



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE NASIONALE SENIOR SETIFIKAAT

GRADE/GRAAD 12

**MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2**

NOVEMBER 2018

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/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/RCA	Rounding off/ <i>Afronding</i> /Rounding with CA/ <i>Afronding met CA</i>
NPR	No penalty for rounding/ <i>Geen penalisasie vir afronding nie</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with constant accuracy/ <i>Metode met volgehoue akkuraatheid</i>


**This marking guideline consists of 17 pages.
Hierdie nasien riglyne 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.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra incorrect item presented.

LET WEL:

- As 'n kandidaat 'n vraag TWEE KEER beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n antwoord van 'n vraagdootrek(kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.
- Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglynetoegepas, dit hou 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 verkeerde item.

QUESTION/VRAAG 1 [38 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.1.1	Discount percentage/Persentasie afslag $= \frac{R6140}{R160\,087,72} \times 100\% \approx 3,835397\% \approx 3,8\%$ ✓ RT ✓ MA ✓ A 	1RT numerator and denominator 1MA multiply correct values with 100 % 1A simplification rounded to one decimal place AO (3)	F L2
1.1.2	Sub Total/Subtotaal $= R160\,087,72 - R6\,140 + (2 \times R3\,500 + R4\,298,25 + R1\,315,79)$ $= R166\,561,76$ ✓ M ✓ RT ✓ MA	1M subtracting discount 1RT all values 1MA adding accessories, on roads & transaction fee (3)	F L2
1.1.3	Safety reason/as a safety feature - protect against thieves / hijackers /sunlight / door against damages <i>Veiligheidsrede/as 'n veiligheidskenmerk - beskerm teen diewe / kapers / sonlig / deur teen beskadiging</i> OR/OF Beautification of the car / reduce sunlight <i>Verfraaiing van die motor/ sonlig te verminder</i> OR/OF Longer lasting /Langdurend OR/OF Convenience / Gemak OR/OF For insurance purposes / Vir versekeringsdoeleindes	✓✓ O ✓✓ O ✓✓ O 2O reason (2)	F L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.1.4	<p>Interest Year 1/ <i>Jaar1 rente</i> $= 6\% \times R\ 1\ 250\ 000 = R\ 75\ 000$ ✓ MA</p> <p>Interest Year 2/ <i>Jaar2 rente</i> $= 6\% \times (R\ 1\ 250\ 000 + R\ 75\ 000)$ ✓ CA = R 79 500 ✓ CA</p> <p>Interest rate 3 Months /<i>Rentekoers vir 3 maande</i> ✓ C $= 6\% \div 4 = 1,5\%$ or $6\% \times \frac{3}{12} = 1,5\%$ ✓ M</p> <p>Interest 3 Months/3 <i>Maande rente</i> $= 1,5\% \times (R\ 1\ 325\ 000 + R\ 79\ 500) = R\ 21\ 067,50$ ✓ CA</p> <p>Interest earned/ <i>Rente verdien</i> $= R\ 75\ 000 + R\ 79\ 500 + R\ 21\ 067,50$ ✓ M = R 175 567,50 ✓ CA</p> <p>Interest earned is not enough / not sufficient to cover the price of the <i>bakkie</i>. ✓ O <i>Die rente verdien is nie genoeg om die aankoopprys te dek nie</i></p> <p style="text-align: center;">OR/OF</p> <p>27 months = 2 years and 3 months or $2\frac{1}{4}$ years <i>27 maande = 2 jaar en 3 maande of $2\frac{1}{4}$ jaar</i> ✓ C</p> <p>1st year value/<i>Iste jaar waarde</i> $= R\ 1\ 250\ 000 \times 6\% + R\ 1\ 250\ 000 = R\ 1\ 325\ 000$ ✓ MA ✓ CA</p> <p>2nd year value/<i>2de jaar waarde</i> $= R\ 1\ 325\ 000 \times 6\% + R\ 1\ 325\ 000 = R\ 1\ 404\ 500$ ✓ CA</p> <p>Last 3 months/<i>Laaste 3 maande</i> $= R\ 1\ 404\ 500 \times \frac{6\%}{4} + R\ 1\ 404\ 500 = R\ 1\ 425\ 567,50$ ✓ M ✓ CA</p> <p>Difference/<i>Verskil</i> $= R\ 1\ 425\ 567,50 - R\ 1\ 250\ 000 = R\ 175\ 567,50$ ✓ MA ✓ CA</p> <p>It is not enough / not sufficient / <i>Dit is nie genoeg nie.</i> ✓ O</p> <p style="text-align: center;">OR/OF</p> <p>Value the interest after 27 months/ <i>Rentewaarde na 27 maande</i> $= R\ 1\ 250\ 000 \times 1,06 \times 1,06 \times 1,015 - R\ 1\ 250\ 000$ ✓ M ✓ M ✓ CA ✓ C $= R\ 1\ 425\ 567,50 - R\ 1\ 250\ 000$ ✓ MA $= R\ 175\ 567,50$ ✓ CA</p> <p>Not enough / not sufficient / <i>Nie genoeg nie.</i> ✓ O</p>	<p>1MA calculating interest</p> <p>1CA 1st year value 1CA 2nd year interest 1C conversion to years (allocated since there are 3 periods) 1M dividing % value by 4 (or the interest by 4)</p> <p>1CA last 3 months interest</p> <p>1M adding the interest values 1CA available amount</p> <p>1O conclusion</p> <p style="text-align: center;">OR /OF</p> <p>1C conversion to years</p> <p>1MA calculating interest 1CA 1st year value</p> <p>1CA 2nd year value</p> <p>1M dividing % value by 4 1CA last 3 months value</p> <p>1MA subtracting 1CA available amount</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>2M multiply the principal with 106 % 1M 2nd year value 2CA 3months rate and value 1C conversion to years 1MA subtracting 1CA available amount 1O conclusion (9)</p>	F L3

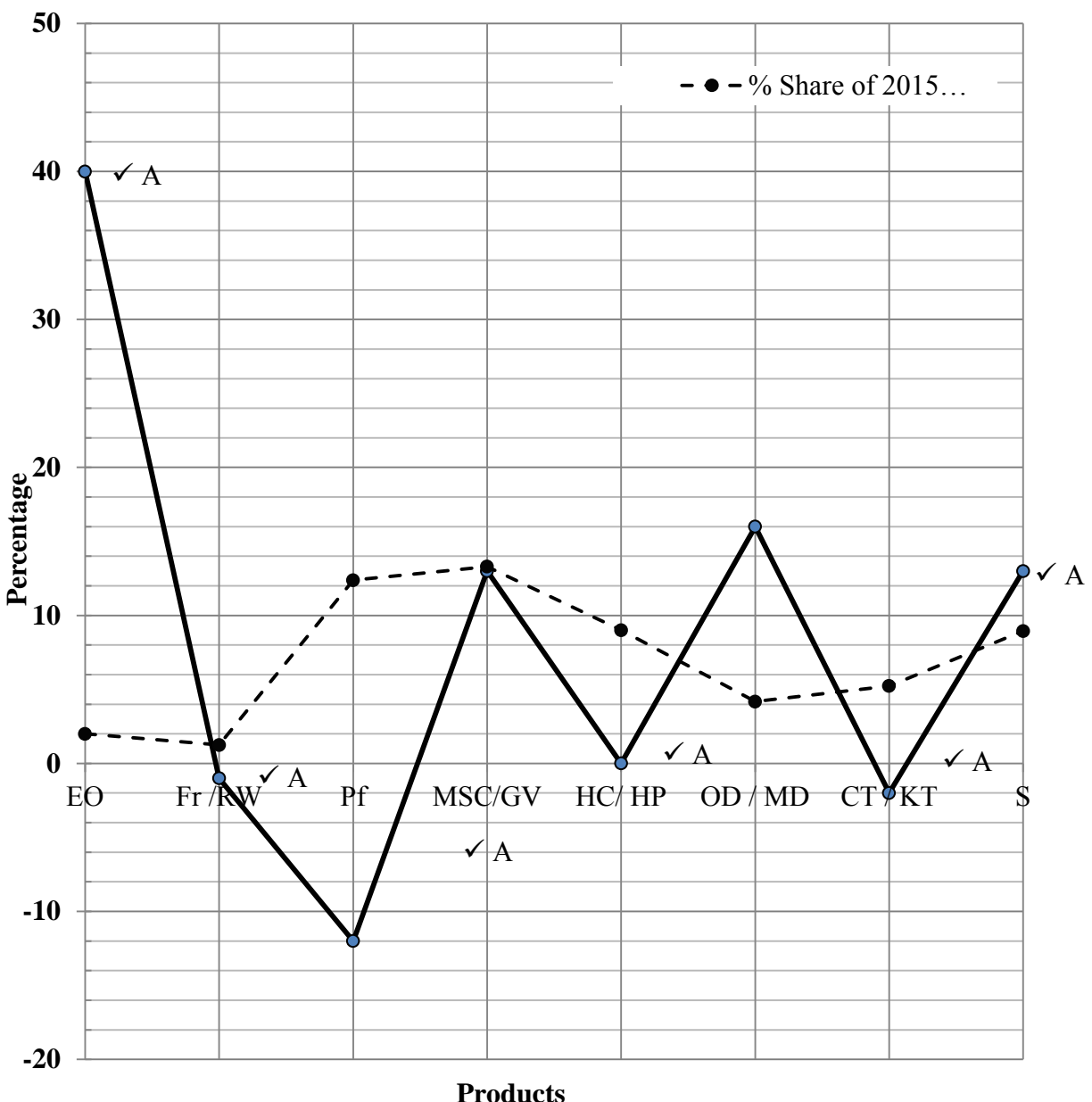
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.1.5	<p style="text-align: right;">✓ O</p> <p>Mistake: calc. 14% on original price AND an extra 1% on accumulated price <i>Fout: bereken 14% op die oorspronklike EN tel 'n ekstra 1% by die totaal.</i></p> <p>Correct calculation should be 15% on original price <i>Korrekte berekening sou wees om 15% by oorspronklike prys te tel</i></p> <p>New selling price / Nuwe verkoopsprys $= R160\ 087,72 + 15\% \text{ of } R160\ 087,72$ ✓ MA $= R160\ 087,72 + R24\ 013,16$ ✓ MA $= R184\ 100,88$ ✓ CA</p> <p style="text-align: center;">OR/OF</p> <p>The dealer added 1% on the VAT inclusive price of ✓ O $R182\ 500$ / Calculating VAT on VAT <i>Die handelaar het 1% by die BTW insluitende prys van R182 500 getel/ Bereken BTW op BTW</i></p> <p>He should have calculated the 15% directly on the original selling price excluding VAT. <i>Hy moet die 15% direk op die oorspronklike verkoopsprys sonder BTW tel</i></p> <p>New selling price incl. VAT/ Verkoopsprys BTW ingesluit $\checkmark A$ $= 115\% \times R160\ 087,72$ ✓ MA $= R184\ 100,88$ ✓ CA</p> <p style="text-align: center;">OR/OF</p> <p>Mistake is calculating the increased 1% on the VAT inculsive amount. ✓ O The 1% must be added to the original price <i>Die fout wat hy gemaak het is om die 1% op die prys wat reeds BTW bevat uit te werk</i></p> <p>Increased price incl. VAT / Verhoogde prys met BTW $\checkmark MA$ $= R182\ 500 + R160\ 087,72 \times 1\%$ ✓ MA $= R184\ 100,88$ ✓ CA</p>	<p>1O reason</p> <p>1MA calculating 15% 1MA adding 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1O stating the error or the solution</p> <p>1A 115% 1MA multiplying 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1O describing the error</p> <p>1MA calculating 1% on original amount 1MA adding to VAT incl. amount 1CA simplification</p> <p style="text-align: right;">(4)</p>	<p>F L4</p>

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.2.1 (a)	<p>Surface area of an open box/<i>Buite opp. van oopboks</i> ✓ SF $= \text{Width} \times \text{length} + 2(\text{length} \times \text{height} + \text{width} \times \text{height})$ ✓ A $= 1,374 \text{ m} \times 1,807 \text{ m} + 2(1,807 \text{ m} \times 0,535 \text{ m} + 1,374 \text{ m} \times 0,535 \text{ m})$</p> <p>$= 2,482818 \text{ m}^2 + 2(1,701835 \text{ m}^2)$ ✓ S</p> <p>$= 5,886488 \text{ m}^2$ ✓ CA</p> <p>Surface area of bin (bakkie)/<i>Opp. van bak</i> $= 5,886488 \text{ m}^2 + 2\% \times 5,886488 \text{ m}^2$ ✓ MCA $= 5,886488 \text{ m}^2 + 0,11772976 \text{ m}^2$ $= 6,00421776 \text{ m}^2$ ✓ CA</p> <p>Or/of $= 1,02 \times 5,886488 \text{ m}^2$ $= 6,00421776 \text{ m}^2$</p> <p>Number of litres required/<i>Aantal liter benodig</i> $= \frac{6,00421776 \text{ m}^2}{0,25 \text{ m}^2/\ell}$ ✓ MA</p> <p>$= 24,01687104 \approx 25 \ell$ ✓ R</p>	<p>1SF Substitution 1A correct values used</p> <p>1S simplification</p> <p>1CA total area</p> <p>1MCA increasing by 2%</p> <p>1CA simplification</p> <p>1MA dividing with spread rate</p> <p>1R rounding up litres</p> <p>(8)</p>	M L3
1.2.1 (b)	<p>Cost = Number of 5 litre \times 2 coats \times Price per 5 litre <i>Koste = Aantal 5 liters \times 2 lae \times prys per 5ℓ</i> $= \frac{25}{5} \times 2 \times \text{R}549,00$ ✓ CA $= \text{R}5\,490,00$ ✓ CA</p> <p>OR/OF</p> <p>For two coats of paint = $25 \times 2 = 50$ litres ✓ MCA</p> <p>Number of 5 litre tins = $\frac{50}{5} = 10$ ✓ CA</p> <p>Cost = $10 \times \text{R}5\,49 = \text{R}5\,490$ ✓ CA</p>	<p>CA from 1.2.1(a)</p> <p>1CA number of 5 litres 1MCA multiply 2 by price</p> <p>1CA cost for 10 litres OR/OF</p> <p>1MCA multiply by 2</p> <p>1CA number of 5 litres</p> <p>1CA cost AO</p> <p>(3)</p>	F L2



Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.2.2	<p>To protect the cargo bin's surface from scratching/rusting/ being damaged. ✓✓ O <i>Om die vragbak te beskerm teen krappe/roes/beskadiging</i></p> <p style="text-align: center;">OR</p> <p style="text-align: right;">✓✓ O</p> <p>Extend the life span of a bakkie's loading box <i>Om die vragbak se leeftyd te verleng</i></p> <p style="text-align: center;">OR</p> <p style="text-align: right;">✓✓ O</p> <p>To stop goods from slipping/protection of goods/<i>Om te keer dat goedere gly/beskadig word.</i></p>	<p>20 reason</p> <p style="text-align: right;">(2)</p>	<p>M L4</p>
1.3	<p>Time: Apply = 20 min × 2 coats = 40 min Re-coat = 4 hours = 240 min ✓ C Drying time = 2 hours = 120 min <i>Tyd: Aanwend = 20 min × 2 lae = 40 min</i> <i>Wagtyd = 4 uur = 240 min</i> <i>Droogtyd = 2 uur = 120 min</i></p> <p>Total time needed/<i>totale tyd benodig</i> = 40 min + 240 min + 120 min = 400 min = 6 hours 40 min ✓ M</p> <p>Completion/<i>Voltooing</i> = 8 h 15 + 6 h 40 = 14 h 55 ∴ Time/<i>Tyd</i> 14:55 ✓ CA</p> <p style="text-align: center;">OR/OF</p> <p>Apply 1st coat (20 min) 8:15 – 8:35 ✓ M <i>Wend 1^{ste} laag aan (20 min) 8:15 – 8:35</i></p> <p>Waiting time (4 hours) 8:35 – 12:35 ✓ MCA <i>Wagtyd (4 uur) 8:35 – 12:35</i></p> <p>Apply 2nd coat (20 min) 12:35 – 12:55 ✓ MCA <i>Wend 2^{de} laag aan (20 min) 12:35 – 12:55</i></p> <p>Drying time (2 hours) 12:55 – 14:55 <i>Droogtyd (2 uur) 12:55 – 14:55</i></p> <p>∴ Time 14:55 or 2:55 p.m. or five to three in the afternoon ✓ CA ∴ <i>Tyd 14:55 of 2:55 nm. of vyf minute voor drie die namiddag</i></p>	<p>1C converting</p> <p>1M adding times 1CA time needed</p> <p>1CA time</p> <p style="text-align: center;">OR/OF</p> <p>1M adding times</p> <p>1MCA adding correct hours</p> <p>1MCA adding correct times</p> <p>1 CA time</p> <p>AO</p> <p style="text-align: right;">(4)</p>	<p>M L2</p>
			[38]

QUESTION/VRAAG 2 [38MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.1 (a)	$A = \frac{216\,329 - 227\,665}{227\,665} \times 100\%$ $= -4,979\%$ $\approx -5\%$	1MA subtracting correct values 1A denominator 1A negative simplification 1RCA value of A	D L2 (4)
2.1.1 (b)	$\text{Median/Mediaan} = \frac{5\% + 10\%}{2} = 7,5\%$	CA from 2.1.1(a) 1MCA arranging 1M median concept 1CA median	D L3 (3)
2.1.2	As the year increased the value of the imports of make-up and skincare increased. <i>Soos die jare aangaan, het die waarde van die invoere van grimering en versorg vermeerder.</i>	1A year increased 1A value increased	D L4 (2)
2.1.3	Fr: import share increased from 2013 to 2014, but decreased in 2015. <i>RW: invoer vermeerder in 2014 vanaf 2013, maar verminder in 2015</i> Pf: import share decreased from 2013 to 2014, but increased in 2015. <i>Pf: invoer verminder in 2014 vanaf 2013, maar vermeerder in 2015.</i>	1A product 1O reasoning 1A product 1O reasoning	D L4 (4)
2.1.4	No. Too many sectors and one pie chart cannot be used as different years need to be shown. <i>Nee. Te veel sektore om op een sirkeldiagram te toon omdat verskillende jare getoon moet word.</i> OR/OF No. Too many sectors/columns; some are too small /negligible. <i>Nee. Te veel sektore/kolomme; sommige is te klein.</i> OR/OF No. Negative values will be difficult to indicate. <i>Nee. Negatiewe waardes maak dit moeilik.</i> OR/OF No. Percentages do not add up to 100%. <i>Nee. Persentasies tel nie op tot 100% nie.</i>	1O No 1O reason	D L4 (2)

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.5	<p style="text-align: center;">Percentage imports and average growth of Personal Care and Cosmetics to Australia</p>  <p style="text-align: center;">1A first point 1A last point 3 × 1A Every other two points correctly plotted 1A Joining</p>		D L3

(6)

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.2.1	Total cost = Basefare + 10 × cost per mile <i>Totale koste = Basisfooi + 10 × koste per myl</i> $= \$20,00 + 10 \times \$5,00 \text{ per mile}$ $= \$70,00$	2RT using correct values 1CA value of B if only 1 value is incorrect (3)	F L2
2.2.2	Maximum distance (in miles)/ <i>Maksimum afstand(in myl)</i> $= \frac{\$4,65}{\$0,90}$ $= 5,166\dots$ ≈ 5	1RT reading correct values from table 1M dividing 1CA simplification 1R rounding (4)	F L3
2.2.3	1 hour 9 minutes = 69 minutes <i>1 uur 9 minute = 69 minute</i> Post trip cost/ <i>Na-ritkoste</i> $= 69 \text{ min} \times \$0,45 / \text{min} + 29,73 \text{ mi} \times \$3,55 / \text{mi}$ $= \$31,05 + \$105,5415$ $= \$136,59$ Upfront cost/ <i>Vooruit koste</i> $= \$8 + 29,73 \text{ mi} \times \$3,55 / \text{mi}$ $= \$113,54$ Difference = \$136,59 – \$113,54 = \$23,05 The statement is correct/ <i>Die stelling is korrek.</i> <p style="text-align: center;">OR/OF</p> Difference = Post trip cost – Upfront cost <i>Verskil = Na-ritkoste – Vooruit koste</i> $= 69 \text{ min} \times \$0,45 / \text{min} + 29,73 \text{ mi} \times \$3,55 / \text{mi} - (\$8 + 29,73 \text{ mi} \times \$3,55 / \text{mi})$ $= 69 \text{ min} \times \$0,45 / \text{min} - \$8$ $= \$23,05$ The statement is correct/ <i>Die stelling is korrek.</i>	1 C converting to minutes 1SF substituting correct values 1S simplification 1CA post trip cost 1SF substituting correct values 1CA upfront trip cost 1S difference 1O conclusion <p style="text-align: center;">OR/OF</p> 1C time to minutes 1SF values into 1 st formula 1SF values into 2 nd formula 3S simplification 1CA difference 1O conclusion (8)	F L4



Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.2.4	<p style="text-align: right;">✓✓ O</p> <p>To cover cost for idle/wasted time when a vehicle could have been used to assist someone when you cancel the booking. <i>Om kostes te dek vir verlore tyd terwyl die voertuig gebruik kon word om iemand anders te help wanneer jy die bespreking kanselleer.</i></p> <p style="text-align: center;">OR/OF</p> <p>Penalty for booking made if one does not finally use the vehicle (time wasting). ✓✓ O <i>Boete vir'n bespreking wat gemaak is as jy aan die einde nie die voertuig gebruik nie (vermorsing van tyd)</i></p> <p style="text-align: center;">OR/OF</p> <p>Prevent hoax calls/ <i>Verhoed fopoproepe</i> ✓✓ O</p> <p style="text-align: center;">OR/OF</p> <p>To cover petrol costs and wear and tear of the vehicle ✓✓ O <i>Om petrol- en slytasiekoste van die voertuig te dek.</i></p> <p style="text-align: center;">OR/OF</p> <p>For the company to make a profit / avoid losses ✓✓ O <i>Vir die maatskappy om 'n wins te maak/ verhoed verliese</i></p>	<p>20 reasoning</p>	<p>F L4</p>
			<p>(2)</p>
			<p>[38]</p>

QUESTION/VRAAG 3 [39MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.1.1	$P_{(\text{Coke \& water})} = \left(\frac{4}{9}\right)^{\checkmark A}$ $= 0,44 \quad \checkmark CA$	1A numerator 1A denominator 1CA decimal number NPR	P L2
3.1.2	South East OR East of South OR SE. $\checkmark\checkmark A$ <i>Suidoos OF Oos van Suid OF SO</i>	2A direction	MP L2
3.1.3 (a)	The start is at 1 400 m $\checkmark A$ running to 1 565 m at the 5 km mark and then 1 708 m at the 10 km mark. $\checkmark A$ <i>Die begin is by 1 400m, by die 5km merk is dit 1 565 m en dan 1 708 m by die 10km merk.</i>	1A for height 1 400 m 1 A for height 1 708 m [Accept increase in height above sea level/altitude]	MP L4
3.1.3 (b)	Lowest point : highest point/ <i>Laagste punt: hoogste punt</i> $\checkmark RT \quad \checkmark RT$ $= 1\ 166\ m : 1\ 708\ m$ $= 1 : 1,464837... \quad \checkmark CA$ $\approx 1 : 1,46$ or $1 : 1,5$	2RT correct values 1CA ratio NPR	MP L2
3.1.4	To take struggling runners out of the race because they are not coping. $\checkmark\checkmark O$ <i>Om hardlopers wat sukkel uit die wedren te haal omdat hulle nie die mas opkom nie.</i> <p style="text-align: center;">OR</p> Security reasons (guards and health personnel deployed in strategic sections along the race course during specific times). $\checkmark\checkmark O$ <i>Veiligheidsredes (wagte en noodhulppersoneel word ontplooi in sekere gedeeltes van die wedren vir spesifieke tye)</i> <p style="text-align: center;">OR/OF</p> For runners to know whether they have a realistic chance of finishing race within the time allowed for the race. $\checkmark\checkmark O$ <i>Sodat deelnemers weet of hulle 'n realistiese kans het om die wedren binne die toegelate tyd te voltooi.</i> <p style="text-align: center;">OR/ OF</p> Also helps organisers to plan appropriately for other scheduled events. $\checkmark\checkmark O$ <i>Dit help ook die organiseerders om te beplan vir ander geskeduleerder items soos medalje- en perskonferensies.</i> <p style="text-align: center;">OR/ OF</p> If the road was closed it needs to be opened. $\checkmark\checkmark O$ <i>Indien die pad gesluit was, moet weer oopgestel word.</i>	2O understanding/reason	MP L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.1.5	<p>The average speed required to beat the cut-off 2: Die gemiddelde spoed nodig om afsny 2 te haal:</p> $\text{Speed/Spoed(marathon)} = \frac{31,5\text{km}}{5\text{h}15\text{min}} \begin{matrix} \checkmark\text{RT} \\ \checkmark\text{M} \end{matrix}$ $= 6 \text{ km/h } \checkmark\text{CA}$ $\text{Speed/Spoed}(\frac{1}{2} \text{ marathon}) = \frac{16,5\text{km}}{5\text{h}} \checkmark\text{MA}$ $= 3,3 \text{ km/h } \checkmark\text{CA}$ <p>$\checkmark\text{O}$ The claim is correct ($6 - 3,3 = 2,7 \text{ km/h}$). Die bewering is korrek.</p> <p style="text-align: center;">OR/OF</p> <p style="text-align: right;">$\checkmark\text{M}$</p> $\text{Speed/Spoed}(\frac{1}{2} \text{ marathon}) = 16,5 \text{ km} \div 5\text{h} = 3,3 \text{ km/h } \checkmark\text{CA}$ <p>Increased speed for full marathon = $(3,3 + 2,7) \text{ km/h} = 6\text{km/h} \checkmark\text{MA}$</p> $\text{Distance} = 6 \text{ km/h} \times 5,25\text{h} = 31,5 \text{ km } \checkmark\text{CA}$ <p>Correct/Korrek $\checkmark\text{O}$</p> <p style="text-align: center;">OR/OF</p> $\text{Speed/Spoed}(\frac{1}{2} \text{ marathon}) = 16,5 \text{ km} \div 5\text{h} = 3,3 \text{ km/h } \checkmark\text{CA}$ <p>Increased speed for full marathon = $(3,3 + 2,7) \text{ km/h} = 6\text{km/h} \checkmark\text{MA}$</p> $\text{Time to cut-off} = \frac{31,5\text{km}}{6\text{km/h}} = 5,25 \text{ h } \checkmark\text{CA}$ <p>Correct/Korrek $\checkmark\text{O}$</p>	<p>1RT correct values (dist. & time) 1M calculating speed / change the subject 1CA simplification</p> <p>1MA calculating speed</p> <p>1CA 2nd speed</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1M calculating speed / change the subject 1CA simplification 1MA calculating incr. speed 1MA calculating distance 1CA distance 1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1M calculating speed / change the subject 1CA simplification 1MA calculating incr. speed 1MA calculating time 1CA time 1O conclusion</p> <p style="text-align: right;">(6)</p>	MP L4
3.2.1	$20 \ell = 20 \times 1\,000 \text{ cm}^3 \checkmark\text{C}$ <p>Inner diameter /Binneste middellyn = $31,2 \text{ cm} - 2 \times 0,2 \text{ cm}$ $= 30,8 \text{ cm } \checkmark\text{A}$</p> $V = 3,142 \times (30,8\text{cm} \div 2)^2 \times \text{height/hoogte} \checkmark\text{MCA}$ $20\,000 \text{ cm}^3 = 3,142 \times \left(\frac{30,8}{2} \text{ cm}\right)^2 \times \text{H} \checkmark\text{SF}$ $\text{H} = \frac{20\,000 \text{ cm}^3}{3,142 \times 237,16\text{cm}^2} \checkmark\text{M}$ $= \frac{20\,000}{745,15672} \text{ cm } \checkmark\text{S}$ $= 26,84 \text{ cm } \checkmark\text{CA}$	<p>1C conversion</p> <p>1A calculating inner diameter</p> <p>1MCA radius</p> <p>1SF correct values</p> <p>1M changing the subject</p> <p>1S simplification</p> <p>1CA height</p> <p style="text-align: right;">(7)</p>	M L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.2.2 (a)	<p>Area of base of 1 bucket/<i>Oppervlakte van 1 emmer basis</i></p> $= 3,142 \times (15,6 \text{ cm})^2$ $= 764,63712 \text{ cm}^2 \quad \checkmark \text{ CA}$ <p>Area of base of 11 buckets/<i>Oppervlakte van 11 emmers</i></p> $= 11 \times 764,63712 \text{ cm}^2 = 8\,411,00832 \text{ cm}^2 \quad \checkmark \text{ CA}$ <p>Area of base of pallet/<i>Oppervlakte van palletbasis</i></p> $= 100 \text{ cm} \times 120 \text{ cm} = 12\,000 \text{ cm}^2 \quad \checkmark \text{ A}$ <p>Difference/<i>Verskil</i> = $12\,000 \text{ cm}^2 - 8\,411,00832 \text{ cm}^2$</p> $= 3\,588,99168 \text{ cm}^2 \quad \checkmark \text{ CA}$	<p>1A radius</p> <p>1CA simplification</p> <p>1CA multiply by 11</p> <p>1SF correct values 1A rectangular area</p> <p>1CA area unused NPR</p>	M L3
3.2.2 (b)	$120 \text{ cm} = 31,2 \times 3 + C$ $C = 120 \text{ cm} - 31,2 \text{ cm} \times 3 \quad \checkmark \text{ M}$ $= 26,4 \text{ cm} \quad \checkmark \text{ CA}$	<p>1A 120 cm</p> <p>1M multiplying and subtracting 1CA finding C</p>	M L4
3.2.3	<p>Length occupied by 4 buckets/<i>Lengte van 4 emmerbasisse</i></p> $= 4 \times 31,2 \text{ cm} = 124,8 \text{ cm} \quad \checkmark \text{ MA} \quad \checkmark \text{ A}$ <p>Length should be increased by/<i>Lengte moet vermeerder met</i></p> $= \frac{124,8 - 120}{120} \times 100\% \quad \checkmark \text{ CA} \quad \checkmark \text{ M}$ $= 4\% \quad \checkmark \text{ CA}$ <p style="text-align: center;">OR/OF</p> <p>Length occupied by 4 buckets/<i>Lengte van 4 emmerbasisse</i></p> $= 4 \times 31,2 \text{ cm} = 124,8 \text{ cm} \quad \checkmark \text{ MA} \quad \checkmark \text{ A}$ <p>120 cm is 100%</p> $124,8 \text{ cm is } \frac{124,8}{120} \times 100\% = 104\% \quad \checkmark \text{ M} \quad \checkmark \text{ CA}$ <p>\therefore 4% increase $\checkmark \text{ CA}$</p>	<p>1MA multiplying 1A correct length</p> <p>1CA substituting 1M % change</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1MA multiplying 1A correct length</p> <p>1M multiply with 100% 1CA simplification</p> <p>1CA simplification</p>	MP L3
		(6)	
		(3)	
		(5)	
		[39]	

QUESTION/VRAAG 4 [35 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1.1	<p>Total for these capsules/<i>totaal vir hierdie kapsules</i></p> $= 23 \times \overset{\checkmark}{MA} \text{ £}27 + 5 \times \overset{\checkmark}{MA} \text{ £}27 \times 90\% + 8 \times \overset{\checkmark}{MA} \text{ £}22 + 7 \times \overset{\checkmark}{MA} \text{ £}25,50$ $= \text{£}621 + \text{£}121,50 + \text{£}176 + \text{£}178,50$ $= \text{£}1\,097 \quad \checkmark CA$ <p>Rand value/<i>waarde</i> = $\text{£}1\,097 \times \text{R}16,58/\text{£}$</p> $= \text{R}18\,188,26 \quad \checkmark C$ <p>\therefore the statement is not correct/<i>die opmerking is nie korrek nie</i></p> <p style="text-align: center;">OR/OF</p> <p>Without discount for 5/<i>sonder afslag vir 5</i></p> $= 28 \times \overset{\checkmark}{MA} \text{ £}27 + 8 \times \overset{\checkmark}{MA} \text{ £}22 + 7 \times \overset{\checkmark}{MA} \text{ £}25,50 \quad \checkmark MA$ $= \text{£}756 + \text{£}176 + \text{£}178,50$ $= \text{£}1\,110,50 \quad \checkmark CA$ <p>Discount for 5/<i>Afslag vir 5</i> = $5 \times \text{£}27 \times 10\%$</p> $= \text{£}13,50 \quad \checkmark A$ <p>Total ticket price/<i>Totale kaartjie prys</i></p> $= \text{£}1\,110,50 - \text{£}13,50 = \text{£}1\,097 \quad \checkmark CA$ <p>Rand value/<i>waarde</i></p> $= \text{£}1\,097 \times \text{R}16,58/\text{£} = \text{R}18\,188,26 \quad \checkmark C$ <p>NOT correct/<i>NIE korrek NIE</i> $\checkmark O$</p> <p style="text-align: center;">OR/OF</p> <p>Cost of Capsule 24 + Cost of Capsule 30 – Discount for 5 Adults</p> $(18 \times \overset{\checkmark}{MA} \text{ £}27 + 7 \times \overset{\checkmark}{MA} \text{ £}22 + 2 \times \overset{\checkmark}{MA} \text{ £}25,50) + \overset{\checkmark}{M}$ $(10 \times \overset{\checkmark}{MA} \text{ £}27 + 1 \times \overset{\checkmark}{MA} \text{ £}22 + 5 \times \overset{\checkmark}{MA} \text{ £}25,50) - 5 \times \overset{\checkmark}{A} \text{ £}27 \times 10\% =$ $\text{£}691 + \text{£}419,5 - \overset{\checkmark}{CA} \text{ £}13,5 = \text{£}1\,097 \quad \checkmark CA$ <p>Rand value/<i>waarde</i></p> $= \text{£}1\,097 \times \text{R}16,58/\text{£} = \text{R}18\,188,26 \quad \checkmark C$ <p>NOT correct/<i>NIE korrek NIE</i> $\checkmark O$</p>	<p>3MA multiply tickets by price</p> <p>2MA discount for 5</p> <p>1CA total for 2 capsules</p> <p>1C pounds to rand</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>3MA multiply tickets by price</p> <p>1CA simplification</p> <p>1A discount</p> <p>1CA total</p> <p>1C pounds to rand</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>2MA multiply tickets by price</p> <p>1M adding costs</p> <p>1A discount</p> <p>1CA simplification</p> <p>1CA total</p> <p>1C pounds to rand</p> <p>1O conclusion</p>	<p>F</p> <p>L4</p>



Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> <p>Ticket price in rand: Adult: $27 \times 16,58 = R447,66$ ✓ C Children: $22 \times 16,58 = R364,76$ Senior citizens: $25,5 \times 16,58 = R422,79$</p> <p>Discount adult = R44,77 ✓ A Online ticket price = R402,89</p> <p>Total price = $(23 \times R447,66) + (5 \times R402,89) +$ $(8 \times R364,76) + (7 \times R422,79)$ $= R18\ 188,24$ ✓ CA</p> <p>NOT correct/NIE korrek NIE ✓ O</p>	<p style="text-align: center;">OR/OF</p> <p>1C conversion</p> <p>1A discount</p> <p>4×1MA multiply tickets by price</p> <p>1CA total</p> <p>1O conclusion</p> <p style="text-align: right;">(8)</p>	
4.1.2 (a)	<p>Circumference of the wheel/Omtrek van die wiel $= 2 \times \pi \times \text{radius}$ $= 2 \times 3,142 \times 197$ ✓ SF $= 1\ 237,948$ feet/voet ✓ CA</p>	<p>1SF correct values</p> <p>1CA circumference NPR</p> <p style="text-align: right;">(2)</p>	M L2
4.1.2 (b)	<p>Distance/Afstand = $\frac{1\ 237,948}{32}$ feet/voet ✓ MA $= 38,685875$ feet/voet $= \frac{38,685875}{3,28}$ m ✓ C $= 11,794\dots$ m ≈ 11 m ✓ R</p> <p style="text-align: center;">OR/OF</p> <p>Circumference in metre/Omtrek in meter $= \frac{1\ 237,948}{3,28} = 377,4231707$ m ✓ C</p> <p>Distance apart/afstand tussen kapsules $= \frac{377,4231707}{32}$ ✓ MA $= 11,794\dots$ m ≈ 11 m ✓ R</p>	<p>CA from 4.1.2(a) 1MA dividing by 32</p> <p>1C conversion</p> <p>1R rounded distance [also accept 12m]</p> <p style="text-align: center;">OR/OF</p> <p>1C conversion</p> <p>1MA dividing by 32</p> <p>1R rounded distance</p> <p style="text-align: right;">(3)</p>	M L2
4.2.1	<p>Difference/Verskil = $624\ 000 - 312\ 600$ ✓ M ✓ RT $= 311\ 400$ or/of 311,4 thousand/duisend ✓ CA</p>	<p>1RT correct values 1M subtraction 1CA difference in thousands</p> <p style="text-align: right;">(3)</p>	D L2

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.2	$P_{(\text{Midlands West \& East})} = \frac{609\,600 + 295\,000}{7\,146\,600} \times 100\% \quad \checkmark \text{RT}$ $= \frac{904\,600}{7\,146\,600} \times 100\% \quad \checkmark \text{M}$ $= 12,65776\dots\%$ $\approx 12,66\% \quad \checkmark \text{CA}$	<p>1RT numerator & denominator</p> <p>1S simplification 1M multiply by 100%</p> <p>1CA probability NPR AO</p> <p>(4)</p>	P L3
4.2.3	$\text{Ratio/Verhouding} = \frac{1\,157,0}{378,3} \quad \checkmark \text{RT}$ $= 3,0584 \quad \checkmark \text{CA}$ <p>∴ The statement is valid/Die bewering is geldig. $\checkmark \text{O}$</p> <p style="text-align: center;">OR/OF</p> <p>Number of business visitors = 378,3 thousand And holiday visitors = 1 157 thousand</p> $378,3 \text{ thousand} \times 3 = 1\,134,9 \text{ thousand} \quad \checkmark \text{RT} \quad \checkmark \text{CA}$ $378,3 \text{ duisend} \times 3 = 1\,134,9 \text{ duisend}$ <p>∴ The statement is valid/Die bewering is geldig. $\checkmark \text{O}$</p> <p style="text-align: center;">OR/OF</p> $1\,157\,000 \div 3 \approx 385\,667 \quad \checkmark \text{RT} \quad \checkmark \text{CA}$ <p>∴ The statement is valid/Die bewering is geldig. $\checkmark \text{O}$</p>	<p>1RT values</p> <p>1CA simplification</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1RT values 1CA simplification</p> <p>1O conclusion</p> <p style="text-align: center;">OR/OF</p> <p>1RT values 1CA simplification</p> <p>1O conclusion [No penalty for omitting thousand]</p> <p>(3)</p>	D L4
4.2.4	<p>175,1 324,8 405,7 480,5 562,7 600,8</p> <p>762,6 806,8 856,2 1594,0 3 556,0</p> <p>$Q_1/K_1 = 405,7 \quad \checkmark \text{A}$ $Q_3/K_3 = 856,2 \quad \checkmark \text{A}$</p> <p>$\text{IQR/IKO} = (856,2 - 405,7) \times 1\,000 \quad \checkmark \text{M}$</p> <p>$= 450,5 \times 1\,000$</p> <p>$= 450\,500 \quad \checkmark \text{CA}$</p>	<p>1MA order, ascending or descending</p> <p>2A Q_1 and Q_3</p> <p>1M subtracting quartiles</p> <p>1CA IQR value [No penalty for omitting thousand]</p> <p>(5)</p>	D L3

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
4.2.5	<p>Tourism boosts the economy (selling and buying) of the country. ✓✓ O <i>Toerismeversterk die ekonomie (koop en verkoop) van die land.</i></p> <p style="text-align: center;">OR/OF</p> <p>Tourism assists people to know the places they want to visit and be prepared/ exposes the goods and services of a country ✓✓ O <i>Toerisme help mense om die plekke wat hulle besoekte ken en om voor te berei/land se goedere en dienste kry blootstelling</i></p> <p style="text-align: center;">OR/OF</p> <p>Brings income to the country and more tourist stimulate the economy. / GDP grows. ✓✓ O <i>Dit bring ekstra inkomste na die land en meer toeriste stimuleer die ekonomie./ BBP groei.</i></p> <p style="text-align: center;">OR/OF</p> <p>Help to promote Social and Cultural interaction. ✓✓ O <i>Bevorder sosiale en kulturele interaksie.</i></p>	<p>2O reason financial</p> <p>2O environmental reason</p> <p>2O economic reason</p> <p>2O humanitarian reason (2)</p>	<p>D L4</p>
4.2.6	<p style="text-align: center;">✓ M</p> <p>Total = $162\,666,5455 \times 11 \approx 1\,789\,332$ ✓ R</p> <p>Known data total = $471\,928 + 170\,113 + 119\,639 + 107\,230 + 76\,496 + 120\,343 + 179\,450 + 226\,003 + 172\,282 = 1\,643\,484$ ✓ A</p> <p>Wales = NE + 30 440 $NE + NE + 30\,440 + 1\,643\,484 = 1\,789\,332$ ✓ MA $2NE = 115\,408$ $NE = 57\,704$ ✓ CA</p> <p style="text-align: center;">OR/OF</p> <p>Mean value/Gemiddelde waarde $= \frac{\text{North East/Noordoos} + \text{Wales/Wallis} + \text{other / ander}}{11}$ ✓ M</p> <p style="text-align: center;">✓ MA</p> <p>$\frac{NE + NE + 30\,440 + 1\,643\,484}{11} = 162\,666,5455$</p> <p>$2NE + 1\,673\,924 = 1\,789\,332,001$ ✓ S</p> <p>$\frac{2NE}{2} = \frac{115\,408,001}{2}$ ✓ M</p> <p>NE = 57 704,00025</p> <p>Direct employment of North East = 57 704 ✓ R <i>Direkte werkseleenthede van Noordooste = 57 704</i></p>	<p>1M multiplying with 11 1R rounding</p> <p>1A known total</p> <p>1MA two unknowns</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1M concept of mean</p> <p>1MA two unknowns</p> <p>1S simplification</p> <p>1M dividing by 2</p> <p>1R rounding (5)</p>	<p>D L4</p>
		[35]	
TOTAL/TOTAAL:150			