



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

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

MATHEMATICAL LITERACY P2/WISKUNDIGE GELETTERDHEID V2

2023

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/PUNTE: 150

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

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

NOTE:

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

LET WEL:

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

Note: Questions marked with * refers to the notes.

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

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

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

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

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
	<p style="text-align: center;">OR/OF</p> <p>1 cm: 250 000 cm $\therefore 1 \text{ cm} : 2,5 \text{ km} \quad \checkmark \text{C}$ $\therefore 1 : 2,5 \text{ km}$ Map Dist/<i>Kaart afstand</i> : 65 km</p> <p>Map distance /<i>Kaart afstand</i> $= \frac{65}{2,5} \quad \checkmark \text{MA}$ $= 26 \text{ cm} \quad \checkmark \text{CA}$</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 $\checkmark \checkmark \text{A}$ <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> $\checkmark \text{MA}$ $= \frac{102 \text{ cm}}{27,94 \text{ cm}} = 3,65 \approx 3 \quad \checkmark \text{A} \quad \checkmark \text{R}$</p> <p>Number of reams widthwise /<i>Getal rieme in die breedte</i> $= \frac{44 \text{ cm}}{21,59 \text{ cm}} = 2,04 \approx 2 \quad \checkmark \text{MCA}$</p> <p>Number of reams heightwise/<i>Getal rieme in die hoogte</i> $= \frac{39 \text{ cm}}{6,35 \text{ cm}} = 6,14 \approx 6 \quad \checkmark \text{A}$</p> <p>Total number of reams/<i>Totale getal rieme</i> $= 3 \times 2 \times 6 \quad \checkmark \text{MCA}$ $= 36 \quad \checkmark \text{CA}$</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/Oplissing	Explanation/Verduideliking	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>OR/OF To keep them safe for later use. <i>Om hulle veilig te bêre vir latere gebruik</i></p> <p>OR/OF Glass door - For learners to see that the teacher is using their reams of paper – Easy to see how many reams are left (record keeping). <i>Glasdeure - Sodat leerders kan sien hul onderwyser gebruik hulle rieme papier</i> --maklik om te sien hoeveel rieme is oor (hou rekord)</p> <p>OR/OF Convenient –Paper is in the class for later usage. –Keeps the teacher’s table clear/more space on teacher’s table –Easily accessible when needed. –Effective use of space <i>Gerieflik:</i> – die papier is in die klas gereed vir later gebruik – Hou die onderwyser se tafel skoon /meer spasie op die onderwyser se tafel – Maklike toegang te hê – Effektiewe gebruik van spasie</p> <p>OR/OF Keeps the classroom neat and in order. <i>Hou die klaskamer netjies en skeep orde.</i></p>	<p style="text-align: center;">20 reason</p>	<p>MP L4 E</p> <p style="text-align: right;">(2)</p>
		[24]	

QUESTION/VRAAG 3 [31 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
3.1.1	<p>Surface area wall 1 = length × width <i>Oppervlakte muur 1 = lengte × breedte</i></p> <p>= 4,8 m × 2,75 m ✓SF</p> <p>= 13,2 m² ✓CA</p> <p>Surface area wall 2 = length × width <i>Oppervlakte muur 2 = lengte × breedte</i></p> <p>= 3,50 m × 2,75 m</p> <p>= 9,6250 m² ✓A</p> <p>Total surface area / <i>Totale oppervlakte</i></p> <p>= (13,2 + 9,625) m²</p> <p>= 22,8250 m² ✓CA</p> <p style="text-align: center;">OR/OF</p> <p style="text-align: center;">✓SF</p> <p>T SA/ TO = (4,8 m × 2,75 m) + (3,5 m × 2,75 m)</p> <p style="text-align: center;">= 13,2 m² + 9,6250 m² ✓A</p> <p style="text-align: center;">= 22,8250 m² ✓CA</p> <p style="text-align: center;">OR/OF</p> <p style="text-align: center;">✓A</p> <p>Surface Area = (3,5 m + 4,8 m) × 2,75 m ✓SF</p> <p style="text-align: center;">= 8,3 × 2,75 ✓CA</p> <p style="text-align: center;">= 22,825 m² ✓CA</p>	<p>1SF substitution</p> <p>1CA simplification</p> <p>1A simplification</p> <p>1CA simplification</p> <p>OR/OF</p> <p>1SF substitution</p> <p>1CA simplification</p> <p>1A simplification</p> <p>1CA simplification</p> <p>OR/OF</p> <p>1A adding both wall dimensions</p> <p>1SF substitution</p> <p>1CA simplification</p> <p>1CA simplification</p> <p>NPR</p>	<p>M</p> <p>L2</p> <p>M</p> <p>(4)</p>
*3.1.2	<p>Volume = Area of wall × thickness of plaster <i>Volume = Opp van muur × dikte van pleister</i></p> <p style="text-align: center;">= (22,8250 × 10 000) × $\frac{12}{10}$ ✓C ✓SF</p> <p style="text-align: center;">= 228 250 cm² × 1,2 cm ✓CA₂</p> <p style="text-align: center;">= 273 900 cm³ ✓CA</p>	<p>CA from 3.1.1</p> <p>2C conversion</p> <p>1SF substitution</p> <p>1CA simplification</p> <p>1CA simplification</p>	<p>M</p> <p>L3</p> <p>D</p>

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p style="text-align: center;">OR/OF</p> <p>12 mm = 1,2 cm ✓C</p> <p>$22,825\text{m}^2 = (22,825 \times 100 \times 100) \text{cm}^2$ ✓C = 228 250 cm² ✓CA</p> <p>Volume = Area of wall × thickness of plaster <i>Volume = Opp van muur × dikte van pleister</i> = 228 250 cm² × 1,2 cm ✓SF = 273 900 cm³ ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>12 mm = (12 ÷ 1 000) = 0,012 m ✓C</p> <p>Volume = 22,825 × 0,012 ✓SF = 0,2739 m³ ✓CA = (0,2739 × 100 × 100 × 100) ✓C = 273 900 cm³ ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>Volume = $22\ 825\ 000 \text{mm}^2 \times 12 \text{mm}$ ✓C ✓SF = 273 900 000 mm³ ✓CA = 273 900 cm³ ✓C₃ ✓CA</p>	<p>1C conversion mm to cm</p> <p>1C conversion m² to cm² 1CA simplification</p> <p>1SF substitution 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1C conversion m</p> <p>1SF substitution 1CA simplification 1C conversion m³ to cm³ 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1C conversion mm² 1SF substitution 1CA simplification 1C conversion cm³ 1CA simplification</p>	(5)
3.1.3	<p>Number of bags/ <i>Getal sakke</i></p> <p>$= \frac{273\ 900 \text{cm}^3}{15\ 000 \text{cm}^3}$ ✓MCA = 18,26 ✓CA ≈ 19 ✓R</p>	<p>CA from 3.1.2</p> <p>1MCA dividing 1CA simplification 1R rounding up</p>	M L2 M (3)
3.1.4	<p>Perimeter / <i>Omtrek</i></p> <p>$= 2 \times (4,8 + 3,5) \text{m}$ ✓RT ✓SF = 16,6 m ✓CA</p> <p style="text-align: center;">OR/OF</p>	<p>1SF substitution 1RT correct values 1CA simplification</p> <p style="text-align: center;">OR/OF</p>	M L2 E

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
	<p>Perimeter/ Omtrek</p> <p>= 4,8 m + 3,5 m + 4,8 m + 3,5 m ✓MA ✓RT</p> <p>= 16,6 m ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>Perimeter/Omtrek ✓MA</p> <p>= 2(3,5 m) + 2(4,8 m) ✓RT</p> <p>= 16,6 m ✓CA</p>	<p>1MA adding all 4 sides</p> <p>1RT correct values</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1MA adding all 4 sides</p> <p>1RT correct values</p> <p>1CA simplification</p> <p>AO</p>	(3)
3.2.1	<p>$P = \frac{1}{5} \checkmark A$ or/of 0,2 or/of 20%</p> <p>$\checkmark A$</p>	<p>1A numerator</p> <p>1A denominator</p> <p>AO</p>	P L2 E (2)
*3.2.2	<p>P(not appear/ nie verskyn) = 1 - 0,75 ✓MA</p> <p>= 0,25^{✓A} or/of ¼ or/of</p> <p>25%</p>	<p>1MA subtracting from 1</p> <p>1A simplification</p> <p>AO</p>	P L2 M (2)
3.2.3	<p>Less likely /kleiner kans ✓✓A</p>	<p>CA from Q3.2.2</p> <p>2A correct likelihood</p>	P L2 E (2)
*3.3.1	<p>Starting time /Begin tyd</p> <p>✓MA ✓A</p> <p>= 08:05 - 2 min - 3 min - 4 min</p> <p>= 07:56 ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>Total time to prepare:</p> <p>= 4 min + 3 min + 2 min</p> <p>= 9 min ✓A</p> <p>Starting time /Begin tyd</p> <p>= 08:05 - 9 min ✓MA</p> <p>= 07:56^{✓CA} or 4 minutes to eight in the morning</p>	<p>1MA subtract minutes</p> <p>1A all the minutes</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1A all the minutes</p> <p>1MA subtract minutes</p> <p>1CA simplification</p> <p>AO</p>	M L2 M (3)

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

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

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

Or rounded up:

$$1\,513 \times 110\%$$

$$= 1\,664,3$$

$$\approx 1665$$

Boxes

$$= 1\,665 \div 16$$

$$= 104,06$$

$$\approx 105$$

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

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

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