Moderators		Internal Moderator
	R I Singh 	E Cronje 	L R deWaal

DEPARTMENT OF BASIC
EDUCATION

PRIVATE BAG X895, PRETORIA 0001

2022 -11- 16

APPROVED MARKING GUIDELINE

PUBLIC EXAMINATION

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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.
- Rounding is an independent mark.
- In opinion type questions marks will only be awarded if relevant calculations are shown

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 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 en ekstra antwoorde gee, penaliseer vir elke ekstra item.
- 'n Algemene nasien beginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor
- Afronding tel as 'n afsonderlike punt.
- In Opinie tipe vrae sal punte slegs toegeken word indien relefante berekening aangetoon is.

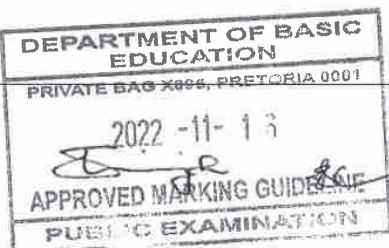
Note: Questions marked with * refers to the notes./Vrae gemerk met *, verwys na die notas.

Questions where the numbers are encircled are the ones where we have a tolerance range.

Vrae waar die nommer omkring is, is die waar ons 'n toleransie omvang het.

QUESTION/VRAAG 1 [27 MARKS/PUNTE] Answer Only AO - full marks			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
1.1.1	Z ✓✓A	2A correct time (2)	M L1 E
1.1.2*	24 hour /uur ✓✓A 12 hour /uur. ✓A	2A 1 st display 1A 2 nd display (3)	M L1 E
1.1.3*	✓A ✓A Quarter to one in the afternoon/ pm or post meridian Kwart voor een in die middag / nm ✓A OR/OF ✓A Fifteen minutes to one in the afternoon Fifteen minutes before one in the afternoon Vyftien minute voor een, namiddag	1A correct time 1A afternoon OR/OF 1A correct time 1A afternoon (2)	M L1 E
1.1.4*	2 ✓✓A	2A correct number (2)	M L1 E

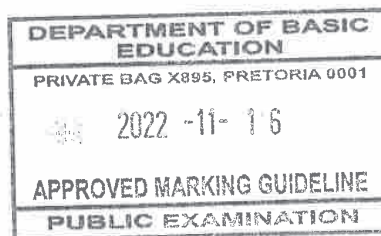
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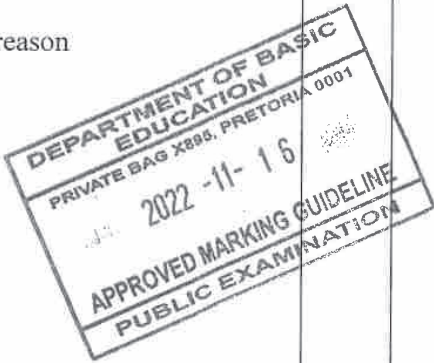
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.1.5	✓C $16 \times 60 + 45$ $= 1\ 005$ minutes/minute ✓ A	1C multiply hours by 60 1A adding correct values (2)	M L1 M
1.2.1	$32 - (8 + 6 + 8 + 8)$ ✓ MA $= 2$ bolts/boute ✓ A	1MA subtracting from 32 1A two bolts (2)	MP L1 E
1.2.2	2 nuts/moere ✓✓ A	2A correct number nuts (2)	MP L1 M
1.2.3*	Short brace ✓✓RT Kort spanstuk	2RT answer (2)	MP L1 E
1.3.1	Bar scale/staaf skaal ✓✓A OR/OF Line scale or linear scale / lynskaal of liniêre skaal OR/OF Graphic scale / Grafiese skaal	2A Correct scale (2)	MP L1 E
1.3.2*	Gauteng ✓✓RT	2RT correct province (2)	MP L1 E
1.3.3	N14 ✓RT N17 ✓RT	1RT 1 st route 1RT 2 nd route (2)	MP L1 E
1.3.4*	7 ✓✓A	2A number of destination towns (2)	MP L1 E
1.3.5	39 mm ✓✓A [allow 1 mm on both sides/laat 1 mm weerskante toe]	2A correct measurement (2)	MP L1 E
		[27]	

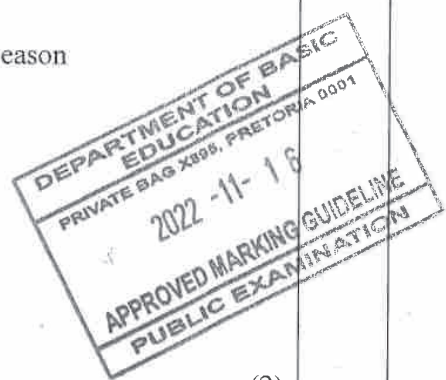


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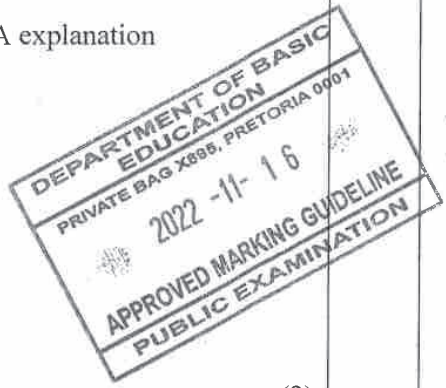
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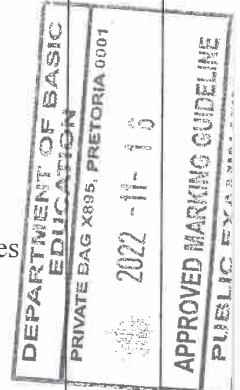
QUESTION/VRAAG 2 [36 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
2.1.1	✓✓ O To let in fresh air or ventilation. <i>Vars lug in te laat of ventilasie .</i> OR/OF ✓✓ O To let natural light in./Sunlight/sun rays to come in. <i>Om lig in te laat/sonlig/sonstrale te laat inkom.</i> OR/OF ✓✓ O For customers to enjoy the view outside. <i>Vir kliënte om die uitsig te kan geniet.</i> OR/OF ✓✓ O The windows are many because they are small sized. <i>Die vensters is klein daarom is daar so baie.</i> OR/OF ✓✓ O People outside to view the inside, hence attract customers <i>Mense kan van buite, binne toe kyk, dit trek gevolglik kliënte</i>	20 reason  (2)	MP L4 M
2.1.2	Max. no of seats /Maks. Getal stoele ✓MA $= 6 + 2 + 5 + 5 + 5 + 4 + 4 + 4 + 4 + 4 + 4 + 6$ $= 6 + 2 + 15 + 28 + 6$ ✓S $= 57$ ✓CA OR/OF Max. no. of seats/Maks. Getal stoele ✓MA $= 1 \times 6 + 2 \times 1 + 3 \times 5 + 4 \times 7 + 6 \times 1$ $= 6 + 2 + 15 + 28 + 6$ ✓S $= 57$ ✓CA	1MA adding correct numbers 1S simplification 1CA answer OR/OF 1MA multiply correct numbers 1S simplification 1CA answer AO (3)	MP L2 E
2.1.3*	13 seats/stoele. ✓✓ A	2A number of seats (2)	MP L2 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.1.4*	✓✓ O For people waiting to be seated. /Vir mense wat wag vir 'n sitplek OR/OF ✓✓ O A place you can wait for a dining table to be ready or prepared for one. / 'n Plek waar jy kan wag dat 'n tafel gereed gemaak word vir jou. OR/OF ✓✓ O To sit on while waiting for your lift after visiting the restaurant. /Om op te sit terwyl jy wag vir jou geleentheid nadat jy die restaurant besoek het. OR/OF ✓✓ O Waiting area for customers who ordered take-aways. Wag plek vir mense wat wegneemetes bestel het. OR/OF ✓✓ O A place where customers can take pictures. / 'n Plek waar kliënte fotos kan neem.	20 reason  (2)	MP L4 E
2.1.5	✓ A Walk in an Easterly direction. Then turn and walk in a Southerly direction. ✓ A Then turn and walk in an Easterly direction. ✓ A Loop in 'n Oostelike rigting. Draai en loop in 'n Suidelike rigting, draai weer en loop in 'n Oostelike rigting.	1A East 1A South 1A East (3)	MP L3 M
2.1.6*	✓ A Number 13 is left out, there are only 20 tables. ✓ A Nommer 13 is uitgelaat, daar is slegs 20 tafels. Therefore, her claim is valid. ✓ O Daarom is haar bewering geldig. ✓ O OR/OF Number of tables set for/ tafels vir 1 = 6 Number of tables set for / tafels vir 2 = 1 ✓ A Number of tables set for / tafels vir 3 = 5 Number of tables set for / tafels vir 4 = 7 Number of tables set for / tafels vir 6 = <u>1</u> Total = 20 ✓ A Therefore, her claim is valid. ✓ O Daarom is haar bewering geldig. ✓ O	2A Reasoning and reflecting 10 verification OR/OF 2A Reasoning and reflecting 10 verification (3)	MP L4 M

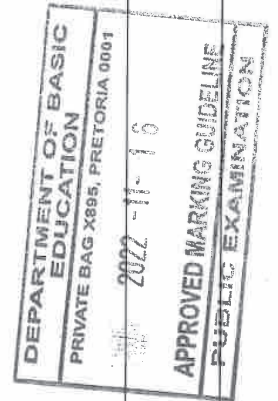
DEPARTMENT OF BASIC
EDUCATION
PRIVATE BAG X896, PRETORIA 0001
2022-11-16
APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION (2)

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
2.3.2*	✓✓ A There is no relationship (or ratio) between distances on a map and the corresponding distance on the ground. <i>Daar is nie 'n verhouding tussen die afstande op die kaart en die ooreenstemmende afstande in die werklikheid nie.</i> OR/OF ✓✓ A One should not measure the length on the map and then expect to be able to calculate the “real life” distance from it. <i>Jy kan nie die afstande op die kaart meet en verwag dat jy die werklike afstande kan bereken nie.</i> OR/OF ✓✓ A No specific scale was used throughout to draw this map (Candidates might mention a scale e.g. 1 : 100). <i>Geen spesifieke skaal was deurgaans gebruik om hierdie kaart te teken nie. (Kandidate mag 'n skaal bv. 1: 100 noem).</i> OR/OF ✓✓ A Not to scale means the dimensions or measurements on the map are not accurate. <i>Nie op skaal beteken die afmetings op die kaart is nie akkuraat nie.</i>	2A explanation  (2)	MP L4 M
2.3.3* (a)	✓✓ O The road is overshadowing or hide/covering or obscuring the route course. <i>Die roete is obskuur of versteek of nie sigbaar waar die ander deel bo-oor dit gaan nie.</i> OR/OF ✓✓ O There is a break in the line that shows the route. <i>Die lyn wat die roete aandui word onderbreek.</i> OR/OF ✓✓ O Arrows disappear under the road / Pyle verdwyn onder die pad.	2O reasoning (2)	MP L4 M
2.3.3* (b)	✓✓ A Four (4) times/Vier keer.	2A correct number (2)	MP L1 E
2.3.4	✓✓ A South west or SW/Suidwes	2A correct direction (2)	MP L2 M
		[36]	

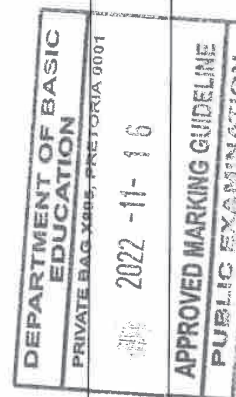
QUESTION/VRAAG 3 [29 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.1.1	Perimeter/Omtrek ✓SF $= 2 \times (239 + 89) \text{ mm}$ ✓A $= 656 \text{ mm} \quad \checkmark A$ OR/OF Perimeter/Omtrek $= 239 \text{ mm} + 89 \text{ mm} + 239 \text{ mm} + 89 \text{ mm} \quad \checkmark MA$ ✓A $= 656 \text{ mm} \quad \checkmark A$	1SF substitution 1A simplification 1A unit OR/OF 1MA adding all sides 1A simplification 1A unit AO (3)	M L2 E
3.1.2	Height opening/closing part/Hoogte van die oop-/toemaak gedeelte ✓MA $= 114 \text{ mm} - 2,5 \text{ cm} - 7 \text{ cm}$ ✓C $= 11,4 \text{ cm} - 2,5 \text{ cm} - 7 \text{ cm}$ $= 1,9 \text{ cm} \quad \checkmark CA$ OR/OF Height opening/closing part/Hoogte van die oop-/toemaak gedeelte $= 114 \text{ mm} - (2,5 \text{ cm} + 7 \text{ cm}) \quad \checkmark MA$ ✓C $= 11,4 \text{ cm} - 9,5 \text{ cm}$ $= 1,9 \text{ cm} \quad \checkmark CA$ OR/OF Height opening/closing part/Hoogte van die oop-/toemaak gedeelte ✓MA $= 114 \text{ mm} - 25 \text{ mm} - 70 \text{ mm}$ $= \frac{190 \text{ mm}}{10} \quad \checkmark C$ $= 1,9 \text{ cm} \quad \checkmark CA$	1MA subtracting both values 1C converting 1CA simplification OR/OF 1MA subtracting both values 1C converting 1CA simplification OR/OF 1MA subtracting both values 1C converting 1CA simplification (3)	M L2 E



Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.1.3 (a)	$\text{Radius} = \frac{28\text{mm}}{2} = 14\text{mm} \quad \checkmark A$ $= 1,4 \text{ cm} \quad \checkmark C$ $\text{Volume} = 3,142 \times (1,4 \text{ cm})^2 \times 8,5 \text{ cm} \quad \checkmark SF$ $= 52,34572 \text{ cm}^3$ $= 52,346 \text{ cm}^3$ OR/OF $\text{Radius} = \frac{2,8 \text{ cm}}{2} \quad \checkmark C$ $= 1,4 \text{ cm} \quad \checkmark A$ $\text{Volume} = 3,142 \times (1,4 \text{ cm})^2 \times 8,5 \text{ cm} \quad \checkmark SF$ $= 52,34572 \text{ cm}^3$ $= 52,346 \text{ cm}^3$	1A radius 1C converting 1SF radius squared 1SF substitution OR/OF 1C converting 1A radius 1SF substitution 1SF radius squared	M L3 M
3.1.3 (b)	$0,82 = \text{Mass} / \text{Massa} \div 52,346 \quad \checkmark SF$ $\text{Mass/Massa} = 0,82 \times 52,346 \quad \checkmark M$ $= 42,92372 \text{ g} \quad \checkmark A$ $= 43 \text{ g} \quad \checkmark R$	1SF substitution 1M changing the subject of the formula 1A simplification 1R rounded	M L3 M
3.2.1*	$\text{Volume} = 1,6 \text{ gallon/gelling} \times 4 \times 28 \times 5 \quad \checkmark MA$ $= 896 \text{ gallon/gelling}$ $\text{Volume} = 896 \times 3,785 \text{ l} \quad \checkmark C$ $= 3\,391,36 \text{ l} \quad \checkmark CA$ OR/OF $1,6 \text{ gallon/gelling} = 1,6 \times 3,785 \text{ l} = 6,056 \text{ l} \quad \checkmark C$ $\text{Volume water} = 6,056 \text{ l} \times 4 \times 28 \times 5 \quad \checkmark MA$ $= 3\,391,36 \text{ l} \quad \checkmark CA$	1MA multiplication 1C conversion factor 1CA simplification OR/OF 1C conversion 1MA multiplication 1CA simplification	M L3 M

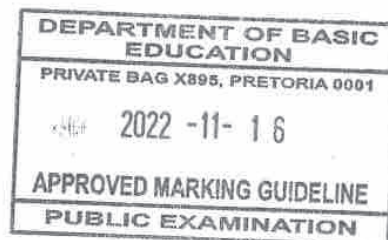


Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF 1 Person flushes/ <i>spoel</i> $4 \times 28 = 112$ times a month/<i>keer per maand</i> That is/<i>dit is</i> $112 \times 1,6$ gal = 179,2 gallons/<i>gelling</i> Volume = $179,2 \times 3,785 = 678,272$ ℓ ✓C Family of 5 volume/ <i>familie van 5</i> Volume = $678,272 \text{ ℓ} \times 5 = 3\,391,36$ ℓ ✓MA ✓CA OR/OF The family flushes /<i>die familie spoel</i> $4 \times 5 \times 1,6$ gal = 32 gal / day Volume = $32 \text{ gal/day} \times 3,785 = 121,12$ gal/day ✓C For the month /<i>vir 'n maand</i> ✓MA Volume = $121,12 \text{ gal/day} \times 28 \text{ days} = 3\,391,36$ ℓ ✓CA OR/OF Toilet flushed in Feb/ <i>Spoel in Feb</i> $= 5 \times 4 \times 28$ $= 560$ Volume = $1,6 \times 3,785 \times 560$ ✓C ✓MA $= 3\,391,36$ ℓ ✓CA	OR/OF 1C conversion 1MA multiplication 1CA simplification OR/OF 1C conversion 1MA multiplication 1CA simplification OR/OF 1C conversion 1MA multiplication 1CA simplification	(3)
3.2.2*	✓✓O Restrict the volume of water flowing into the cistern <i>Verminder die volume water wat in die spoelbak invloei</i> OR/OF Repair all the leaks/<i>Maak alle lekplekke reg</i> ✓✓O OR/OF Place a brick into the cistern/<i>Sit 'n baksteen in die spoelbak</i> ✓✓O OR/OF Install a newer model / <i>Installeer 'n nuwer model</i> ✓✓O	2O any valid way to reduce volume of water in the cistern	(2) M L4 E

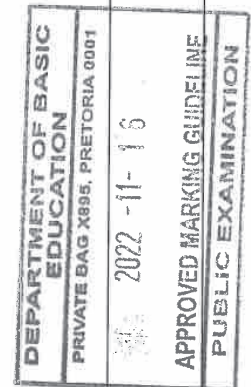


Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.3.1	$17:30 - 15 \text{ min} - 40 \text{ min} - 40 \text{ min}$ $= 15:55$	1MA subtracting 15 min from 17:30 1MA subtracting two cooking times 1CA simplification AO (3)	M L2 M
3.3.2	$^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \times \frac{5}{9}$ $= (325 - 32) \times \frac{5}{9}$ $= 162,777..$ $\approx 160^{\circ}\text{C}$	1SF correct substitution 1CA simplification 1R rounding AO (3)	M L2 E
3.3.3*	$4\frac{1}{4} \times 2 = 8\frac{1}{2}$ cups/koppies $250 \text{ ml} = 0,25 \text{ l}$ Number of litres/Hoeveelheid liter $= 8\frac{1}{2} \times 0,25 \text{ l} = 2,125 \text{ l}$ OR/OF $1 \text{ cup/koppie} = 250 \text{ ml}$ $4 \text{ cups /koppies} = 4 \times 250 \text{ ml} = 1\,000 \text{ ml}$ $\frac{1}{4} \text{ cup/koppie} = \frac{1}{4} \times 250 \text{ ml} = 62,5 \text{ ml}$ For 1 tart she needs /vir 1 tert benodig sy $= 1\,000 + 62,5 = 1\,062,5 \text{ ml}$ For 2 tarts/vir 2 terte = $1\,062,5 \text{ ml} \times 2 = 2\,125 \text{ ml}$ $= 2,125 \text{ l}$ OR/OF $1 \text{ tart /tert} : 4\frac{1}{4} \times 250 \text{ ml} = 1\,062,5 \text{ ml}$ $2 \text{ tarts /terte} : 1\,062,5 \text{ ml} \times 2 = 2\,125 \text{ ml}$ Total /totaal: $2\,125 \text{ ml} \div 1\,000 = 2,125 \text{ l}$	1M multiplying with 2 1A total cups 1C convert to litre 1CA simplification OR/OF 1MA multiplying with 250 1A milk needed for 1 tart 1C convert to litre 1CA simplification OR/OF 1MA multiplying with 250 1A milk needed for 1 tart 1C convert to litre 1CA simplification	M L3 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF $4\frac{1}{4} = \frac{17}{4} \text{ cups /koppies}$ For 1 tart/ vir 1 tert $\frac{17}{4} \times 250 \text{ ml} = 1\,062,5 \text{ ml} = 1,0625 \text{ l}$ Milk for 2 tarts /Melk vir 2 terte $= 1,0625 \text{ l} \times 2 = 2,125 \text{ l}$ OR/OF $4\frac{1}{4} \times 2 \times 250 \text{ ml} = 2\,125 \text{ ml} = 2,125 \text{ l}$ OR/OF $4,25 \times 2 = 8,5 \text{ cups/koppies}$ 1 cup /koppie = 250 ml $8,5 \text{ cups /koppies} = x$ $x = \frac{8,5 \text{ cups}}{1 \text{ cup}} \times 250 \text{ ml} = 2\,125 \text{ ml} = 2,125 \text{ l}$ OR/OF $2(4 \times 250) = 2\,000 \text{ ml}$ $2(\frac{1}{4} \times 250) = 125 \text{ ml}$ Total/Totaal = 2 125 ml $= 2,125 \text{ l}$	OR/OF 1MA multiplying with 250 1C convert to litre 1A milk needed for 1 tart 1CA simplification OR/OF 1MA multiplying with 2 1A total cups 1CA simplification 1C convert to litre OR/OF 1MA multiplying with 2 1A total cups 1CA simplification 1C convert to litre OR/OF 1MA multiplying with 2 1A total cups 1CA simplification 1C convert to litre	(4) [29]



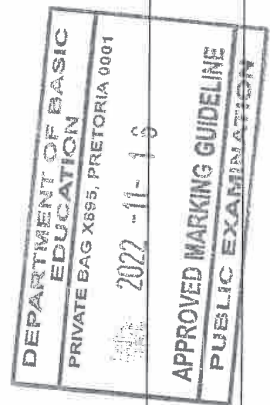
QUESTION/VRAAG 4 [32 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
4.1.1	The total length/Totale lengte $= 19 \text{ cm} + 23 \text{ cm} + 10 \text{ cm} + 25 \text{ cm} + 23 \text{ cm} + 41 \text{ cm} \quad \checkmark \text{MA}$ $= 141 \text{ cm} \quad \checkmark \text{CA}$ $= 1\,410 \text{ mm} \quad \checkmark \text{C}$ $\approx 1\,500 \text{ mm}$	1MA adding correct values 1CA simplification 1C conversion (3)	MP L2 M
4.1.2	The 2 sides are against the back which is 14 cm wide. The thickness of the boards is 20 mm <i>Die 2 sykante is teen die agterkant wat 14 cm breed is. Die dikte van die plank is 20 mm</i> Floor against the Back/Vloer teen die agterkant $= 14 \text{ cm} - 20 \text{ mm} - 20 \text{ mm} \quad \checkmark \text{MA}$ $= 14 \text{ cm} - 2 \text{ cm} - 2 \text{ cm} \quad \checkmark \text{C}$ $= 10 \text{ cm} \quad \checkmark \text{A}$ His statement is correct/Sy bewering is korrek $\checkmark \text{O}$ OR/OF If the 10 cm side goes against the back: <i>Indien die 10cm teen die rugkant is:</i> $14 \text{ cm} - 10 \text{ cm} = 4 \text{ cm} \text{ is left on the sides/bly oor vir die kante} \quad \checkmark \text{MA}$ $4 \text{ cm} \div 2 = 2 \text{ cm on each side /elke kant.} \quad \checkmark \text{A}$ Board thickness/plank dikte = 20 mm = 2 cm $\checkmark \text{C}$ His statement is correct./ Sy bewering is korrek $\checkmark \text{O}$ OR/OF Thickness of the board / dikte van die plank = 20 mm = 2 cm $\checkmark \text{C}$ $10 \text{ cm} + 2 \text{ cm} + 2 \text{ cm} = 14 \text{ cm} \quad \checkmark \text{MA}$ His statement is correct./ Sy bewering is korrek $\checkmark \text{O}$	1MA subtracting 1C conversion 1A simplification 1O verification OR/OF 1MA subtracting 1A simplification 1C conversion 1O verification OR/OF 1C conversion 1MA adding 1A simplification 1O verification	MP L4 D



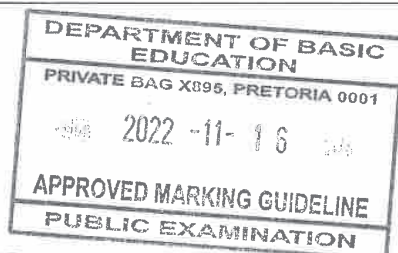
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF The thickness of each side / <i>dikte aan elke kant</i> = 2 cm ✓C Floor against the back side / <i>Vloer teen rugkant</i> = (14 cm – 10 cm) ÷ 2 ✓MA = 4 cm ÷ 2 = 2 cm ✓A His statement is correct. / <i>Sy bewering is korrek</i> ✓Q	OR/OF 1C conversion 1MA subtracting 1A simplification 1O verification (4)	
4.1.3	Area of rectangle / <i>Oppervlakte van reghoek</i> = 23 cm × 14 cm ✓SF = 322 cm² ✓A Radius of the hole / <i>Radius van opening</i> = 4,2 cm ÷ 2 = 2,1 cm ✓A Size of the hole / <i>Grootte van opening</i> = 3,142 × (2,1)² ✓SF = 13,85622 cm² ✓CA Exposed front area / <i>Voorste buite oppervlakte</i> = 322 cm² – 13,85622 cm² = 308,14378 cm² ✓CA	1SF correct values 1A simplification 1A radius value 1SF substitution 1CA simplification 1CA simplification NPR (6)	M L3 D

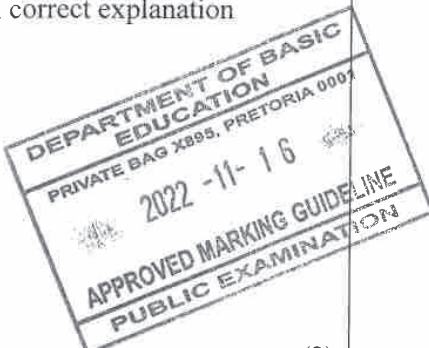


Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
4.2	Coat/Laag 1: 10 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{10} \text{ ℓ} \quad \checkmark \text{MA}$ $= 0,02888 \text{ ℓ} \quad \checkmark \text{A}$ Coat/Laag 2: 14 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{14} \text{ ℓ} = 0,0206285... \text{ ℓ} \quad \checkmark \text{A}$ Total for 3 coats/Totaal vir 3 lae $= 0,02888 + 2 \times 0,0206285... \text{ ℓ} \quad \checkmark \text{MCA}$ $= 0,070137... \text{ ℓ} \quad \checkmark \text{CA}$ Number of birdhouses with 500 m ℓ Getal voëlhuysies met 500 mℓ $= \frac{0,500}{0,070137} \quad \checkmark \text{MCA}$ $\approx 7 \quad \checkmark \text{CA}$ His statement is correct/Sy bewering is korrek $\checkmark \text{O}$ OR/OF Coat/Laag 1: 10 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{10} \text{ ℓ} \quad \checkmark \text{MA}$ $= 0,02888 \text{ ℓ} \quad \checkmark \text{A}$ Coat/Laag 2: 14 m² use 1 ℓ 0,2888 m² needs n ℓ $n = \frac{0,2888}{14} \text{ ℓ} = 0,0206285... \text{ ℓ} \quad \checkmark \text{A}$ Total for 3 coats /Totaal vir 3 lae $= 0,02888 + 2 \times 0,0206285... \text{ ℓ} \quad \checkmark \text{MCA}$ $= 0,070137... \text{ ℓ} \quad \checkmark \text{CA}$ For 7 birdhouses/Vir 7 voëlhuysies $= 0,070137 \times 7 \quad \checkmark \text{MCA}$ $= 0,490959$ $= 490 \text{ mℓ} \quad \checkmark \text{CA}$ His statement is correct/Sy bewering is korrek. $\checkmark \text{O}$	1MA ratio 1A simplification 1A simplification 1MCA adding 3 values 1CA simplification 1MCA dividing converted values 1CA simplification 1O conclusion OR/OF 1MA ratio 1A simplification 1A simplification 1MCA adding 3 values 1CA simplification 1MCA multiplying by 7 1CA number of millilitres 1O conclusion	M L 4 D



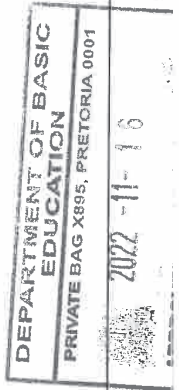
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	OR/OF Total area for 7 birdhouses /Totale oppervlakte vir 7 voëlhuysies = $7 \times 0,2888 \text{ m}^2 = 2,0216 \text{ m}^2$ ✓MA 1st coat/laag: 1 ℓ covers/bedek 10 m^2 $n \text{ ℓ covers /bedek } 2,0216 \text{ m}^2$ $n = \frac{2,0216}{10} = 0,20216 \text{ ℓ}$ ✓MA ✓A 2nd coat/laag: 1 ℓ covers/bedek 14 m^2 $x \text{ ℓ covers/bedek } 2,0216 \text{ m}^2$ $x = 0,1444 \text{ ℓ}$ ✓A and 3rd coat/laag = $0,1444 \text{ ℓ}$ Total paint needed /totale hoeveelheid verf nodig = $0,20216 \text{ ℓ} + 0,1444 \text{ ℓ} + 0,1444 \text{ ℓ}$ ✓MCA = $0,49096 \text{ ℓ}$ ✓CA = $490,96 \text{ mℓ}$ ✓CA Correct /korrek ✓O	OR/OF 1MA multiplying by 7 1MA ratio 1A simplification 1A simplification 1MCA adding 3 values 1CA simplification 1CA number of millilitres 1O conclusion (8)	
4.3.1 (a)	Rental + Transport/Huur en vervoer = $R250 + R100$ ✓RT ✓MA = $R350$	1RT correct values 1MA adding correct values (2)	M/F L1 E
4.3.1* (b)	Wooden boards each/Houtplanke elk = $\frac{R287,40}{6} = R47,90$ ✓MA Total cost for one/Totale koste vir een $p = R47,90 + R21,40 + R10,70$ ✓MCA = $R80$ ✓CA	1MA unit price 1MCA adding ALL correct values 1CA simplification (3)	M/F L2 M



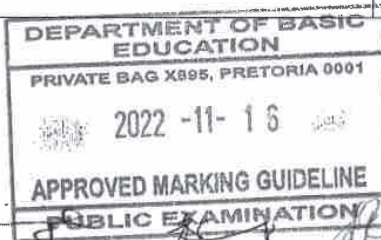
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
4.3.2*	✓✓ A Break-even point is when the expenses for making, transporting the birdhouses and renting the stall is equal to the income from selling the birdhouses. <i>Gelykbreekpunt is waar die uitgawes vir die maak, vervoer en huur van die stalletjie is gelyk aan die inkomste uit die verkoop van die voëlhuisies.</i> OR/OF ✓✓ A Break-even point is where the number of birdhouses sold equals the expense (cost) to make the birdhouses. <i>Gelykbreekpunt is waar die getal voëlhuisies wat verkoop word gelyk is aan die uitgawes (koste) om hulle te maak</i> OR/OF ✓✓ A In this context he must make and sell 5 birdhouses and his expense and income will both be R750 <i>In hierdie konteks moet hy 5 voëlhuisies maak en verkoop en sy uitgawes en inkomste is beide R750</i>	2A correct explanation  (2)	M/F L1 E
4.3.3*	Expense for/Uitgawe vir 15 is R1 550 ✓RT Income/Inkomste 12 is R1 800 ✓RT ✓A Profit/Wins = R1 800 – R1 550 = R250 ✓CA OR/OF Income from selling /Inkomste uit verkoop van 12 = R150 × 12 = R1 800 ✓A Expense for making 15 / Uitgawes om 15 te maak = R350 + R80 × 15 = R1 550 ✓A ✓A He makes a profit / Hy maak 'n wins R1 800 – R1 550 = R250 ✓CA	1RT expense 1RT income 1A profit 1CA simplification OR/OF 1A income 1A expense 1A profit 1CA simplification (4)	M/F L3 M
		[32]	

QUESTION/VRAAG 5 [26 MARKS/PUNTE]																	
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L														
5.1	<table><tr><th>Location/Plek</th><th>Detail/Besonderheid</th></tr><tr><td>01</td><td>a</td></tr><tr><td>02</td><td>f ✓A</td></tr><tr><td>03</td><td>b ✓A</td></tr><tr><td>04</td><td>d ✓A</td></tr><tr><td>05</td><td>c ✓A</td></tr><tr><td>06</td><td>e</td></tr></table>	Location/Plek	Detail/Besonderheid	01	a	02	f ✓A	03	b ✓A	04	d ✓A	05	c ✓A	06	e	1A 1 st correct one 1A 2 nd correct one 1A 3 rd correct 1A last correct OR/OF 1A 1 st correct one 1A 2 nd correct one 1A 3 rd correct 1A last correct OR/OF 1A 1 st correct one 1A 2 nd correct one 1A 3 rd correct 1A last correct OR/OF 1A 1 st correct one 1A 2 nd correct one 1A 3 rd correct 1A last correct (4)	MP L2 M
	Location/Plek	Detail/Besonderheid															
	01	a															
	02	f ✓A															
	03	b ✓A															
	04	d ✓A															
	05	c ✓A															
	06	e															
	OR/OF 02. Pass Kamakura /ry deur Kamakura ✓A 03. Visit Mount Fuji / besoek Fuji ✓A 04. Visit the Wooden Temple / Hout tempel ✓A 05. Visit the Aquarium / grootste akwarium ✓A OR/OF (a) – 01 (b) – 03 ✓A (c) – 05 ✓A (d) – 04 ✓A (e) – 06 (f) – 02 ✓A																
5.2.1*	2022 – 1707 = 315 years/jaar ✓A Number of decades/Getal dekades = $\frac{315}{10}$ ✓A = 31,5 ✓CA	1A number of years 1A decade 1CA simplification (3)	M L2 M														
5.2.2	Nov: 30 – 11 = 19 days/dae ✓A Dec: 15 days ✓A Elapsed days between/Verloopte dae tussen = 19 + 15 = 34 ✓CA OR/OF From/van 12 Nov to/tot 11 Dec = 30 days/dae ✓A From /van 12 Dec to /tot 15 Dec = 4 days dae ✓A Total days between /Totale dae tussen = 30 + 4 = 34 ✓CA	1A days in Nov 1A number of days in Dec 1CA total number of days OR/OF 1A number of days in Nov 1A days in Dec 1CA total number of days (3)	M L1 E														

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.3.1*	$150 : 250 \quad \checkmark A$ $\quad \quad \quad \checkmark CA$ $= 3 : 5$	1A correct values and order 1CA simplification (2)	M L1 E
5.3.2	$1 \text{ m} = 3,281 \text{ feet/voet}$ $\text{Height} = \frac{1\,092,1916 \text{ feet}}{3,281 \text{ feet per metre}} \quad \checkmark MA$ $\approx 332,884 \text{ m} \quad \checkmark CA$	1MA dividing 1CA simplification NPR (2)	M L2 E
5.3.3*	$\% \text{ discount/afslag} = \frac{\text{discount amount}}{\text{original price}} \times 100\% \quad \checkmark MA$ $= \frac{1\,200 - 960}{1\,200} \times 100\% \quad \checkmark RT \quad \checkmark A$ $= \frac{240}{1\,200} \times 100\% \quad \checkmark A$ $= 20\% \quad \checkmark CA$ $\quad \quad \quad \checkmark O$ His statement is incorrect/Sy bewering is verkeerd. OR/OF $\text{Percentage /Persentasie} = \frac{960}{1\,200} \times 100\% \quad \checkmark RT \quad \checkmark MA$ $\quad \quad \quad \checkmark A$ $= 80\% \quad \checkmark A$ Percentage discount /Persentasie afslag $= 100\% - 80\%$ $= 20\% \quad \checkmark CA$ Incorrect / verkeerd $\checkmark O$ OR/OF $\text{Discount /afslag} = 30\% \times 1\,200 = 360 \text{ yen} \quad \checkmark MA \quad \checkmark RT \quad \checkmark A$ Discounted amount should be /Afslag moes wees: $1\,200 - 360 = 840 \text{ yen} \quad \checkmark MA \quad \checkmark CA$ Incorrect / verkeerd $\checkmark O$	1MA percentage calculation 1RT correct values 1A denominator 1A numerator 1CA simplification 1O verification OR/OF 1MA percentage calculation 1RT correct values 1A denominator 1A simplification 1CA simplification 1O verification OR/OF 1MA percentage calculation of correct values 1RT correct values 1A simplification 1MA subtracting 1CA simplification 1O verification	M L4 M

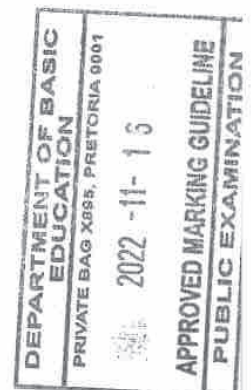


Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	OR/OF Difference in ticket price / <i>Verskil in kaartjie pryse</i> $\checkmark RT \quad \checkmark MA \quad \checkmark A$ $= 1\,200 - 960 = 240 \text{ yen}$ $\checkmark MA$ Discount / <i>afslag</i> = $30\% \times 1\,200 = 360 \text{ yen}$ $\checkmark A$ Incorrect / <i>verkeerd</i> $\checkmark O$ OR/OF $\checkmark MA$ $100\% - 30\% = 70\%$ $\checkmark A$ Discounted Amount / <i>Bedrag na afslag</i> $\checkmark MA \quad \checkmark RT$ $= \frac{70}{100} \times 1\,200$ $= 840 \text{ yen}$ $\checkmark A$ His statement is incorrect, the price for adults is 960 yen $\checkmark O$ <i>Sy bewering is nie korrek want die bedrag vir volwassenes is 960 jen</i>	OR/OF 1RT correct values 1MA subtracting 1A simplification 1MA percentage calculation 1A simplification 1O verification OR/OF 1MA subtracting 1A simplification 1RT correct values 1MA percentage calculation 1A simplification 1O verification (6)	
5.4	Duration of the trip / <i>Duur van rit</i> $= 12:03 - 8:06$ $= 3 \text{ h } 57 \text{ min}$ $\checkmark A$ Total stopping time / <i>Totale tyd van stoppe</i> $= 8 \times 4 \text{ min} = 32 \text{ min}$ $\checkmark A$ Time that the train was moving / <i>Tyd wat trein beweeg</i> $= 3 \text{ h } 57 \text{ min} - 32 \text{ min}$ $= 3 \text{ h } 25 \text{ min}$ $\checkmark CA$ Distance = speed $\times$ time <i>Afstand = spoed $\times$ tyd</i> $816 \text{ km} = \text{speed} \times 3 \text{ h } 25 \text{ min}$ $\checkmark SF$ Speed / <i>Spoed</i> = $\frac{816 \text{ km}}{3 \text{ h } 25 \text{ min}} = \frac{816 \text{ km}}{3,416667 \text{ h}}$ $\checkmark S$ $= 238,83 \text{ km/h}$ $\checkmark CA$	1A duration 1A total stopping time 1CA travelling time 1SF substitution 1S change of subject of the formula 1CA simplification	M L3 D



Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF Duration of the trip/<i>Duur van rit</i> = 12:03 – 8:06 = 3 h 57 min = 237 min ✓A Total stopping time/<i>Totale tyd van stoppe</i> = 8 × 4 min = 32 min ✓A Time that the train was moving/ <i>Tyd wat trein beweeg</i> = 237 min – 32 min = 205 min ✓CA Distance = speed × time <i>Afstand = spoed × tyd</i> 816 km = speed × 205 min ✓SF Speed/<i>Spoed</i> = $\frac{816 \text{ km}}{205 \text{ min}}$ ✓S ≈ 3,980487.. km/min ✓CA	OR/OF 1A duration 1A total stopping time 1CA travelling time 1SF substitution 1S change of subject of the formula 1CA simplification NPR	
		(6)	
		[26]	
		TOTAL: 150	

Mathematical Literacy P2 Analaysys Grid Nov 2022									Difficulty level			
	Maps	Meas	Prob	L1	L 2	L 3	L 4	Total	27	E	M	D
1.1.1		2		2				2		E	M	D
1.1.2		3		3				3		3		
1.1.3		2		2				2		2		
1.1.4		2		2				2		2		
1.1.5		2		2				2			2	
1.2.1	2			2				2		2		
1.2.2	2			2				2			2	
1.2.3	2			2				2		2		
1.3.1	2			2				2		2		
1.3.2	2			2				2		2		
1.3.3	2			2				2		2		
1.3.4	2			2				2		2		
1.3.5	2			2				2		2		
2.1.1	2						2	2		36		2
2.1.2	3				3			3	3			
2.1.3	2				2			2	2			

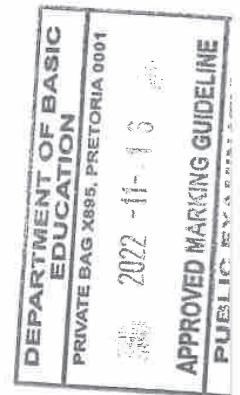


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Kopiereg voorbehou

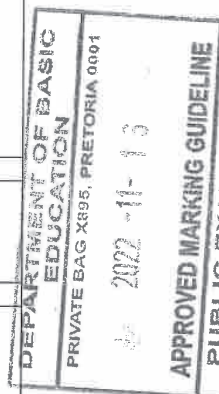
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2.1.4	2						2	2		2		
2.1.5	3					3		3			3	
2.1.6	3						3	3			3	
2.2.1			2	2				2		2		
2.2.2			4		4			4		4		
2.2.3			2	2				2		2		
2.2.4			3		3			3			3	
2.3.1	2			2				2		2		
2.3.2	2						2	2			2	
2.3.3(a)	2						2	2			2	
2.3.3(b)	2			2				2		2		
2.3.4	2				2			2			2	
3.1.1		3			3			3		3		
3.1.2		3			3			3		3		
3.1.3a		4				4		4			4	
3.1.3b		4				4		4			4	
3.2.1		3				3		3			3	
3.2.2		2					2	2		2		
3.3.1		3			3			3			3	
3.3.2		3			3			3		3		
3.3.3		4				4		4	29		4	
4.1.1	3				3			3			3	
4.1.2	4						4	4				4
4.1.3		6				6		6				6
4.2.2		8					8	8				8
4.3.1a		2		2				2		2		
4.3.1b		3			3			3	32		3	
4.3.2		2		2				2		2		
4.3.3		4				4		4			4	
5.1	4				4			4			4	
5.2.1		3			3			3			3	
5.2.2		3		3				3		3		
5.3.1		2		2				2		2		
5.3.2		2			2			2		2		
5.3.3		6					6	6			6	
5.4		6				6		6	26			6
	52	87	11	44	41	34	31	150	150	64	62	24
	34.7	58.0	7.3	29.3	27.3	22.7	20.7	100.0		42.7	41.3	16.0
Target	40%	55%	5%	30%	30%	20%	20%	100%		40%	40%	20%



	NOTES				
1.1.2	Digital and Analogue <i>Digitaal en Analoo</i>	2 marks			
1.1.3	Twelve forty-five in the afternoon Forty-five minutes past 12 in the afternoon	2 marks			
1.1.4	If B & E is written Correct times - 12:45 & 16:45	1 mark			
1.2.3	Screw/s	2 marks			
1.3.2	Free State	2 marks			
1.3.4	Listing only all 7 names	1 mark			
2.1.3	Accept 6	1 mark			
2.1.4	Accept Decorating purposes For people to take pictures Health reasons Outside for people who smoke	2 marks			
2.1.6	Accept Invalid –only when they wrote following explanation: There are 21 tables because table 18 is made up of two × 3 - seater tables (Table 13 and Table 18)	3 marks			
2.2.3	Options listed BVI BVM BSI BSM	1 mark			
2.2.4	$\frac{2}{4} \times 100\% = 50\%$	3 marks			
2.3.2	Free hand sketch	2 marks			
2.3.3 (a)	The bridges are indicated with the number 10 and 110 on each side of the streets.	2 marks			
2.3.3 (b)	Accept 5	2 marks			
3.2.1	If ONE value is missing <table border="1"> <tr> <td>$1,6 \times 4 \times 28$ = 179,2 gallons $179,2 \times 3,785$ = 678,272 ℓ</td> <td>$1,6 \times 4 \times 5$ = 32 gallons $32 \times 3,785$ = 121,12 ℓ</td> <td>$1,6 \times 28 \times 5$ = 224 gallons $224 \times 3,785$ = 847,84 ℓ</td> </tr> </table>	$1,6 \times 4 \times 28$ = 179,2 gallons $179,2 \times 3,785$ = 678,272 ℓ	$1,6 \times 4 \times 5$ = 32 gallons $32 \times 3,785$ = 121,12 ℓ	$1,6 \times 28 \times 5$ = 224 gallons $224 \times 3,785$ = 847,84 ℓ	2 marks
$1,6 \times 4 \times 28$ = 179,2 gallons $179,2 \times 3,785$ = 678,272 ℓ	$1,6 \times 4 \times 5$ = 32 gallons $32 \times 3,785$ = 121,12 ℓ	$1,6 \times 28 \times 5$ = 224 gallons $224 \times 3,785$ = 847,84 ℓ			





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*

2023

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

Symbol/ <i>Kode</i>	Explanation/ <i>Verduideliking</i>
M	Method/ <i>Metode</i>
MA	Method with accuracy/ <i>Metode met 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/a graph/document/diagram/ <i>Lees vanaf tabel/grafiek/diagram</i>
SF	Correct substitution in a formula/ <i>Korrekte vervanging in formule</i>
O	Opinion/Explanation/Reasoning / <i>Opinie/Verduideliking/redenasie</i>
P	Penalty, e.g. for no units, incorrect rounding off, etc./ <i>Penalisasie, bv. vir geen eenhede/verkeerde afronding, ens.</i>
R	Rounding off/ <i>Afronding</i>
NPR	No penalty for correct rounding/ <i>Geen penalisasie vir korrekte afronding nie</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with constant accuracy/ <i>Metode met volgehoue akkuraatheid</i>
RCA	Rounding consistent with accuracy/ <i>Afronding met volgehoue akkuraatheid</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.
- 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.
- Rounding is an independent mark.
- In order to award the verification / conclusion mark the candidate must have scored at least one mark in the calculations preceding the final conclusion.

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 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 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.*
- *Afronding tel as 'n afsonderlike punt.*
- *Ten einde die verifikasie/ gevolgtrekking punt toe te ken moes die kandidaat ten minste een punt gekry het in die berekening wat lei tot die finale gevolgtrekking.*

Note: Questions marked with * refers to the notes.

Questions where the numbers are encircled are the ones where we have a tolerance range.

QUESTION/VRAAG 1 [28 MARKS/PUNTE] Answer Only AO - full marks			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
*1.1.1	E ✓✓A	2A correct option (2)	M L1 E
*1.1.2	C ✓✓A	2A correct option (2)	M L1 E
*1.1.3	I ✓✓A	2A correct option (2)	MP L1 E
*1.1.4	B ✓✓A	2A correct option (2)	MP L1 E
*1.1.5	G ✓✓A	2A correct option (2)	P L1 E

Q/V	Solution/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T/L
1.2.1	✓RT ✓RT ✓RT Potatoes, Onions and Cucumber <i>Aartappels, Uie en Komkommer</i>	3RT correct partner (3)	MP L1 E
1.2.2	Six / <i>Ses</i> (6) ✓✓ RT	2RT correct number (2)	MP L1 M
1.2.3	Beans / <i>Bone</i> ✓✓ RT	2RT correct partner (2)	MP L1 M
*1.2.4	South East OR SE ✓✓ RT <i>Suidoos OF SO</i>	2RT correct direction (2)	MP L1 M
*1.2.5	✓✓RT ✓ RT 3 and 7	2RT 1 st correct number label 1RT 2 nd correct number label (3)	MP L1 E
1.3.1	C OR/OF $\pi \times r^2 \times h$ ✓✓ RT	2A correct option (2)	M L1 E
1.3.2	mm ³ ✓✓ A	2A correct unit (2)	M L1 E
1.3.3	mm to metre = $124 \div 1\,000$ ✓C <i>mm tot meter</i> = 0,124 m ✓ A	1C correct conversion/dividing by 1 000 1A answer in metres (2)	M L1 E
		[28]	

QUESTION/VRAAG 2 [24 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.1.1	5 ✓✓ A	2A correct number (2)	MP L1 E
2.1.2	Tripod/Driepoot ✓✓ A	2A correct item (2)	MP L1 E
2.1.3	Clockwise/Kloksgewys ✓✓ A	2A correct direction (2)	MP L1 E
2.1.4 (a)	H ✓✓ A	2 A correct choice (2)	MP L2 M
2.1.4 (b)	G ✓✓ A	2 A correct choice (2)	MP L2 M
2.2.1	65 km $\times$ 100 000 = 6 500 000 cm ✓C Distance on the map /Afstand op kaart = $\frac{6\,500\,000}{250\,000}$ ✓MA = 26 cm ✓CA OR/OF 65 km $\times$ 1 000 000 = 65 000 000 mm ✓C Distance on the map /Afstand op kaart = $\frac{65\,000\,000}{250\,000}$ ✓MA = 260 mm ✓CA OR/OF Map: Reality Kaart : Werklikheid 1: 250 000 Map Dist/Kaart afstand : 65 km Map distance = $\frac{65}{250\,000}$ Kaart afstand = 0,00026 km ✓C = (0,00026 $\times$ 100 000) cm = 26 cm ✓CA	1C conversion 1MA division by 250 000 1CA simplification OR/OF 1C conversion 1MA division by 250 000 1CA simplification OR/OF 1MA division by 250 000 1C conversion 1CA simplification	MP L2 D

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	OR/OF 1 cm: 250 000 cm $\therefore 1 \text{ cm} : 2,5 \text{ km} \quad \checkmark \text{C}$ $\therefore 1 : 2,5 \text{ km}$ Map Dist/<i>Kaart afstand</i> : 65 km Map distance /<i>Kaart afstand</i> $= \frac{65}{2,5} \quad \checkmark \text{MA}$ $= 26 \text{ cm} \quad \checkmark \text{CA}$	1C conversion 1MA division by 2,50 1CA simplification (3)	
2.2.2	Bar scale or line scale or Graphic Scale $\checkmark \checkmark \text{A}$ <i>Staafskaal/ Balkskaal of lynskaal of Grafiese skaal</i>	2A correct scale (2)	MP L1 E
*2.3.1	Number of reams lengthwise/ <i>Getal rieme in die lengte</i> $\checkmark \text{MA}$ $= \frac{102 \text{ cm}}{27,94 \text{ cm}} = 3,65 \approx 3 \quad \checkmark \text{A} \quad \checkmark \text{R}$ Number of reams widthwise /<i>Getal rieme in die breedte</i> $= \frac{44 \text{ cm}}{21,59 \text{ cm}} = 2,04 \approx 2 \quad \checkmark \text{MCA}$ Number of reams heightwise/<i>Getal rieme in die hoogte</i> $= \frac{39 \text{ cm}}{6,35 \text{ cm}} = 6,14 \approx 6 \quad \checkmark \text{A}$ Total number of reams/<i>Totale getal rieme</i> $= 3 \times 2 \times 6 \quad \checkmark \text{MCA}$ $= 36 \quad \checkmark \text{CA}$	1MA dividing lengths 1A simplification 1R rounding down 1MC A reams widthwise 1A reams heightwise 1MCA multiplying the values 1CA total number of reams (7)	MP L3 M

Q/V	Solution/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T/L
2.3.2	✓✓O To keep them dust free/<i>Om stof af te keer</i> To keep the reams dry/ moisture free <i>Om die rieme droog te hou</i> OR/OF To keep them safe for later use. <i>Om hulle veilig te bêre vir latere gebruik</i> OR/OF Glass door - For learners to see that the teacher is using their reams of paper – Easy to see how many reams are left (record keeping). <i>Glasdeure - Sodat leerders kan sien hul onderwyser gebruik hulle rieme papier</i> <i>--maklik om te sien hoeveel rieme is oor (hou rekord)</i> OR/OF Convenient –Paper is in the class for later usage. –Keeps the teacher’s table clear/more space on teacher’s table –Easily accessible when needed. –Effective use of space <i>Gerieflik:</i> – <i>die papier is in die klas gereed vir later gebruik</i> – <i>Hou die onderwyser se tafel skoon /meer spasie op die onderwyser se tafel</i> – <i>Maklike toegang te hê</i> – <i>Effektiewe gebruik van spasie</i> OR/OF Keeps the classroom neat and in order. <i>Hou die klaskamer netjies en skep orde.</i>	2O reason (2)	MP L4 E
		[24]	

QUESTION/VRAAG 3 [31 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.1.1	Surface area wall 1 = length $\times$ width <i>Oppervlakte muur 1 = lengte $\times$ breedte</i> = 4,8 m $\times$ 2,75 m ✓SF = 13,2 m² ✓CA Surface area wall 2 = length $\times$ width <i>Oppervlakte muur 2 = lengte $\times$ breedte</i> = 3,50 m $\times$ 2,75 m = 9,6250 m² ✓A Total surface area / <i>Totale oppervlakte</i> = (13,2 + 9,625) m² = 22,8250 m² ✓CA OR/OF ✓SF T SA/ TO = (4,8 m $\times$ 2,75 m) + (3,5 m $\times$ 2,75 m) = 13,2 m² + 9,6250 m² ✓CA ✓A = 22,8250 m² ✓CA OR/OF ✓A Surface Area = (3,5 m + 4,8 m) $\times$ 2,75 m ✓SF = 8,3 $\times$ 2,75 ✓CA = 22,825 m² ✓CA	1SF substitution 1CA simplification 1A simplification 1CA simplification OR/OF 1SF substitution 1CA simplification 1A simplification 1CA simplification OR/OF 1A adding both wall dimensions 1SF substitution 1CA simplification 1CA simplification NPR (4)	M L2 M
*3.1.2	Volume = Area of wall $\times$ thickness of plaster <i>Volume = Opp van muur $\times$ dikte van pleister</i> = (22,8250 $\times$ 10 000) $\times$ $\frac{12}{10}$ ✓C ✓SF = 228 250 cm² $\times$ 1,2 cm ✓CA = 273 900 cm³ ✓CA	CA from 3.1.1 2C conversion 1SF substitution 1CA simplification 1CA simplification	M L3 D

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	OR/OF 12 mm = 1,2 cm ✓C $22,825\text{m}^2 = (22,825 \times 100 \times 100)\text{cm}^2$ ✓C $= 228\,250\text{cm}^2$ ✓CA Volume = Area of wall $\times$ thickness of plaster <i>Volume = Opp van muur $\times$ dikte van pleister</i> $= 228\,250\text{cm}^2 \times 1,2\text{cm}$ ✓SF $= 273\,900\text{cm}^3$ ✓CA OR/OF 12 mm = (12 $\div$ 1 000) $= 0,012\text{m}$ ✓C Volume = $22,825 \times 0,012$ ✓SF $= 0,2739\text{m}^3$ ✓CA $= (0,2739 \times 100 \times 100 \times 100)$ ✓C $= 273\,900\text{cm}^3$ ✓CA OR/OF Volume = $22\,825\,000\text{mm}^2 \times 12\text{mm}$ ✓C ✓SF $= 273\,900\,000\text{mm}^3$ ✓CA $= 273\,900\text{cm}^3$ ✓C₃ ✓CA	1C conversion mm to cm 1C conversion m² to cm² 1CA simplification 1SF substitution 1CA simplification OR/OF 1C conversion m 1SF substitution 1CA simplification 1C conversion m³ to cm³ 1CA simplification OR/OF 1C conversion mm² 1SF substitution 1CA simplification 1C conversion cm³ 1CA simplification (5)	
3.1.3	Number of bags/ <i>Getal sakke</i> $= \frac{273\,900\text{cm}^3}{15\,000\text{cm}^3}$ ✓MCA $= 18,26$ ✓CA ≈ 19 ✓R	CA from 3.1.2 1MCA dividing 1CA simplification 1R rounding up (3)	M L2 M
3.1.4	Perimeter / <i>Omtrek</i> $= 2 \times (4,8 + 3,5)\text{m}$ ✓RT ✓SF $= 16,6\text{m}$ ✓CA OR/OF	1SF substitution 1RT correct values 1CA simplification OR/OF	M L2 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	Perimeter/ Omtrek $= 4,8 \text{ m} + 3,5 \text{ m} + 4,8 \text{ m} + 3,5 \text{ m}$ ✓MA ✓RT $= 16,6 \text{ m}$ ✓CA OR/OF Perimeter/Omtrek ✓MA $= 2(3,5 \text{ m}) + 2(4,8 \text{ m})$ ✓RT $= 16,6 \text{ m}$ ✓CA	1MA adding all 4 sides 1RT correct values 1CA simplification OR/OF 1MA adding all 4 sides 1RT correct values 1CA simplification AO (3)	
3.2.1	$P = \frac{1}{5}$ ✓A or/of 0,2 or/of 20% ✓A	1A numerator 1A denominator AO (2)	P L2 E
*3.2.2	P(not appear/ nie verskyn) $= 1 - 0,75$ ✓MA $= 0,25$ ✓A or/of $\frac{1}{4}$ or/of 25%	1MA subtracting from 1 1A simplification AO (2)	P L2 M
3.2.3	Less likely /kleiner kans ✓✓A	CA from Q3.2.2 2A correct likelihood (2)	P L2 E
*3.3.1	Starting time /Begin tyd $= 08:05 - 2 \text{ min} - 3 \text{ min} - 4 \text{ min}$ ✓MA ✓A $= 07:56$ ✓CA OR/OF Total time to prepare: $= 4 \text{ min} + 3 \text{ min} + 2 \text{ min}$ $= 9 \text{ min}$ ✓A Starting time /Begin tyd $= 08:05 - 9 \text{ min}$ ✓MA $= 07:56$ ✓CA or 4 minutes to eight in the morning	1MA subtract minutes 1A all the minutes 1CA simplification OR/OF 1A all the minutes 1MA subtract minutes 1CA simplification AO (3)	M L2 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.3.2	Total volume of water /<i>totale volume water</i> $= 7 \ell \times 5 = 35 \ell \quad \checkmark \text{MA}$ 1 gallon/<i>gelling</i> = 3,78541 ℓ Number of gallons /<i>Getal gellings</i> $= \frac{35}{3,78541} \quad \checkmark \text{C}$ $= 9,24602619 \approx 9,25 \quad \checkmark \text{R}$ OR/OF 1 gallon/<i>gelling</i> = 3,78541 ℓ $n = 7 \ell$ Number of gallons /<i>Getal gellings</i> $= \frac{7}{3,78541} \quad \checkmark \text{C}$ $= 1,849205... \approx 1,85$ For 5 bags/<i>Vir 5 sakke</i> $= 1,85 \times 5 = 9,25 \text{ gallon / } gelling \quad \checkmark \text{MA} \quad \checkmark \text{R}$	1MA multiplying with 5 1C converting 1R rounded answer OR/OF 1C converting 1MA multiplying with 5 1R rounded answer (3)	M L2 M
3.3.3	$^{\circ}\text{F} - 32^{\circ} = (1,8 \times ^{\circ}\text{C})$ $73,4 - 32^{\circ} = (1,8 \times ^{\circ}\text{C}) \quad \checkmark \text{SF}$ $41,4^{\circ} = 1,8 \times ^{\circ}\text{C} \quad \checkmark \text{S}$ $^{\circ}\text{C} = 41,4^{\circ} \div 1,8 \quad \checkmark \text{MCA}$ $= 23 ^{\circ}\text{C} \quad \checkmark \text{CA}$	1SF correct substitution 1S simplification 1MCA dividing by 1,8 1CA simplification (4)	M L2 M
		[31]	

QUESTION/VRAAG 4 [30 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
4.1.1	12 ✓✓ RT	2RT number of houses (2)	MP L2 E
4.1.2	✓✓ RT ✓ RT 1, 2 or/of 12 Any two /Enige twee	2RT 1 st house label or number 1RT second (3)	MP L2 M
*4.2.1	The depth 1m or it is shallow/ not too deep. ✓✓ O <i>Die diepte is 1m of dit is vlak/ nie te diep nie.</i>	2O explanation (2)	M L4 M
4.2.2	✓✓ A Capacity: the maximum amount of water the pool can hold/contain. Kapasiteit is die maksimum hoeveelheid water wat die swembad kan hou. OR/OF Capacity: a measure of space covered by pool structure with water. Kapasiteit is die mate van spasie wat die swembad met water vul.	2A concept (2)	M L1 M
*4.2.3	$\text{Volume}_{(\text{cylinder})} = 3,142 \times \left(\frac{7}{2}\text{m}\right)^2 \times 1\text{m} \quad \checkmark \text{SF}$ $= 3,142 \times (3,5\text{m})^2 \times 1\text{m}$ $= 38,4895 \text{ m}^3 \quad \checkmark \text{CA}$ $\text{Volume}_{(\text{rectangular})} = 6,2 \text{ m} \times 3,25 \text{ m} \times 1,65 \text{ m} \quad \checkmark \text{SF}$ $= 33,2475 \text{ m}^3 \quad \checkmark \text{CA}$ $\text{Difference / Verskil} = 38,4895 \text{ m}^3 - 33,2475 \text{ m}^3 \quad \checkmark \text{MCA}$ $= 5,242 \text{ m}^3 \quad \checkmark \text{CA}$ $= 5\,242 \text{ l} \quad \checkmark \text{C}$ OR/OF	1A radius 1SF correct substitutions 1CA simplification 1SF correct values 1CA rectangular volume 1MCA subtracting 1CA difference 1C conversion OR/OF	M L3 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	$\text{Volume}_{(\text{cylinder})} = 3,142 \times (3,5\text{m})^2 \times 1\text{m} \times \frac{1}{1\,000} \ell/\text{m}^3$ $= 38\,489,5 \ell$ $\text{Volume}_{(\text{rectangular})} = 6,2\text{m} \times 3,25\text{m} \times 1,65\text{m} \times \frac{1}{1\,000} \ell/\text{m}^3$ $= 33\,247,5 \ell$ $\text{Difference / Verskil} = 38\,489,5 \ell - 33\,247,5 \ell$ $= 5\,242 \ell$	1A radius 1SF correct substitutions 1C conversion 1CA simplification 1SF correct values 1CA rectangular volume 1MCA subtracting 1CA difference NPR	(8)
4.2.4 (a)	To accommodate cutting the tiles or breakages or curved surfaces or keep spares for later usage. <i>Om voorsiening te maak die sny van teëls of breekskade of die gekurfde oppervlakte of om oor te hou vir latere gebruik.</i>	2O reason	M L4 E (2)
*4.2.4 (b)	$\text{SA}_{(\text{open cylinder})}/BO = 3,142 \times \text{radius} \times (\text{radius} + 2 \times \text{height})$ $= 3,142 \times 3,5\text{m} \times (3,5\text{m} + 2 \times 1\text{m})$ $= 3,142 \times 3,5\text{m} \times 5,5\text{m} = 60,4835\text{m}^2$ Area of one tile/ Opp van 1 teël $= \frac{20}{100}\text{m} \times \frac{20}{100}\text{m}$ $= 0,2 \times 0,2\text{m}^2 = 0,04\text{m}^2$ Number of tiles needed /Getal teëls nodig $= \frac{\text{Area to be tiled}}{\text{Area of single tile}}$ $= \frac{60,4835}{0,04}$ $= 1\,512,0875$ Plus 10% $= \frac{10}{100} \times 1\,512,0875 + 1\,512,0875$ $= 1\,663,29625 \text{ tiles /teëls}$ $\approx 1\,664 \text{ tiles /teëls}$ Number of boxes /Getal bokse $= 1\,664 \div 16$ $= 104$ VALID/GELDIG	CA radius form 4.2.3 1SF substitution 1CA area of pool 1C conversion 1CA area of a tile 1MCA finding number of tiles 1CA simplification 1MCA calc. 10% and adding it or multiply with 1,10 1CA number of tiles 1MCA dividing 1CA number of boxes 1O conclusion	M L4 D

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	OR/OF $SA_{(\text{open cylinder})}/BO = 3,142 \times \text{radius} \times (\text{radius} + 2 \times \text{height})$ $= 3,142 \times 3,5 \text{ m} \times (3,5 \text{ m} + 2 \times 1 \text{ m}) \quad \checkmark \text{ SF}$ $= 3,142 \times 3,5 \text{ m} \times 5,5 \text{ m} = 60,4835 \text{ m}^2. \quad \checkmark \text{ CA}$ Area of one tile/ <i>Opp van 1 teël</i> $= \frac{20}{100} \text{ m} \times \frac{20}{100} \text{ m} \quad \checkmark \text{ C}$ $= 0,2 \times 0,2 \text{ m}^2 = 0,04 \text{ m}^2. \quad \checkmark \text{ CA}$ Number of tiles needed /<i>Getal teëls nodig</i> $= \frac{\text{Area to be tiled}}{\text{Area of single tile}}$ $= \frac{60,4835}{0,04} \quad \checkmark \text{ MCA}$ $= 1\,512,0875 \quad \checkmark \text{ CA} \quad \textbf{OR/OF} \approx 1\,513$ Number of boxes/<i>Getal bokse</i> $= 1\,512,0875 \div 16 \quad \checkmark \text{ MCA}$ $= 94,505... \quad \checkmark \text{ CA}$ Increased number/ <i>Verhoogde getal</i> $= 94,505... \times 110\% \quad \checkmark \text{ MCA}$ $= 103,95... \quad \checkmark \text{ CA}$ ≈ 104 VALID/GELDIG $\checkmark \text{ O}$ OR/OF $SA_{(\text{open cylinder})}/BO = 3,142 \times \text{radius} \times (\text{radius} + 2 \times \text{height})$ $= 3,142 \times 3,5 \text{ m} \times (3,5 \text{ m} + 2 \times 1 \text{ m}) \quad \checkmark \text{ SF}$ $= 3,142 \times 3,5 \text{ m} \times 5,5 \text{ m} = 60,4835 \text{ m}^2. \quad \checkmark \text{ CA}$ Area of one tile/ <i>Opp van 1 teël</i> $= \frac{20}{100} \text{ m} \times \frac{20}{100} \text{ m} \quad \checkmark \text{ C}$ $= 0,2 \times 0,2 \text{ m}^2 = 0,04 \text{ m}^2. \quad \checkmark \text{ CA}$	1SF substitution 1CA SA of pool 1C conversion 1CA area of a tile 1MCA finding number of tiles 1CA simplification 1MCA dividing 1CA number of boxes 1MCA calc. 10% and adding it or multiply with 1,10 1CA number of boxes 1O conclusion OR/OF 1SF substitution 1CA area of pool 1C conversion 1CA area of a tile	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	Continue Area covered by one box/<i>Opp wat een boks bedek</i> $= 0,04 \text{ m}^2 \times 16$ ✓ MCA $= 0,64 \text{ m}^2$ ✓ CA Number of boxes/<i>Getal bokse</i> $= \frac{60,4835}{0,64}$ ✓ MCA $= 94,505...$ ✓ CA Increased number/<i>Verhoogde getal</i> $= 94,505... \times 110\%$ ✓ MCA $= 103,95...$ ✓ CA ≈ 104 VALID/<i>GELDIG</i> ✓ O OR/OF $SA_{(\text{open cylinder})}/BO = 3,142 \times \text{radius} \times (\text{radius} + 2 \times \text{height})$ $= 3,142 \times 3,5 \text{ m} \times (3,5 \text{ m} + 2 \times 1 \text{ m})$ ✓ SF $= 3,142 \times 3,5 \text{ m} \times 5,5 \text{ m} = 60,4835 \text{ m}^2$. ✓ CA Increased area/<i>Vergrote opp</i> $= 60,4835 \times 1,1$ ✓ MCA $= 66,53185$ ✓ CA Area of one tile/<i>Opp van 1 teël</i> $= \frac{20}{100} \text{ m} \times \frac{20}{100} \text{ m}$ ✓ C $= 0,2 \times 0,2 \text{ m}^2 = 0,04 \text{ m}^2$. ✓ CA Area covered by one box/<i>Opp wat een boks bedek</i> $= 0,04 \text{ m}^2 \times 16$ ✓ MCA $= 0,64 \text{ m}^2$ ✓ CA Number of boxes/<i>Getal bokse</i> $= \frac{66,53185}{0,64}$ ✓ MCA $= 103,956...$ ≈ 104 ✓ CA VALID/<i>GELDIG</i> ✓ O	1MCA finding area of box of tiles 1CA simplification 1MCA dividing 1CA number of boxes 1MCA calc. 10% and adding it or multiply with 1,10 1CA number of boxes 1O conclusion OR/OF 1SF substitution 1CA area of pool 1MCA calc. 10% and adding it or multiply with 1,10 1CA simplification 1C conversion 1CA area of a tile 1MCA finding area of box of tiles 1CA simplification 1MCA dividing 1CA number of boxes 1O conclusion	(11) [30]

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Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
*5.2.3	6 sleeper / slaper: Total cost / <i>totale koste</i> ✓RT ✓RT = R2 640 + R2 730 × 2 ✓MA = R8 100 ✓CA VALID/ <i>GELDIG</i> ✓O	CA from 5.2.2 1RT correct rate, Thursday 1RT correct rate, weekend 1MA multiplying with 2 1CA simplification 1O conclusion (5)	M/F L4 M
5.3.1 (a)	✓A False, the map shows other roads also have toll gates. ✓O <i>Onwaar, die kaart toon ook ander tolhekke</i>	1A correct option 1O reason (2)	MP L4 E
5.3.1 (b)	True/ <i>Waar</i> ✓✓A	2A correct option (2)	MP L4 E
5.3.2	Top view or aerial view or bird's eye view or satellite view ✓✓O <i>Bo-aansig of vanuit die lug aansig of voël-aansig of satelliet aansig.</i>	2O correct view (2)	MP L1 E
5.3.3	Distance/ <i>Afstand</i> = speed/ <i>spoed</i> × time/ <i>tyd</i> 588 km = speed/ <i>spoed</i> × 7 h ✓SF Speed/ <i>spoed</i> = $\frac{588 \text{ km}}{7 \text{ h}}$ ✓A = 84 km/h ✓CA	1SF substitution 1A change subject of formula 1CA simplification (3)	M L2 M
*5.3.4	Expense for tolls / <i>Tol-fooie</i> : ✓RT = R56,00 + R77,00 + R82,00 + R58,00 = R273 ✓CA Fuel used/ <i>Brandstof verbruik</i> = 588 km ÷ 100 km × 6,42 ℓ ✓MA = 37,7496 ℓ ✓A Fuel cost / <i>Brandstofkoste</i> = 37,7497 × R21,40 = R807,84 ✓CA Total cost / <i>Totale koste</i> = R8 100 + R807,84 × 2 + R273,00 × 2 ✓MCA = R10 261,68 ✓CA Cost per person / <i>Koste per persoon</i> = R10 261,68 ÷ 5 ✓MCA = R2 052,34 ✓CA	CA from 5.2.3 1 RT correct 4 tolls 1CA simplification 1MA fuel consumption rate 1A simplification 1CA fuel cost 1MCA return trip 1CA total cost for 3 items 1MCA dividing by 5 1CA simplification	M/F L3 D

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	OR/OF Round trip/ <i>Heer en terug</i> $588 \text{ km} \times 2 = 1176 \text{ km}$ Fuel used/<i>Brandstof verbruik</i> $= 1176 \text{ km} \div 100 \text{ km} \times 6,42 \text{ ℓ}$ ✓MA $= 75,4992 \text{ ℓ}$ ✓A Fuel cost / <i>Brandstofkoste</i> $= 75,4992 \times R21,40$ $= R1\,615,68$ ✓CA Cost per person/<i>Koste per persoon</i> $= R1\,615,68 \div 5$ ✓MA $= R323,14$ Toll fees / <i>Tol-fooie</i>: $= R56,00 + R77,00 + R82,00 + R58,00$ ✓RT $= R273$ ✓CA Round trip/ <i>Heen en weer</i> $= R273 \times 2$ ✓MCA $= R546$ Cost per person/<i>Koste per persoon</i> $= R546 \div 5$ $= R109,20$ Accommodation per person/<i>Verblyf per persoon</i> $= R8100 \div 5$ $= R1\,620$ Total per person/ <i>Totaal per persoon</i> $= R323,14 + R109,20 + R1\,620$ ✓MCA $= R2\,052,34$ ✓CA OR/OF Toll Expenses / <i>Tol-fooie</i>: ✓MCA ✓RT $= 2(R56,00 + R77,00 + R82,00 + R58,00)$ $= R546,00$ ✓CA Fuel Cost /<i>Brandstof koste</i> Total Distance/<i>Afstand</i> $= 588 \text{ km} \times 2 = 1176 \text{ km}$ ✓MA ✓A Fuel used/<i>Brandstof</i>: $\frac{1176}{100} \times 6,42 = 75,4992 \text{ ℓ}$ Cost/<i>Koste</i>: $75,4992 \times R21,40 = R1\,615,68$ ✓CA Total Cost/<i>Totale koste</i>: $R8\,100 + R546,00 + R1\,615,68 = R10\,261,68$ ✓CA ✓MCA ✓CA Cost PP/ <i>Koste PP</i>: $R10\,261,68 \div 5 = R2\,052,34$	1MA fuel consumption rate 1A simplification 1CA fuel cost 1MA dividing by 5 1 RT correct 4 tolls 1CA simplification 1MCA return trip 1MCA adding all the values 1CA total cost OR/OF 1MCA return trip 1 RT correct 4 tolls 1CA simplification 1MA fuel consumption rate 1A simplification 1CA fuel cost 1CA total cost for 3 items 1MCA dividing by 5 1CA simplification	(9)
		[37]	
TOTAL/TOTAAL: 150			



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE/
NASIONALE
SENIOR SERTIFIKAAT**

GRADE/GRAAD 12

**MATHEMATICAL LITERACY P1/
WISKUNDIGE GELETERDHEID V1**

NOVEMBER 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/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 rounding/Geen penalisasie vir 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 consistent accuracy/Metode met volgehoue akkuraatheid
RCA	Rounding consistent with accuracy/ Afronding met volgehoue akkuraatheid

**These marking guidelines consist of 18 pages.
Hierdie nasienriglyne bestaan uit 18 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 or break-down.
- 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 awarded if relevant calculations of at least $\frac{1}{3}$ of the maximum mark of the sub-question has been awarded.
- 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 'break-down'.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *Afronding tel as 'n afsonderlike punt.*
- *Die algemene beginsel van merk as 'n leerder een fout maak, word een punt afgetrek.*
- *'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekeninge van ten minste $\frac{1}{3}$ van die maksimumpunt van die subvraag toegeken is.*
- *Geen penalisering vir ronding (NPR) as die eerste desimaal korrek is nie, behalwe as vrae geld insluit.*

QUESTION/VRAAG 1 [29 MARKS/PUNTE] ANSWER ONLY FULL MARKS			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1	5 / Five / Vyf ✓✓A	2A correct number (2)	D L1 E
1.1.2	✓A 17:30 – 18:00 ✓A OR / OF ✓A 5:30 pm – 6:00 pm ✓A OF / OF ✓A ✓A Half past five until 6 o'clock in the afternoon/evening/ Half ses tot 6 uur in die namiddag/aand.	1A 17:30 / 5:30 pm / Half past five 1A 18:00 / 6:00 pm / 6 o'clock (2)	D L1 E
* 1.1.3	C ✓✓A	2A correct option (2)	D L1 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
* 1.1.4	Probability / <i>Waarskynlikheid</i> $= \frac{56}{100} \quad \checkmark A$ $= \frac{14}{25} \quad \checkmark A$	1A writing as a fraction 1A simplification (2)	P L1 E
* 1.1.5	Total number / <i>Totale getal</i> $\checkmark RT$ $= 26 + 26 \quad \checkmark MA$ $= 52 \quad \checkmark A$	1RT correct values 1MA adding correct values 1A simplification (3)	D L1 E
1.2.1	$\checkmark \checkmark RT$ Sunflower oil / Oil / <i>Sonneblomolie / Olie</i> $\checkmark RT$ Oranges / <i>Lemoene</i>	2RT first correct product 1RT second correct product (3)	F L1 E
1.2.2	Value of A / <i>Waarde van A</i> $= R12,60 + R45,56 + R52,97 + R40,68 + R22,07 + R37,73 + R86,80 \quad \checkmark MA$ $= R298,41 \quad \checkmark A$	1MA adding ALL correct values 1A simplification NPU (2)	F L1 E
* 1.2.3	Price per dozen / <i>Prys per dosyn</i> $= R52,97 \div 1,5 \quad \checkmark A$ $= R35,31 \quad \checkmark A$ $OR \times \frac{1}{1,5}$ OR / OF $1 \text{ egg} / \text{eier} = \frac{R52,97}{18} \quad \checkmark A$ Price per dozen / <i>Prys per dosyn</i> $= R2,94277 \times 12$ $= R35,31 \quad \checkmark A$ OR / OF	1A dividing by 1,5 1A simplification 1A dividing by 18 1A simplification	F L1 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
* 1.2.3	Price for $\frac{1}{2}$ dozen / Prys per $\frac{1}{2}$ dosyn $= \frac{R52,97}{3} \quad \checkmark A$ $= R17,65666$ Price for dozen / Prys per dosyn $= R17,65666 \times 2$ $= R35,31 \quad \checkmark A$	1A dividing by 3 1A simplification NPR (2)	
* 1.2.4	$\checkmark RT$ $= 22,07 : 20,10 \quad \checkmark RT$ $= 1 : 0,9107385591$ $\approx 1 : 0,91 \quad \checkmark A$	1RT correct value 1RT correct value 1A simplification in correct order NPR (3)	F L1 E
* 1.3.1	C $\checkmark \checkmark A$	2A correct letter (2)	F L1 E
* 1.3.2	A $\checkmark \checkmark A$	2A correct letter (2)	F L1 E
* 1.3.3	I $\checkmark \checkmark A$	2A correct letter (2)	F L1 E
* 1.3.4	B $\checkmark \checkmark A$	2A correct letter (2)	D L1 E
		[29]	

QUESTION/VRAAG 2 [30 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.1	07032985769 ✓✓RT	2RT correct number (2)	F L1 E
* 2.1.2	$\begin{aligned} &\text{✓RT} \\ \mathbf{B} &= \text{R1 300,00} - \text{R1 130,43} \text{ ✓MA} \\ &= \text{R169,57} \text{ ✓A} \end{aligned}$ OR/OF $\begin{aligned} &\text{✓RT} \quad \text{✓MA} \\ \mathbf{B} &= \text{R1 130,43} \times \frac{15}{100} \text{ OR } \times 0,15 \\ &= \text{R169,56} \text{ ✓A} \end{aligned}$ OR/OF $\begin{aligned} &\text{✓RT} \quad \text{✓MA} \\ \mathbf{B} &= \text{R1 300} \times \frac{15}{115} \\ &= \text{R169,57} \text{ ✓A} \end{aligned}$	1RT correct value 1MA subtracting values 1A simplification OR/OF 1RT correct value 1MA calculating 15% 1A simplification OR/OF 1RT correct value 1MA calculating $\frac{15}{115}$ 1A simplification AO (3)	F L1 E
* (2.1.3)	Amount for Block 1 / <i>Bedrag vir Blok 1</i> $= 350 \text{ kWh} \times \text{R2,19} \text{ ✓MA}$ $= \text{R766,50} \text{ ✓CA}$ Amount left for Block 2 / <i>Bedrag oor vir Blok 2</i> $= \text{R1 130,43} - \text{R766,50}$ $= \text{R363,93} \text{ ✓MCA}$ Units in Block 2/ <i>Eenhede in Blok 2</i> $= \frac{\text{R363,93}}{\text{R2,91}} \text{ ✓MCA}$ $= 125,0618557 \text{ kWh} \text{ ✓CA}$ Total kWh received / <i>Totale kWh ontvang</i> $= 350 \text{ kWh} + 125,0618557 \text{ kWh} \text{ ✓MCA}$ $= 475,06 \text{ kWh} \text{ ✓CA}$ OR / OF	1MA multiplying with tariff 1CA simplification 1MCA calculating remaining amount in Block 2 1MCA dividing by tariff 1CA simplification 1MCA adding values 1CA simplification OR / OF	F L3 D

Q/V	Solution/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T&L
* 2.1.3	Tariff (VAT included) $= R2,19 \times \frac{115}{100}$ $= R2,5185$ Tariff (VAT included) $= R2,91 \times \frac{115}{100}$ $= R3,3465$ Amount spent in Block 1 / <i>Bedrag spandeer in Blok 1</i> $= 350 \text{ kWh} \times R2,5185$ $= R881,475$ Amount available for Block 2 / <i>Bedrag beskikbaar vir Blok 2</i> $= R1\ 300 - R881,475$ $= R418,525$ Units in Block 2/ <i>Eenhede in Blok 2</i> $= \frac{R418,525}{R3,3465}$ $= 125,06 \text{ kWh}$ Total kWh received / <i>Totale kWh ontvang</i> $= 350 \text{ kWh} + 125,06 \text{ kWh}$ $= 475,06 \text{ kWh}$	1A VAT calculation 1MCA calculating amount in Block 1 1MCA calculating remaining amount in Block 2 1MCA dividing by R3,3465 1CA simplification 1MCA adding values 1CA simplification NPR (7)	
* 2.2.1	R1 549 ✓✓RT	2RT correct amount NPU (2)	F L1 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.2.2	Price excluding VAT / Prys BTW uitgesluit ✓RT $= \frac{R78\ 200}{1,15} \quad \checkmark\text{MA}$ = R68 000 ✓A OR/OF Price excluding VAT / Prys BTW uitgesluit ✓RT $= R78\ 200 \times \frac{100}{115} \quad \checkmark\text{MA}$ = R68 000 ✓A OR/OF VAT amount / BTW bedrag ✓RT $= R78\ 200 \times \frac{15}{115} \quad \checkmark\text{MA}$ = R10 199,999 $\approx R10\ 200$ Price excluding VAT / Prys BTW uitgesluit $= R78\ 200 - R10\ 200$ $= R68\ 000 \quad \checkmark\text{A}$	1RT for R78 200 1MA dividing by 1,15 1A simplification OR/OF 1RT for R78 200 1MA multiplying $\times \frac{100}{115}$ 1A simplification OR/OF 1RT for R78 200 1MA multiplying $\times \frac{15}{115}$ 1A simplification (3)	F L2 E
* 2.2.3	Number of months / Aantal maande $= 12 \times 7$ $= 84 \text{ months / maande} \quad \checkmark\text{A}$ Rent-to-own / Huur-om-te-besit $= (R1\ 549 \times 84) + R782 + R7\ 820$ $= R130\ 116 + R782 + R7\ 820 \quad \checkmark\text{MCA}$ $= R138\ 718 \quad \checkmark\text{CA}$ Difference / Verskil $= R138\ 718 - R78\ 200 \quad \checkmark\text{MCA}$ $= R60\ 518 \quad \checkmark\text{CA}$	1A correct number of months 1MCA adding ALL correct values 1CA simplification 1MCA subtracting values 1CA simplification (5)	F L3 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
* 2.3.1	Annual taxable income / <i>Jaarlikse belasbare inkomste</i> = R39 275,85 × 12 ✓ MA = R471 310,20 ✓ A Tax Bracket C / <i>Belastingkerf C</i> ✓ MCA	1MA multiplying by 12 1A simplification 1MCA tax bracket C AO (3)	F L2 E
2.3.2	Tax before rebate / <i>Belasting voor kortings</i> 77 362 + 31% of taxable income above 370 500 ✓ SF = R77 362 + 31% (R471 310,20 – R370 500) = R77 362 + 31% (R100 810,20) = R77 362 + R31 251,162 ✓ MCA = R108 613,162 ✓ CA Annual tax payable / <i>Jaarlikse belasting betaalbaar</i> = R108 613,162 – R17 235 ✓ RT = R91 378,162 = R91 378,16 ✓ CA OR/OF Annual tax payable / <i>Jaarlikse belasting betaalbaar</i> ✓✓ MCA ✓ SF = R77 362 + 0,31 (R471 310,20 – R370 500) – R17 235 ✓ RT = R91 378,16 ✓ CA	CA from Question 2.3.1 1SF correct substitution 1MCA adding values 1CA simplification 1RT rebate: R17 235 1CA simplification OR/OF 1SF correct substitution 2MCA adding values 1RT rebate: R17 235 1CA simplification (5)	F L3 M
		[30]	

QUESTION/VRAAG 3 [29 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 3.1.1	2015 ✓✓RT	2RT correct year (2)	D L2 M
* 3.1.2	Projected number of stores / <i>Geprojekteerde getal winkels</i> $\begin{aligned} &\checkmark\text{RT} \quad \checkmark\text{MA} \\ &= 2\,204 \times \frac{95,39}{100} + 2\,204 \\ &= 2\,102,3956 + 2\,204 \\ &= 4\,306,3956 \\ &= 4\,306 \quad \checkmark\text{CA} \end{aligned}$ OR/OF Projected number of stores / <i>Geprojekteerde getal winkels</i> $\begin{aligned} &\checkmark\text{RT} \quad \checkmark\text{MA} \quad \boxed{\text{OR} \times 1,9539} \\ &= 2\,204 \times \frac{195,39}{100} \\ &= 4\,306 \text{ stores / } \textit{winkels} \quad \checkmark\text{CA} \end{aligned}$	1RT correct value 2 204 1MA percentage calculation 1CA simplification OR/OF 1RT correct value 2 204 1MA percentage calculation 1CA simplification AO Accept: 4 307 (3)	D L2 M
* 3.1.3	Average Shoprite / <i>Gemiddelde Shoprite</i> $\begin{aligned} &\checkmark\text{RT} \quad \checkmark\text{RT} \\ &= 153\,726 \div 3\,543 \\ &= 43,388653.... \text{ employees / } \textit{werknemers} \quad \checkmark\text{CA} \end{aligned}$ Average Pick n Pay / <i>Gemiddelde Pick n Pay</i> $\begin{aligned} &\checkmark\text{RT} \\ &= 90\,000 \div 2\,204 \\ &= 40,834845.... \text{ employees / } \textit{werknemers} \quad \checkmark\text{CA} \end{aligned}$ <i>Her statement is VALID / Haar bewering is GELDIG.</i> ✓O	1RT 153 726 1RT 3 543 1CA simplification 1RT both correct values 1CA simplification 1O conclusion NPR (6)	D L4 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
* 3.1.4	Probability / <i>Waarskynlikheid</i> $\frac{\checkmark_{RT} 3}{10} \times 100\%$ $= 30\% \checkmark_{CA}$	1RT correct numerator 1RT correct denominator 1CA simplification AO (3)	P L2 E
* 3.2.1	Sample / <i>Steekproef</i> $= 32 \checkmark_A \checkmark_A$ Population / <i>Populasie</i> $= 12\ 342 \checkmark_A$ OR/OF $\checkmark\checkmark_A$ 32 and / en 12 342 $\checkmark_A$ No words used	1A counting to 32 1A sample 1A correct population OR/OF 2A sample in correct order 1A population in correct order (3)	D L2 M
* 3.2.2	Option E / <i>Opsie E</i> $\checkmark\checkmark_A$	2A correct option (2)	D L1 E
* 3.2.3	The value 127 is 60 minutes <u>more than the second highest</u> time in the dataset / <i>Die waarde 127 is 60 minute meer as die tweede hoogste tyd van die datastel.</i> $\checkmark\checkmark_O$	2O conclusion (2)	D L4 M
3.2.4 (a)	Quartile 3/Kwartiel 3 $= \frac{\checkmark_{RT} 28 + 29}{2} \checkmark_{MA}$ $= 28,5 \checkmark_{CA}$	1RT correct values 1MA concept of quartile 1CA simplification AO (3)	D L2 E
* 3.2.4 (b)	New Quartile 1/ <i>Nuwe Kwartiel 1</i> $= 15 \checkmark_{RT}$ New Quartile 3/ <i>Nuwe Kwartiel 3</i> $= 28 \checkmark_{RT}$ IQR $= Q_3 - Q_1 \checkmark_A$ IQR $= 28 - 15 \checkmark_{MCA}$ $= 13$ He is CORRECT. / <i>Hy is KORREK.</i> $\checkmark_O$	1RT correct value 1RT correct value 1A correct formula 1MCA subtracting values 1O conclusion (5)	D L4 M
		[29]	

QUESTION/VRAAG 4 [31 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
* 4.1.1 (a)	Cost / Koste ✓A ✓A ✓A = R4 000 + R1 250 × (number of hours exceeding 5) = R4 000 + R1 250 × (aantal ure meer as 5) OR/OF Cost / Koste ✓A ✓A = R4 000 + R1 250 × n Where n = number of hours exceeding 5 Waar n = aantal ure meer as 5 ✓A	1A fixed cost (R4 000) 1A multiply hours with tariff (R1 250) 1A number of hours more than 5 (3)	F L2 M
4.1.1 (b)	P = 4 000 ✓A Q = 5 250 ✓✓A R = 9 000 ✓A	1A value of P 2A value of Q 1A value of R (4)	F L2 M
* 4.1.2 (a)	Step graph / Trapgrafiek Stepwise graph / Stapgewyse grafiek ✓✓A	2A correct name (2)	D L1 E

Q/V	Solution/Oplossing	T&L																																	
4.1.2 (b)	COMPARISON OF THE COST FOR DIFFERENT DJ'S The graph shows the cost in rand on the y-axis (0 to 10 000) and the number of hours playing on the x-axis (0 to 9). DJ 5-Star is represented by a solid line with open circles, and DJ Cool is represented by a solid line with solid circles. A dashed line labeled 'A' connects the points (0, 4000), (5, 4000), and (9, 9000). <table border="1"><thead><tr><th>Number of hours playing</th><th>DJ 5-Star (Cost in rand)</th><th>DJ Cool (Cost in rand)</th></tr></thead><tbody><tr><td>0</td><td>1000</td><td>4000</td></tr><tr><td>1</td><td>2000</td><td>4000</td></tr><tr><td>2</td><td>3000</td><td>4000</td></tr><tr><td>3</td><td>4000</td><td>4000</td></tr><tr><td>4</td><td>5000</td><td>4000</td></tr><tr><td>5</td><td>6000</td><td>4000</td></tr><tr><td>6</td><td>7000</td><td>5000</td></tr><tr><td>7</td><td>8000</td><td>6000</td></tr><tr><td>8</td><td>9000</td><td>7000</td></tr><tr><td>9</td><td>10000</td><td>8000</td></tr></tbody></table> CA from 4.1.1 (b) 1A starting point (0 ; 4 000) 1A (5 ; 4 000) 1A end point (9 ; 9 000) 1A joining ALL the points plotted on the slanted part of graph <i>1A beginpunt (0 ; 4 000)</i> <i>1A (5 ; 4 000)</i> <i>1A eindpunt (9 ; 9 000)</i> <i>1A verbind ALLE punte op die skuinsgedeelte van die grafiek</i> (4)	Number of hours playing	DJ 5-Star (Cost in rand)	DJ Cool (Cost in rand)	0	1000	4000	1	2000	4000	2	3000	4000	3	4000	4000	4	5000	4000	5	6000	4000	6	7000	5000	7	8000	6000	8	9000	7000	9	10000	8000	F L3 M
Number of hours playing	DJ 5-Star (Cost in rand)	DJ Cool (Cost in rand)																																	
0	1000	4000																																	
1	2000	4000																																	
2	3000	4000																																	
3	4000	4000																																	
4	5000	4000																																	
5	6000	4000																																	
6	7000	5000																																	
7	8000	6000																																	
8	9000	7000																																	
9	10000	8000																																	

Q/V	Solution/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T&L
* 4.1.3	Time / <i>Tyd</i> = 18:00 – 01:30 = 7 hrs 30 min } ✓A ≈ 8 hrs Cost for DJ / <i>Koste vir platejoggie</i> = 8 × R1 000 ✓MCA = R8 000 ✓CA Total cost / <i>Totale koste</i> = R18 000 + R750 + R6 185 + R1 250 + R8 000 ✓MCA = R34 185 ✓CA	1A calculating hours 1MCA multiply by R1 000 1CA simplification 1MCA adding all values 1CA simplification (5)	F L3 M
* 4.1.4	He charges a flat/fixed rate, which is not economical if the party ends early. / <i>Hy vra 'n vaste tarief wat nie ekonomies is indien die partytjie vroeg eindig nie</i> OR/OF ✓✓O He has a bad reputation / <i>Hy het 'n slegte reputasie.</i>	2O correct reason (2)	F L4 E
4.2.1	Probability / <i>Waarskynlikheid</i> = $\frac{4}{16}$ ✓A = 0,25 ✓CA	1A numerator 1A denominator 1CA simplification (3)	P L2 D
* 4.2.2	90 150 160 180 200 215 230 350 400 ✓A Median / <i>Mediaan</i> = 200 ✓✓A	1A arranging 2A median AO (3)	D L2 M

Q/V	Solution/<i>Oplossing</i>	Explanation/<i>Verduideliking</i>	T&L
4.2.3	Range 2022 / <i>Omvang 2022</i> ✓RT = 360 – 70 ✓MCA = 290 ✓CA Range 2023 / <i>Omvang 2023</i> = 400 – 90 = 310 ✓A His statement is NOT VALID / <i>Sy bewering is NIE GELDIG NIE.</i> ✓O	1RT both correct values 1MCA concept of range 1CA simplification 1A range 1O conclusion (5)	D L4 M
		[31]	

QUESTION/VRAAG 5 [31 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
5.1.1	Deficit / <i>Tekort</i> ✓✓A	2A correct word (2)	F L1 M
5.1.2	$\text{GST/AVB \%} = 100\% - (15\% + 15\% + 4\% + 7\% + 6\% + 2\% + 34\%) \checkmark\text{RT}$ $= 100\% - 83\% \checkmark\text{MA}$ $= 17\% \checkmark\text{CA}$	1RT ALL correct values 1MA adding and subtracting 1CA simplification AO (3)	D L1 E
5.1.3	Defence / <i>Verdediging</i> $= 8\% \times 45,03 \text{ lakh crore} \checkmark\text{RT} \quad \checkmark\text{MA}$ $= 3,6024 \text{ lakh crore} \checkmark\text{CA}$	1RT correct percentage 1MA multiply by 45,03 1CA simplification NPR AO (3)	D L2 M
* 5.1.4	Corporation tax / <i>Korporatiewe belasting</i> ✓RT Income tax / <i>Inkomstebelasting</i> ✓RT Customs / <i>Doeane</i> ✓RT OR/OF Corporation tax / <i>Korporatiewe belasting</i> ✓RT GST / <i>AVB</i> ✓RT Non Debt Capital Receipts / <i>Nie-skuld kapitaal ontvangstes</i> ✓RT OR/OF Income tax / <i>Inkomstebelasting</i> ✓RT GST / <i>AVB</i> ✓RT Non Debt Capital Receipts / <i>Nie-skuld kapitaal ontvangstes</i> ✓RT	CA from 5.1.2 for GST 1RT correct source 1RT correct source 1RT correct source adding to 34% OR/OF 1RT correct source 1RT correct source 1RT correct source adding to 34% OR/OF 1RT correct source 1RT correct source 1RT correct source adding to 34% (3)	D L2 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 5.1.5	Interest payments / <i>Rentebetalings</i> ✓RT $= 20\% \times 45,03 \text{ lakh crore}$ $= 9,006 \text{ lakh crore}$ ✓A Unrounded / <i>Nie afgerond</i> $= 9,006 \times 100 \times 100\ 000$ $= 90\ 060\ 000 \text{ rupees}$ ✓C Rounded / <i>Afgerond</i> ✓R $= 9 \times 100 \times 100\ 000$ $= 90\ 000\ 000 \text{ rupees}$ Difference / <i>Verskil</i> $= 90\ 060\ 000 - 90\ 000\ 000$ $= 60\ 000 \text{ rupees}$ ✓CA His statement is NOT VALID / <i>Sy bewering is NIE GELDIG NIE.</i> ✓O OR/OF Interest payments / <i>Rentebetalings</i> ✓RT $= 20\% \times 45,03 \text{ lakh crore}$ $= 9,006 \text{ lakh crore}$ ✓A Difference / <i>Verskil</i> ✓R $9,006 - 9,000 = 0,006 \text{ lakh crore}$ ✓CA Amount in rupees $= 0,006 \times 100 \times 100\ 000$ $= 60\ 000$ ✓C His statement is NOT VALID / <i>Sy bewering is NIE GELDIG NIE.</i> ✓O	1RT both correct values 1A simplification 1C conversion 1R rounded answer 1CA difference 1O conclusion OR/OF 1RT both correct values 1A simplification 1R rounded answer 1CA difference 1C conversion 1O conclusion (6)	F L4 D
* 5.2.1	Amount expressed in million/ <i>Bedrag uitgedruk in miljoen</i> $= \text{R}302,4 \text{ billion/miljard} \times 1\ 000$ ✓MA $= \text{R}302\ 400 \text{ million / miljoen}$ OR/OF ✓A $\text{R}302\ 400\ 000\ 000$	1 MA multiplying by 1 000 1A simplification AO (2)	F L1 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
5.2.2	R302 400 million = R302 400 × 44,479891 lakh ✓MA = 13 450 719,04 lakh ✓CA = 13 450 719,04 ÷ 100 ✓MCA = 134 507,1904 lakh crore ✓CA OR / OF R302 400 000 000 = $\frac{\text{R302 400 000 000}}{\text{R1 000 000}} \times 4\,447\,989,1$ ✓MA ✓CA ✓MCA = 1,345071904 × 1 000 000 000 000 ÷ 100 000 ÷ 100 = 134 507,1904 lakh crore ✓CA OR / OF R1 000 000 = 0,44479891 lakh crore ✓C ✓MA R302 400 000 000 = $\frac{302\,400\,000\,000 \times 0,44479891}{1\,000\,000}$ ✓MCA = 134 507,1904 lakh crore ✓CA	CA from Question 5.2.1 1MA multiplying by correct exchange rate 1CA simplification 1MCA dividing by 100 1CA simplification OR / OF 1MA multiplying by correct exchange rate 1CA simplification 1MCA ÷ 100 000 ÷ 100 1CA simplification OR / OF 1C ÷ 10 000 000 1MA multiplying by correct exchange rate 1MCA ÷ 1 000 000 1CA simplification NPR (4)	F L3 D
5.3.1	✓O As the years increase the inflation rate increases / Soos die jare toeneem, verhoog die inflasiekoers. OR/OF ✓O ✓O The inflation rate increases from 2020 to 2024 / Die inflasiekoers verhoog vanaf 2020 tot 2024.	1O years increase 1O rate increases OR/OF 1O rate increases 1O years increase (2)	D L4 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
* 5.3.2	Price at the end of 2023 / Prys aan die einde van 2023 ✓A = 5 000 000 ÷ 1,08 ✓MA $5\,000\,000 \div 108\%$ = 4 629 629,63 rupees ✓CA Price at end of 2022 / Prys aan die einde van 2022 ✓MCA = 4 629 629,63 rupees ÷ 1,075 $4\,629\,629,63 \div 107,5\%$ ✓MA = 4 306 632,214 rupees ✓CA OR/OF Price at the end of 2023 / Prys aan die einde van 2023 ✓A = 5 000 000 × $\frac{100}{108}$ ✓MA = 4 629 629,63 rupees ✓CA Price at end of 2022 / Prys aan die einde van 2022 = 4 629 629,63 × $\frac{100}{107,5}$ ✓MCA ✓MA = 4 306 632,214 rupees ✓CA OR/OF Price at end of 2022 / Prys aan die einde van 2022 ✓MA = 5 000 000 × $\frac{100}{108}$ × $\frac{100}{107,5}$ ✓MA ✓CA ✓MA = 4 306 632,214 rupees ✓CA	1A 1,08 or 108% 1MA dividing by 1,08 or 108% 1CA simplification 1MCA 1,075 or 107,5% 1MA dividing by 1,075 or 107,5% 1CA simplification OR/OF 1A $\frac{100}{108}$ 1MA multiplying by $\frac{100}{108}$ 1CA simplification 1MCA $\frac{100}{107,5}$ 1MA multiplying by $\frac{100}{107,5}$ 1CA simplification OR/OF 1A identifying 1,08 or 108% 1MA multiplying by $\frac{100}{108}$ 1MCA identifying 1,075 or 107,5% 1MA multiplying by $\frac{100}{107,5}$ 2CA simplification NPU NPR (6)	F L3 D
		[31]	
		TOTAL/TOTAAL: 150	



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/ <i>Metode met 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/a graph/document/diagram/ <i>Lees vanaf tabel/grafiek/diagram</i>
SF	Correct substitution in a formula/ <i>Korrekte vervanging in formule</i>
O	Opinion/Explanation/Reasoning / <i>Opinie/Verduideliking/Redenasie</i>
P	Penalty, e.g. for no units, incorrect rounding off, etc./ <i>Penalisasie, bv. vir geen eenhede/verkeerde afronding, ens.</i>
R	Rounding off/ <i>Afronding</i>
NPR	No penalty for correct rounding/ <i>Geen penalisasie vir korrekte afronding nie</i>
NPU	No penalty for omitting correct unit/ <i>Geen penalisasie vir die uitlos van die korrekte eenheid nie</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with constant accuracy/ <i>Metode met volgehoue akkuraatheid</i>
RCA	Rounding consistent with accuracy/ <i>Afronding met volgehoue akkuraatheid</i>

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/Oplissing	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/Oplissing	Explanation/Verduideliking	T/L
1.2.3*	1: 25 000 ✓✓ A	2A correct scale (Accept B) (2)	MP L1 E
1.3.1*	✓A Rectangle and a circle. Reghoek en 'n sirkel ✓A	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. 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	$\frac{90 \text{ cm}}{100}$ ✓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	Length / Lengte = 65 m = 65 000 mm ✓C Scale/ Skaal: 1 : 8 000 n : 65 000 $n = \frac{65\,000}{8\,000}$ ✓ MA = 8,125 mm ✓CA ≈ 8 mm ✓R OR/OF Scale/Skaal: 1 : 8 000 n : 65 $n = \frac{65}{8\,000}$ ✓ 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	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	$X = 2\,840 - 1\,476 - 1\,024 = 340$ ✓MA ✓CA OR/OF $X = 565 - 163 - 62 = 340$ ✓MA ✓CA	1MA subtracting from total 1CA simplification AO (2)	P L1 E
2.4.2	$P_{(\text{not a horse})} = \frac{2\,840 + 796}{4\,996}$ ✓RT ✓RT $= \frac{3\,636}{4\,996}$ $= \frac{909}{1\,249}$ ✓A OR/OF $P_{(\text{horse})} = \frac{1\,360}{4\,996}$ ✓RT $P_{(\text{not a horse})} = 1 - \frac{1\,360}{4\,996}$ ✓MCA $= \frac{909}{1\,249}$ ✓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	$P = \frac{363}{796} \times 100\%$ ✓RT ✓RT $= 45,60301508\%$ ✓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	To allow rotor blade to produce more energy. ✓✓O <i>Om met die rotorlem meer energie op te wek.</i> OR/OF 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 Larger rotor diameters allow wind turbines to sweep more area, capture more wind and produce more electricity <i>Groter rotormiddelgelyne laat die windturbines 'n groter area dek, meer wind vang en so meer krag opwek</i> OR/OF Demand for electricity increased/ demand for cleaner electricity <i>Verhoogde aanvraag vir elektrisiteit/ aanvraag vir skoner elektisiteit</i>	2O reason (more electricity) (2)	M L4 E
3.1.3	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 $= 238 - (124 \div 2) \quad \checkmark \text{MA}$ $= 238 - 62$ $= 176 \quad \checkmark \text{CA}$	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/Oplissing	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	$\% \text{ increase/verhoging} = \frac{5\,000 - 800}{800} \times 100\% \quad \checkmark \text{ MA}$ $\checkmark \text{ A}$ $= 525\% \quad \checkmark \text{ CA}$ 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	$\checkmark \text{ RT}$ $\text{Perimeter/Omtrek} = 2 \times (2,3 + 2,3 + 2,3 + 3) \text{ m} \quad \checkmark \text{ SF}$ $\checkmark \text{ MA}$ $= 2 \times (6,9 + 3) \text{ m}$ $= 19,8 \text{ m} \quad \checkmark \text{ CA}$ OR/OF <i>Perimeter/Omtrek</i> $\checkmark \text{ RT}$ $= 3 + 2,3 + 2,3 + 2,3 + 3 + 2,3 + 2,3 + 2,3 \text{ m} \quad \checkmark \text{ MA}$ $= 19,8 \text{ m} \quad \checkmark \text{ CA}$	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	Height /hoogte B = $\frac{5}{7} \times 0,5 \text{ m}$ $= 0,3571428571 \text{ m}$ ✓ A Vol B = $(2,3 \times 3 \times 0,3571428571) \text{ m}^3$ $= 2,464285714 \text{ m}^3$ ✓ CA Vol A = $(2,3 \times 3 \times 0,5) \text{ m}^3$ ✓ SF $= 3,45 \text{ m}^3$ ✓ A Total/Totaal = $2,4642514 \text{ m}^3 + 3,45 \text{ m}^3$ $= 5,914285714 \text{ m}^3$ ✓ CA Capacity / Kapasiteit = $1\,000 \times 5,914285714$ $= 5\,914,285714 \text{ litres.}$ ✓ CA OR/OF Height of section B/ Hoogte van boks B $= \frac{5}{7} \times 0,5 \text{ m}$ $= 0,3571428571 \text{ m}$ ✓ A Vol = $(\text{length} \times \text{width} \times \text{height}) + (\text{length} \times \text{width} \times \text{height})$ $= (2,3 \text{ m} \times 3 \text{ m} \times 0,357\dots \text{ m}) + (2,3 \times 3 \text{ m} \times 0,5 \text{ m})$ ✓ SF $= (2,464285714 + 3,45) \text{ m}^3$ ✓ CA $= 5,914285714 \text{ m}^3$ ✓ CA Capacity / Kapasiteit = $1\,000 \times 5,914285714$ $= 5\,914,285714 \text{ litres.}$ ✓ CA OR/OF Volume A = $\text{length} \times \text{width} \times \text{height}$ $\text{length} \times \text{breedte} \times \text{hoogte}$ $= (3 \text{ m} \times 2,3 \text{ m} \times 0,5 \text{ m})$ ✓ SF $= 3,45 \text{ m}^3$ ✓ A $\therefore 3\,450 \text{ litres}$ ✓ C Volume B = $\frac{3\,450 \ell}{7} \times 5$ ✓ A $= 2\,464,285714 \text{ litres}$ ✓ CA $\therefore \text{Total} = 3\,450 + 2\,464,285714$ $= 5\,914,285714 \ell$ ✓ 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/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	$\checkmark_{RT} 30 : 6$ $= 5 : 1$	$\checkmark_{RT}$ $\checkmark_A$ 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>	$\checkmark_A$ 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	Area/ <i>Opp A</i> = length $\times$ width / <i>lengte $\times$ breedte</i> $= 11 \text{ m} \times 3,5 \text{ m}$ $\checkmark_{SF}$ $= 38,5 \text{ m}^2$ $\checkmark_{MCA}$ Area/ <i>Opp B</i> = length $\times$ width / <i>lengte $\times$ breedte</i> $= 14 \text{ m} \times 3,5 \text{ m}$ $= 49 \text{ m}^2$ $\checkmark_{MA}$ Floor area/ <i>Vloer opp.</i> $= 38,5 \text{ m}^2 + 49 \text{ m}^2$ $= 87,5 \text{ m}^2$ $\checkmark_{MCA}$ Area of tile = length $\times$ width <i>Opp van teël</i> = <i>lengte $\times$ breedte</i> $= 600 \text{ mm} \times 600 \text{ mm}$ $= 360\,000 \text{ mm}^2$ $\checkmark_A$ $\therefore \frac{360\,000}{1000\,000} = 0,36 \text{ m}^2$ $\checkmark_C$ Number of tiles/ <i>Getal teëls</i> = $\frac{87,5}{0,36}$ $\checkmark_{MCA}$ $\approx 243,056$ tiles $\checkmark_{CA}$ Number of boxes/ <i>Getal bokse</i> = $\frac{244}{5}$ $= 48,8$ $= 49$ $\checkmark_{CA}$ INVALID/ <i>ONGELDIG.</i> $\checkmark_O$ OR/OF Floor Area/ <i>vloeropp</i> = $11 \text{ m} \times 7 \text{ m} + 3,5 \text{ m} \times 3 \text{ m}$ $\checkmark_A$ $= 77 \text{ m}^2 + 10,5 \text{ m}^2$ $= 87,5 \text{ m}^2$ $\checkmark_{CA}$	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 = $\frac{600 \text{ mm}}{1000} = 0,6 \text{ m}$ ✓ C Area of a tile / Opp van teël $= 0,6 \text{ m} \times 0,6 \text{ m} = 0,36 \text{ m}^2$ ✓ MCA Number of tiles/Getal teëls = $\frac{87,5}{0,36}$ ✓ MCA $\approx 243,056 \text{ tiles}$ ✓ CA Number of boxes/ Getal bokse = $\frac{244}{5}$ $= 48,8$ $= 49$ ✓ CA INVALID/ ONGELDIG. ✓ O OR/OF ✓ SF ✓ A 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 Tiles / Teëls = $\frac{600 \text{ mm}}{1000} = 0,6 \text{ m}$ ✓ C Area of a tile / Opp van 'n teël = $0,6 \text{ m} \times 0,6 \text{ m}$ $= 0,36 \text{ m}^2$ ✓ MCA Number of tiles / Getal teëls = $\frac{87,5}{0,36}$ ✓ MCA $\approx 243,056 \text{ tiles}$ ✓ CA 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 OR/OF ✓ SF ✓ A 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 Tiles /Teëls = $\frac{600 \text{ mm}}{1000} = 0,6 \text{ m}$ ✓ C Area of a tile / Opp van teël $= 0,6 \text{ m} \times 0,6 \text{ m} = 0,36 \text{ m}^2$ ✓ MCA Number of tiles/Getal teëls = $\frac{87,5}{0,36}$ ✓ MCA $\approx 243,056 \text{ tiles}$ ✓ CA Number of boxes/ Getal bokse = $\frac{244}{5}$ $= 48,8$ $= 49$ ✓ CA INVALID/ ONGELDIG. ✓ O	1C conversion 1MCA area of tile 1MCA dividing areas 1CA number of tiles 1CA number of boxes 1O conclusion OR/OF 1A 3 1SF substitution 1MA adding areas 1CA area 1C conversion 1MCA area of tile 1MCA dividing areas 1CA number of tiles 1CA less than 1O conclusion OR/OF 1A 3 1SF substitution 1MA subtracting areas 1CA area 1C conversion 1MCA area of tile 1MCA dividing areas 1CA number of tiles 1CA number of boxes 1O conclusion	

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

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	Number of tiles/<i>Aantal teëls</i> $= \frac{87\,500\,000\text{ mm}^2}{360\,000\text{ mm}^2} \checkmark \text{MCA} = 243,0555556 \text{ tiles } \checkmark \text{CA}$ Number of boxes/<i>Getal bokse</i> $= \frac{243,0555556}{5}$ $= 48,61 \approx 49 \checkmark \text{CA}$ $\therefore$ INVALID/<i>ONGELDIG</i> $\checkmark \text{O}$ OR/OF $\checkmark \text{SF} \quad \checkmark \text{A}$ Area (Lab) = $(7 \times 14 - 3 \times 3,5) \text{ m}^2$ $= (98 - 10,5) \text{ m}^2 \checkmark \text{MA}$ $= 87,5 \text{ m}^2 \checkmark \text{MCA}$ Tile side / <i>Teël sy</i> = $600 \div 1\,000 = 0,6 \text{ m} \quad \checkmark \text{C}$ Area covered by a box of tiles <i>Oppervlakte bedek deur 'n boks teëls</i> $= (0,6 \times 0,6) \times 5 \quad \checkmark \text{MCA}$ $= 1,8 \text{ m}^2 \quad \checkmark \text{CA}$ Number of boxes / <i>Getal bokse</i> $= \frac{87,5}{1,8} \quad \checkmark \text{MCA}$ $= 48,6 \approx 49 \quad \checkmark \text{CA}$ INVALID / <i>ONGELDIG</i> $\checkmark \text{O}$ OR/OF Calculating 3 areas/<i>Berekening 3 opp.</i> $A1 = 3,5 \times 11 \quad \checkmark \text{SF}$ $= 38,5 \text{ m}^2$ $A2 = 3 \times 3,5 \quad \checkmark \text{A}$ $= 10,5 \text{ m}^2$ $A3 = 3,5 \times 11$ $= 38,5 \text{ m}^2$ TOTAL = $38,5 \text{ m}^2 + 10,5 \text{ m}^2 + 38,5 \text{ m}^2 \quad \checkmark \text{MA}$ $= 87,5 \text{ m}^2 \quad \checkmark \text{MCA}$ Number of tiles/<i>Getal teëls</i> = $\frac{87,5}{0,36} \quad \checkmark \text{MCA}$ $\approx 243,056 \text{ tiles } \checkmark \text{CA}$ Number of boxes/ <i>Getal bokse</i> = $\frac{244}{5}$ $= 48,8$ $= 49 \quad \checkmark \text{CA}$ INVALID/ <i>ONGELDIG</i> $\checkmark \text{O}$	1MCA dividing 1CA number of tiles 1CA number of boxes 1O opinion OR/OF 1A 3 1SF substitution 1MA subtracting 1MCA simplification total area 1C conversion 1MCA area of 1 tile 1CA area box of tiles 1MCA dividing 1CA number of boxes of tiles 1O opinion OR/OF 1SF substitution 1A 3 1MA adding 1MCA simplification total area 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 $97 \text{ km/h} = 179 \text{ km} \div \text{tyd}$ Time = distance $\div$ speed <i>Tyd = afstand $\div$ spoed</i> $= \frac{179}{97}$ ✓ MCA $= 1,845 \text{ hours}$ ✓ CA Time duration / <i>tydsduur</i> = 1,845 hours./uur $= 1 \text{ hour/uur} + 0,845 \times 60 \text{ min}$ $= 1 \text{ hour/uur } 51 \text{ min}$ Arrival time / <i>Aankomstyd</i>: $= 09:55 + 1 \text{ h } 51 \text{ min}$ $= 11: 46$ ✓ 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/<i>Afstand</i> = $(713 - 263) + 2(18)$ $= 450 + 36$ ✓MA $= 486 \text{ km}$ ✓ CA OR/OF Distance /<i>Afstand</i> ✓ MA ✓ MA $= (713 - 552) + 18 + 18 + (552 - 263)$ $= 161 + 18 + 18 + 289 = 486 \text{ km}$ ✓ 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 $\text{Distance/Afstand} = (455 - 5) + 2(18)$ $= 450 + 36 \quad \checkmark \text{MA}$ $= 486 \text{ km} \quad \checkmark \text{CA}$ OR/OF Distance /Afstand $= (166 - 5) + 18 + 18 + (455 - 166)$ $= 161 + 18 + 18 + 289 = 486 \text{ km} \quad \checkmark \text{CA}$ OR/OF Distance/Afstand $= 179 + 18 + (552 - 263) \text{ km}$ $= 486 \text{ km} \quad \checkmark \text{CA}$	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]	

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 <i>Daar is geen mure wat die kombuis, eetkamer en woonvertrek skei nie</i>	2O reason (2)	MP L4 E
5.1.4*	Toilet OR bath OR basin or sink ✓✓A <i>Toilet OF bad OF wasbak</i>	2A correct feature (2)	MP L1 E
5.1.5	✓O 3 rd floor and B that it is the second apartment ✓O <i>3^{de} vloer en B is die tweede woonstel</i> OR/OF ✓O Block B, Number 3 ✓O <i>Blok B, nommer 3</i> OR/OF ✓O 3 rd Floor, unit on the left/right ✓O <i>3^{de} vloer, die eenheid links/ regs</i> OR/OF ✓O 3 rd Floor, B-wing ✓O <i>3^{de} vloer, B -vleuel</i>	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: $1 \text{ m} = \frac{58 \text{ } \checkmark \text{RT}}{17,6784} = 3,28083989... \checkmark \text{MA}$ $\approx 3,281 \text{ feet } \checkmark \text{R}$	1RT 58 1MA simplification 1R rounded answer (3)	M L2 M
5.1.6 (b)	Width / Breedte = $\frac{40 \text{ } \checkmark \text{RT}}{3,281} \checkmark \text{MCA}$ = 12,191405 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
	OR/OF 58 feet/voet = 17,6784 m 40 feet/voet = n ✓RT $n = \frac{40}{58} \times 17,6784 \quad \checkmark \text{MA}$ $= 12,191405 \text{ m} \quad \checkmark \text{CA}$	OR/OF 1RT correct width 1MA working with ratio 1CA simplification NPR (3)	
5.2.1	Area /Oppervlakte = length $\times$ width / lengte $\times$ breedte $= 0,614 \text{ m} \times 0,474 \text{ m} \quad \checkmark \text{SF}$ $= 0,291036 \text{ m}^2$ $= 0,3 \text{ m}^2 \quad \checkmark \text{R}$	1SF substitution 1R simplification NPU (2)	M L2 E
5.2.2*	Area for 6 panels /Opp van 6 panele = $0,3 \text{ m}^2 \times 6$ $= 1,8 \text{ m}^2 \quad \checkmark \text{MCA}$ Cost for 6 panels /Koste van 6 panele $= 1,8 \text{ m}^2 \times \text{R}490/\text{m}^2 = \text{R}882 \quad \checkmark \text{MCA}$ Mass of the 6 panels / Massa van 6 panele $= 1,8 \text{ m}^2 \times 15 \text{ kg}/\text{m}^2 = 27 \text{ kg} \quad \checkmark \text{MCA}$ Delivery mass / Afleverings massa = $20 \text{ kg} + 7 \text{ kg}$ Cost of delivery / Afleveringskoste ✓MA $= \text{R}820 + \text{R}53,50 \times 7 \text{ kg} \quad \checkmark \text{MCA}$ $= \text{R}1\,194,50 \quad \checkmark \text{CA}$ Total cost / Totale koste = $\text{R}882,00 + \text{R}1\,194,50$ $= \text{R}2\,076,50 \quad \checkmark \text{CA}$ 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/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T/L
	Using unrounded area Area for 6 panels / <i>Opp van 6 panele</i> $= 0,291036 \text{ m}^2 \times 6$ $= 1,746216 \text{ m}^2$ ✓CA	1CA simplification	
	Cost for 6 panels / <i>Koste van 6 panele</i> $= 1,746216 \text{ m}^2 \times \text{R}490/\text{m}^2 = \text{R}855,65$ ✓CA	1CA simplification cost	
	Mass of the 6 panels / <i>Massa van 6 panele</i> $= 1,746216 \text{ m}^2 \times 15 \text{ kg}/\text{m}^2 = 26,19324 \text{ kg}$ ✓CA	1CA simplification: mass	
	Delivery mass / <i>Afleverings massa</i> = 20 kg + 7 kg Cost of delivery / <i>Afleveringskoste</i> ✓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 / <i>Totale koste</i> = $\text{R}855,65 + \text{R}1\,194,50$ $= \text{R}2\,050,15$ ✓CA	1CA simplification	
	INVALID/ <i>ONGELDIG</i> ✓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,</i> 120 km/h is the speed limit./ Do not exceed 120 km/h on this road <i>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	Using this formula correctly – no part marks $^{\circ}\text{F} = (^{\circ}\text{C} \times \frac{9}{5}) + 32^{\circ}$ $= (70^{\circ} \times \frac{9}{5}) + 32^{\circ}$ $= 158$	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	Area for 6 panels/<i>Oppervlakte van 6 panele</i> $= 0,3 \text{ m}^2 \times 6$ $= 1,746216 \text{ m}^2$ $= 2 \text{ m}^2$ Cost for 6 panels/<i>Koste van 6 panele</i> $= 2 \text{ m}^2 \times \text{R}490/\text{m}^2 = \text{R}980,00$ Mass of the 6 panels/<i>Massa van die 6 panele</i> $= 2 \text{ m}^2 \times 15 \text{ kg}/\text{m}^2 = 30 \text{ kg}$ Delivery mass = 20 kg + 10 kg Cost of delivery/<i>Afleveringskoste</i> $= \text{R}820 + (\text{R}53,50 \times 10)$ $= \text{R}1\,355,00$ Total cost/<i>Totale koste</i> $= \text{R}980,00 + \text{R}1\,355$ $= \text{R}2\,335,00$ INVALID/<i>ONGELDIG</i>	7 out of 8



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* 2025

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

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

**These marking guidelines consist of 15 pages.
*Hierdie nasienriglyne bestaan uit 15 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.
- Rounding is an independent mark.
- A conclusion mark can only be given if relevant calculations precede it.
- 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 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 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*
- *Afronding tel as 'n onafhanklike punt*
- *'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekening dit voorgaan.*
- *Geen penalisering vir ronding (NPR) as die eerste desimaal korrek is nie.*

NOTE: Questions marked with * refers to the notes.

Questions where the numbers are encircled are the ones where there is a tolerance range.

QUESTION/VRAAG 1 [28 MARKS/PUNTE] Answer Only AO - full marks			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
* 1.1.1	I ✓✓ A	2A correct choice (2)	MP L1 E
* 1.1.2	B ✓✓ A	2A correct choice (2)	M L1 E
* 1.1.3	H ✓✓ A	2A correct choice (2)	M L1 E
* 1.1.4	G ✓✓ A	2A correct choice (2)	MP L1 E
1.2.1	✓✓ A Less than / <i>kleiner as</i>	2A correct choice (2)	P L1 E
1.2.2	down / <i>af</i> ✓✓ A	2A correct choice (2)	M L1 E
1.2.3	Two / <i>twee</i> ✓✓ A	2A correct choice (2)	M L1 E
1.2.4	2D ✓✓ A	2A correct choice (2)	MP L1 E
1.3.1	1,75 °C ✓✓ RT	2RT correct choice NPU (2)	M L1 E
* 1.3.2	Kiribati ✓✓ RT	2RT correct country (2)	M L1 E
* 1.3.3	✓ RT −5,35°C ≈ −5°C ✓ R	1RT correct temperature 1R correct rounding NPU (2)	M L1 E
1.3.4	✓ RT ✓ MA Difference / <i>Verskil</i> = 27,85°C − (− 0,70°C) = 28,55°C ✓ A	1RT correct temperature 1MA subtracting − 0,70°C from 27,85°C 1A simplification Accept −28,55°C (3)	M L1 E
1.3.5	Djibouti/ <i>Djiboeti</i> and/ <i>en</i> Mauritius ✓ A ✓ A Mauritania/ <i>Mauritanië</i> and / <i>en</i> Tuvali / <i>Tuvalu</i> ✓ A	2A 1 st correct pair 1A 2 nd correct pair (3)	MP L1 E
		[28]	

QUESTION/VRAAG 2 [23 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
2.1.1	✓✓ RT Cleaning supplies/Skoonmaakmiddels	2RT correct product (2)	MP L2 E
2.1.2	✓ A Pet care is next to the sweets, just to the left of the checkout points. ✓ A /Between sweets and checkout point/ Last section before checkout point <i>Troeteldiersorg is langs die lekkers, net links van die betaalpunte./ Tussen lekkers en betaalpunt /Laaste afdeling voor betaalpunte</i>	1A explanation 1st reference. 1A explanation 2nd reference. (2)	MP L2 E
2.1.3	✓✓ A Dairy and cheese. / <i>Suiwel en kaas</i>	2A correct section (2)	MP L1 E
2.1.4	✓✓ A anticlockwise. / <i>anti-kloksgewys</i>	2A correct option (2)	MP L1 M
2.1.5	✓✓ O Any ONE of the following: - Encourages customers to make purchases. - Pleasant environment – customers like to shop there - To encourage customers to return to shop again - Easy to find items/easy access/convenience - User friendly - Save time <i>Enige EEN van die volgende:</i> <i>Dit moedig kliënte aan om te koop.</i> <i>Aangename omgewing – kliënte hou daarvan om daar te koop.</i> <i>Om kliënte aan te moedig om terug te keer na winkel vir aankope.</i> <i>Maklik om items te vind/maklik toeganklik/gerieflik</i> <i>Verbruikersvriendelik</i> <i>Bespaar tyd</i>	2O reason (2)	MP L4 M

QUESTION/VRAAG 3 [27 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.1.1	Length of fencing /Lengte van heining $= 12 \text{ m} + 8,7 \text{ m} + 2,6 \text{ m} + 12 \text{ m}$ ✓ MA ✓ CA $= 35,3 \text{ m}$ ✓ A OR/OF Length of fencing /Lengte van heining $= 12 \text{ m} + 8,7 \text{ m} + 2,6 \text{ m} + 1,4 \text{ m} + 10,6 \text{ m}$ ✓ MA ✓ CA $= 35,3 \text{ m}$ ✓ A	1MA adding all the values 1CA simplification 1A unit (3)	M L2 E
3.1.2 (a)	Radius $= 120 \text{ cm} \div 2 = 60 \text{ cm}$ ✓ A Volume of the fish pond /Volume van visdam $= 3,142 \times \text{radius}^2 \times \text{depth} / \text{diepte}$ $= 3,142 \times \left(\frac{120}{2} \text{ cm}\right)^2 \times 0,5 \text{ m}$ ✓ SF ✓ C $= 3,142 \times (60 \text{ cm})^2 \times 50 \text{ cm}$ $= 565\,560 \text{ cm}^3$ ✓ CA	1A radius 1SF substitution 1C conversion m to cm 1CA simplification (4)	M L2 M
3.1.2 (b)	Diameter / Middellyn $= 120 \text{ cm} + (2 \times 20 \text{ cm}) = 160 \text{ cm}$ ✓ A Circumference of the outer edge /Buite omtrek $= 3,142 \times \text{diameter} / \text{middellyn}$ $= 3,142 \times 160 \text{ cm}$ ✓ SF $= 502,72 \text{ cm}$ ✓ CA OR/OF ✓ A Radius $= 60 \text{ cm} + 20 \text{ cm} = 80 \text{ cm}$ $C = 3,142 \times 2 \times 80 \text{ cm}$ ✓ SF $= 502,72 \text{ cm}$ ✓ CA	1A adding both sides 20 cm 1SF substitution 1CA simplification OR/OF 1A adding one side 20 cm to inner radius 1SF substitution 1CA simplification (3)	M L2 M
3.1.3 (a)	Length $= 8,7 \text{ m} + 2,6 \text{ m} = 11,3 \text{ m}$ ✓ A Area of a rectangle $= \text{length} / \text{lengte} \times \text{width} / \text{breedte}$ $36,16 \text{ m}^2 = 11,3 \text{ m} \times \text{width} / \text{breedte}$ ✓ SF Width /breedte $= \frac{36,16 \text{ m}^2}{11,3 \text{ m}}$ ✓ MCA $= 3,2 \text{ m}$ ✓ CA	1A length 1SF substitution 1MCA change the subject 1CA simplification (4)	M L3 M

Q/V	Solution/oplossing	Explanation/Verduideliking	T/L
3.1.3 (b)	Volume = Area $\times$ depth / <i>Oppervlakte $\times$ diepte</i> $= 36,16 \text{ m}^2 \times 150 \text{ mm} \quad \checkmark \text{ SF}$ $= 36,16 \text{ m}^2 \times 0,150 \text{ m} \quad \checkmark \text{ C}$ $= 5,424 \text{ m}^3 \quad \checkmark \text{ CA}$ $10 \text{ m}^3 = 118 \text{ wheelbarrows / kruiseiens}$ $5,424 \text{ m}^3 = n$ $n = \frac{5,424 \text{ m}^3}{10 \text{ m}^3} \times 118 \quad \checkmark \text{ MCA}$ $\approx 65 \text{ wheelbarrows / kruiseiens} \quad \checkmark \text{ CA}$ INVALID / ONGELDIG $\checkmark \text{ O}$ OR/OF $118 \text{ wheelbarrows / kruiseiens} = 10 \text{ m}^3$ $\therefore 65 \text{ wheelbarrows / kruiseiens} = x$ $\therefore \frac{118 \times x}{118} = \frac{65 \times 10 \text{ m}^3}{118} \quad \checkmark \text{ MA}$ $\therefore x = 5,5084745 \text{ m}^3 \quad \checkmark \text{ CA}$ Volume = Area $\times$ depth / <i>Oppervlakte $\times$ diepte</i> $= 36,16 \text{ m}^2 \times 150 \text{ mm} \quad \checkmark \text{ SF}$ $= 36,16 \text{ m}^2 \times 0,150 \text{ m} \quad \checkmark \text{ C}$ $= 5,424 \text{ m}^3 \quad \checkmark \text{ CA}$ INVALID/ONGELDIG $\checkmark \text{ O}$ OR/OF $118 \text{ wheelbarrows / kruiseiens} = 10 \text{ m}^3$ $1 \text{ wheelbarrow / kruiseiens} = \frac{10}{118} \text{ m}^3 \quad \checkmark \text{ MA}$ $= 0,0847457622 \text{ m}^3$ Volume = $36,16 \text{ m}^2 \times 0,15 \text{ m} \quad \checkmark \text{ C} \quad \checkmark \text{ SF}$ $= 5,424 \text{ m}^3 \quad \checkmark \text{ CA}$ $\therefore \text{No of wheelbarrows / Aantal kruiseiens}$ $= \frac{5,424 \text{ m}^3}{0,084757626 \text{ m}^3}$ $= 64,005$ $\approx 65 \quad \checkmark \text{ CA}$ INVALID/ONGELDIG $\checkmark \text{ O}$	1SF substitution 1C converting mm to m 1CA simplification 1MCA using ratio 1CA simplification 1O conclusion [Accept 64] OR/OF 1MA using ratio 1CA simplification 1SF substitution 1C converting mm to m 1CA simplification 1O conclusion OR/OF 1MA using ratio 1SF substitution 1C converting mm to m 1CA simplification 1CA simplification 1O conclusion [Accept 64]	M L4 D (6)

Q/V	Solution/oplossing	Explanation/Verduideliking	T/L
3.2.1	12 ✓✓ A	2A correct number (2)	M L1 E
* 3.2.2	Total cost (excl) /Totale koste (uitsluitende) ✓ MA ✓MA = R125,80 + 4 × R657,40 + R1 250 = R4 005,40 ✓ CA VAT/BTW = R4 005,40 × 15% = R600,81 ✓ MCA Cost (incl) / Koste (ingesluit) = R4 005,40 + R600,81 = R4 606,21 ✓ CA OR Cost/Koste = R4 005,40 × 1,15 = R4 606,21	1MA adding three costs 1MA multiplying by 4 1CA simplification 1MCA VAT 1CA simplification (5)	M L2 M
		[27]	

QUESTION/VRAAG 4 [36 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1.1	Ratio / <i>Verhouding</i> $\checkmark$ RT $= 11,6 : 7,6 \checkmark$ MA $= 29 : 19 \checkmark$ A	1RT correct values 1MA correct order 1A simplification AO (3)	M L2 M
* 4.1.2	Monday to Friday / <i>Maandag tot Vrydag</i> $= 17:00 - 07:30$ $= 9 \text{ hours/uur } 30 \text{ min } \checkmark$ A Total for Mon-Fri/ <i>Totaal vir Maan-Vry</i> $= 9 \text{ hours/uur } 30 \text{ min } \times 5 \checkmark$ MCA $= 47,5 \text{ hours/uur } \checkmark$ CA Saturdays / <i>Saterdag</i> $= 13:00 - 08:00$ $= 5 \text{ hours } 0 \text{ min } \checkmark$ A Total time / <i>Totale tyd</i> $= 47,5 \text{ hours/uur } + 5 \text{ hours/uur}$ $= 52,5 \text{ hours/uur } \checkmark$ C	1A hours per day 1 MCA multiplying by 5 1CA time for 5 days 1A time for Saturday 1CA simplification (5)	M L2 M
4.1.3	Volume / <i>Volume</i> $= 11,6 \text{ cm} \times 7,6 \text{ cm} \times 10,5 \text{ cm } \checkmark$ SF $= 925,68 \text{ cm}^3 \checkmark$ A Capacity / <i>Kapasiteit</i> $1 \text{ cm}^3 = 1 \text{ ml}$ $\therefore 925,68 \text{ cm}^3 = 925,68 \text{ ml } \checkmark$ C Water volume $= 925,68 \times 75\% \checkmark$ MCA $= 694,26 \text{ ml } \checkmark$ CA Leftover / <i>Oorblywend</i> $= 1\,000 \text{ ml} - 694,26 \text{ ml } \checkmark$ MCA $= 305,74 \text{ ml } \checkmark$ CA	1SF correct substitution 1A simplification 1C capacity in ml 1MCA calculating 75% of tank 1CA simplification 1MCA subtracting 1CA ml left (7)	M L3 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.1	D ✓A	1A correct letter (1)	MP L1 E
4.2.2	A ✓A	1A correct letter (1)	MP L1 E
4.2.3	F ✓A	1A correct letter (1)	MP L1 E
4.2.4	B ✓A	1A correct letter (1)	MP L1 E
4.2.5	C ✓A	1A correct letter (1)	MP L1 E
4.2.6	E ✓A	1A correct letter (1)	MP L1 E
4.3.1	1 mm = 0,0394 inch/ <i>duim</i> Height / <i>Hoogte</i> $= \frac{\checkmark\text{RT } 4,3 \text{ inches}}{0,0394 \text{ inches/mm}} \checkmark\text{MA}$ $= 109,1370558 \text{ mm } \checkmark\text{CA}$ $= 10,9 \text{ cm } \checkmark\text{C OR } 10,914 \text{ cm OR } 10,91 \text{ cm}$	1RT correct height 4,3 inches 1MA dividing with 0,0394 inch 1CA simplification in mm 1C conversion from mm to cm NPR (4)	M L2 M
4.3.2	Length / <i>Lengte</i> $= 12 \text{ cm} + 5 \text{ cm } \checkmark\text{MA}$ $= 17 \text{ cm } \checkmark\text{A}$ Number lengthwise / <i>Getal lengtegewys</i> $= 199 \text{ cm} \div 17 \text{ cm } \checkmark\text{MCA}$ $= 11,70588235$ $\approx 11 \checkmark\text{CA}$ But / <i>maar</i> $17 \text{ cm} \times 11 = 187 \text{ cm } \checkmark\text{MCA}$ And/ <i>En</i> $199 \text{ cm} - 187 \text{ cm}$ $= 12 \text{ cm } \checkmark\text{CA}$ Number of mini aquariums / <i>Getal mini akwariums</i> $= 11 + 1$ $= 12 \checkmark\text{CA}$ OR/OF	1MA adding length and space 1A simplification 1MCA dividing 1CA simplification 1MCA calculating space left 1CA simplification 1CA simplification OR/OF	MP L3 D

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	Tank and space / <i>Tenk en spasie</i> $= 12 \text{ cm} + 5 \text{ cm}$ ✓MA $= 17 \text{ cm}$ ✓A Place 2 tanks at the ends/<i>Plaas 2 tenke aan die einde</i> $12 \text{ cm} + 12 \text{ cm} = 24 \text{ cm}$ ✓MA Two tanks and 1 space/<i>Twee tenke en 1 spasie</i>: $24 \text{ cm} + 5 \text{ cm} = 29 \text{ cm}$ ✓CA Space left/<i>Spasie oor</i> $= 199 \text{ cm} - 29 \text{ cm} = 170 \text{ cm}$ ✓MCA Use of space left/<i>Gebruik van spasie oor</i> $= \frac{170 \text{ cm}}{17 \text{ cm}}$ $= 10 \text{ tanks}$ ✓CA Total no of tanks $= 2 + 10$ $= 12$ ✓CA	1MA adding length and space 1A simplification 1MA adding 1CA simplification 1MCA simplification 1CA simplification 1CA simplification (7)	
* 4.3.3	Length of 2nd row's tank resting on 1st row <i>Lengte van 2de ry se tenk wat rus op 1ste ry</i> $= 12 \text{ cm} - 5 \text{ cm}$ $= 7 \text{ cm}$ ✓A On each side /<i>aan elke kant</i> $= 7 \text{ cm} \div 2$ ✓MA $= 3,5 \text{ cm}$ $d = 12 \text{ cm} - 3,5 \text{ cm}$ $= 8,5 \text{ cm}$ ✓CA Her statement is VALID ✓O OR/OF	1A subtracting values 1MA dividing by 2 1CA simplification 1O conclusion OR/OF	MP L4 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Length on 2nd row/Lengte op 2de ry $\checkmark A$ $d + 12 \text{ cm} + 5 \text{ cm} + 12 \text{ cm} + d = 46 \text{ cm}$ $\checkmark A$ Therefore/Daarom $2d = 46 \text{ cm} - 29 \text{ cm}$ $2d = 17 \text{ cm}$ $\checkmark MCA$ $d = 8,5 \text{ cm}$ $\checkmark O$ VALID/GELDIG OR/OF Total length of wall/Total lengte van muur $\checkmark A$ $\checkmark A$ $d + (12 \text{ cm} + 5 \text{ cm}) \times 10 + 12 \text{ cm} + d = 199 \text{ cm}$ Therefore/Daarom $2d = 199 \text{ cm} - 182 \text{ cm}$ $2d = 17 \text{ cm}$ $d = 8,5 \text{ cm}$ $\checkmark MCA$ VALID/GELDIG $\checkmark O$ OR/OF $12 \text{ cm} + 5 \text{ cm} + 12 \text{ cm} + 5 \text{ cm} + 12 \text{ cm} = 46 \text{ cm}$ $\checkmark A$ $46 \div 2 = 23$ $\checkmark MA$ $5 \div 2 = 2,5$ $12 + 2,5 = 14,5$ $23 - 14,5 = 8,5$ $\checkmark CA$ VALID/GELDIG $\checkmark O$ OR/OF $2d = 1 \text{ tank} + 1 \text{ space}$ $= 12 \text{ cm} + 5 \text{ cm}$ $\checkmark A$ $= 17 \text{ cm}$ $d = 17 \text{ cm} \div 2$ $\checkmark MA$ $= 8,5 \text{ cm}$ $\checkmark CA$ VALID/GELDIG $\checkmark O$	OR/OF 1A adding values 1A 46 cm 1MCA dividing by 2 1O conclusion OR/OF 1A adding values 1A 199 1MCA dividing by 2 1O conclusion OR/OF 1A adding values 1MA dividing by 2 1CA simplification 1O conclusion OR/OF 1A adding values 1MA dividing by 2 1CA simplification 1O conclusion (4)	
		[36]	

QUESTION/VRAAG 5 [36 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
5.1.1	✓✓RT The Forum / <i>Die Forum</i>	2RT correct shop (2)	MP L1 E
5.1.2	SW ✓✓RT	2RT correct direction (2)	MP L2 E
5.1.3	✓RT 6,201 km × 50 ✓MA = 310,05 km	1RT correct value- 6,201 1MA multiply by 50 laps (2)	M L1 E
5.1.4	Flamingo ✓✓RT	2RT correct road (2)	MP L1 E
5.1.5	Distance between A and B/ <i>Afstand tussen A en B</i> = 69 mm ✓A Actual distance/ <i>Werklike afstand</i> = 69 mm × 13 500 ✓MCA = 931 500 mm = 0,9315 km ✓C Distance = Speed × Time/ <i>Afstand = Spoed × Tyd</i> ✓SF 0,9315 km = 204 km/h × Time/ <i>Tyd</i> Time/ <i>tyd</i> = 0,9315 km ÷ 204 km/h ✓MCA = 0,004566176471 h ✓CA Time in min/ <i>Tyd in min</i> = 0,004566176471 h × 60 = 0,2739705882 min ✓C	1A map distance 1MCA multiply by scale 1C convert to km 1SF substitute correct values 1MCA changing subject of formula 1CA simplification 1C convert to minutes. [Accept measurement from 67 mm to 71 mm. Allow ± 1 mm deviation from province measurement] NPR (7)	MP L3 D
5.1.6	✓A ✓✓O Agree. He will be facing West and that is where the sun sets. <i>Stem saam. Hy sal in 'n westelike rigting kyk en dit is waar die son sak</i>	1A agree 2O correct explanation (3)	MP L4 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
5.2.1	Start time/ <i>Begintyd</i> $\checkmark$ RT $\checkmark$ RT $23:28:54 - 00:01:35,490$ $23:27:18,51$ $\checkmark$ A	1RT correct value 1RT correct value 1A simplification (3)	M L2 M
* 5.2.2	1:29:08,289 Time in seconds/ <i>Tyd in sekondes</i> : $\checkmark$ C $\checkmark$ C $= (1 \times 60 \times 60) \text{ s} + (29 \times 60) \text{ s} + 8,289 \text{ s}$ $= 3\,600 \text{ s} + 1\,740 \text{ s} + 8,289 \text{ s}$ $= 5\,348,289 \text{ s}$ $\checkmark$ CA Average lap-time/ <i>Gemiddelde rondte tyd</i> $= 5\,348,289 \text{ s} \div 50$ $\checkmark$ MCA $= 106,96578 \text{ seconds/sekondes}$ $\checkmark$ CA INVALID/ <i>ONGELDIG</i> $\checkmark$ O OR/OF Total time $\div$ number of laps = Ave time/ <i>Totale tyd $\div$ getal rondtes = Gemiddelde tyd</i> Total time = Ave time $\times$ number of laps/ <i>Totale tyd = Gemiddelde tyd $\times$ getal rondtes</i> $= 106 \text{ s} \times 50$ $\checkmark$ MCA $= 5\,300 \text{ sec}$ $\checkmark$ CA $\checkmark$ C $\checkmark$ C $\checkmark$ C $= 1 \text{ hour } 28 \text{ min } 20 \text{ sec}$ INVALID/ <i>ONGELDIG</i> $\checkmark$ O	1C converting hours to seconds 1C minutes to seconds 1CA simplification 1MCA divide by laps 1CA simplification 1O conclusion OR/OF 1MCA multiply by laps 1CA simplification 1C correct 1 hour 1C correct 28 minutes 1C correct 20 seconds 1O conclusion (6)	M L4 D
5.3.1	Inside length/ <i>Binne lengte</i> : $\checkmark$ MA $\checkmark$ C $\checkmark$ RT $630 \text{ mm} - 2(25 \text{ mm} + 45 \text{ mm})$ $= 630 \text{ mm} - 140 \text{ mm}$ $= 490 \text{ mm}$ $\checkmark$ CA Inside width/ <i>binne breedte</i> : $420 \text{ mm} - 2(25 \text{ mm} + 45 \text{ mm})$ $\checkmark$ MCA $= 420 \text{ mm} - 140 \text{ mm}$ $= 280 \text{ mm}$ $\checkmark$ CA	1C conversion 1RT correct value - 45 mm 1MA subtracting from length 1CA inside length 1MCA subtracting from width 1CA simplification (6)	M L3 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.3.2	Lengthwise/ <i>lengte</i>gewys: ✓MA 490 mm – 485 mm = 5 mm ✓CA VALID/ <i>GELDIG</i> ✓O OR/OF Widthwise/ <i>breedte</i>gewys: ✓MA 280 mm – 270 mm = 10 mm ✓CA ✓O VALID/ <i>GELDIG</i>	CA from Q 5.3.1 1 MA subtracting from 490 mm 1 CA simplification 1 O conclusion OR/OF 1 MA subtracting from 280 mm 1 CA simplification 1 O conclusion (3)	M L4 D
		[36]	
		TOTAL/TOTAAL: 150	



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* 2025

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

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

**These marking guidelines consist of 15 pages.
*Hierdie nasienriglyne bestaan uit 15 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.
- Rounding is an independent mark.
- A conclusion mark can only be given if relevant calculations precede it.
- 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 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 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*
- *Afronding tel as 'n onafhanklike punt*
- *'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekening dit voorgaan.*
- *Geen penalisering vir ronding (NPR) as die eerste desimaal korrek is nie.*

NOTE: Questions marked with * refers to the notes.

Questions where the numbers are encircled are the ones where there is a tolerance range.

QUESTION/VRAAG 1 [28 MARKS/PUNTE] Answer Only AO - full marks			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
* 1.1.1	I ✓✓ A	2A correct choice (2)	MP L1 E
* 1.1.2	B ✓✓ A	2A correct choice (2)	M L1 E
* 1.1.3	H ✓✓ A	2A correct choice (2)	M L1 E
* 1.1.4	G ✓✓ A	2A correct choice (2)	MP L1 E
1.2.1	✓✓ A Less than / <i>kleiner as</i>	2A correct choice (2)	P L1 E
1.2.2	down / <i>af</i> ✓✓ A	2A correct choice (2)	M L1 E
1.2.3	Two / <i>twee</i> ✓✓ A	2A correct choice (2)	M L1 E
1.2.4	2D ✓✓ A	2A correct choice (2)	MP L1 E
1.3.1	1,75 °C ✓✓ RT	2RT correct choice NPU (2)	M L1 E
* 1.3.2	Kiribati ✓✓ RT	2RT correct country (2)	M L1 E
* 1.3.3	✓ RT −5,35°C ≈ −5°C ✓ R	1RT correct temperature 1R correct rounding NPU (2)	M L1 E
1.3.4	✓ RT ✓ MA Difference / <i>Verskil</i> = 27,85°C − (− 0,70°C) = 28,55°C ✓ A	1RT correct temperature 1MA subtracting − 0,70°C from 27,85°C 1A simplification Accept −28,55°C (3)	M L1 E
1.3.5	Djibouti/Djiboeti and/en Mauritius ✓ A ✓ A Mauritania/ <i>Mauritanië</i> and /en Tuvali / <i>Tuvalu</i> ✓ A	2A 1 st correct pair 1A 2 nd correct pair (3)	MP L1 E
		[28]	

QUESTION/VRAAG 2 [23 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.1.1	✓✓ RT Cleaning supplies/Skoonmaakmiddels	2RT correct product (2)	MP L2 E
2.1.2	✓ A Pet care is next to the sweets, just to the left of the checkout points. ✓ A /Between sweets and checkout point/ Last section before checkout point <i>Troeteldiersorg is langs die lekkers, net links van die betaalpunte./ Tussen lekkers en betaalpunt /Laaste afdeling voor betaalpunte</i>	1A explanation 1st reference. 1A explanation 2nd reference. (2)	MP L2 E
2.1.3	✓✓ A Dairy and cheese. / <i>Suiwel en kaas</i>	2A correct section (2)	MP L1 E
2.1.4	✓✓ A anticlockwise. / <i>anti-kloksgewys</i>	2A correct option (2)	MP L1 M
2.1.5	✓✓ O Any ONE of the following: - Encourages customers to make purchases. - Pleasant environment – customers like to shop there - To encourage customers to return to shop again - Easy to find items/easy access/convenience - User friendly - Save time <i>Enige EEN van die volgende:</i> <i>Dit moedig kliënte aan om te koop.</i> <i>Aangename omgewing – kliënte hou daarvan om daar te koop.</i> <i>Om kliënte aan te moedig om terug te keer na winkel vir aankope.</i> <i>Maklik om items te vind/maklik toeganklik/gerieflik</i> <i>Verbruikersvriendelik</i> <i>Bespaar tyd</i>	2O reason (2)	MP L4 M

QUESTION/VRAAG 3 [27 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.1.1	Length of fencing /Lengte van heining $= 12 \text{ m} + 8,7 \text{ m} + 2,6 \text{ m} + 12 \text{ m}$ ✓ MA ✓ CA $= 35,3 \text{ m}$ ✓ A OR/OF Length of fencing /Lengte van heining $= 12 \text{ m} + 8,7 \text{ m} + 2,6 \text{ m} + 1,4 \text{ m} + 10,6 \text{ m}$ ✓ MA ✓ CA $= 35,3 \text{ m}$ ✓ A	1MA adding all the values 1CA simplification 1A unit (3)	M L2 E
3.1.2 (a)	Radius $= 120 \text{ cm} \div 2 = 60 \text{ cm}$ ✓ A Volume of the fish pond /Volume van visdam $= 3,142 \times \text{radius}^2 \times \text{depth} / \text{diepte}$ $= 3,142 \times \left(\frac{120}{2} \text{ cm}\right)^2 \times 0,5 \text{ m}$ ✓ SF ✓ C $= 3,142 \times (60 \text{ cm})^2 \times 50 \text{ cm}$ $= 565\,560 \text{ cm}^3$ ✓ CA	1A radius 1SF substitution 1C conversion m to cm 1CA simplification (4)	M L2 M
3.1.2 (b)	Diameter / Middellyn $= 120 \text{ cm} + (2 \times 20 \text{ cm}) = 160 \text{ cm}$ ✓ A Circumference of the outer edge /Buite omtrek $= 3,142 \times \text{diameter} / \text{middellyn}$ $= 3,142 \times 160 \text{ cm}$ ✓ SF $= 502,72 \text{ cm}$ ✓ CA OR/OF ✓ A Radius $= 60 \text{ cm} + 20 \text{ cm} = 80 \text{ cm}$ $C = 3,142 \times 2 \times 80 \text{ cm}$ ✓ SF $= 502,72 \text{ cm}$ ✓ CA	1A adding both sides 20 cm 1SF substitution 1CA simplification OR/OF 1A adding one side 20 cm to inner radius 1SF substitution 1CA simplification (3)	M L2 M
3.1.3 (a)	Length $= 8,7 \text{ m} + 2,6 \text{ m} = 11,3 \text{ m}$ ✓ A Area of a rectangle $= \text{length} / \text{lengte} \times \text{width} / \text{breedte}$ $36,16 \text{ m}^2 = 11,3 \text{ m} \times \text{width} / \text{breedte}$ ✓ SF Width /breedte $= \frac{36,16 \text{ m}^2}{11,3 \text{ m}}$ ✓ MCA $= 3,2 \text{ m}$ ✓ CA	1A length 1SF substitution 1MCA change the subject 1CA simplification (4)	M L3 M

Q/V	Solution/oplossing	Explanation/Verduideliking	T/L
3.2.1	12 ✓✓ A	2A correct number (2)	M L1 E
* 3.2.2	Total cost (excl) / <i>Totale koste (uitsluitende)</i> ✓ MA ✓MA $= R125,80 + 4 \times R657,40 + R1\,250$ $= R4\,005,40$ ✓ CA VAT/BTW $= R4\,005,40 \times 15\%$ $= R600,81$ ✓ MCA Cost (incl) / <i>Koste (ingesluit)</i> $= R4\,005,40 + R600,81$ $= R4\,606,21$ ✓ CA OR Cost/<i>Koste</i> $= R4\,005,40 \times 1,15$ $= R4\,606,21$	1MA adding three costs 1MA multiplying by 4 1CA simplification 1MCA VAT 1CA simplification (5)	M L2 M
		[27]	

QUESTION/VRAAG 4 [36 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1.1	Ratio / <i>Verhouding</i> ✓RT = 11,6 : 7,6 ✓MA = 29 : 19 ✓A	1RT correct values 1MA correct order 1A simplification AO (3)	M L2 M
* 4.1.2	Monday to Friday / <i>Maandag tot Vrydag</i> = 17:00 – 07:30 = 9 hours/uur 30 min ✓A Total for Mon-Fri/ <i>Totaal vir Maan-Vry</i> = 9 hours/uur 30 min × 5 ✓MCA = 47,5 hours/uur ✓CA <i>Saturdays / Saterdag</i> = 13:00 – 08:00 = 5 hours 0 min ✓A Total time / <i>Totale tyd</i> = 47,5 hours/uur + 5 hours/uur = 52,5 hours/uur ✓C	1A hours per day 1 MCA multiplying by 5 1CA time for 5 days 1A time for Saturday 1CA simplification (5)	M L2 M
4.1.3	Volume / <i>Volume</i> = 11,6 cm × 7,6 cm × 10,5 cm ✓SF = 925,68 cm ³ ✓A <i>Capacity / Kapasiteit</i> 1 cm ³ = 1 ml ∴ 925,68 cm ³ = 925,68 ml ✓C Water volume = 925,68 × 75% ✓MCA = 694,26 ml ✓CA <i>Leftover / Oorblywend</i> = 1 000 ml – 694,26 ml ✓MCA = 305,74 ml ✓CA	1SF correct substitution 1A simplification 1C capacity in ml 1MCA calculating 75% of tank 1CA simplification 1MCA subtracting 1CA ml left (7)	M L3 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.1	D ✓A	1A correct letter (1)	MP L1 E
4.2.2	A ✓A	1A correct letter (1)	MP L1 E
4.2.3	F ✓A	1A correct letter (1)	MP L1 E
4.2.4	B ✓A	1A correct letter (1)	MP L1 E
4.2.5	C ✓A	1A correct letter (1)	MP L1 E
4.2.6	E ✓A	1A correct letter (1)	MP L1 E
4.3.1	1 mm = 0,0394 inch/ <i>duim</i> Height / <i>Hoogte</i> $= \frac{\checkmark\text{RT } 4,3 \text{ inches}}{0,0394 \text{ inches/mm}} \checkmark\text{MA}$ $= 109,1370558 \text{ mm } \checkmark\text{CA}$ $= 10,9 \text{ cm } \checkmark\text{C OR } 10,914 \text{ cm OR } 10,91 \text{ cm}$	1RT correct height 4,3 inches 1MA dividing with 0,0394 inch 1CA simplification in mm 1C conversion from mm to cm NPR (4)	M L2 M
4.3.2	Length / <i>Lengte</i> $= 12 \text{ cm} + 5 \text{ cm } \checkmark\text{MA}$ $= 17 \text{ cm } \checkmark\text{A}$ Number lengthwise / <i>Getal lengtegewys</i> $= 199 \text{ cm} \div 17 \text{ cm } \checkmark\text{MCA}$ $= 11,70588235$ $\approx 11 \checkmark\text{CA}$ But / <i>maar</i> $17 \text{ cm} \times 11 = 187 \text{ cm } \checkmark\text{MCA}$ And/ <i>En</i> $199 \text{ cm} - 187 \text{ cm}$ $= 12 \text{ cm } \checkmark\text{CA}$ Number of mini aquariums / <i>Getal mini akwariums</i> $= 11 + 1$ $= 12 \checkmark\text{CA}$ OR/OF	1MA adding length and space 1A simplification 1MCA dividing 1CA simplification 1MCA calculating space left 1CA simplification 1CA simplification OR/OF	MP L3 D

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	Tank and space / <i>Tenk en spasie</i> $= 12 \text{ cm} + 5 \text{ cm}$ ✓MA $= 17 \text{ cm}$ ✓A Place 2 tanks at the ends/<i>Plaas 2 tenke aan die einde</i> $12 \text{ cm} + 12 \text{ cm}$ ✓MA $= 24 \text{ cm}$ Two tanks and 1 space/<i>Twee tenke en 1 spasie</i>: $24 \text{ cm} + 5 \text{ cm} = 29 \text{ cm}$ ✓CA Space left/<i>Spasie oor</i> $= 199 \text{ cm} - 29 \text{ cm} = 170 \text{ cm}$ ✓MCA Use of space left/<i>Gebruik van spasie oor</i> $= \frac{170 \text{ cm}}{17 \text{ cm}}$ $= 10 \text{ tanks}$ ✓CA Total no of tanks $= 2 + 10$ $= 12$ ✓CA	1MA adding length and space 1A simplification 1MA adding 1CA simplification 1MCA simplification 1CA simplification 1CA simplification (7)	
* 4.3.3	Length of 2nd row's tank resting on 1st row <i>Lengte van 2de ry se tenk wat rus op 1ste ry</i> $= 12 \text{ cm} - 5 \text{ cm}$ $= 7 \text{ cm}$ ✓A On each side /<i>aan elke kant</i> $= 7 \text{ cm} \div 2$ ✓MA $= 3,5 \text{ cm}$ $d = 12 \text{ cm} - 3,5 \text{ cm}$ $= 8,5 \text{ cm}$ ✓CA Her statement is VALID ✓O OR/OF	1A subtracting values 1MA dividing by 2 1CA simplification 1O conclusion OR/OF	MP L4 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Length on 2nd row/Lengte op 2de ry $\checkmark A$ $d + 12 \text{ cm} + 5 \text{ cm} + 12 \text{ cm} + d = 46 \text{ cm}$ $\checkmark A$ Therefore/Daarom $2d = 46 \text{ cm} - 29 \text{ cm}$ $2d = 17 \text{ cm}$ $\checkmark MCA$ $d = 8,5 \text{ cm}$ $\checkmark O$ VALID/GELDIG OR/OF Total length of wall/Total lengte van muur $\checkmark A$ $\checkmark A$ $d + (12 \text{ cm} + 5 \text{ cm}) \times 10 + 12 \text{ cm} + d = 199 \text{ cm}$ Therefore/Daarom $2d = 199 \text{ cm} - 182 \text{ cm}$ $2d = 17 \text{ cm}$ $d = 8,5 \text{ cm}$ $\checkmark MCA$ VALID/GELDIG $\checkmark O$ OR/OF $12 \text{ cm} + 5 \text{ cm} + 12 \text{ cm} + 5 \text{ cm} + 12 \text{ cm} = 46 \text{ cm}$ $\checkmark A$ $46 \div 2 = 23$ $\checkmark MA$ $5 \div 2 = 2,5$ $12 + 2,5 = 14,5$ $23 - 14,5 = 8,5$ $\checkmark CA$ VALID/GELDIG $\checkmark O$ OR/OF $2d = 1 \text{ tank} + 1 \text{ space}$ $= 12 \text{ cm} + 5 \text{ cm}$ $\checkmark A$ $= 17 \text{ cm}$ $d = 17 \text{ cm} \div 2$ $\checkmark MA$ $= 8,5 \text{ cm}$ $\checkmark CA$ VALID/GELDIG $\checkmark O$	OR/OF 1A adding values 1A 46 cm 1MCA dividing by 2 1O conclusion OR/OF 1A adding values 1A 199 1MCA dividing by 2 1O conclusion OR/OF 1A adding values 1MA dividing by 2 1CA simplification 1O conclusion OR/OF 1A adding values 1MA dividing by 2 1CA simplification 1O conclusion (4)	
		[36]	

QUESTION/VRAAG 5 [36 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
5.1.1	✓✓RT The Forum / <i>Die Forum</i>	2RT correct shop (2)	MP L1 E
5.1.2	SW ✓✓RT	2RT correct direction (2)	MP L2 E
5.1.3	✓RT 6,201 km × 50 ✓MA = 310,05 km	1RT correct value- 6,201 1MA multiply by 50 laps (2)	M L1 E
5.1.4	Flamingo ✓✓RT	2RT correct road (2)	MP L1 E
5.1.5	Distance between A and B/ <i>Afstand tussen A en B</i> = 69 mm ✓A Actual distance/ <i>Werklike afstand</i> = 69 mm × 13 500 ✓MCA = 931 500 mm = 0,9315 km ✓C Distance = Speed × Time/ <i>Afstand = Spoed × Tyd</i> ✓SF 0,9315 km = 204 km/h × Time/ <i>Tyd</i> Time/ <i>tyd</i> = 0,9315 km ÷ 204 km/h ✓MCA = 0,004566176471 h ✓CA Time in min/ <i>Tyd in min</i> = 0,004566176471 h × 60 = 0,2739705882 min ✓C	1A map distance 1MCA multiply by scale 1C convert to km 1SF substitute correct values 1MCA changing subject of formula 1CA simplification 1C convert to minutes. [Accept measurement from 67 mm to 71 mm. Allow ± 1 mm deviation from province measurement] NPR (7)	MP L3 D
5.1.6	✓A ✓✓O Agree. He will be facing West and that is where the sun sets. <i>Stem saam. Hy sal in 'n westelike rigting kyk en dit is waar die son sak</i>	1A agree 2O correct explanation (3)	MP L4 E

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.2.1	Start time/ <i>Begintyd</i> $\checkmark$ RT $\checkmark$ RT $23:28:54 - 00:01:35,490$ $23:27:18,51$ $\checkmark$ A	1RT correct value 1RT correct value 1A simplification (3)	M L2 M
* 5.2.2	1:29:08,289 Time in seconds/ <i>Tyd in sekondes</i> : $\checkmark$ C $\checkmark$ C $= (1 \times 60 \times 60) \text{ s} + (29 \times 60) \text{ s} + 8,289 \text{ s}$ $= 3\,600 \text{ s} + 1\,740 \text{ s} + 8,289 \text{ s}$ $= 5\,348,289 \text{ s}$ $\checkmark$ CA Average lap-time/ <i>Gemiddelde rondte tyd</i> $= 5\,348,289 \text{ s} \div 50$ $\checkmark$ MCA $= 106,96578 \text{ seconds/sekondes}$ $\checkmark$ CA INVALID/ <i>ONGELDIG</i> $\checkmark$ O OR/OF Total time $\div$ number of laps = Ave time/ <i>Totale tyd $\div$ getal rondtes = Gemiddelde tyd</i> Total time = Ave time $\times$ number of laps/ <i>Totale tyd = Gemiddelde tyd $\times$ getal rondtes</i> $= 106 \text{ s} \times 50$ $\checkmark$ MCA $= 5\,300 \text{ sec}$ $\checkmark$ CA $\checkmark$ C $\checkmark$ C $\checkmark$ C $= 1 \text{ hour } 28 \text{ min } 20 \text{ sec}$ INVALID/ <i>ONGELDIG</i> $\checkmark$ O	1C converting hours to seconds 1C minutes to seconds 1CA simplification 1MCA divide by laps 1CA simplification 1O conclusion OR/OF 1MCA multiply by laps 1CA simplification 1C correct 1 hour 1C correct 28 minutes 1C correct 20 seconds 1O conclusion (6)	M L4 D
5.3.1	Inside length/ <i>Binne lengte</i> : $\checkmark$ MA $\checkmark$ C $\checkmark$ RT $630 \text{ mm} - 2(25 \text{ mm} + 45 \text{ mm})$ $= 630 \text{ mm} - 140 \text{ mm}$ $= 490 \text{ mm}$ $\checkmark$ CA Inside width/ <i>binne breedte</i> : $420 \text{ mm} - 2(25 \text{ mm} + 45 \text{ mm})$ $\checkmark$ MCA $= 420 \text{ mm} - 140 \text{ mm}$ $= 280 \text{ mm}$ $\checkmark$ CA	1C conversion 1RT correct value - 45 mm 1MA subtracting from length 1CA inside length 1MCA subtracting from width 1CA simplification (6)	M L3 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.3.2	Lengthwise/ <i>lengte</i>gewys: ✓MA 490 mm – 485 mm = 5 mm ✓CA VALID/ <i>GELDIG</i> ✓O OR/OF Widthwise/ <i>breedte</i>gewys: ✓MA 280 mm – 270 mm = 10 mm ✓CA ✓O VALID/ <i>GELDIG</i>	CA from Q 5.3.1 1 MA subtracting from 490 mm 1 CA simplification 1 O conclusion OR/OF 1 MA subtracting from 280 mm 1 CA simplification 1 O conclusion (3)	M L4 D
		[36]	
		TOTAL/TOTAAL: 150	



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 2025

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>Penalisering, bv. vir geen eenhede, verkeerde afronding, ens.</i>
NPR	No penalty for correct rounding/ <i>Geen penalisering vir korrekte afronding nie</i>
NPU	No penalty for omitting unit, but wrong unit is penalised/ <i>Geen penaliseringe indien die eenheid uitgelos is nie, maar wel indien 'n verkeerde eenheid gebruik word.</i>
AO	Correct answer only/ <i>Slegs korrekte antwoord</i>

**These marking guidelines consist of 15 pages.
Hierdie nasienriglyne bestaan uit 15 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.
- Rounding is an independent mark.
- A conclusion mark can only be given if relevant calculations precede it.
- 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 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 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*
- *Afronding tel as 'n onafhanklike punt*
- *'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekening dit voorgaan.*
- *Geen penalisering vir ronding (NPR) as die eerste desimaal korrek is nie.*

QUESTION/VRAAG 1 [28 MARKS/PUNTE]		ANSWER ONLY FULL MARKS	
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1	B ✓✓ A	2A correct option (2)	MP L1 E
1.1.2	G ✓✓ A	2A correct option (2)	MP L1 E
1.1.3	A ✓✓ A	2A correct option (2)	M L1 E
1.1.4	E ✓✓ A	2A correct option (2)	MP L1 E
1.1.5	F ✓✓ A	2A correct option (2)	M L1 E
1.2.1	✓ RT ✓ A Quarter past two in the afternoon. <i>Kwart oor twee in die middag.</i> OR/OF ✓ RT ✓ A Fifteen minutes after two in the afternoon. <i>Vyftien minute na twee namiddag.</i>	1RT correct time in words 1A correct time of day OR/OF 1RT correct time in words 1A correct time of day (2)	M L1 E
1.2.2	✓ MA Number of passengers/<i>Aantal passasiers</i> = $33\frac{1}{3}\% \times 189$ = 63 ✓ A OR/OF Number of passengers/<i>Aantal passasiers</i> = $\frac{1}{3} \times 189$ ✓ MA = 63 ✓ A	1MA multiply with $33\frac{1}{3}\%$ 1A simplification OR/OF 1MA multiply with $\frac{1}{3}$ 1A simplification (2)	M L1 M
1.2.3	B ✓✓ A	2A correct letter (2)	M L1 M
1.2.4	Thursday/ <i>Donderdag</i> ✓✓ A	2A correct day (2)	M L1 E

Q/V	Solution/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T/L
1.3.1	(a) R ✓ A (b) S ✓ A (c) U ✓ A (d) P ✓ A (e) Q ✓ A (f) T ✓ A	1A correct letter 1A correct letter 1A correct letter 1A correct letter 1A correct letter 1A correct letter 1A correct letter (6)	MP L1 M
1.3.2	C ✓✓ A	2A correct formula (2)	M L1 E
1.3.3	Length of geyser/ <i>Lengte van waterverwarmer</i> $= 1,2 \text{ m} \times 1\,000$ ✓ MA $= 1\,200 \text{ mm}$ ✓ A	1MA multiply by 1 000 1A conversion (2)	M L1 E
		[28]	

QUESTION/VRAAG 2 [34 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.1	Number of seats/ <i>Getal sitplekke</i> = $59 + 22 - 4$ ✓MA = 77 seats/sitplekke ✓A	1MA addition and subtraction of correct values 1A simplification AO (2)	MP L1 E
2.1.2	✓A F2 ✓A	1A correct row 1A correct seat (2)	MP L2 M
2.1.3	a) Right/Regs ✓A b) Left/Links ✓A c) Aisle/Gang ✓A d) Second/Tweede ✓A	1A correct choice 1A correct choice 1A correct choice 1A correct choice (4)	MP L2 E
2.2.1	✓✓RT Camps Bay/Kampsbaai	2RT correct stop (2)	MP L1 E
2.2.2	Bar scale / Line scale /Linear scale / Graphic scale <i>Staafskaal/Lynskaal /Grafiese skaal</i> ✓✓RT	2RT correct scale (2)	MP L1 E
2.2.3	Clockwise/Kloksgewys ✓✓A	2A correct direction (2)	MP L1 E
2.2.4	✓A 13 mm = 500 m ✓RT Real distance in meter/<i>Regte afstand in meter</i> 19,2 km = 19 200 m ✓C Map distance/<i>Kaart afstand</i> = $19\,200 \div 500 \times 13$ ✓MCA = 499,2 mm ✓CA OR/OF ✓A Bar/<i>Staaft</i>: 1,3 cm = 500 m ✓RT 500 m = 0,5 km ✓C Map distance / <i>kaart afstand</i> = $\frac{19,2\text{ km} \times 1,3\text{ cm}}{0,5\text{ km}}$ ✓MCA = 49,92 cm ✓CA OR/OF	1A measured distance 1RT correct ratio 1C convert to m 1MCA divide and multiply 1CA simplification OR/OF 1A measured distance 1RT correct ratio 1C convert to km 1MCA divide and multiply 1CA simplification OR/OF	MP L3 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	Measure distance / <i>gemete afstand</i> $\checkmark A$ $1,3 \text{ cm} : 500 \quad \checkmark RT$ $\checkmark C$ $0,013 \text{ m} : 500 \text{ m}$ $1 : 38\,461,53846$ $? : 19,2$ $? = \frac{19,2}{38\,461,53846} \quad \checkmark MCA$ $= 0,0004992 \text{ km}$ $= 49,92 \text{ cm OR } 499,2 \text{ mm} \quad \checkmark CA$ Accept 12 mm – 13 mm	1A measured distance 1RT correct ratio 1C convert to m 1MCA divide by scale factor 1CA simplification Accept 460,8 for 12 mm (5)	
2.3.1	$\checkmark \checkmark A$ Right / <i>Regs</i>	2A correct direction (2)	MP L1 E
2.3.2	Longer dimension/ <i>Langer afmeting</i> = 12'8" $\checkmark RT$ Length in cm/ <i>Lengte in cm</i> $12' \times 30,48 \quad \checkmark MCA$ $= 365,76 \text{ cm} \quad \checkmark C$ $8'' \times 2,54$ $= 20,32 \text{ cm} \quad \checkmark C$ Total/ <i>Totaal</i> = 365,76 + 20,32 $= 386,08 \text{ cm} \quad \checkmark CA$ OR/OF Longer dimension/ <i>Langer afmeting</i> = 12'8" $\checkmark RT$ $\checkmark MCA$ Length/ <i>Lengte</i> = $(12 \times 30,48 \text{ cm}) + (8 \times 2,54 \text{ cm})$ $\checkmark C \quad \checkmark C$ $= 365,6 \text{ cm} + 20,32 \text{ cm}$ $= 386,08 \text{ cm} \quad \checkmark CA$	1RT 12'8" 1MCA multiply by 30,48 1C convert feet to cm 1C convert inches to cm 1CA simplification OR/OF 1RT 12'8" 1MCA multiply by 30,48 1C convert feet to cm 1C convert inches to cm 1CA simplification (5)	MP L3 M
2.3.3	$\checkmark \checkmark RT$ One has a living room and the other has a bedroom/ <i>Een het 'n woonkamer en die ander een 'n slaapkamer</i> $\checkmark \checkmark RT$ The balcony is on the first floor/ <i>Die balkon is op die eerste verdieping</i>	2RT identify first difference 2RT identify second difference (4)	MP L1 M
2.3.4	It is on the ground floor. / <i>Dit is op die grondverdieping.</i> $\checkmark \checkmark O$	2O explanation (2)	MP L4 M
2.3.5	There must be more flats adjacent to it. $\checkmark \checkmark O$ <i>Daar moet meer woonstelle langsaa wees.</i>	2O explanation (2)	MP L4 M
		[34]	

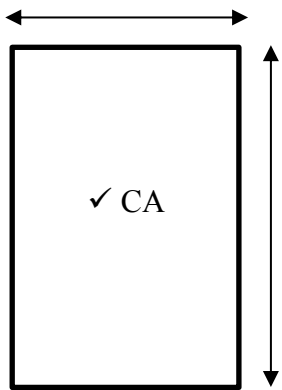
QUESTION/VRAAG 3 [32 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.1.1	$13:12 - 3 \text{ hours and } 27 \text{ min} / 3 \text{ ure en } 27 \text{ min}$ $= 09:45 \quad \checkmark \text{A}$ OR/OF $\text{Time} = 13,2 - 3,45 = 9,75 \text{ hours} \quad \checkmark \text{MA}$ $= 09:45 \quad \checkmark \text{A}$	$1\text{MA subtracting time}$ 1A simplification OR/OF $1\text{MA subtracting the hours}$ 1A simplification AO (2)	M L2 E
3.1.2	$\text{Number/Getal} = 1 + 2 + 3 + 4 + 5 + 6 + 7$ $= 28 \quad \checkmark \text{CA}$ OR/OF $\text{Number/Getal} = \frac{7(1+7)}{2}$ $= 7 \times 4 \quad \checkmark \text{MA}$ $= 28 \quad \checkmark \text{CA}$	$1\text{RT interpreting pattern}$ 1MA adding values $1\text{CA simplification}$ OR/OF $1\text{RT interpreting pattern}$ $1\text{MA multiplication of values}$ $1\text{CA simplification}$ AO (3)	M L2 E
3.1.3	$\text{Height in cm/Hoogte in cm} = 240 \text{ mm}$ $= 24 \text{ cm} \quad \checkmark \text{C}$ $\text{Area/Oppervlakte} = \frac{1}{2} (28 \text{ cm} \times 24 \text{ cm}) \quad \checkmark \text{SF}$ $= 336 \text{ cm}^2 \quad \checkmark \text{CA}$ OR/OF $\text{Area/Oppervlakte} = \frac{1}{2} \times 280 \text{ mm} \times 240 \text{ mm} \quad \checkmark \text{SF}$ $= 33\,600 \text{ mm}^2 \quad \checkmark \text{CA}$ $= 336 \text{ cm}^2 \quad \checkmark \text{C}$	1C conversion $1\text{RT } 28$ $1\text{SF substitution in formula}$ $1\text{CA simplification}$ OR/OF $1\text{SF substitution in formula}$ $1\text{RT } 280$ $1\text{CA simplification}$ 1C conversion (4)	M L2 M
3.1.4	$\text{Area of C/Oppervlakte van C} = 30\,240 \text{ mm}^2 \times 1,6$ $= 48\,384 \text{ mm}^2$ OR/OF $\text{Total Area/Totale oppervlakte}$ $= 48\,384 \text{ mm}^2 + 30\,240 \text{ mm}^2 + 33\,600 \text{ mm}^2 \quad \checkmark \text{MCA}$ $= 112\,224 \text{ mm}^2 \quad \checkmark \text{CA}$	CA from 3.1.3 $1\text{MA multiply by } 1,6$ $1\text{CA simplification}$ OR/OF $1\text{C convert to mm}^2$ $1\text{MCA adding values}$ $1\text{CA simplification}$ OR/OF	M L3 M

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	Part/Deel B: $30\,240\text{ mm}^2 \div 10^2 = 302,4\text{ cm}^2$ $\checkmark$ MA Part /Deel C: $302,4\text{ cm}^2 \times 1,6 = 483,84\text{ cm}^2$ $\checkmark$ CA $\checkmark$ MCA $\checkmark$ CA Total/Totaal: $(336 + 483,84 + 302,4)\text{ cm}^2 = 1\,122,24\text{ cm}^2$ $\therefore (1\,122,24 \times 100)\text{ mm}^2 = 112\,224\text{ mm}^2$ $\checkmark$ C	1MA multiply by 1,6 1CA simplification 1MCA adding values 1CA simplification 1C convert to mm^2 (5)	
3.1.5	$9 + 7 + 28 + 8 + 22 = 74$ $\checkmark$ A $P = \frac{16}{74} \times 100\%$ $\checkmark$ MA $\approx 21,62\%$ $\checkmark$ CA OR/OF $9 + 7 + 28 + 8 + 22 = 74$ $\checkmark$ A $P(\text{red}) = \frac{9}{74} \times 100\%$ $\checkmark$ MA $= 12,16216216\%$ $P(\text{green}) = \frac{7}{74} \times 100\%$ $\checkmark$ MA $= 9,459459459\%$ $P(\text{red or green}) \approx 12,16\% + 9,46\%$ $= 21,62\%$ $\checkmark$ CA OR/OF $9 + 7 + 28 + 8 + 22 = 74$ $\checkmark$ A $P(\text{red or green}) = \frac{9}{74} + \frac{7}{74}$ $\checkmark$ MA $= 0,1216216... + 0,0945945...$ $= 0,216216... \times 100\%$ $= 21,62\%$ $\checkmark$ CA	1A correct number of circles 1MA correct numerator 1MA concept percentage 1CA simplification OR/OF 1A correct number of circles 1MA P(red) 1MA P(green) 1CA simplification OR/OF 1A correct number of circles 1MA P(red) 1MA P(green) 1CA simplification (4)	P L2 M
3.2.1	Radius of small circle/ <i>Radius van klein sirkel</i> $= \frac{4}{7} \times 14\text{ mm}$ $\checkmark$ MA $= 8\text{ mm}$ $\checkmark$ A	1MA multiplication by 14 1A correct length AO (2)	M L1 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.2.2	Circumference/Omtrek = $3,142 \times 2 \times 14 \text{ mm}$ ✓SF $= 87,976 \text{ mm}$ ✓CA $\approx 88 \text{ mm}$ ✓R	1SF substitution in formula 1CA simplification 1R rounding (3)	M L2 M
3.2.3	Area of material/Oppervlakte van materiaal ✓C $= 30 \text{ cm} \times 137 \text{ cm}$ ✓SF $= 4\,110 \text{ cm}^2$ ✓CA Total area of all circles/Totale oppervlakte van alle sirkels ✓SF ✓MA ✓MA $= 3,142 \times (1,4 \text{ cm})^2 \times 48 \times 2 \times 2$ $= 1\,182,40 \text{ cm}^2$ ✓CA Area of off-cuts/Oppervlakte van oorblyfsels $= 4\,110 \text{ cm}^2 - 1\,182,40 \text{ cm}^2$ $= 2\,927,60 \text{ cm}^2$ ✓CA ✓O Her statement is CORRECT/Haar stelling is KORREK OR/OF Area of material/Oppervlakte van materiaal ✓C $= 30 \text{ cm} \times 137 \text{ cm}$ ✓SF $= 4\,110 \text{ cm}^2$ ✓CA Area of circle /Oppervlakte van sirkel = $3,142 \times \text{radius}^2$ $= 3,142 \times (1,4 \text{ cm})^2$ ✓SF $= 6,15832 \text{ cm}^2$ ✓MA Number of circles / Getal sirkels = $48 \times 2 = 96$ For both sides/ Vir beide kante = $96 \times 2 = 192$ ✓MA Total area/ Totale oppervlakte = $6,15832 \text{ cm}^2 \times 192$ $= 1\,182,39744 \text{ cm}^2$ ✓CA Area of off-cuts/Oppervlakte van oorblyfsels $= 4\,110 - 1\,182,39744$ $\approx 2\,927,60 \text{ cm}^2$ ✓CA ✓O Her statement is CORRECT/Haar stelling is KORREK	1C converting to cm 1SF substitution in formula 1CA correct area 1SF substitution in formula 1MA multiplying by 48 1MA multiplying by 2×2 1CA simplification 1CA area of off cuts 1O opinion OR/OF 1C converting to cm 1SF substitution in formula 1CA correct area 1SF substitution in formula 1MA multiplying by 48 1MA multiplying 96 by 2 1CA simplification 1CA area of off cuts 1O opinion (9)	M L4 D
		[32]	

QUESTION/VRAAG 4 [30 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.1.1	De Aar ✓✓ A	2A correct town (2)	MP L1 E
4.1.2 (a)	8 ✓✓ A	2A correct number (2)	MP L2 E
4.1.2 (b)	Kimberley ✓✓ A and/en Britstown ✓ A	2A 1 st correct town 1A 2 nd correct town (3)	MP L2 E
4.1.3	Provincial borders are indicated by a broken line / dotted line/ dashed line ✓✓ O <i>Provinsiale grense word deur 'n gebroke lyn/ stippellyn voorgestel</i>	2O correct description (2)	MP L4 M
4.2.1	17 months/maande ✓✓ A	2A number of months (2)	M L2 E
4.2.2	Time of arrival/Aankomstyd ✓ MA = 19:00 + 14 hours 25 min/14 ure 25 min = 09:25 ✓ A ✓ A 16 June 2023 at 09:25 / 16 Junie 2023 teen 09:25 OR/OF From/Van 19:00 to 24:00 = 5 hours/ure ✓ A 14 hours/ ure 25 min – 5 hours/ure = 09:25 ✓ A ✓ A 16 June 2023 at 09:25 / 16 Junie 2023 teen 09:25	1MA adding the flight time 1A 16 June 1A arrival time OR/OF 1A 5 hours 1A 16 June 1A arrival time AO (3)	M L3 M
4.2.3	0 ; 0% , Impossible /Onmoontlik ✓✓ A	2A correct probability (2)	P L2 E
4.2.4	Distance = Speed × time /Afstand = Spoed × tyd 770 km = speed/spoed × 14 hours 25 min/14 ure 25 min ✓ SF Speed/Spoed = $\frac{770 \text{ km}}{14 \text{ hours } 25 \text{ min}}$ ✓ S = $\frac{770 \text{ km}}{14,4166... \text{ hours}}$ ✓ C ≈ 53,41 km/h ✓ CA	1SF substitute into formula 1S change subject of formula 1C convert minutes to hours 1CA simplification (4)	M L2 D

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.2.5	1 mile/myl = 1,60934 km 311,72 miles/myle = ? km ? = 311,72 × 1,60934 km ✓MA = 501,6634... km ✓A Extra distance/<i>Ekstra afstand</i> = 770 km – 501,6634... km ✓MCA = 268,336... km ✓CA INVALID/<i>NIE GELDIG NIE</i> ✓O OR/OF Distance/ <i>Afstand</i> = 311,72 × 1,60934 km ✓MA = 501,6634... km ✓A Total distance/ <i>Totale afstand</i> = 501,6634... km + 268,13 km ✓MCA = 769,7934... km ✓CA INVALID/ <i>NIE GELDIG NIE</i> ✓O	1MA multiply with conversion factor 1A simplification 1MCA subtracting 1CA simplification 1O verification OR/OF 1MA multiply with 1,60934 1A simplification 1MCA adding 268,13 1CA simplification 1O verification (5)	M L4 M
4.2.6	Number of adults/<i>Aantal volwassenes</i> = 78% × 333 million/<i>miljoen</i> ✓MA = 259,74 million/<i>miljoen</i> Number of adult women/<i>Aantal volwasse vroue</i> = 50% × 259,74 million/<i>miljoen</i> ✓MA = 129,87 million/<i>miljoen</i> Number shorter than flamingo/<i>Aantal korter as flamink</i> = 10% × 129,87 million/<i>miljoen</i> ✓MA = 12,987 million/<i>miljoen</i> ✓CA ≈ 13 million/<i>miljoen</i> ✓R OR/OF ✓MA Number of women/ <i>vroue</i> = 50% × 333 000 000 = 166 500 000 ✓MA Number of adults/ <i>volwasse</i> = 78% × 166 500 000 = 129 870 000 Number shorter / <i>korter</i> = 10% × 129 870 000 ✓MA = 12 987 000 ✓CA ≈ 13 000 000 ✓R	1MA calculating 78% 1MA calculating 50% of previous value 1MA calculating 10% of previous value 1CA simplification 1R correctly rounded OR/OF 1MA calculating 50% 1MA calculating 78% of previous value 1MA calculating 10% of previous value 1CA simplification 1R correctly rounded (5)	M L3 M
		[30]	

QUESTION/VRAAG 5 [26 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
5.1.1 (a)	F OR/OF G ✓✓ RT	2RT for correct letter (2)	MP L2 M
5.1.1 (b)	C ✓✓ A	2RT correct letter (2)	MP L2 M
5.1.2	$P = \frac{1}{3}$ ✓ A OR/OF 0,333 OR/OF 33,3% ✓ A	1A numerator 1A denominator NPR (2)	P L2 E
5.1.3 (a)	The length of the bookcase is 60 cm and the height of the bookcase is 90 cm. ✓✓ O <i>Die lengte van die boekrak is 60 cm en die hoogte van die boekrak is 90 cm.</i> OR/OF It covers the entire back of the bookcase ✓✓ O <i>Dit bedek die hele agterkant van die boekrak</i>	2O explanation OR/OF 2O explanation (2)	M L4 M
5.1.3 (b)	Dimensions/Afmetings: Width/Breedte = 60 cm ÷ 20 ✓ MA = 3 cm ✓ A Height/Hoogte = 90 cm ÷ 20 = 4,5 cm ✓ CA 3 cm ✓ CA  4,5 cm ✓ CA	1MA using scale 1A simplification 1CA simplification 1CA width drawn 1CA height drawn 1CA shape (6)	M L3 D

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
5.2	Area of complete piece of wood/<i>Oppervlakte van volledige stuk hout:</i> $= 42 \text{ cm} \times 430 \text{ cm} \quad \checkmark \text{ SF}$ $= 18\,060 \text{ cm}^2 \quad \checkmark \text{ A}$ Area of pieces of one bookcase/<i>Oppervlakte van dele van een boekrak:</i> $\quad \checkmark \text{ MA}$ $= (90 + 60 + 56) \text{ cm} \times (20 + 20) \text{ cm}$ $= 8\,240 \text{ cm}^2 \quad \checkmark \text{ CA}$ Area of unused wood/<i>Oppervlakte van ongebruikte hout:</i> $= 18\,060 - 2(8\,240) \quad \checkmark \text{ MCA}$ $= 1\,580 \text{ cm}^2 \quad \checkmark \text{ CA}$ OR/OF Area complete piece/<i>Oppervlakte van volledige stuk</i> $\quad \checkmark \text{ SF}$ $= 42 \text{ cm} \times 430 \text{ cm} = 18\,060 \text{ cm}^2 \quad \checkmark \text{ A}$ For 1 bookcase: $\checkmark \text{ MA}$ $\left. \begin{array}{l} \text{Area /oppervlakte E \& D} = 60 \text{ cm} \times 20 \text{ cm} \times 2 = 2\,400 \text{ cm}^2 \\ \text{Area /oppervlakte F \& G} = 56 \text{ cm} \times 20 \text{ cm} \times 2 = 2\,240 \text{ cm}^2 \\ \text{Area /oppervlakte A \& B} = 90 \text{ cm} \times 20 \text{ cm} \times 2 = 3\,600 \text{ cm}^2 \end{array} \right\}$ Total/<i>Totaal</i> = $(2\,400 + 2\,240 + 3\,600) \text{ cm}^2 = 8\,240 \text{ cm}^2 \quad \checkmark \text{ CA}$ For 2 bookcases/ Vir 2 boekrakke $= 8\,240 \text{ cm}^2 \times 2 = 16\,480 \text{ cm}^2 \quad \checkmark \text{ MCA}$ Remaining part/ <i>Oorblywende deel</i> $= 18\,060 \text{ cm}^2 - 16\,480 \text{ cm}^2 = 1\,580 \text{ cm}^2 \quad \checkmark \text{ CA}$ OR/OF For 2 bookcases/<i>Vir 2 boekrakke</i> $\checkmark \text{ MA}$ E&D Area /<i>Oppervlakte</i> = $60 \text{ cm} \times 20 \text{ cm} \times 4$ $= 1200 \text{ cm}^2 \times 4 \quad \checkmark \text{ MCA}$ $= 4800 \text{ cm}^2$ A&B Area /<i>Oppervlakte</i> = $90 \text{ cm} \times 20 \text{ cm} \times 4$ $= 1\,800 \text{ cm}^2 \times 4 = 7\,200 \text{ cm}^2$ F&G Area /<i>Oppervlakte</i> = $56 \text{ cm} \times 20 \text{ cm} \times 4$ $= 1\,120 \text{ cm}^2 \times 4 = 4\,480 \text{ cm}^2$ Area complete piece/<i>Oppervlakte van volledige stuk</i> $= 430 \text{ cm} \times 42 \text{ cm} \quad \checkmark \text{ SF}$ $= 18\,060 \text{ cm}^2 \quad \checkmark \text{ A}$ Remaining part/ <i>Oorblywende deel</i> = $\quad \checkmark \text{ MCA}$ $18\,060 \text{ cm}^2 - (4480 + 7200 + 4800) \text{ cm}^2 = 1\,580 \text{ cm}^2 \quad \checkmark \text{ CA}$	1SF substitute into formula 1A simplification 1MA total length and width 1CA simplification 1MCA multiplying by 2 1CA simplification OR/OF 1SF substitute into formula 1A simplification 1MA total length and width 1CA simplification 1MCA multiplying by 2 1CA simplification OR/OF 1MA total length and width 1MCA multiplying by 4 1SF substitute into formula 1A simplification 1MCA subtraction 1CA simplification	M L3 M (6)

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	OR/OF Total length of one bookcase/<i>Totale lengte van een boekrak</i>: $= 2(90) + 2(60) + 2(56)$ ✓ MA $= 412 \text{ cm}$ ✓ A Wood left over /<i>Hout wat oorbly</i> $= 430 \text{ cm} - 412 \text{ cm}$ ✓ MA $= 18 \text{ cm}$ ✓ CA Area of unused wood/<i>Oppervlakte van ongebruikte hout</i>: $= 18 \text{ cm} \times 40 \text{ cm} + (2 \times 430)$ ✓ MCA $= 720 \text{ cm} + 860 \text{ cm}$ $= 1\,580 \text{ cm}^2$ ✓ CA OR/OF Total length of one bookcase/<i>Totale lengte van een boekrak</i>: $= 2(90\text{cm}) + 2(60\text{cm}) + 2(56\text{cm}) = 412 \text{ cm}$ ✓ MA ✓ A Total width of 2 bookcases /<i>Totale breedte van 2 boekrakke</i> $42 \text{ cm} - 20 \text{ cm} - 20 \text{ cm}$ ✓ MA $= 2 \text{ cm}$ ✓ CA Wood left /<i>Oorblywende hout</i> $= 430 \text{ cm} - 412 \text{ cm} = 18 \text{ cm}$ Area of unused wood/<i>Oppervlakte van ongebruikte hout</i>: $= (412 \text{ cm} \times 2\text{cm}) + (18\text{cm} \times 42 \text{ cm})$ ✓ MCA $= 1580 \text{ cm}^2$ ✓ CA	OR/OF 1MA adding values and multiplied by 2 1A simplification 1MA subtraction 1CA simplification 1MCA adding unused areas 1CA simplification OR/OF 1MA adding values and multiplied by 2 1A simplification 1MA subtraction 1CA simplification 1MCA adding unused areas 1CA simplification (6)	
5.3	Volume of wood per month/<i>Volume hout per maand</i> $= 0,4 \text{ m}^3 \times 100^3 = 400\,000 \text{ cm}^3$ ✓ C Mass per month/ <i>Massa per maand</i> $= 0,75 \text{ g/} \times 400\,000 \text{ cm}^3$ ✓ MA ✓ CA $= 300\,000 \text{ g} \div 1000$ $= 300 \text{ kg}$ 1 ton = 1000 kg Number of months to accumulate one ton/ <i>Getal maande om 'n ton mekaar te maak</i> ✓ C $= 1000 \text{ kg} \div 300 \text{ kg} = 3,33$ ✓ CA VALID/<i>GELDIG</i> ✓ O	1C converting m^3 to cm^3 1MA substitution 1CA mass in gram 1C tonnes to kg 1CA number of months 1O verification (6)	M L4 D

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF Unused wood produced per month <i>Ongebruikte hout per maand</i> $\checkmark$ MA $\checkmark$ C $= (0,4 \times 1\,000\,000) \text{ cm}^3 \times 0,75 \text{ g/ cm}^3$ $= 300\,000 \text{ g}$ $\checkmark$ CA $= 300\,000 \div 1\,000$ $= 300 \text{ kg}$ $= 300 \div 1\,000$ $= 0,3 \text{ ton}$ $\checkmark$ C Number of tons in 3 months / <i>Aantal ton in 3 maande</i> $= 0,3 \times 3 = 0,9$ $\checkmark$ CA VALID/ GELDIG $\checkmark$ O OR/OF $0,4 \text{ m}^3 \times 3 = 1,2 \text{ m}^3$ $\checkmark$ A Mass of used wood/<i>Massa van ongebruikte hout</i> $\checkmark$ MA $= (1,2 \times 100 \times 100 \times 100 \times 0,75) \text{ g}$ $\checkmark$ C $= 900\,000 \text{ g}$ $\checkmark$ CA $= 900 \text{ kg}$ $\checkmark$ C $< 1000 \text{ kg}$ His statement is correct/<i>Sy stelling is korrek</i> $\checkmark$ O OR/OF 1 ton = 1 000 000 g $\checkmark$ C Volume = $0,4 \text{ m}^3 \times 100^3 = 400\,000 \text{ cm}^3$ / month/<i>maand</i> $\checkmark$ C Mass/<i>Massa</i> = $(0,75 \times 400\,000) \text{ g} = 300\,000 \text{ g}$ $\checkmark$ MA Number of months/ <i>Getal maande</i> $\checkmark$ CA $= \frac{1\,000\,000 \text{ g}}{300\,000 \text{ g}}$ $= 3,3 \text{ months}$ $\checkmark$ CA Statement is valid/<i>Sy stelling is korrek</i> $\checkmark$ O	OR/OF 1MA substitution 1C conversion 1CA mass in grams 1C convert to tonnes 1CA tons in 3 months 1O verification OR/OF 1A volume in 3 months 1MA substitution 1C converting m^3 to cm^3 1CA mass in g 1C converting to kg in 3 months 1O verification OR/OF 1C converting to gram 1C converting m^3 to cm^3 1MA substitution 1CA mass in g 1CA number of months 1O verification (6)	
		[26]	
		TOTAL/TOTAAL: 150	

3.2.2	Practical examples to restrict flow into the cistern are e.g. - Bend the arm that carries the float down - push the handle up before all the water runs out. - short flush Flush less	2 marks
3.3.3	Failure to multiply by 2	3 marks
4.3.1 (b)	Accept: Expenses = R350 + $p \times$ number $R430 = R350 + p \times 1$ $p = R430 - R350 = R80$	3 marks
4.3.2	At break-even no profit or loss is made.	2 marks
4.3.3	Showing Income = R1 800 and Expense = R1 550 and concluding profit without the calculation	4 marks
5.2.1.	Accept 31 and 32	3 marks
5.3.1	Accept ratio simplified to 1:1,67 or 0,6 : 1 or $\frac{3}{5}$	2 marks
5.3.3	Accept correct answers if multiplied with 60. E.g. $1\,200 \times 60 = 72\,000$ yen $960 \times 60 = 57\,600$ yen $\% \text{ discount / afslag} = \frac{72\,000 - 57\,600}{72\,000} \times 100\%$ $= 20\%$ His statement is wrong / Sy bewering is nie korrek nie OR/OF $1\,200 \times 60 = 72\,000$ yen $960 \times 60 = 57\,600$ yen $30\% \times 72\,000 \text{ yen} = 21\,600 \text{ yen}$ $72\,000 \text{ yen} - 21\,600 \text{ yen} = 50\,400 \text{ yen}$ His statement is wrong / Sy bewering is nie korrek nie	6 marks

