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*

## 2022

## 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/graph/document/diagram/*Lees vanaf tabel/grafiek/dokument/diagram* |
| **SF** | Correct substitution in a formula/*Korrekte vervanging in 'n formule* |
| **O** | Opinion/Explanation/*Opinie/Verduideliking* |
| **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 consistent accuracy/*Metode met volgehoue akkuraatheid* |
| **RCA** | Rounding consistent with accuracy/*Afronding met volgehoue akkuraatheid* |
| ***** | Asterisk means refer to attached notes |

**These marking guidelines consist of 19 pages.**
***Hierdie nasien riglyne bestaan uit 19 bladsye.***

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**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.

***LET WEL:***
- *As'n kandidaat'n vraag TWEE KEER beantwoord, sienslegs die EERSTE pogingna.*
- *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 het 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, die kandidaat slegs EEN punt verloor.*

| **QUESTION/*VRAAG* 1 [30 MARKS/*PUNTE*] – ANSWER ONLY ACCEPTED** | | | |
|---|---|---|---|
| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T/L** |
| 1.1.1 | D ✓✓ A | 2A correct option<br>Accept 1:50 000<br>(2) | MP<br>L1 |
| 1.1.2 | E ✓✓ A | 2A correct option<br>(2) | M<br>L1 |
| 1.1.3 | G ✓✓ A | 2A correct option<br>Accept 1 cm = 1 m<br>(2) | MP<br>L1 |
| *1.1.4 | C ✓✓ A | 2A correct option<br>(2) | M<br>L1 |
| *1.1.5 | F ✓✓ A | 2A correct option<br>(2) | M<br>L1 |
| 1.2.1 | B ✓✓ A **OR/*OF***<br>$(2 \times 240 \times 70 + 2 \times 240 \times 112 + 2 \times 112 \times 70)$ mm$^2$ | 2A correct option<br>(2) | M<br>L1 |
| *1.2.2 | mm$^3$ ✓✓ A **OR** Cubic millimetres/*Kubieke millimeter* | 2A correct unit<br>(2) | M<br>L1 |
| 1.2.3 | Length/*Lengte* = 240 ÷ 1 000 ✓ C<br>= 0,24 m ✓ A | 1C conversion factor<br>1A simplification<br>(2) | M<br>L1 |

| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T/L** |
|---|---|---|---|
| *1.2.4 | Number of rows/*Getal rye*<br>$= \frac{2\,100\text{ mm}}{70\text{ mm}}$ ✓ A ✓ A<br>= 30 ✓ CA | 1A height<br>1 A correct denominator<br>1CA number of rows<br>(3) | MP<br>L1 |
| 1.3.1 | Mass of the flour (in kg)/*Massa van die meel*<br>$= \frac{500}{1\,000}$ ✓ C<br>$= \frac{1}{2}$ kg **or/*of*** 0,5 kg ✓ A | 1C divide by 1 000<br>1A simplification<br>(2) | M<br>L1 |
| 1.3.2 | ✓ A<br>12 scones/*botterbroodjies* = 2 eggs/*eiers*<br>6 scones/*botterbroodjies* = 1 egg/*eier*<br>30 scones = 2 + 2 + 1 = 5 eggs/*eiers* ✓ A<br>**OR/*OF***<br>✓ A<br>12 scones/*botterbroodjies* = 2 eggs/*eiers*<br>30 scones/*botterbroodjies* = $\frac{30}{12} \times 2$<br>= 5 eggs/*eiers* ✓ A<br>**OR/*OF***<br>✓ A<br>30 scones/*botterbroodjies* = $\frac{30}{12}$ = 2,5 dozen/*dosyn*<br>1 dozen need 2 eggs/*1 dosyn benodig 2 eiers*<br>2,5 dozen/*dosyn* = 2,5× 2 = 5 eggs/*eiers* ✓ A | 1A dozen = 12<br>1A simplification<br>**OR/*OF***<br>1A dozen = 12<br>1A simplification<br>**OR/*OF***<br>1A dozen = 12<br>1A simplification<br>(2) | M<br>L1 |
| 1.3.3 | Radius = 7 cm ÷ 2 ✓ MA<br>= 3,5 cm **OR/*OF*** 35 mm ✓ A | 1MA dividing by 2<br>1A radius<br>(2) | M<br>L1 |
| 1.3.4 | Number of dozen scones/*Getal dosyn botterbroodjies*<br>$= \frac{500}{75}$ ✓MA<br>= 6,67 ✓ S<br>= 6 ✓ R | 1MA dividing by 75<br>1S simplification<br>1R rounding down<br>(3) | M<br>L1 |
| *1.3.5 | ✓ A ✓ A<br>Ten minutes past two in the afternoon.<br>*Tien minute oor twee in die namiddag.* | 1A time<br>1A afternoon<br>(2) | M<br>L1 |
| | | **[30]** | |

| **QUESTION/*VRAAG* 2 [32 MARKS/*PUNTE*]** | | | |
|---|---|---|---|
| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T/L** |
| 2.1.1 | 14:00 ✓✓ A | 2A 24-hour time format (2) | MP L1 |
| 2.1.2 | 8 ✓✓A | 2A correct number (2) | MP L2 |
| 2.1.3 | Bicycle/*Fiets* ✓✓RT | 2RT bicycle (2) | MP L1 |
| 2.1.4(a) | Distance/*Afstand* = 9K + 1K<br>= 10 km ✓✓ A<br>Fraction/*Breuk* = $\frac{10}{42,2}$ ✓ MCA<br>= $\frac{50}{211}$ ✓ CA<br>**OR/*OF***<br>Distance/*Afstand* = 1 000 × 10 = 10 000 m ✓✓ A<br>42,2 km = 42 200 m<br>Fraction/*Breuk* = $\frac{10\,000\,m}{42\,200\,m}$ ✓ MCA<br>= $\frac{50}{211}$ ✓ CA | 2A 10 km<br>1MCA correct order<br>1CA simplification<br>**OR/*OF***<br>2A 10 km<br>1MCA correct order<br>1CA simplification (4) | MP L2 |
| 2.1.4 (b) | ✓✓ A<br>The distance is less than a full marathon.<br>*Die afstand is minder as 'n vol marathon.*<br>**OR/*OF***<br>It is shorter than a standard marathon.<br>*Dit is korter as 'n standaard marathon.*<br>**OR/*OF***<br>It is a fraction of a full marathon.<br>*Dit is 'n breuk van die vol marathon.* | 2A explanation (2) | MP L4 |
| 2.1.5 | B ✓✓ A **OR/*OF*** 0% | 2A correct option (2) | P L2 |
| 2.2.1 | Scout House/*Verkennerhuis* ✓✓RT | 2RT correct place of interest (2) | MP L2 |
| *2.2.2 | South-east **OR** SE ✓✓A<br>*Suidoos **OF** SO* | 2A correct direction (2) | MP L1 |

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| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T/L** |
|---|---|---|---|
| *2.2.3 | Nellmapius ✓✓RT | 2RT correct street<br>(2) | MP<br>L2 |
| 2.2.4 | St Martin's Church/ *St Martin-Kerk* ✓✓RT | 2RT correct church<br>(2) | MP<br>L2 |
| 2.2.5 | Irene Library &Hall/*Irene Biblioteek & Saal* ✓✓✓RT<br>[Accept Hall /*Aanvaar Saal*] | 3RT correct place<br>(3) | MP<br>L3 |
| 2.2.6 | Measured distance/*Gemete afstand* = 8 cm ✓MA<br>8 cm : 1,9 km ✓MCA<br>8 cm : 190 000 cm ✓C<br>Scale/*Skaal* is 1 : 23 750 ✓S<br>1 : 24 000 ✓R<br>(Maximum distance/ *maksimum afstand)*<br>Measured distance/*Gemete afstand* = 8,4cm ✓MA<br>8,4 cm : 1,9 km ✓MCA<br>8,4 cm : 190 000 cm ✓C<br>Scale/*Skaal* is1 : 22 619,05 ✓S<br>1 : 23 000 ✓R<br>**OR/*OF***<br>✓MA ✓C<br>8,4cm ÷ 100 000 : 1,9 km ✓MCA<br>0,000084 km : 1,9km<br>1: 22 619 ✓S<br>1: 23 000 ✓R | 1MA correct measurement<br>1MCA correct ratio<br>1C converting km to cm<br>1S simplified ratio<br>1R correct rounding<br>**OR/*OF***<br>1MA correct measurement<br>1C converting cm to km<br>1MCA correct ratio<br>1S simplified ratio<br>1R correct rounding<br>**Provinces need to mark according to ± 1 mm of their provincial paper.**<br>(5) | MP<br>L3 |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T/L |
|---|---|---|---|
| 2.2.7 | The traffic flow is in the opposite direction. ✓✓O<br>*Die verkeervloei in die teenoorgestelderigting.*<br><br>**OR/*OF***<br><br>One-way traffic /The arrow shows you can only turn left.<br>*Eenrigtingverkeer/ Die pyl wys jy kan slegs links draai*<br><br>**OR/*OF***<br><br>The driver will be facing oncoming traffic.<br>*Die bestuurder sal in aankomende verkeer inry.* | 2O opinion<br><br>(2) | MP<br>L4 |
| | | **[32]** | |

| **QUESTION/*VRAAG* 3[29MARKS/*PUNTE*]** | | | |
|---|---|---|---|
| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T/L** |
| 3.1.1 | Total length/*Totale lengte*<br>= 55 cm + 99 cm + 55cm = 209 cm ✓A<br><br>Perimeter/*Omtrek*= 2(209 cm +149 cm) ✓SF<br><br>= 2(358) cm<br><br>= 716 cm ✓CA<br><br>**OR/*OF***<br><br>Perimeter/*Omtrek*<br>= (149 + 55 + 99 + 55 + 149 + 55 + 99 + 55) cm ✓A ✓SF<br><br>= 716 cm ✓CA<br><br>**OR/*OF***<br><br>Perimeter/*Omtrek* = 2 (149) cm + 2(55+99+55) cm ✓A ✓SF<br><br>= (298 + 418) cm<br>= 716 cm ✓CA | 1A total length<br><br>1SF substitution<br><br>1CA perimeter<br><br>**OR/*OF***<br><br>1A total length<br>1SF substitution<br>1CA perimeter<br><br>**OR/*OF***<br><br>1A total length<br>1SF substitution<br><br>1CA perimeter<br>(3) | M<br>L2 |
| 3.1.2 | Radius = $\frac{605}{2}$ = 302,5 mm ✓A<br>= 30,25 cm ✓C<br><br>Area/*Oppervlakte* = 3,142 × $(30{,}25\,\text{cm})^2$ ✓SF<br>= 2 875,126375 $\text{cm}^2$ ✓CA<br><br>**OR/*OF***<br><br>Radius = $\frac{605}{2}$ = 302,5 mm ✓A<br><br>Area/*Oppervlakte* = 3,142 × $(302{,}5\,\text{mm})^2$ ✓SF<br>= 28 512,6375 $\text{mm}^2$<br>= 28 751 263,75 ÷ $10^2$ ✓C<br>= 2 875,126375 $\text{cm}^2$ ✓CA | 1A radius<br><br>1C conversion<br><br>1SF substitution<br><br>1CA simplification<br><br>**OR/*OF***<br><br>1A radius<br><br>1SF substitution<br><br>1C conversion<br><br>1CA simplification<br>**NPR**<br>(4) | M<br>L2 |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T/L |
|---|---|---|---|
| 3.1.3 | $P = \frac{3}{7}$ ✓A ✓A<br>$= 0,4285714286$ ✓CA<br>**OR/*OF***<br>✓M<br>$P = 1 - \frac{4}{7} = \frac{3}{7}$ ✓A<br>$= 0,4285714286$ ✓CA | 1A numerator<br>1A denominator<br>1CA decimal form<br>**OR/*OF***<br>1M subtracting from 1<br>1A simplification<br>1CA decimal form<br>**NPR** (3) | P<br>L2 |
| *3.2.1 | Total area/*Totale oppervlakte*<br>✓M<br>$= 4\text{ m} \times 5\text{ m} + 3\text{ m} \times 4\text{ m}$ ✓SF<br>$= 20\text{ m}^2 + 12\text{ m}^2$<br>$= 32\text{ m}^2$ | 1SF substitution of correct values<br>1M adding<br>**NPU** (2) | M<br>L2 |
| *3.2.2<br>TR | Area of 1 tile/*Opp van 1 teël* = 35 cm × 35 cm ✓SF<br>$= 1\,225\text{ cm}^2$<br>$= 1\,225 \div (100)^2\text{ m}^2$ ✓C<br>$=0,1225\text{ m}^2$ ✓CA<br><br>Number of tiles needed/*Getal teëls nodig*<br>$= \frac{32}{0,1225}$ ✓MCA<br>$= 261,2244898$ ✓CA<br><br>Number to add/*Getal om by te tel*<br>✓MCA<br>$= 10\% \times 261,2244898 = 26,12244898$<br><br>Total number of tiles/*Totale aantal teëls*<br>$= 261,2244898 + 26,12244898 = 287,3469388$ ✓CA<br><br>Number of boxes/*Getal bokse*<br>✓MCA<br>$= \frac{287,3469388}{4} = 71,83673469$<br>$\therefore$ 72 boxes ✓CA | 1 SF substitution<br><br>1C conversion<br>1CA simplification<br><br>1MCA dividing areas<br><br>1CA simplification<br><br>1MCA calculation 10%<br><br>1CA simplification<br><br>1MCA dividing by 4<br><br>1CA rounding up<br><br>3 marks area of tile<br>2 marks number of tiles<br>2 marks adding 10% tiles or area<br>2 marks number of boxes | M<br>L3 |

| | | | |
|---|---|---|---|
| 3.2.2 | **OR (when rounding consistently up) /*OF*** | **OR/*OF*** | |
| | Area of 1 tile/*Opp van 1 teël* = 35 cm × 35 cm ✓SF<br>= 1 225 $cm^2$<br>= 1 225 ÷ $(100)^2$ $m^2$ ✓C<br>=0,1225 $m^2$ ✓CA | 1 SF substitution<br><br>1C conversion<br>1CA simplification | |
| | Number of tiles needed/*Getal teëls nodig*<br>$= \frac{32}{0,1225}$ ✓MCA ✓CA<br>= 261,2244898 ≈262 | 1MCA dividing areas<br><br>1CA simplification | |
| | Number to add/*Getal om by tetel*<br>✓MCA<br>= 10% of 262 = 26,2 | 1MCA calculation 10% | |
| | Total number of tiles/*Totale aantal teëls*<br><br>= 262 + 26,2 = 288,2 ≈ 289 ✓CA | 1CA simplification | |
| | Number of boxes/*Getalbokse* = $\frac{289}{4}$ ✓MCA = 72,25<br>∴ 73 boxes ✓CA | 1MCA dividing by 4<br><br>1CA rounding up | |
| | **OR/*OF***<br>✓C ✓SF ✓CA<br>Area of 1 tile/*Opp van 1 teël* = $(0,35)^2$ = 0,1225 $m^2$ | **OR/*OF***<br><br>1C conversion<br>1 SF substitution<br>1CA simplification | |
| | Area covered by tiles in a box/<br>*Opp. wat 'n boks teëls bedek*<br>✓MCA<br>= 0,1225 $m^2$ × 4 = 0,49 $m^2$ ✓CA | 1MCA multiplying by 4<br>1CA simplification | |
| | Area to be tiled/*Opp wat geteël word*<br>✓MCA<br>32 × 110% = 35,2 ✓CA | 1MCA calculation 10%<br>1CA simplification | |
| | Number of boxes needed/*Getal bokse nodig*<br>$= \frac{35,2}{0,49}$ ✓MCA ≈ 71,8<br>∴72 boxes ✓CA | 1MCA dividing areas<br><br>1CA rounding up | |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T/L |
|---|---|---|---|
| | **OR/*OF*** | **OR/*OF*** | |
| | Area of tile/ *Opp van 'n teël* = $(35\text{cm})^2$<br>$= 1\ 225\ \text{cm}^2$ ✓A<br>✓A<br>$32\ \text{m}^2 \times 100^2 = 320\ 000\ \text{cm}^2$ ✓C<br>Number of tiles needed/ *Getal teëls nodig*<br>✓MCA<br>$32\ \text{m}^2 = 320\ 000\ \text{cm}^2 \div 1\ 225\ \text{cm}^2$<br>$= 261{,}2244898$ ✓CA<br><br>With extras/ *Met ekstras* $=261{,}2244898 \times 1{,}1$ MCA<br>✓CA<br>$= 287{,}3 = 288$ tiles /*teëls*<br><br>Number of boxes/ *Getal bokse*: $288 \div 4$ ✓MCA<br>$= 72$ ✓CA | 1A simplification<br>1A factor<br>1C conversion<br><br>1MCA dividing areas<br><br>1CA simplification<br><br>1MCA calculation 10%<br><br>1CA simplification<br><br>1MCA dividing by 4<br>1CA rounded up simplification | |
| | **OR/*OF*** | **OR/*OF*** | |
| | ✓C MCA<br>Number of tiles/*Getal teëls* = 4 m ÷ 0,35 ≈ 11,428 ✓A<br>Number of tiles/*Getal teëls* = 5 m ÷ 0,35 ≈ 14,2857<br><br>Total number of tiles for lounge<br>*Totale getal teëls vir woonkamer*<br><br>$= 11{,}4285 \times 14{,}285 = 163{,}2641$ ✓SF<br><br>Number of tiles/*Getal teëls* = 3 m ÷ 0.35 = 8,5714<br>Number of tiles/*Getal teëls* = 4 m ÷ 0,35 = 11,4285<br><br>Total number of tiles for dining<br>*Totale getal teëls vir eetkamer*<br><br>$= 11{,}4285 \times 8{,}5714 = 97{,}9582$<br><br>Total for lounge and dining room<br>*Totaal vir woon en eetkamer*<br><br>$= 163{,}2641 + 97{,}9582 = 261{,}22$ tiles ✓CA<br><br>Including extra for cuttings and breakages/ *Insluitend ekstra vir sny en breek*<br>✓MCA<br>$= 261{,}28 \times 110\%$ = 287,408 ✓CA<br>✓MCA<br>Total number of boxes/*Getal bokse* = 287,408..÷ 4<br>= 71,852<br>≈ 72 ✓CA | 1C conversion<br>1MCA dividing dimensions<br>1A simplification<br><br>1 SF substitution<br><br>1CA simplification<br><br>1MCA calculation 10%<br>1CA simplification<br><br>1MCA dividing by 4<br><br>1CA rounding up<br>(9) | |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T/L |
|---|---|---|---|
| 3.2.3 TR | Bags of tile cement/*Sakke teël sement*<br>$= \frac{32}{3} = 10,7 \approx 11$ ✓A<br>Cost of the cement/*Sementkoste*<br>✓MCA ✓CA<br>= R99,90 × 11 = R1 098,90<br><br>Cost of the grout/*Koste van bryvulsel*<br>= R89,90 × 4 = R359,60 ✓CA<br><br>Cost of the tiles/*Teëlkoste*<br>= R143,84 × 72 = R10 356,48 ✓CA<br><br>Total cost/*Totalekoste* ✓MCA<br>= R10 356,48 + R1 098,90 + R359,60 + R2 500<br>= R14 314,98 ✓CA<br>✓O<br>Her budget is enough./*Haar begroting is genoeg.*<br><br>**OR/*OF***<br>**(using 73 boxes of tiles)**<br>Bags of tile cement/*Sakke teëlsement*<br>$= \frac{32}{3} = 10,7 \approx 11$ ✓A<br>Cost (in rand)/*Koste in rand*<br>✓MCA<br>= 143,84 × 73 + 99,90 × 11 + 89,90 × 4 + 2 500<br>✓CA ✓CA ✓CA ✓MCA<br>= R10 500,32 + R1 098,90 + R359,60 + R2 500<br>= R14 458,82 ✓CA<br>✓O<br>Her budget is enough./*Haar begroting is genoeg.*<br><br>**OR/*OF*** | **CA from Q3.2.2**<br><br>1A number of bags of cement<br><br>1MCA multiplying cost with number<br>1CA cement cost<br><br>1CA grout cost<br><br>1CA tile cost<br><br>1MCA adding 4 values<br><br>1CA simplification<br><br>1O verification<br><br>**OR/*OF***<br><br>1A number of bags of cement<br><br>1MCA multiplying cost with number<br>1CA cement cost<br>1CA grout cost<br>1CA tile cost<br>1MCA adding 4 values<br>1CA simplification<br><br>1O verification<br><br>**OR/*OF***<br><br>3 marks cement cost<br>1 mark tile cost<br>1 mark grout cost<br>2 marks adding costs<br>1 mark verification | M/F<br>L4 |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T/L |
|---|---|---|---|
| | **OR/*OF*** | **OR/*OF*** | |
| | Bags of tile cement/*Sakke sement*<br>$\frac{32}{3} = 10,7 \approx 11$ ✓A<br>Budget verification/*Begroting verifikasie*:<br>✓MCA ✓CA ✓CA ✓CA<br>R15 000 – [(R143,84 × 72) + (4 × R89,90) + (11 × R99,90) + R2 500]<br>✓MCA<br>= R15 000 – (R10 356,46 + R359,60 + R1 098,90 + R2 500)<br>= R15 000 – R14 314,98<br>= R685,02 ✓CA<br>✓O<br>The budget is enough with R685,02 to spare<br>*Die begroting is genoeg met R685,02 oorblywend.* | 1A number of bags of cement<br>1MCA multiplying cost with number<br>1CA tile cost<br>1CA cement cost<br>1CA grout cost<br>1MCA adding 4 values<br>1CA simplification<br>1O verification<br>(8) | |
| | | **[29]** | |

| **QUESTION/*VRAAG* 4 [30 MARKS/*PUNTE*]** | | | |
|---|---|---|---|
| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T/L** |
| *4.1.1 | Right/*Regs* ✓✓RT | 2RT correct direction (2) | MP L1 |
| 4.1.2 (a) | ✓RT<br>K 11 ✓RT | 1RT correct row<br>1RT correct seat (2) | MP L2 |
| *4.1.2 (b) | Total seats/*Totale sitplekke*<br>= 10 + 16 × 5 + 19 + 21 = 130 ✓ A<br><br>Ratio/*Verhouding*<br>= 4 : 130 ✓ MCA<br>= 2 : 65 ✓ CA<br><br>**OR/*OF***<br><br>Total seats/*Totale sitplekke*<br>= 64 + 66 (vacant) = 130 ✓ A<br><br>Ratio/*Verhouding*<br>= 4 : 130 ✓ MCA<br>= 2 : 65 ✓ CA | 1A total seats<br><br>1MCA ratio in correct order<br>1CA simplification<br><br>**OR/*OF***<br><br>1A total seats<br><br>1MCA ratio in correct order<br>1CA simplification (3) | MP L2 |
| 4.1.3 | Total vacant seats/*Totale oop sitplekke* = 66 ✓ A<br><br>Percentage income lost/*Persentasie inkomste verloor*<br>$= \frac{66}{130} \times 100\%$ ✓ MCA<br>= 50,76923077<br>≈ 50,77 % ✓ CA<br><br>**OR/*OF***<br><br>Percentage income from occupied seats<br>*Persentasie inkomste van hierdie sitplekke*<br>$= \frac{64}{130} \times 100\% \approx 49{,}23\%$ ✓ CA<br>Income lost/*Verlore inkomste* = 100% – 49,23% ✓ MCA<br>= 50,77% ✓ CA | **CA Q4.1.2 total seats**<br>1A total vacant seats<br><br>1MCA percentage calculation<br><br>1CA simplification<br><br>**OR/*OF***<br><br>1CA % occupied seats<br>1MCA subtracting from 100%<br>1CA simplification<br>**NPR** (3) | MP L3 |

| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T/L** |
|---|---|---|---|
| 4.2.1 | ✓✓ O<br>To allow air inside the tank to escape as the diesel is pumped in **OR** Release air bubbles formed **OR** To let air in **OR** To protect the tank from exploding or imploding<br>*Om lug wat in die tenk is,uittelaat terwyl diesel ingepomp word* ***OF*** *Lugborrels vry te laat* ***OF*** *Om lug in te laat* ***OF*** *Om te keer dat die tenk ontplof of inplof.* | 2O reason<br>(2) | MP<br>L4 |
| 4.2.2(a) | Inner diameter/*Binne-middellyn*<br>✓ A<br>$= 3{,}22\text{ m} - 2\times\frac{5}{1\,000}\text{ m}$ ✓ C<br>$= 3{,}21\text{ m}$<br>**OR/*OF***<br>✓ A ✓ C<br>$5\text{ mm} + 5\text{ mm} = \frac{10}{1000}\text{ m} = 0{,}01\text{ m}$<br>Inner Diameter $= 3{,}22 - 0{,}01$ m<br>$= 3{,}21$ m | 1A subtracting **double** the thickness<br>1C converting to m<br>**OR/*OF***<br>1A subtracting **double** the thickness<br>1C converting to m<br>(2) | M<br>L2 |
| 4.2.2 (b) | Inner height/*Binne hoogte*<br>✓ MA<br>$= 7{,}25\text{ m} - 2\times\frac{5}{1\,000}\text{ m}$<br>$= 7{,}24$ m ✓ CA<br>✓ MCA<br>Volume $= 3{,}142\times(\frac{3{,}21}{2})^2\times 7{,}24$ ✓ SF<br>$= 3{,}142\times(1{,}605)^2\times 7{,}24$<br>$= 58{,}599622782\text{ m}^3$. ✓ CA<br>Filling volume/*Opvul volume*<br>$= 58{,}599622782\text{ m}^3\times 95\%$ ✓ MCA<br>$= 55{,}6696416429\text{ m}^3$ ✓ CA<br>Number of litres/*Hoeveelheid liter*<br>$= 1\,000\times 55{,}6696416429\text{ m}^3$<br>$= 55\,669{,}64\ \ell$ ✓ C | 1MA subtracting double the thickness<br>1CA simplification<br>1MCA finding radius<br>1SF correct values<br>1CA simplification<br>1MCA percentage finding<br>1CA capacity<br>1C to litres<br>(8) | M<br>L3 |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T&L |
|---|---|---|---|
| 4.2.3 | ✓ MCA ✓ SF<br>SA/*BO* = 2 × 3,142 × (1,61) × (1,61 + 7,25)<br>≈ 89,64 m$^2$ ✓ S<br><br>Total area to be painted/*Totale oppervlakte om te verf*<br><br>= 89,64 m$^2$ – 1 m$^2$ ✓ MCA<br><br>= 88,64 m$^2$ . ✓CA<br><br>✓ MCA<br>Litres needed/*Liter nodig* = 88,64 ÷ 3<br><br>= 29,55 ✓ CA<br><br>Valid ✓ O<br><br>**OR/*OF***<br>✓ A ✓ SF<br>SA/BO = 2 × 3,142 × (1,61) × (1,61 + 7,25)<br>≈ 89,64 m$^2$ ✓ S<br><br>Surface Area = 89,64 m$^2$ – 1 m$^2$ ✓ MCA<br>= 88,64 m$^2$ ✓CA<br><br>Area that can be covered by 30 ℓ /*Opp wat met 30 ℓ geverf word*<br><br>✓ MA<br>30 litres × 3 = 90 m$^2$ ✓CA<br><br>Less is needed/ *Minder word benodig* ✓ O | **CA from Q4.2.2**<br>1MCA correct radius<br>1SF substitution<br>1S simplification<br><br><br><br>1MCA subtracting 1 m$^2$<br><br>1CA simplification<br><br>1MCA dividing by 3<br><br>1CA simplification<br><br>1O verification<br><br>**OR/*OF***<br><br>1A correct radius<br>1SF substitution<br>1S simplification<br><br>1MCA subtracting 1 m$^2$<br>1CA simplification<br><br><br><br>1MA multiplying by 3<br>1CA simplification<br><br>1O verification<br>(8) | M<br>L4 |
| | | **[30]** | |

| **QUESTION/*VRAAG* 5 [28 MARKS/*PUNTE*]** | | | |
|---|---|---|---|
| **Q/*V*** | **Solution/*Oplossing*** | **Explanation/*Verduideliking*** | **T&L** |
| 5.1.1 | ✓✓ RT<br>Front view **OR** Back view **OR** Rear view<br>*Vooraansig **OF** Agteraansig* | 2RT view<br>(2) | MP<br>L1 |
| 5.1.2 | Width of the bakkie/*Bakkie se breedte* = 1,86 m ✓ C<br>2D = 3,6 m – 1,86 m<br>= 1,74 m ✓ MA<br>D = $\frac{1,74}{2}$ m ✓ MCA<br>= 0,87 m ✓ CA<br>**OR/*OF***<br>Width of the garage/*Motorhuis se breedte* = 3 600 mm ✓ C<br>2D = 3 600 mm – 1 860 mm<br>= 1 740 mm ✓ MA<br>D = $\frac{1740}{2}$ mm ✓ MCA<br>= 870 mm ✓ CA | 1C conversion<br>1MA difference<br>1MCA dividing by 2<br>1CA simplification<br>**OR/*OF***<br>1C conversion<br>1MA difference<br>1MCA dividing by 2<br>1CA simplification<br>(4) | M<br>L2 |
| 5.1.3 | Number of choices/*Getal keuses* = 4 × 2 ✓ MA<br>= 8 ✓ CA | 1MA multiplying<br>1CA number of choices.<br>(2) | P<br>L2 |
| 5.2.1 | A map is drawn to scale while a strip chart is not. ✓✓A<br>*'n Kaart word volgens skaal geteken terwyl 'n strook kaart nie.*<br>**OR/*OF***<br>A map shows the routes in a winding manner while a stip chart shows them as straight lines.<br>*'n Kaart toon die kronkelende roetes terwyl die strook kaart dit in reguitlyne wys.* | 2A statement<br>(2) | MP<br>L1 |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T&L |
|---|---|---|---|
| *5.2.2 | Distance/*Afstand* (Springbok to/*na* Gobabis)<br>= 892 km + 203 km ✓ RT ✓ RT<br>= 1 095 km ✓ CA | 1RT correct 892<br>1RT adding<br>1CA distance in km<br>(3) | MP<br>L2 |
| 5.2.3 | Noordoewer ✓✓RT | 2RT correct town<br>(2) | MP<br>L2 |
| 5.2.4<br>(a) | Distance Mariental to Keetmanshoop<br>*Afstand van Mariental na Keetmanshoop*<br>= 644 – 427 ✓ RT = 217 km ✓ A<br><br>Total distance travelled/*Totale afstand afgelê*<br>= 140 km + 289 km + 217 km = 646 km. ✓ CA<br><br>**OR/*OF***<br><br>Distance/ *Afstand* ✓ RT<br>= 140 km + 289 km + (465 km – 248 km)<br>= 140 km + 289 km + 217 km ✓ A<br>= 646 km ✓ CA | 1RT distances<br>1A simplification<br><br>1CA distance<br><br>**OR/*OF***<br><br>1RT distances<br>1A simplification<br>1CA distance<br>(3) | MP<br>L2 |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T&L |
|---|---|---|---|
| 5.2.4 (b) | ✓ SF ✓ S<br>Time/*Tyd* 1 = 140 km ÷ 80 km/h = 1,75 hrs<br>Time /*Tyd* 2 = 289 km ÷ 80 km/h = 3,6125 hrs ✓ S<br>Time/*Tyd* 3 = 217 km ÷ 120 km/h = 1,808333333 hrs ✓ S<br>Stoppage time = 3 × 25 min = 75 min = 1,25 hrs ✓ S<br><br>Travelling time including breaks<br>= 1,75 + 3,6125 + 1,808333333 + 1,25 ✓ MCA<br>= 8,420833333 hrs ✓CA<br>= 8 h 25 ✓ C<br>Travelling time = 12:25 – 04:00 ✓ MA<br>= 8 h 25 ✓ A<br>Letitia's statement is CORRECT/*KORREK* ✓ O<br><br>**OR/*OF***<br><br>Total time taken/*Totale tydsduur*<br>= 12:25 – 4:00 ✓ MA<br>= 8 h 25 min ✓ A<br><br>Driving time on gravel road/*Bestuurstyd op grondpad*<br>✓ S<br>= $\frac{429\ km}{80\ km/h}$ ✓ SF<br>= 5,3625 h ✓ S<br><br>Driving time on tarred road/*Bestuurstyd op teerpad*<br>= $\frac{217\ km}{120\ km/h}$<br>= 1,808333h ✓ S<br><br>Total time/*Totale tyd* = 5,3265 h + 1,808 hr<br>= 7,170833… hours/*uur* ✓ CA<br>= 7 hours + 0,17083333 × 60<br>= 7 h 10 min ✓ C<br><br>∴ Total break time/*Totale rustyd*<br>= 8 h 25 min – 7 h 10 min = 1 h 15 min ✓ CA<br><br>Duration of breaks/*Rustye se duur*<br>= 3 × 25 min<br>= 75 min<br>= 1h 15 min ✓A<br><br>**OR/*OF***<br><br>Each break/*Elke rustyd*<br>= $\frac{1h15\,min}{3}$<br>= 25 min<br><br>Letitia is CORRECT/*KORREK* ✓ O<br><br>**OR/*OF*** | 1SF substitution<br>1S simplification<br>1S simplification<br>1S simplification<br>1S simplification<br><br>1MCA adding time<br>1CA simplification<br>1C converting time<br><br>1MA subtracting<br>1A total travelling time<br>1O opinion<br><br>**OR/*OF***<br><br>1MA subtracting<br>1A total travelling time<br><br>1S total distance<br>1SF substitution<br><br>1S simplification<br><br>1S simplification<br><br>1CA simplification time<br><br>1C converting time<br><br>1CA simplification<br><br>1A break time<br><br>1O opinion<br><br>**OR/*OF*** | M<br>L4 |

| Q/*V* | Solution/*Oplossing* | Explanation/*Verduideliking* | T&L |
|---|---|---|---|
| | ✓ SF ✓ S<br>Time/*Tyd* 1 = 140 km ÷ 80 km/h = 1h 45 min<br>Time /*Tyd* 2 = 289 km ÷ 80 km/h = 3h 36 min ✓ S<br>Time/*Tyd* 3 = 217 km ÷ 120 km/h = 1h 48 min ✓ S<br><br>Travelling time/*Reis tyd*<br>= 1h 45 min + 3h 36 min + 1h 48 min ✓ MCA<br>= 7 h 9 min ✓CA<br><br>Travelling time /*Reis tyd* = 12:25 – 04:00 ✓ MA<br>= 8 h 25 min ✓ A<br><br>∴ Total break time/*Totale rustyd*<br>= 8 h 25 min – 7 h 9 min = 1 h 16 min ✓ CA<br><br>Each break/*Elke rustyd*<br>$= \frac{1h16\,\text{min}}{3}$<br>≈ 25 mins ✓ S<br><br>Letitia's statement is CORRECT/*KORREK* ✓ O | 1SF substitution<br>1S simplification<br>1S simplification<br>1S simplification<br><br>1MCA adding time<br>1CA simplification<br><br>1MA subtracting<br>1A traveling time<br><br>1CA simplification<br><br>1S break time<br><br>1O opinion<br>(11) | |
| | | **[29]** | |

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|---|---|
| **NOTES: MATHEMATICAL LITERACY PAPER 2** | |
| **Level 4 Questions: Calculations must be evident to award the conclusion/opinion mark.**<br>**When rounding it must be correctly rounded to a minimum of 2 decimal places unless stated otherwise.**<br>**On higher order (i.e level three to four multi-step calculations) questions no penalty for correct early rounding.** | |
| **QUESTION 1** | |
| 1.1.4 | Accept: B |
| 1.1.5 | Accept: E or B |
| 1.2.2 | Accept **cubic centimeters** (i.e. **cm$^3$**) / Kubieke centimeter |
| 1.2.4 | **CA only apply if 1 value is correct**. That is, either 2 100 or 70 must have been used in a fraction for a ***max. 2 marks,*** on condition it is correctly simplified. |
| 1.3.5 | Accept, for ***full marks*** description:<br>• Ten past two in the afternoon. /*Tien oor twee in die namiddag*.<br>• Ten past two post meridian. / *Tien oor twee meridiaan*<br>• Ten past two pm / *Tien oor twee nm* |
| **QUESTION 2** | |
| 2.2.2 | Accept East of South |
| 2.2.3 | Accept one of the following street names for full marks:<br>• King.<br>• Pioneer. |
| **QUESTION 3** | |
| 3.2.1 | Candidates need not show (20 + 12)m$^2$ |
| 3.2.2 | **Full marks can be awarded for this solution:**<br>**Lounge:** Length = 4m ÷ 0,35<br>= 11,428<br>≈ 12<br>Width = 5m ÷ 0,35<br>= 14,285<br>= 15<br>□ Total tiles = 12 × 15<br>= 180 tiles<br><br>**Dining:** Length = 4m ÷ 0,35<br>= 11,428<br>≈ 12<br>Width = 3 ÷ 0,35<br>= 8,571<br>≈ 9<br>□ Total tiles = 11 × 9<br>= 108 tiles<br><br>Hence, total tiles needed = 180 + 108<br>= 288<br><br>Number to add = 288 × 1,1<br>= 316,8<br>≈ 317<br>□ Number of boxes = 317 ÷ 4<br>= 79,25<br>≈ 80 boxes |

| | |
|---|---|
| **QUESTION 4** | |
| 4.1.1 | Accept:<br>• East / *Oos* or E / *O* |
| 4.1.2 (b) | Accept, for full marks ratio given as:<br>• 4:130 or $\frac{4}{130}$<br>However, if given **4:incorrect 2nd part**. Did not show how incorrect 2nd part was obtained can get max. 2 marks provided it is simplified correctly.<br>Accept answer simplified into unit ratio. |
| **QUESTION 5** | |
| | |
| 5.2.2 | CA considered only if adding distance from strip chart other than 203km, then (max 2 marks). |

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