



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/verkeerdeafronding, 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.
Hierdienasienriglynebestaanuit 22 bladsye.**

- 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 provided at least one of the values is correct; however it stops at the second calculation error.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.

- 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 nasienriglyn toegepas op voorwaarde dat ten minste een van die waardes korrek is, dithou op by die tweede berekeningsfout.
- Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.

QUESTION/VRAAG1 [39 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1	Slovakia/Slowakye (diff. 2015 -16): $\begin{array}{r} \checkmark \text{RT} \\ 163\,740 - 161\,906 \\ \hline = 1\,834 \end{array} \quad \checkmark \text{MA} \quad \checkmark \text{CA}$	1 RT correct values 1MA method of subtraction 1CA answer (3)	D L2
1.1.2	Range = highest – lowest <i>Omvang = hoogste – kleinste</i> $\checkmark \text{M}$ $\begin{array}{r} \checkmark \text{RT} \\ 2\,947\,664 = 2\,970\,436 - \text{N} \\ \hline \text{N} = 22\,772 \end{array} \quad \checkmark \text{CA}$	1M Range concept 1RT highest value 1CA simplification AO (3)	D L2
1.1.3	$\begin{array}{r} \checkmark \text{O} \quad \checkmark \text{O} \\ \text{Number of learners enrolled decreased from 2014/2015/2016} \\ \checkmark \text{O} \quad \checkmark \text{O} \\ \text{OR The number of learners decreased every year} \\ \text{Getal ingeskrewe leerders in Griekeland neem vanaf} \\ \text{2014/2015/2016 af} \\ \text{OF Die getal leerder neem jaarliks af} \end{array}$	1O decrease 1O time (2)	D L4

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

Q/V	Solution/Oplossing	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 $284\,655 \times 520,83 \times 12 : 85\,407 \times 350 \times 12$ $1\,779\,082\,364 : 358\,709\,400$ $4,959... : 1$ ✓RT ✓RT ✓A ✓A ✓CA ✓O The statement is NOT VALID/Bewering is NIE GELDIG NIE OR/OF Denmark: $€520,83 \times 12 = €6\,249.96$ 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/Wins = R30 × 120% = R36 ✓MA Profit per marble / Wins per albaster = $\frac{R36}{100} = R0,36$ ✓CA Cost price per marble/Kosprys per albaster = $\frac{R30}{100} = R0,30$ ✓A Selling price/Verkoopprys = R0,36 + R0,30 = R0,66 per marble/albaster ✓MCA OR/OF R30 per 100 marbles/albasters is 100% ✓MA Profit on 100 marbles to yield 120% per pack Wins op 100 albasters om 120% per pakte gee = $\frac{R30 \times 120\%}{100\%}$ = R36 per pack Price of selling 1 marble is/Verkoopprys per albaster is: $\frac{R30 + R36}{100}$ ✓MCA ✓M = R0,66 ✓CA OR/OF Selling price/verkoopprys = R30 × 220% = R66 ✓MA ✓MCA Price per marble/Prys per albaster = $\frac{R66}{100} = R0,66$ ✓M ✓CA OR/OF Price per marble/Prys per albaster = $\frac{30}{100} = R0,30$ ✓MA Selling price/verkoopprys = 0,3 × 2,2 ✓M ✓MCA = R0,66 ✓CA OR/OF Selling price /verkoopprys = 30 × 2,2 = R66 ✓MA ✓MCA Price per marble/Prys per albaster = $\frac{66}{100}$ ✓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 (4)	F L3

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 / meer as 0,5ℓ GELDIG ✓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 $400 \text{ cm}^3 + 500 \text{ cm}^3 = 900 \text{ cm}^3$ ✓MCA ✓CA 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 $= 2 \times 3,142 \times 3,25 \text{ cm}$ ✓ CA $= 20,423 \text{ cm}$	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	$\text{Total/Totaal} = 2 \times (79 \times R244,35)$ $= R38\,607,30$ OR/OF Amount claimed per person/Bedrag geeis per persoon: $\text{CM/HM} = 79 \times R244,35 = R19\,303,65$ $\text{IM} = 79 \times R244,35 = R19\,303,65$ $\text{Total/Totaal} = R19\,303,65 + R19\,303,65$ $= R38\,607,30$	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 (Hours worked by SM)/A(Ure gewerk deur SM) $= \frac{R13\,763,75}{R211,75/h}$ $= 65 \text{ hours/ure}$	1MA numerator and denominator 1CA simplification (2)	M L2
2.1.3 (a)	Number of marking hours/Getal nasien ure $= \frac{2\,808 \times 28}{23 \times 60}$ $= 56,97391303 \text{ hours/ure} \approx 57 \text{ hours/ure}$ 1st day (Monday/Maandag): 14:00 to 20:00 = 5 hours/ure Tuesday to Saturday/Dinsdag tot Saterdag: 50 hours/ure Sunday/Sondag = 2 hours/ure $\text{Total/Totaal } 5 + 50 + 2 = 57 \text{ hrs./ure}$ Finish at 10:00 on Sunday. Eindig Sondag om 10:00 OR/OF Number of marking hours/ Getal nasien ure $= \frac{2\,808 \times 28}{23 \times 60} = 56,97391303 \text{ hours} \approx 57 \text{ hours}$ 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 $= 5h + 10h + 10h + 10h + 10h + 10h + 2h$ $= 57 \text{ hours/ure}$ Sunday/Sondag = 08:00 + 2h $= 10:00$	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 hours of 1st day 1A hours of complete days to last day 1CA day and time	M L3

Q/V	Solution/Oplossing	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/uur $\checkmark \text{A}$ Rest of the days/<i>Res van die dae</i> = 57 hrs – 5 hrs = 52 hrs/uur 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> × 10 = 2 hrs for Sunday/uur vir <i>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 Saterdag nie gewerk 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/teepouse ingesluit) OR/OF ✓ A ✓ MA 52 hours claimed = 5 (Monday) + 40 (Tue to Fri) + 7 (Sat) 52 ure geëis = 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] [aanvaar ook 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	M L3
2.1.3 (c)	✓✓ O Some candidates omitted some questions or sub-sections. Sommige kandidaatelaatvrae of onderafdelings uit. 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 om te volg 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	M L4

(4)

(2)

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)] = $2,7 \times 2,7 - [3,142 (0,8 + 0,5)^2 - 3,142 (0,5)^2]$ ✓ A ✓ 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 – 4,52448 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/Oplissing	Explanation/Verduideliking	T&L
2.2.2	$\text{Volume wood/hout} = 2,7 \text{ m} \times 2,7 \text{ m} \times 0,038 \text{ m} \quad \checkmark \text{ SF} \quad \checkmark \text{ C}$ $= 0,27702 \text{ m}^3 \quad \checkmark \text{ CA}$ Price of one piece of wood excl. VAT <i>Prys van een stuk hout BTW uitgesluit</i> $= 0,27702 \text{ m}^3 \times \text{R1 215} = \text{R336,58} \quad \checkmark \text{ MA}$ Price including VAT/<i>Prys BTW ingesluit</i> = $\text{R336,58} \times 1,15$ $= \text{R387,07} \quad \checkmark \text{ MCA}$ 12 semi-circles cut form 6 boards/<i>12 halfrondes word uit 6 borde gesny</i> $\text{Cost/Koste} = \text{R387,07} \times 6 \quad \checkmark \text{ A}$ $= \text{R2 322,40} \quad \checkmark \text{ CA}$ OR/OF $\text{Volumewood/hout} = 2,7 \text{ m} \times 2,7 \text{ m} \times 0,038 \text{ m} \quad \checkmark \text{ SF} \quad \checkmark \text{ C}$ $= 0,27702 \text{ m}^3 \quad \checkmark \text{ CA}$ Volume of 6 woodenboards $\checkmark \text{ A}$ <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> = $1,66212 \times \text{R1 215}$ $= \text{R2 019,48} \quad \checkmark \text{ MA}$ Cost with VAT/<i>Koste met BTW</i> $= \text{R2 019,48} + (15\% \times \text{R2 019,48}) \quad \checkmark \text{ MCA}$ $= \text{R2 322,40} \quad \checkmark \text{ CA}$ OR/OF Price of wood including VAT/<i>Prys van hout BTW ingesluit</i> $= \text{R1 215} \times 1,15 = \text{R1 397,25} \quad \checkmark \text{ MCA}$ $\text{Volume wood/hout} = 2,7 \text{ m} \times 2,7 \text{ m} \times 0,038 \text{ m} \quad \checkmark \text{ SF} \quad \checkmark \text{ C}$ $= 0,27702 \text{ m}^3 \quad \checkmark \text{ CA}$ Cost/Koste = $\text{R1 397,25} \times 0,27702$ $= \text{R387,07} \quad \checkmark \text{ MA}$ Cost for 12 semicircles/<i>Koste vir 12 halvesirkels</i> $= \text{R387,07} \times 6 \quad \checkmark \text{ A}$ $= \text{R2 322,40} \quad \checkmark \text{ CA}$	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/Oplossing	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 $= \frac{66+67}{2} \quad \checkmark \text{ RT } \checkmark \text{ M}$ $= 66,5 \quad \checkmark \text{ CA}$	1RT correct value 1M median concept 1CA simplification (3)	D L2
3.1.3	✓ MA Mean/Gemiddeld = $\frac{Y (\% \text{ mark}) + 1\,443}{18} = 84 \quad \checkmark \text{ MA}$ $Y (\% \text{ mark}) = 18 \times 84 - 1\,443 \quad \checkmark \text{ M}$ $= 69\% \quad \checkmark \text{ CA}$ OR/OF $18 \times 84 = 1\,512 \quad \checkmark \text{ MA}$ ✓ MA $Y + 1443 = 1\,512$ $Y = 1\,512 - 1\,443 \quad \checkmark \text{ M}$ $= 69\% \quad \checkmark \text{ CA}$	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	$Q_3/K_3 = 71\% \quad \checkmark \text{ A}$ $Q_1/K_1 = 61\% \quad \checkmark \text{ A}$ $IQR = Q_3 - Q_1 / IKO = K_3 - K_1$ $= 71\% - 61\% \quad \checkmark \text{ MCA}$ $= 10\% \quad \checkmark \text{ CA}$	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	Facing oncoming traffic/Sy gaan in aankomende verkeer vasry $\checkmark\checkmark O$ OR/OF One way road/Dit is 'n eenrigtingpad $\checkmark\checkmark O$	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/Oplissing	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]	

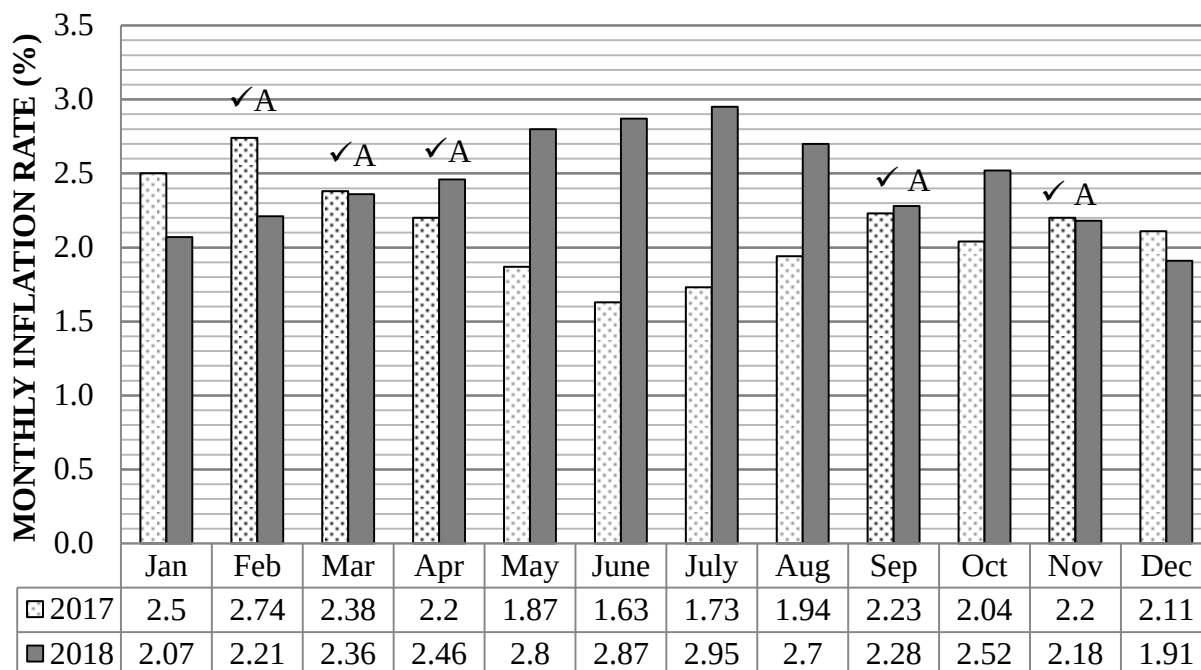
QUESTION/VRAAG4 [34 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.1.1	$P_{(\text{odd seat/oneve})} = \frac{2}{288} \times 100\%$ $= 0,69\%$	1A numerator 1A total seats 1CA simplification (3)	L2 P
4.1.2	$\checkmark$ RT D10 $\checkmark$ RT	1RT row 1RT seat (2)	L2 MP
4.1.3	Person at D7: - Turn left walk towards the corridor./<i>Draai links en loop na die gang.</i> $\checkmark$ A - Turn right walk towards the stage./<i>Draai regs en loop na die verhoog.</i> $\checkmark$ A - At end of the corridor turn left./<i>Aan die einde van die gang draai links.</i> $\checkmark$ A - Walk towards the last seat in the front of section B./<i>Loop na die laastesitplek in afdeling B.</i> $\checkmark$ A	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: $\text{Adults/Volwassenes: } 150 \times \$28,60 = \$4\,290$ $\text{Students/Studente: } 57 \times \$26,40 = \$1\,504,80$ $\text{Kids/Kinders: } 33 \times \$17,60 = \$580,80$ 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/Oplissing	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 / Volwassenes ✓ MCA Price excl. VAT/Prys sonder BTW = $\\$28,60 \times \frac{100}{110} = \\26 ✓ MA Total amount/Totale bedrag = $26 \times 150 = \\$3\,900$ ✓ CA Student /Studente Price excl. VAT /Prys sonder BTW = $\\$26,40 \times \frac{100}{110} = \\24 Total amount/Totale bedrag = $\\$24 \times 57 = \\$1\,368$ ✓ CA Children/Kinders Price excl. VAT/ Prys sonder BTW = $\\$17,60 \times \frac{100}{110} = \\16 Total amount/Totale bedrag = $\\$16 \times 33 = \\528 ✓ CA Total collection/ Totale insameling = $3\,900 + 1\,368 + 528$ ✓ MCA = $\\$5\,796$ ✓ CA Claim is CORRECT/Opmerking is KORREK ✓ O	OR/OF 1MCA dividing by 1,10 1MA multiply tariff by relevant total patrons. 1CA amount 1CA amount 1CA amount 1CA amount 1MCA total collection 1CA amount excl. VAT 1O conclusion (8)	
4.1.5	Cost in USD/Koste in VSD ✓RT = $\\$30,50 \times 0,71$ = 21,655 USD/VSD ✓ MCA Cost in rand/Koste in rand = $\\$21,655 \times R14,43/\\$ = R312,48 ✓ MCA OR/OF Conversion factor ZAR to AUD /Herleidingsfaktor : $R14,43 \times 0,71 = R10,2453$ ✓ A ✓RT $\\$30,50 \times R10,2453$ = R312,48 ✓ MCA OR/OF Conversion to ZAR/ Herlei na ZAR ✓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% ✓ CA

1A 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 ✓ CA

He is incorrect/Hy is NIE korrek NIE ✓ O

1RT 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 × 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 × 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>: Cost of car/<i>Koste van motor</i> = \$156 831,36 × 102,18%^{✓ RT} = \$160 250,28^{✓ MCA}^{✓ CA} January/<i>Januarie</i> Cost of car/<i>Koste</i> = \$ 160 250,28 × 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 × 1,0218 × 1,0191 = AUD 163 311,0641^{✓ CA} Increase/<i>Verhoging</i> = AUD 163 311,06 – AUD 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

	OR/OF ✓RT ✓MCA December price /<i>Desember prys</i> = AUD 156 831,36 × 1,0218 = AUD 160 250,28 ✓CA Januaryprice/<i>Januarie prys</i> = AUD 160 250,28 × 1,0191 = AUD 163 311,06 ✓CA Adding the increase to the price in November <i>Tel die verhoging by die prys in November</i> = AUD 156 831,36 + AUD 6 500 = AUD 163 331,36 ✓CA Therefore/<i>dus</i>AUD 163 331,36 ≠ AUD 163 311,06 Incorrect / <i>Nie korrek nie</i> ✓O	OR/OF 1RT correct rate 1MCA Increasing by % 1CA simplification 1CA simplification 1CA increase 1O opinion	
	OR/OF Price end October = AUD 156 831,36 January price/<i>Januarie prys</i> ✓RT ✓MCA = AUD 156 831,36 × 1,0218 × 1,0191 ✓M = AUD 163 311,0641 ✓CA Subtracting stated increase / <i>Trek die beweerde verhoging af</i> AUD 163 311,0641 – AUD 6 500 = AUD 156 811,06		