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# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

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

**MATHEMATICAL LITERACY P2/*WISKUNDIGE GELETTERDHEID V2***

**2023**

**MARKING GUIDELINES/*NASIENRIGLYNE***

**MARKS/*PUNTE*: 150**

<b>Symbol/<i>Kode</i></b>	<b>Explanation/<i>Verduideliking</i></b>
<b>M</b>	Method/ <i>Metode</i>
<b>MA</b>	Method with accuracy/ <i>Metode met akkuraatheid</i>
<b>CA</b>	Consistent accuracy/ <i>Volgehoue akkuraatheid</i>
<b>A</b>	Accuracy/ <i>Akkuraatheid</i>
<b>C</b>	Conversion/ <i>Herleiding</i>
<b>S</b>	Simplification/ <i>Vereenvoudiging</i>
<b>RT</b>	Reading from a table/a graph/document/diagram/ <i>Lees vanaf tabel/grafiek/diagram</i>
<b>SF</b>	Correct substitution in a formula/ <i>Korrekte vervanging in formule</i>
<b>O</b>	Opinion/Explanation/Reasoning / <i>Opinie/Verduideliking/redenasie</i>
<b>P</b>	Penalty, e.g. for no units, incorrect rounding off, etc./ <i>Penalisasie, bv. vir geen eenhede/verkeerde afronding, ens.</i>
<b>R</b>	Rounding off/ <i>Afronding</i>
<b>NPR</b>	No penalty for correct rounding/ <i>Geen penalisasie vir korrekte afronding nie</i>
<b>AO</b>	Answer only/ <i>Slegs antwoord</i>
<b>MCA</b>	Method with constant accuracy/ <i>Metode met volgehoue akkuraatheid</i>
<b>RCA</b>	Rounding consistent with accuracy/ <i>Afronding met volgehoue akkuraatheid</i>

**These marking guidelines consist of 17 pages.  
*Hierdie nasienriglyne bestaan uit 17 bladsye.***

**NOTE:**

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

**LET WEL:**

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout.*
- *Let wel: volgehoue akkuraatheid (CA) geld nie in die geval van 'n afbreuk nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene nasienbeginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor.*
- *Afronding tel as 'n afsonderlike punt.*
- *Ten einde die verifikasie/ gevolgtrekking punt toe te ken moes die kandidaat ten minste een punt gekry het in die berekening wat lei tot die finale gevolgtrekking.*

**Note: Questions marked with \* refers to the notes.**

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

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

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



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



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



Q/V	Solution/ <i>Oplossing</i>	Explanation/ <i>Verduideliking</i>	T/L
2.3.2	<p style="text-align: center;">✓✓O</p> <p>To keep them dust free/<i>Om stof af te keer</i> To keep the reams dry/ moisture free <i>Om die rieme droog te hou</i></p> <p><b>OR/OF</b> To keep them safe for later use. <i>Om hulle veilig te bêre vir latere gebruik</i></p> <p><b>OR/OF</b> Glass door - For learners to see that the teacher is using their reams of paper – Easy to see how many reams are left (record keeping). <i>Glasdeure - Sodat leerders kan sien hul onderwyser gebruik hulle rieme papier</i> <i>--maklik om te sien hoeveel rieme is oor (hou rekord)</i></p> <p><b>OR/OF</b> Convenient –Paper is in the class for later usage. –Keeps the teacher’s table clear/more space on teacher’s table –Easily accessible when needed. –Effective use of space <i>Gerieflik:</i> – <i>die papier is in die klas gereed vir later gebruik</i> – <i>Hou die onderwyser se tafel skoon /meer spasie op die onderwyser se tafel</i> – <i>Maklike toegang te hê</i> – <i>Effektiewe gebruik van spasie</i></p> <p><b>OR/OF</b> Keeps the classroom neat and in order. <i>Hou die klaskamer netjies en skeep orde.</i></p>	20 reason	MP L4 E
		(2)	
		<b>[24]</b>	



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





Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p style="text-align: center;"><b>OR/OF</b></p> <p>12 mm = 1,2 cm ✓C</p> <p><math>22,825\text{m}^2 = (22,825 \times 100 \times 100)\text{cm}^2</math> ✓C = 228 250 cm<sup>2</sup> ✓CA</p> <p>Volume = Area of wall × thickness of plaster <i>Volume = Opp van muur × dikte van pleister</i> = 228 250 cm<sup>2</sup> × 1,2 cm ✓SF = 273 900 cm<sup>3</sup> ✓CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>12 mm = (12 ÷ 1 000) = 0,012 m ✓C</p> <p>Volume = 22,825 × 0,012 ✓SF = 0,2739 m<sup>3</sup> ✓CA = (0,2739 × 100 × 100 × 100) ✓C = 273 900 cm<sup>3</sup> ✓CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Volume = <math>22\ 825\ 000\ \text{mm}^2 \times 12\ \text{mm}</math> ✓C ✓SF = 273 900 000 mm<sup>3</sup> ✓CA = 273 900 cm<sup>3</sup> ✓C ✓CA</p>	<p>1C conversion mm to cm</p> <p>1C conversion m<sup>2</sup> to cm<sup>2</sup> 1CA simplification</p> <p>1SF substitution 1CA simplification</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1C conversion m</p> <p>1SF substitution 1CA simplification 1C conversion m<sup>3</sup> to cm<sup>3</sup> 1CA simplification</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1C conversion mm<sup>2</sup> 1SF substitution</p> <p>1CA simplification</p> <p>1C conversion cm<sup>3</sup> 1CA simplification</p> <p style="text-align: right;">(5)</p>	
3.1.3	<p>Number of bags/ <i>Getal sakke</i></p> <p><math>= \frac{273\ 900\ \text{cm}^3}{15\ 000\ \text{cm}^3}</math> ✓MCA = 18,26 ✓CA ≈ 19 ✓R</p>	<p><b>CA from 3.1.2</b></p> <p>1MCA dividing</p> <p>1CA simplification</p> <p>1R rounding up</p> <p style="text-align: right;">(3)</p>	M L2 M
3.1.4	<p>Perimeter / <i>Omtrek</i></p> <p><math>= 2 \times (4,8 + 3,5)\text{m}</math> ✓RT ✓SF = 16,6 m ✓CA</p> <p style="text-align: center;"><b>OR/OF</b></p>	<p>1SF substitution 1RT correct values</p> <p>1CA simplification</p> <p style="text-align: center;"><b>OR/OF</b></p>	M L2 E



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



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



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



Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	$\text{Volume}_{(\text{cylinder})} = 3,142 \times (3,5\text{m})^2 \times 1\text{m} \times 1\,000 \ell/\text{m}^3$ $= 38\,489,5 \ell \quad \checkmark \text{CA}$ $\text{Volume}_{(\text{rectangular})} = 6,2 \text{ m} \times 3,25 \text{ m} \times 1,65 \text{ m} \times 1\,000 \ell/\text{m}^3$ $= 33\,247,5 \ell \quad \checkmark \text{CA}$ $\text{Difference / Verskil} = 38\,489,5 \ell - 33\,247,5 \ell \quad \checkmark \text{MCA}$ $= 5\,242 \ell \quad \checkmark \text{CA}$	1A radius 1SF correct substitutions 1C conversion 1CA simplification  1SF correct values 1CA rectangular volume  1MCA subtracting  1CA difference <b>NPR</b>	(8)
4.2.4 (a)	To accommodate cutting the tiles <b>or</b> breakages <b>or</b> curved surfaces <b>or</b> keep spares for later usage. <i>Om voorsiening te maak die sny van teëls of breekskade of die gekurfde oppervlakte of om oor te hou vir latere gebruik.</i>	2O reason	M L4 E  (2)
*4.2.4 (b)	$SA_{(\text{open cylinder})}/BO = 3,142 \times \text{radius} \times (\text{radius} + 2 \times \text{height})$ $= 3,142 \times 3,5 \text{ m} \times (3,5 \text{ m} + 2 \times 1 \text{ m}) \quad \checkmark \text{SF}$ $= 3,142 \times 3,5 \text{ m} \times 5,5 \text{ m} = 60,4835 \text{ m}^2. \quad \checkmark \text{CA}$ <p>Area of one tile/ <i>Opp van 1 teël</i></p> $= \frac{20}{100} \text{m} \times \frac{20}{100} \text{m} \quad \checkmark \text{C}$ $= 0,2 \times 0,2 \text{ m}^2 = 0,04 \text{ m}^2. \quad \checkmark \text{CA}$ <p>Number of tiles needed / <i>Getal teëls nodig</i></p> $= \frac{\text{Area to be tiled}}{\text{Area of single tile}}$ $= \frac{60,4835}{0,04} \quad \checkmark \text{MCA}$ $= 1\,512,0875 \quad \checkmark \text{CA} \quad \text{OR/OF} \approx 1\,513$ <p>Plus 10% <math>\checkmark \text{MCA}</math></p> $= \frac{10}{100} \times 1\,512,0875 + 1\,512,0875$ $= 1\,663,29625 \text{ tiles /teëls}$ $\approx 1\,664 \text{ tiles /teëls} \quad \checkmark \text{CA}$ <p>Number of boxes / <i>Getal bokse</i></p> $= 1\,664 \div 16 \quad \checkmark \text{MCA}$ $= 104 \quad \checkmark \text{CA}$ <p>VALID/GELDIG <math>\checkmark \text{O}</math></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Or rounded up:</p> <math display="block">1\,513 \times 110\%</math> <math display="block">= 1\,664,3</math> <math display="block">\approx 1\,665</math> <p>Boxes</p> <math display="block">= 1\,665 \div 16</math> <math display="block">= 104,06</math> <math display="block">\approx 105</math> </div>	<b>CA radius form 4.2.3</b> 1SF substitution 1CA area of pool  1C conversion 1CA area of a tile  1MCA finding number of tiles 1CA simplification  1MCA calc. 10% and adding it <b>or</b> multiply with 1,10  1CA number of tiles  1MCA dividing 1CA number of boxes 1O conclusion	M L4 D



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



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



<b>QUESTION/VRAAG 5 [37 MARKS/PUNTE]</b>			
<b>Q/V</b>	<b>Solution/Oplossing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
5.1.1	R617 ✓✓RT	2RT correct road (2)	MP L1 E
5.1.2	6 km ✓✓RT	2RT correct distance (2)	MP L1 E
5.1.3	Left /Links ✓✓A	2A correct direction (2)	MP L1 E
5.1.4	Dist. = 16km – dist. Hotel to Mkomazana – dist. Himeville to turn $Afstand = 16 \text{ km} - 4,4 \text{ km} - 2 \text{ km}$ $= 9,6 \text{ km}$	1RT 2 km 1M subtracting of at least one correct value 1CA simplification (3)	M L2 M
5.2.1	The owners need to clean, put fresh linen on the beds and get the cottage ready early for the next booking. <i>Die eienaars moet die plek skoon maak, skoon beddegoed opsit en die kothuis vroeg gereed kry vir die volgende bespreking.</i> <b>OR/OF</b> To encourage spending more days at the venue. <i>Om kliënte aan te moedig om meer dae oor te bly.</i> <b>OR/OF</b> Breaking a long stay. To justify renting out the cottage for one night while someone else might have stayed longer. <i>Dit onderbreek 'n lang oorbly.</i> <i>Om dit te regverdig om die kothuis uit te verhuur vir een nag terwyl iemand anders langer kon oorbly.</i>	2O reason (2)	MP L4 M
5.2.2	Valley Cottage ✓A <b>OR</b> Coot Cottage <i>Vallei kothuis OF Bleshoender kothuis</i> ✓✓O These cottages sleeps 6 persons <b>OR</b> can accommodate 5 to six <b>OR</b> they are 5 <b>OR</b> Cheaper option / Price of 6 sleeper accommodation is more reasonable ( $R2\ 640 \div 6 = R440 \text{ pp}$ ) compared to the 2 sleeper ( $R1\ 150 \div 2 = R575 \text{ pp}$ ) / <i>Hierdie kothuse is vir 6 persone OF hulle kan 5 tot 6 persone huisves OF die groep is 5 OF Dit is die goedkoper opsie / Koste per persoon vir die 6-persoon is goedkoper (<math>R2\ 640 \div 6 = R440 \text{ pp}</math>) vergeleke met 2-persoon (<math>R1\ 150 \div 2 = R575 \text{ pp}</math>)</i>	1A one correct cottage  2O reason (3)	MP L4 E



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



Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p style="text-align: center;"><b>OR/OF</b></p> <p>Round trip/ <i>Heer en terug</i> <math>588 \text{ km} \times 2 = 1176 \text{ km}</math>            Fuel used/<i>Brandstof verbruik</i>  <math>= 1176 \text{ km} \div 100 \text{ km} \times 6,42 \text{ ℓ} \quad \checkmark\text{MA}</math>  <math>= 75,4992 \text{ ℓ} \quad \checkmark\text{A}</math></p> <p>Fuel cost / <i>Brandstofkoste</i> <math>= 75,4992 \times \text{R}21,40</math>  <math>= \text{R}1\,615,68 \quad \checkmark\text{CA}</math></p> <p>Cost per person/<i>Koste per persoon</i>  <math>= \text{R}1\,615,68 \div 5 \quad \checkmark\text{MA}</math>  <math>= \text{R}323,14</math></p> <p>Toll fees / <i>Tol-fooie</i>:  <math>= \text{R}56,00 + \text{R}77,00 + \text{R}82,00 + \text{R}58,00 \quad \checkmark\text{RT}</math>  <math>= \text{R}273 \quad \checkmark\text{CA}</math></p> <p>Round trip/ <i>Heen en weer</i>  <math>= \text{R}273 \times 2 \quad \checkmark\text{MCA}</math>  <math>= \text{R}546</math></p> <p>Cost per person/<i>Koste per persoon</i>  <math>= \text{R}546 \div 5</math>  <math>= \text{R}109,20</math></p> <p>Accommodation per person/<i>Verblyf per persoon</i>  <math>= \text{R}8100 \div 5</math>  <math>= \text{R}1\,620</math></p> <p>Total per person/ <i>Totaal per persoon</i>  <math>= \text{R}323,14 + \text{R}109,20 + \text{R}1\,620 \quad \checkmark\text{MCA}</math>  <math>= \text{R}2\,052,34 \quad \checkmark\text{CA}</math></p> <p style="text-align: center;"><b>OR/OF</b></p> <p>Toll Expenses / <i>Tol-fooie</i>:  <math>\checkmark\text{MCA} \quad \checkmark\text{RT}</math>  <math>= 2(\text{R}56,00 + \text{R}77,00 + \text{R}82,00 + \text{R}58,00)</math>  <math>= \text{R}546,00 \quad \checkmark\text{CA}</math></p> <p>Fuel Cost /<i>Brandstof koste</i></p> <p>Total Distance/<i>Afstand</i> <math>= 588 \text{ km} \times 2 = 1176 \text{ km}</math>  <math>\checkmark\text{MA} \quad \checkmark\text{A}</math></p> <p>Fuel used/<i>Brandstof</i>: <math>\frac{1176}{100} \times 6,42 = 75,4992 \text{ ℓ}</math>  <math>\checkmark\text{MA} \quad \checkmark\text{A}</math></p> <p>Cost/<i>Koste</i>: <math>75,4992 \times \text{R}21,40 = \text{R}1\,615,68 \quad \checkmark\text{CA}</math></p> <p>Total Cost/<i>Totale koste</i>:  <math>\text{R}8\,100 + \text{R}546,00 + \text{R}1\,615,68 = \text{R}10\,261,68 \quad \checkmark\text{CA}</math></p> <p>Cost PP/ <i>Koste PP</i>: <math>\text{R}10\,261,68 \div 5 = \text{R}2\,052,34</math>  <math>\checkmark\text{MCA} \quad \checkmark\text{CA}</math></p>	<p>1MA fuel consumption rate 1A simplification</p> <p>1CA fuel cost</p> <p>1MA dividing by 5</p> <p>1 RT correct 4 tolls 1CA simplification</p> <p>1MCA return trip</p> <p>1MCA adding all the values 1CA total cost</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>1MCA return trip 1 RT correct 4 tolls 1CA simplification</p> <p>1MA fuel consumption rate 1A simplification</p> <p>1CA fuel cost</p> <p>1CA total cost for 3 items</p> <p>1MCA dividing by 5 1CA simplification</p>	(9)
		<b>[37]</b>	
		<b>TOTAL/TOTAAL: 150</b>	