

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
0	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*.

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 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.

LET WEL:

- As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.
- As 'n kandidaat'n antwoord van 'n vraagdoodtrek (kanselleer) ennieoordoennie, sien die doodgetrekte (gekanselleerde) pogingna.
- Volgehoueakkuraatheid (CA) word in ALLE aspekte van die nasienriglynetoegepas op voorwaarde dat ten minste een van die waardes korrek is, dithou op by die tweedeberekeningsfout.
- Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.

QUES	STION/VRAAG1 [39 MARKS/PUNTE]		
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1	Slovakia/Slowakye (diff. 2015 -16):		D L2
	✓RT 163 740 – 161 906 ✓MA	1 RT correct values	
	= 1 834 ✓ CA	1MA method of subtraction 1CA answer (3)	
1.1.2			D
	Range = highest - lowest \checkmark M	1M Range concept	L2
	Omvang = hoogste – kleinste \checkmark RT 2 947 664 = 2 970 436 – N	1RT highest value	
	$\mathbf{N} = 22772 \qquad \checkmark \mathbf{CA}$	1CA simplification AO (3)	
1.1.3	✓ O ✓ O Number of learners enrolled decreased from 2014/2015/2016		D L4
	OR The number of learners decreased every year	10 decrease 10 time	
	Getal ingeskrewe leerders in Griekeland neem vanaf 2014/2015/2016 af		
	OF Die getal leerder neem jaarliks af	(2)	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.4	% increase(Turkey)/% verhoging (Turkye) $= \frac{1221165 - 1064190}{1064190} \times 100\%$ $= \frac{156975}{1064190} \times 100\%$	1M using correct formula 1MA subtractingcorrect values 1CAsimplification	D L3
	= 14,75 % ✓CA % increase(United Kingdom) /% verhoging (VerenigdeKoninkryk) = \frac{2248162-1596803}{1596803} \times 100% ✓MA	1MA subtractingcorrect values	
	= 40,79 % ✓CA United Kingdom has the biggest percentage ✓CA increase/Verenigde Koninkryk het die grootste persentasie verhoging.	1CAsimplificationas a percentage 1CA county	
	OR/OF	OR/OF	
	Turkey: (1 221 165 ÷ 1 064 190) ×100% = 114,75%	1MA subtracting correct values	
	% increase (Turkey) = 114,75% −100% ✓M = 14,75% ✓CA	1M using correct formula 1CA simplification	
	✓MA (United Kingdom): (2 248 162 ÷ 1 596 803) ×100% = 140,79%	1MA subtracting correct values	
	% increase United Kingdom = 140,79% - 100% = 40,79%	1CAsimplification as a percentage 1CA county NPR (6)	
1.1.5	Probability (decline 2015-2016) / Waarskynlikheid $= \frac{3}{11} \checkmark A$	1A numerator 1Adenominator	P L3
	≈ 0,27 ✓CA	1CA as decimal NPR (3)	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.6	Denmark cost/Denemark koste = €520,83 × 284 655	1RT correct values 1A cost 1RT correct values 1A cost 1CA simplified ratioin correct order	D L4
	The statement is NOT VALID/Bewering is NIE GELDIG NIE	1O verification	
	OR/OF	OR/OF	
	Accept per year or per month /Aanvaar per jaar of per maand		
	2016 Denmark : 2016 Slovenia VRT VRT 284 655 × 520,83 × 12 : 85 407 × 350 × 12 VA VA 1 779 082 364 : 358 709 400 4,959: 1 VCA The statement is NOT VALID/Bewering is NIE GELDIG	1RT Denmark values 1RT Slovenia values 1A cost 1A cost 1CA simplified ratio in correct order 1O verification	
	NIE OR/OF	OR/OF	
	Denmark: $\notin 520,83 \times 12 = \notin 6249.96$ per year /per jaar $\notin 6249,96 \times 284.655$ \checkmark RT	1RT correct values	
	= € 1 779 082 364 ✓A	1A cost	
	Slovenia : € $350 \times 12 = € 4200$ per year /per jaar € 4200×85407	1RT correct values 1A cost	
	€ 1 779 082 364 : € 358709 400		
	(€ 1 779 082 364 ÷ € 358 709 400) : (€ 358 709 400 ÷		
	€ 358 709 400) ✓CA = 4,9596:1	1CA simplified ratioin correct order	
	The statement is NOT VALID ✓O	10 verification NPR (6)	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.2.1	Profit/Wins = R30 × 120% = R36 \checkmark MA Profit per marble / Wins per albaster= $\frac{R36}{100}$ = R0,36 \checkmark CA	1MA calculating profit 1CA profit per marble	F L3
	Cost price per marble/Kosprys per albaster = $\frac{R30}{100}$ = R0,30 A	1A price per marble	
	Selling price/Verkoopprys = R0,36 + R0,30 = R0,66 per marble/albaster ✓MCA	1MCA simplification	
	OR/OF	OR/OF	
	R30 per 100 marbles/albastersis 100% Profit on 100 marbles to yield 120% per pack Wins op 100 albasters om 120% per pakte gee $= \frac{\text{R30} \times 120\%}{100\%}$	1MA calculating profit	
	= R36 per pack		
	Price of selling 1 marble is/Verkoopprys per albaster is: $\frac{R30 + R36}{100} $	1MCA cost plus profit 1M dividing by 100	
	= R0,66 ✓CA	1CA simplification	
	OR/OF ✓MA	OR/OF	
	Selling price/verkoopprys = R30 × 220% = R66 ✓ MCA Price per marble/Prys per albaster	1MA calculating % increase 1MCA selling price	
	$= \frac{R66}{100} = R0,66 \checkmark M$ OR/OF $\checkmark MA$ $30 P0.20$	1M dividing by 100 1CA simplification OR/OF 1MA dividing by 100	
	Price per marble/Prys per albaster = $\frac{100}{100}$ = R0,30		
	Selling price/verkoopprys = 0.3×2.2 \checkmark MCA = R0,66	1M calculating % increase 1MCA selling price 1CA simplification	
	OR/OF	OR/OF	
	Selling price /verkoopprys = $30 \times 2,2 = R66$ \checkmark MCA Price per marble/Prys per albaster = $\frac{66}{100}$ \checkmark CA \checkmark CA	1MA calculating % increase 1MCA selling price 1M dividing by 100 1CA simplification NPR (4)	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.2.2	Radius container/houer = $\frac{6.4}{2}$ \checkmark C = 3.2 cm	1C conversion 1MCA finding the radius	M L4
	Volume of a cylinder/ Volume van 'n silinder $= \pi \times \text{radius}^2 \times \text{height}$ $= 3,142 \times (3,2 \text{ cm})^2 \times 30 \text{cm}$ $= 965,2224 \text{ cm}^3 \qquad \checkmark \text{CA}$ Volume of 2 bags of marbles/volume van 2sakkealbasters	1SF both radius and height 1CA simplification	
	$= 2 \times 2 \text{ cm}^{3} \times 100 \checkmark \text{MA}$ $= 400 \text{ cm}^{3} \checkmark \text{CA}$ Vol. Water to fill container/Vol.water om houertevul} $= 965,2224 \text{ cm}^{3} - 400 \text{ cm}^{3} \checkmark \text{MCA}$ $= 565,2224 \text{ cm}^{3} \checkmark \text{CA}$	1MA Vol. of total marbles 1CA simplification 1MCA subtraction 1CA simplification	
	$\frac{1}{2} \ell = 500 \text{ cm}^3$ Statement is valid/Bewering is geldig OR/OF	10 conclusion OR/OF	
	Radius of container/houer = $\frac{6.4}{2}$ = 3,2 cm Volume of a cylinder/ Volume van 'n silinder \checkmark 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 cm ³ OR / <i>OF</i> 0,9652224 litres \checkmark CA Volume of 2 bags of marbles/volume van 2 sakke albasters = $2 \times 2 \text{ cm}^3 \times 100 \checkmark \text{MA}$ = $400 \text{ cm}^3 \text{OR}/OF$ 0,4 litres Vol. Water to fill container/Vol.water om houertevul = 965,2224 cm ³ - 400 cm^3 $\checkmark \text{MCA}$	1C conversion 1MCA finding the radius 1SF both radius and height 1CA simplification 1MA Vol. of total marbles 1CA simplification 1MCA subtraction of volumes	
	= 565,2224 cm ³ \checkmark CA OR / <i>OF</i> = 0,9652224 ℓ – 0,4 ℓ = 0,5652224 ℓ More than 0,5 ℓ VALID / meer as 0,5 ℓ GELDIG \checkmark O	1CA simplification 1O conclusion	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF	OR/OF	
	Radius of container/houer = $\frac{\checkmark \text{C}}{2}$ = 3,2 cm $\checkmark \text{MCA}$	1C conversion 1MCA finding the radius	
	Volume of a cylinder/ Volume van 'n silinder		
	$= \pi \times \text{radius}^2 \times \text{height}$ $= 3,142 \times 3,2 \text{ cm} \times 3,2 \text{ cm} \times 30 \text{ cm}$ $= 965,2224 \text{ cm}^3 \text{OR} / \text{OF} 0,9652224 \text{ litres}$	1SF both radius and height 1CA simplification	
	Volume of 2 bags of marbles/volume van 2 sakke albasters = $2 \times 2 \text{ cm}^3 \times 100$ $\checkmark \text{CA}$ = $400 \text{ cm}^3 \text{OR/OF} 0$,4 litres	1MA Vol. of total marbles 1CA simplification	
	✓ MCA $✓$ CA $400 \text{ cm}^3 + 500 \text{ cm}^3 = 900 \text{ cm}^3$	1MCA addition 1CA simplification	
	This is less than 965,2224 cm³ of the cylinder, VALID ✓O Minder as 965,2224 cm³ van die silinder, GELDIG	10 conclusion (9)	
1.2.3	Outer diameter/Buitemiddellyn = $64 \text{ mm} + 2 \times 0.5 \text{ mm} = 65 \text{ mm}$ $\checkmark \text{ MA}$	1MAincreased diameter	M L2
	Circumference = $\pi \times$ diameter /Omtrek = $\pi \times$ middellyn = 3,142 ×(6,5) cm = 20,423 cm \checkmark CA	1SF substitution 1CA simplification	
	OR/OF	OR/OF	
	Radius = $32 \text{ mm} + 0.5 \text{ mm} = 32.5 \text{ mm}$ $\checkmark \text{ MA}$ = 3.25 cm	1MA increased radius	
	Circumference/omtrek= $2 \times \pi \times \text{radius}$ = $2 \times 3,142 \times 3,25 \text{ cm}$ = $20,423 \text{ cm}$ $\checkmark \text{CA}$	1SF substitution 1CA simplification NPR (3)	
		[39]	

QUES	STION/VRAAG2 [38 MARKS/PUNTE]		
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.1	Total/ $Totaal = 2 \times (79 \times R244,35)$ $= R38 607,30 $	1A number of personnel 1A tariff 1CA simplification OR/OF 1A CM amount 1A IM amount	F L2
	Total/ <i>Totaal</i> = R19 303,65 + R19 303,65 = R38 607,30	1CA simplification (3)	
2.1.2	A (Hours worked by SM)/A(Ure gewerk deur SM) $= \frac{R13763,75}{R211,75/h} $	1MA numerator and denominator 1CA simplification (2)	M L2
2.1.3 (a)	Number of marking hours/Getalnasienure $= \frac{2808 \times 28}{23 \times 60} \checkmark SF$ $= 56,97391303 \text{ hours/} ure \approx 57 \text{ hours /} ure$ $1^{\text{st}} \text{ day (Monday/} Maandag): 14:00 \text{ to } 20:00 = 5 \text{ hours/} ure \checkmark A$ $\text{Tuesday to Saturday/} Dinsdag \text{ tot Saterdag}: 50 \text{ hours/} ure$ $\text{Sunday/} Sondag = 2 \text{ hours/} ure \qquad \checkmark A$ $\text{Total/} Totaal 5 + 50 + 2 = 57 \text{ hrs./} ure$ $\checkmark CA$ $\text{Finish at } 10:00 \text{ on Sunday.}$ $EindigSondag \text{ om } 10:00$	1A hours of complete days to last day 1CA day& time	M L3
	Number of marking hours/ Getal nasien ure VSF $= \frac{2808 \times 28}{23 \times 60} = 56,97391303 \text{ hours } \approx 57 \text{ hours } \checkmark \text{CA}$ VSF 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 VA $= 5h + 10h + 10h + 10h + 10h + 10h + 2h$ $= 57 \text{ hours /ure}$ Sunday/Sondag = $08:00 + 2h$ $= 10:00$ VCA	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	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF	OR/OF	
	Number of marking hours/ Getal nasien ure $ \begin{array}{c} \checkmark \text{SF} \\ = \frac{2808 \times 28}{3} \end{array} $	1SF correct numerator 1SF correct denominator	
	$= \frac{1}{23 \times 60} \checkmark SF$ $= 56,97391303 \text{ hours/} ure \approx 57 \text{ hours/} ure$	1CA simplification/hours	
	57hours: Monday/Maandag = 5hrs/uur A Rest of the days/Res van die dae = 57hrs - 5 hrs = 52 hrs/uur	1A hours of 1 st day	
	Full marking days/Vol merk dae = $\frac{52}{10}$		
	= 5,2 days/dae Therefore/dus 5 days + 0,2 days 5 days Tuesday to Saturday / 5 dae is Dinsdag tot Saterdag		
	$0.2 \text{ days/} dae \times 10 = 2 \text{hrs for Sunday/} uur vir Sondag}$	1A hours of complete days to last day	
	Ends / eindig Sunday/Sondag 10:00	1CA day& time	
	OR/OF Number of marking hours/ Getal nasien ure	OR/OF	
	$= \frac{2808 \times 28}{23 \times 60} \checkmark SF$ $\approx 57 \text{ hours/} uur \checkmark CA$	1SF correct numerator 1SF correct denominator 1CA simplification/hours	
	14:00 to 14:00 = 10 working hours /werks ure ✓ A Monday 14:00 to Saturday 14:00 = 50 hours Maandag 14:00 tot Saterdag 14:00 = 50 uur	1A full day's work	
	Saturday 14:00 to Sunday 10:00 = 7 hours Saterdag14:00 tot Sondag 10:00 = 7 uur ✓A	1A hours of complete days	
	Finish at 10:00 on Sunday ✓ CA Eindig Sondag 10:00	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	1MCA hrs less from marking [CA from 2.1.3 (a)]	M L3
	2 hrs of Sunday and last 3 hrs of Saturday not worked 2 uur van Sondagen die laaste 3 ure van Saterdagniegewerk	1A separation of hrs	
	20:00 - 16:00 = 3 hrs excluding supper/uur sonder aandete	1CA time 1CA day	
	✓ CA ✓ CA Finish at 16:15 on Saturday./EindigSaterdag om 16:15 (Including tea break/teepouseingesluit)		
	OR/OF ✓ A ✓ MA	OR/OF	
	52 hours claimed = 5 (Monday) + 40 (Tue to Fri) + 7 (Sat) 52 uregeëis = 5 (Maandag) + 40(Di tot Vry) + 7(Sat)	1MA breaking up the time 1A the hours per day	
	Finish Saturday/EindigSaterdag ✓ CA 8:00 + 7 hours + 15 min (tea 1) + 45 min (lunch) + 15	1CA day 1CA time	
	min (tea 2) = 16:15 ✓ CA [also accept 16:00 since they are not paid for tea time] [aanvaarook 16:00 aangesienhullenievirteepousebetaal word nie]	AO	
	were mer	(4)	
2.1.3 (c)	Some candidates omitted some questions or sub-sections. Sommigekandidatelaatvrae of onderafdelingsuit. OR/OF Some candidates wrote short answers (skipping other steps or lines or sentences). Sommigekandidateskryfverkorteantwoorde(laatstappeuit) OR/OF	2O reason	M L4
	Responses were very clear to follow. Antwoorde was baie maklik omtevolg OR/OF VV O		
	Some markers mark fast. Sommigenasienerskonvinnig nasien. OR/OF ✓✓ O		
	Markers took shorter breaks Merkers het korter pouses geneem		
		(2)	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.1.4	Transport/Vervoer = 11 542 km × R3,26 / km ✓ MA	1MA calculation	F L4
	= R 37 626,92 ✓ CA	1CA amount	
	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	1MCA multiply correct number of persons by amount claimed 1CA simplification	
	= R378 870, 97.	1CA total	
	R400 000 budget will be enough/begroting is genoegsaam.	10 conclusion (6)	
2.2.1	Diameter = $1 \text{ m} + 0.8 \text{ m} + 0.8 \text{ m} = 2.6 \text{ m}$ Area of big circle/Oppervlakte van grootsirkel	1A diameter	M L4
	$= 3.142 \times \left(\frac{2.6 \mathrm{m}}{2}\right)^2 \qquad \checkmark \mathrm{SF}$	1SF circle formula	
	$= 5,30998 \text{ m}^2 \qquad \checkmark \text{CA}$	1CA area big circle	
	Area of the small circle/kleinsirkel = $3,142 \times (0,5 \text{ m})^2$ = $0,7855 \text{ m}^2$ $\checkmark MA$	1MAarea small circle	
	Area of the wood/Oppervlakte van hout = 2,7 m \times 2,7 m = 7,29 m ² \checkmark A	1A area of the wood	
	Cut-off/Afgesny = 7,29 m ² – 5,30998 m ² + 0,7855 m ² \checkmark MCA = 1,98002 m ² + 0,7855 m ² \approx 2,77 m ² \checkmark CA Statement is NOT valid/Bewering is NIE geldigNIE \checkmark O OR/OF	1MCA subtracting total circles from square area wood 1CA area 1O conclusion	
	Cut-off wood (in m²) /Afgesnydehout (in m²) $= \text{Area}_{(\text{square})} - [\text{Area}_{(\text{big circle})} - \text{Area}_{(\text{small circle})}]$ $= 2.7 \times 2.7 - [3.142 (0.8 + 0.5)^2 - 3.142 (0.5)^2]$ $\checkmark A \qquad \checkmark CA \qquad \checkmark MA$ $= 7.29 - [5.30998 - 0.7855]$ $= 7.29 - 4.52448 \qquad \checkmark M$ $= 2.76552. \qquad \checkmark CA$ Which is more than 2,01. Hence, the statement is not valid Dit is meer as die 2,01, gevolglik is die beweringniegeldignie.	OR/OF 1A radius big circle 1SF circle formula 1CA area big circle 1MAarea small circle 1A area of the wood 1M subtracting total circles from square area wood 1CA area 1O conclusion	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF	OR/OF	
	Area of semi-circle = $\frac{1}{2}\pi \times \mathbf{r}^2$ \checkmark_A Outer circle/Buite sirkel = $\frac{1}{2} \times 3,142 \times (1,3 \text{ m})^2 \checkmark \text{SF}$	1A diameter/ radius 1SF circle formula	
	$= 2,65499 \text{m}^2 \checkmark \text{CA}$	1CA area big circle	
	Inner circle/Binne sirke $l = \frac{1}{2} \times 3,142 \times (0,5 \text{ m})^2$		
	$= 0.39275 \text{ m}^2 \checkmark \text{MA}$	1MA area small circle	
	$Desk/tafel = 2,65488m^2 - 0,39275m^2$		
	$= 2,26224 \text{m}^2 \checkmark \text{CA}$	1CA area of the wood	
	Total area/Totale oppervlak = 2,26224 m ² × 2 = 4,52448 m ² \checkmark MCA	1MCA total circles area	
	Cut-off Area/Afsny hout = $7,29 \text{ m}^2 - 4,452448 \text{ m}^2$	104	
	$= 2,7552 \text{ m}^2 \checkmark \text{CA}$	1CA area	
	Statement not valid /Bewering is nie GELDIG nie ✓O	10 conclusion	
	OR/OF Area of big semi-circle /Oppervlakte van groot halfsirkel $ \begin{array}{c} \checkmark A \checkmark SF \\ = 3,142 \times 1,3^2 \div 2 = 2,65499 \text{ m}^2 \end{array} $	OR/OF 1A diameter/ radius 1SF circle formula 1CA area big circle	
	Area of small semi-circle /Oppervlakte vanklein halfsirkel = $3.142 \times 0.5^2 \div 2 = 0.3927 \text{ m}^2$ \checkmark MA One semi-circular top/ Een halfsirkel bo-kant = $2.65499 - 0.3927 = 2.26224 \text{ m}^2$	1MA area small circle	
	Area of two semi-circular tops/ <i>Oppervlakte van 2 halfsirkels</i> = $2,26224 \times 2 = 4,52448 \text{ m}^2 \checkmark MCA$	1MCA total circles area	
	Square Board/ <i>Vierkantige hout</i> = $2.7 \times 2.7 = 7.29 \text{ m}^2$ \checkmark A	1A area of the wood	
	Cut-off $/Afsny = 7,29 \text{ m}^2 - 4,52448 \text{ m}^2 \approx 2,77 \text{ m}^2 \checkmark \text{CA}$	1CA area	
	Statement not valid/Bewering is nie GELDIG nie ✓ O	10 conclusion (8)	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.2.2	Volume wood/hout = 2,7 m × 2,7 m × 0,038 m = 0,27702 m ³ \checkmark CA Price of one piece of wood excl.VAT Prys van een stuk hout BTW uitgesluit	1SF volume of wood 1C conversion 1CA simplification	F L3
	$= 0.27702 \text{ m}^3 \times \text{R1 215} = \text{R336,58} \checkmark \text{MA}$	1MA calculating cost	
	Price including VAT/Prys BTW ingesluit = R336,58 × 1,15 = R387,07 ✓ MCA	1MCA adding 15%	
	12 semi-circles cut form 6 boards/12 halfrondes word uit 6 borde gesny		
	$Cost/Koste = R387,07 \times 6$ $= R2 322,40 $ \checkmark CA	1A 6 boards 1CA cost	
	OR/OF	OR/OF	
	Volumewood/hout = $2.7 \text{ m} \times 2.7 \text{ m} \times 0.038 \text{ m}$ $= 0.27702 \text{ m}^3 \checkmark \text{CA}$	1SF volume of wood 1C conversion 1CA simplification	
	Volume of 6 woodenboards \checkmark A Volume vir 6 houtborde= 0,27702 m ³ × 6 = 1,66212 m ³	1A 6 boards	
	Cost of 6 boards/ <i>Koste van 6 borde</i> = 1,66212 × R1 215 = R2 019,48 ✓ MA Cost with VAT/ <i>Koste met BTW</i>	1MA calculating cost	
	✓ MCA = R2 019,48 + (15% ×R2 019,48)	1MCA adding 15%	
	$= R2\ 322,40$ \checkmark CA	1CA simplification	
	OR/OF	OR/OF	
	Price of wood including VAT/ <i>Prys van hout BTW ingesluit</i> = R1 215 × 1,15 = R1 397,25 ✓ MCA	1MCA adding 15%	
	Volume wood/hout = 2,7 m × 2,7 m × 0,038 m = 0,27702 m ³ \checkmark CA	1SF volume of wood 1C conversion 1CA simplification	
	Cost/Koste = R1 397,25 \times 0,27702 = R387,07 \checkmark MA	1MA calculating cost	
	Cost for 12 semicircles/Koste vir 12halfsirkels = R387,07 × 6 ✓ A = R2 322,40 ✓ CA	1A 6 boards 1CA simplification (7)	
		[38]	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
3.1.1	✓ A The data is discrete./Die data is diskreet ✓ ✓ O	1Adiscrete	D L4
	Percentages run from 0 to 100 and depends on the total of the test and the mark obtained. It is presented as whole numbers. 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.	2O opinion	
	toets en die punt bendat. Ther is dit dangebied as neetgetaite.	(3)	D
3.1.2	Median score test 2/mediaan	1000	L2
	$= \frac{66+67}{2} \qquad \checkmark RT \checkmark M$	1RT correct value 1M median concept	
	$=66,5$ \checkmark CA	1CA simplification	
	,	(3)	D
3.1.3	Mean/Gemiddeld = $\frac{Y (\% \text{ mark}) + 1443}{18} = 84$ $\checkmark MA$	1MA adding all known% marks 1MA mean concept	L3
	$Y (\% \text{ mark}) = 18 \times 84 - 1443 \checkmark M$	1M changing the subject	
	= 69% ✓ CA	1CA simplification	
	OR/OF	OR/OF	
	$18 \times 84 = 1512 \checkmark MA$	1MA mean concept	
	\checkmark MA Y + 1443 = 1 512	1MA adding all known %	
		marks 1M changing the subject	
	$Y = 1512 - 1443 \checkmark M$		
	= 69% √ CA	1CA simplification (4)	
	√√RT		D
3.1.4	Helen: $87\% - 57\% = 30\%$	2RT candidate	L3
	✓RT Kevin: 97% –67% = 30%	1RT candidate	
	[Note: Afrikaans scripts the answers will be		
	Paul &Oscar]	(3)	
3.1.5	$Q_3/K_3 = 71\%$ \checkmark A	1A quartile 3	D L3
	$Q_1/K_I = 61\% \qquad \checkmark A$	1 A quartile O	
	$IQR = Q_3 - Q_1/IKO = K_3 - K_1$	1A quartile Q ₁	
	= 71% − 61% ✓MCA	1MCA IQR concept	
		1	ĺ

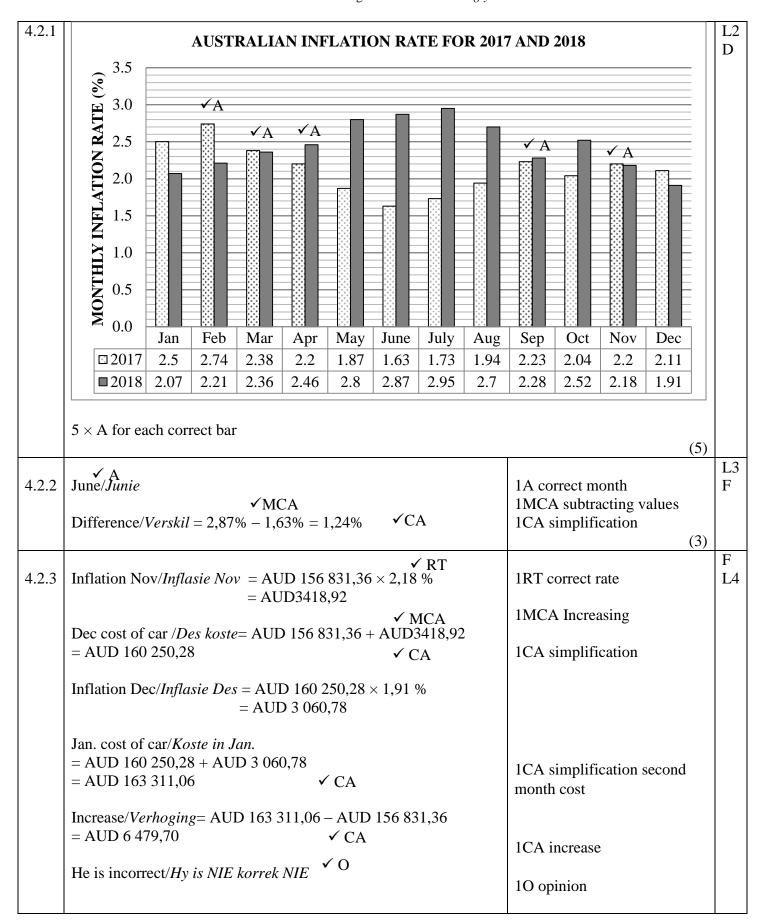
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
_		CA value of Y from 3.1.3	P
3.1.6	$P_{\text{(non distinction/nie onderskeiding)}} = \frac{8}{18} $	1A numerator	L3
	(non distinction/nie onderskeiding) – $\frac{1}{18}$ \checkmark A	1A denominator	
	$=\frac{4}{9}$ \checkmark CA	1.64	
	$=\frac{1}{9}$	1CAsimplification	
	OR/OF	OR/OF	
	$P_{\text{(distinction/onderskeiding)}} = \frac{10}{18} = \frac{5}{9}$ \checkmark A	1A numerator	
	\checkmark MA $\stackrel{\checkmark}{}_{5}$	1MA subtracting from 1	
	$P_{\text{(not distinction/nieonderskeiding)}} = 1 - \frac{5}{9} = \frac{4}{9}$ \(\sigma \text{CA}\)	1CA simplification	
	9 9	(3)	
3.1.7		(6)	D
0,1,	$Mode/Modus = 73\%$ $\checkmark \checkmark A$	2A modal value	L2
		(2)	
	4.6		MP
3.2.1	View Terrace \mathbf{OR}/\mathbf{OF} View \mathbf{OR}/\mathbf{OF} Terrace \checkmark RT	2RT Reading from the map	L2
		(2)	
222	√√0		MP
3.2.2	Facing oncoming traffic/Sy gaanin aankomende verkeer vasry	20	L4
	OR/OF	2O reason	
	On	(2)	
	One way road/Dit is 'n eenrigtingpad	(2)	
2.2.2	N d // A		MP
3.2.3	North west/Noordwes or/of NW	2A correctdirection	L2
	✓A	(2)	MP
3.2.4	$\frac{VA}{21 \text{ mm}} = 110 \text{ yards/} jaart$	1A measuring scale	L3
	\checkmark Δ		
	$XY = \frac{50 \times 110}{21}$	1A measuring distance	
	$AT = \frac{1}{21} \checkmark M$	1M working with scale	
	VV = 261 004 yanda/iaaut (2)		
	$XY = 261,904$ yards/jaart \checkmark CA	104	
	≈ 262 yards/ <i>jaart</i>	1CA answer	
	[Bar scale accept measurements in the range 20 mm to 23 mm	NPR	
	For XY measurements in the range 47 mm to 53 mm]	(4)	
			MP
3.2.5	Parking offence Parkeer boete ✓✓O		L4
(a)	Street parking is limited to 1 Parkering is beperk tot 1 uur		
	hour before 5 pm voor 5nm.	2O Reason for charge	
	Exceededallowable duration Oorskryding van toegelate		
	of parking. parkering		
	Free parking time was over Gratis parkeering het		
	verstryk	(2)	
	Parked for more than 1 hour. Parkeer vir meer as 1 uur		

\mathbf{Q}/V	Solution/Oplossing	Explanation/Verduideliking	T&L
3.2.5 (b)	From/Vanaf 12:00 - 15:25 = $(3-1) + \frac{25}{60}$ \checkmark C $= 2 ,4166666667 \text{ hours/uur}$ Rate per hour/Koers per uur= $\frac{£79,75}{2,4166666667}$ \checkmark M	1M subtracting free hour 1C conversion minutes into hours 1CA total charged hours 1M division by hours	F L3
	=£33 ✓CA	1CA simplification rounded to the nearest pound	
	OR/OF	OR/OF	
	From/Vanaf 12:00 - 15:25 = 3 h 25 min		
	Hours she was charged for /Ure waarvoor sy beboet is $\checkmark M$ $3 \text{ h } 25 \text{ min} - 1 \text{ h} = 2 \text{ h } 25 \text{ min}$ $2 \text{h } 25 \text{ min} = 145 \text{ min}$ $\checkmark C$ Rate per hour/Koers per uur = $\frac{79,75 \times 60}{145}$ $=\frac{4785}{145}$ $=£33$ $\checkmark CA$	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) [39]	

QUESTION/VRAAG4 [34 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.1.1	$P_{(\text{odd seat/onewe})} = \frac{2}{288} \times \frac{\checkmark A}{100\%}$	1A numerator 1Atotal seats	L2 P
	= 0,69% ✓CA	1CA simplification (3)	
4.1.2	✓ RT D10 ✓ RT	1RT row 1RT seat (2)	L2 MP
4.1.3	Person at D7:		L3 MP
	• Turn left walk towards the corridor./Draai links en loop na die gang.	1A turn left and walk	
	 Turn right walk towards the stage./Draai regs en loop na die verhoog. 	1A turn right towards stage	
	 ✓ A At end of the corridor turn left./Aan die einde van die gang draai links. 	1A turn left end of corridor	
	• Walk towards the last seat in the front of section B./Loop na die laastesitplek in afdeling B.	1A last seat; section B (4)	
4.1.4	Collection/Insameling: \checkmark MA Adults/Volwassenes: $150 \times \$28,60 = \$4\ 290$ Students/Studente: $57 \times \$26,40 = \$1\ 504,80$ \checkmark CA Kids/Kinders: $33 \times \$17,60 = \$\ 580,80$ \checkmark CA	1MA multiply tariff by relevant total patrons. 1CA amount 1CA amount 1CA amount	F L4
	Total collection/ <i>Totaalingesamel</i> = \$4 290 + \$1 504,80 + \$580,80 = \$6 375,60 ✓ MCA	1MCA total collection	
	Excluding VAT/Sonder BTW = $\frac{$6375,60}{1,10}$ = \$5 796	1MCA dividing by 1,10 1CA amount excl. VAT	
	✓ O Claim is CORRECT/Opmerking is KORREK	1O conclusion	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF	OR/OF	
	Adults/volwassenes = $53 + 57 + 40 = 150$		
	\sqrt{MA} Cost/Koste = \$28,60 × 150 = \$4 290	1MA multiply tariff by	
	Cost excl VAT /Koste BTW uitgesluit = \$4 290 ÷ 1,10 = \$3 900 ✓ CA	relevant total patrons. 1MCA dividing by 1,10 1CA amount	
	Students/ $Studente = 15 + 32 + 10 = 57$		
	$Cost/Koste = \$26,40 \times 57 = \$1504,80$		
	Cost excl VAT / <i>Koste BTW uitgesluit</i> = \$1 504,80 ÷ 1,10 = \$1 368 ✓ CA	1CA amount	
	Children = $9+15+9=33$		
	$Cost/Koste = $17,60 \times 33 = $580,80$		
	Cost excl VAT/Koste BTW uitgesluit = \$580,80 ÷ 1,10 = \$528 ✓ CA	1CA amount	
	Total/ <i>Totaal</i> = \$3 900 + \$1 368 + \$528 ✓ MCA = \$5 796 ✓ CA	1MCA total collection 1CA amount excl. VAT	
	The claim is correct/ <i>Opmerking is KORREK</i> ✓ O	10 conclusion	
	ODIOE	ODIOR	
	Section A/Afdeling A: \checkmark MA	OR/OF 1MA multiply tariff by	
	$= 53 \times 28,60 + 15 \times 26,40 + 9 \times 17,60$	relevant total patrons.	
	= 1 515,80 + 396,00 + 158,40= 2 070,20 ✓ CA	1CA amount	
	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 $ \checkmark CA	1CA amount	
	Section C/ Afdeling C:		
	$=40 \times 28,60 + 10 \times 26,40 + 9 \times 17,60$		
	$= 1\ 144,00 + 264,00 + 158,40 = 1\ 566,40$ \checkmark CA	1CA amount	
	Total amount of Sections = $2\ 070,20 + 2\ 739,00 + 1\ 566,40$		
	= \$6 375,60 ✓ MCA	1MCA total collection	
	Excluding VAT/Sonder BTW = $\frac{\$6375,60}{1,10} = \5796 \checkmark CA or/of	1MCA dividing by 1,10 1CA amount excl. VAT	
	or/of $\$5.796 \times 1,1 = \$6.375,60$ which equals total collection		
	Claim is CORRECT/Opmerking is KORREK ✓ O	1O conclusion	

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	OR/OF	OR/OF	
	Adult / Volwassenes ✓ MCA	1MCA dividing by 1,10	
	Price excl. VAT/Prys sonder BTW = $$28,60 \times \frac{100}{110} = 26 \checkmark MA Total amount/Totale bedrag = $26 \times 150 = $3900 \checkmark$ CA	1MA multiply tariff by relevant total patrons.	
		1CA amount	
	Student / Studente Price excl. VAT / Prys sonder BTW = \$26,40 × $\frac{100}{110}$ = \$24		
	Total amount/ <i>Totale bedrag</i> = $$24 \times 57 = $1368 \checkmark CA$	1CA amount	
	Children/Kinders		
	Price excl. VAT/ Prys sonder BTW = \$17,60 $\times \frac{100}{110}$ = \$16		
	Total amount/ <i>Totale bedrag</i> = $$16 \times 33 = \&528$ \checkmark CA	1CA amount	
	Total collection/ <i>Totale insameling</i> = 3 900 + 1 368 + 528 = \$5 796 ✓ CA	1MCA total collection 1CA amount excl. VAT	
	Claim is CORRECT/Opmerking is KORREK ✓ O	10 conclusion (8)	
4.1.5	Cost in USD/Koste in VSD		L2 F
	✓RT	1RTticket price	
	$= $30,50 \times 0,71 = 21,655 \text{ USD/VSD} \checkmark MCA$	1MCA answer in USD	
	Cost in rand/Koste in rand $= \$21,655 \times R14,43/\$$		
	= R312,48 ✓MCA	1MCA answer in rand	
	OR/OF	OR/OF	
	Conversion factor ZAR to AUD /Herleidingsfaktor:	1A Conversion factor	
	$R14,43 \times 0,71 = R10,2453 \checkmark A$ $\checkmark RT$ $\$30,50 \times R10,2453$	1RT ticket price	
	=R312,48 ✓MCA	1MCA answer in rand	
	OR/OF	OR/OF	
	Conversion to ZAR/ Herlei na ZAR		
	$= \$30,50 \times 0,71 \times R14,43 $ ✓ MCA	1RT ticket price 1MCA Conversion	
	= R312,48 ✓MCA	1MCA conversion 1MCA answer in rand (3)	



Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.2.3	OR/OF	OR/OF	F
	Inflation Nov/ <i>Inflasie Nov</i> = \$156 831,36 × 2,18 % RT = \$3418,92	1RT correct rate	L4
	✓ MCA	1MCA Increasing	
	Dec. cost of car /Des koste= \$ 156 831,36 + \$3418,92 = \$ 160 250,28 ✓ CA	1CA simplification	
	Inflation Dec/ <i>Inflasie Des</i> = \$ 160 250,28 × 1,91 % = \$ 3 060,78	1CA simplification second month inflation	
	Price increase = Inflation Nov + Inflation Dec Prysverhoging = Inflasie Nov + Inflasie Des = \$3418,92 + \$ 3 060,78		
	= \$ 6 479,70 ✓ CA	1CA increase	
	He is incorrect/Hy is NIE korrek NIE	1O opinion	
	OR/OF	OR/OF	
	December/ <i>Desember</i> :	1RT correct rate 1MCA Increasing by % 1CA simplification	
	January/ <i>Januarie</i> Cost of car/ <i>Koste</i> = \$ 160 250,28 × 101,91 % = \$ 163 311,06 ✓ CA	1CA simplification	
	Increase/ <i>Verhoging</i> = \$ 163 311,06 − \$156 831,36 = \$ 6 479,70 ✓ CA	1CA increase	
	He is incorrect/Hy is verkeerd ✓ O	10 opinion	
	OR/OF	•	
	Price in January /Prys in Januarie	OR/OF	
	✓ RT ✓ MCA ✓ CA = AUD 156 831,36 × 1,0218 × 1,0191 = AUD 163 311,0641 ✓ CA	1RT correct rate 1MCA Increasing 1CA Increasing 1CA simplification	
	Increase/ <i>Verhoging</i> = AUD 163 311,06 − AUD 156 831,36 = AUD 6 479,70	1CA increase 1O opinion	

OR/OF ✓ _{RT}	OR/OF
December price Desember prys = AUD 156 831,36 \times 1,0218 = AUD 160 250,28 \checkmark CA	1RT correct rate 1MCA Increasing by % 1CA simplification
Januaryprice/ <i>Januarie prys</i> = AUD 160 250,28 × 1,0191 = AUD 163 311,06	1CA simplification
Adding the increase to the price in November Tel die verhoging by die prys in November = AUD 156 831,36 + AUD 6 500	
= AUD 163 331,36 ✓CA	1CA increase
Therefore/dusAUD 163 331,36 ≠ AUD 163 311,06 Incorrect / Nie korrek nie ✓ O	1O opinion
OR/OF	OR/OF
Price end October = AUD 156 831,36 January price/Januarie prys ✓RT ✓MCA = AUD 156 831,36 × 1,0218 × 1,0191 = AUD 163 311,0641 ✓CA Subtracting stated increase / Trek die beweerde verhoging af AUD 163 311,0641 – AUD 6 500	1RT correct rate 1M Increasing by % 1M Increasing by % 1CA simplification
= AUD 156 811,06 \checkmark CA Therefore/dusAUD 156 831,36 \neq AUD 156 811,06	1CA comparing values
Incorrect/ Nie korrek nie ✓O	1O opinion (6)
	[34]
	TOTAL/TOTAAL:150