



# basic education

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

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**MATHEMATICAL LITERACY P2**

**NOVEMBER 2016**

**FINAL MARKING GUIDELINE**

**MARKS: 150**

| <b>Symbol</b> | <b>Explanation</b>                                       |
|---------------|--|
| M             | Method   |
| MA            | Method with accuracy                                     |
| CA            | Consistent accuracy                                      |
| A             | Accuracy   |
| C             | Conversion   |
| S             | Simplification   |
| RT/RG/RD      | Reading from a table/graph/map/diagram                   |
| SF            | Correct substitution in a formula                        |
| O             | Opinion/reason/deduction/example                         |
| P             | Penalty, e.g. for no units, incorrect rounding off, etc. |
| R             | Rounding off   |
| NP            | No penalty for rounding                                  |
| AO            | Answer only full marks                                   |
| J             | Justification  |

**This memorandum consists of 19 pages.**

| <b>QUESTION 1 [36 MARKS]</b> |  |  |                |
|------------------------------|--|--|----------------|
| <b>Ques</b>                  | <b>Solution</b>  | <b>Explanation</b>   | <b>T&amp;L</b> |
| 1.1.1                        | $P_{(\text{even number date})} = \frac{11}{22}$ $= \frac{1}{2} \text{ or } 0,5 \text{ or } 50\%$   | 2A numerator<br>1A denominator<br><br>AO (3)   | P<br>L2        |
| 1.1.2                        | <ul style="list-style-type: none"> <li>• Quality of bank services / security / perks. ✓✓O</li> <li style="text-align: center;"><b>OR</b></li> <li>• Proximity or accessibility of the bank. ✓✓O</li> <li style="text-align: center;"><b>OR</b></li> <li>• Marketing/advertising appeal ✓✓O</li> <li style="text-align: center;"><b>OR</b></li> <li>• Loyalty to bank ✓✓O</li> <li style="text-align: center;"><b>OR</b></li> <li>• Religious reasons / Economical reasons ✓✓O</li> </ul> Any other suitable reason | 2O reason<br><br><br><br><br><br><br><br><br><br>(2)   | F<br>L4        |
| 1.1.3                        | $2014 \text{ Fee} = R3,50 + 1,1\% \times R1\,000$ $= R14,50$ $\% \text{ change} = \left( \frac{R15,50}{R14,50} - 1 \right) \times 100\%$ $= \left( \frac{R1,00}{R14,50} \right) \times 100\%$ $= 6,8965517\dots$ $A \approx 6,9\%$ <p style="text-align: center;"><b>OR</b></p> $\% \text{ change} = \left( \frac{R15,50}{R3,50 + 0,011 \times R1\,000} - 1 \right) \times 100\%$ $= \left( \frac{R15,50}{R14,50} - 1 \right) \times 100\%$ $= 6,8965517\dots$ $A \approx 6,9\%$                                   | 1SF substituting R1000<br>1CA 2014 fee<br><br>1SF correct values<br><br>1CA simplification<br>1R rounding<br><br><b>OR</b><br>1SF correct values<br>1SF substituting R1000<br><br>1CA 2014 fee<br><br>1CA simplification<br>1R rounding<br><br>(5) | F<br>L2        |

| Ques  | Solution   | Explanation  | T&L             |
|-------|--|--|-----------------|
| 1.1.4 | <p>Withdrawal fee R15 000 at Bank X</p> $= R3,95 + 0,013 \times R15\ 000$ $= R198,95$ <p>Fees for 4 withdrawals</p> $= R198,95 \times 4$ $= R795,80$ <p>Withdrawal fee for R15 000 at Bank Y</p> $= R4,00 + R15\ 000 \times 1,15\%$ $= R176,50$ <p>Fees for 4 withdrawals = <math>4 \times R176,50</math></p> $= R706,00$ <p>Difference in fees = <math>R795,80 - R706,00</math></p> $= R89,80$ <p>It is NOT VALID.</p> <p style="text-align: center;"><b>OR</b></p> <p>Withdrawal fee R15 000 at Bank X</p> $= R3,95 + 0,013 \times R15\ 000$ $= R198,95$ <p>Withdrawal fee for R15 000 at Bank Y</p> $= R4,00 + R15\ 000 \times 1,15\%$ $= R176,50$ <p>Difference in fees = <math>R198,95 - R176,50 = R22,45</math></p> <p>Saving on 4 withdrawals = <math>R22,45 \times 4 = R89,80</math></p> <p>It is NOT VALID.</p> | <p>1SF substituting</p> <p>1CA weekly charges</p> <p>1CA fees for 4 withdrawals</p> <p>1CA charges</p> <p>1CA fees for 4 withdrawals</p> <p>1CA difference</p> <p>1O conclusion</p> <p style="text-align: center;"><b>OR</b></p> <p>1MA substituting</p> <p>1CA weekly charges</p> <p>1CA charges</p> <p>1CA difference</p> <p>1M fees for 4 withdrawals</p> <p>1CA October charges</p> <p>1O conclusion</p> | <p>F<br/>L4</p> |



| Ques  | Solution  | Explanation  | T&L     |
|-------|---|--|---------|
|       | $\text{Monthly wage} = R2\,142,85 \times \frac{52}{12}$ $= R9\,285,68$  | 1M multiplying<br>1A 52 weeks in year<br>1MA dividing by 12<br><br>1CA total wage<br>(4)   |         |
| 1.2.1 | <ul style="list-style-type: none"> <li>• More small/local companies may have entered the market ✓✓O</li> <li>• The increased use of smartphones, laptops and tablets ✓✓O</li> <li>• Locally produced no need to import. ✓✓O</li> <li>• Cost of transport increased ✓✓O</li> <li>• Economical reasons / factors ✓✓O</li> <li>• Maritime piracy / security ✓✓O</li> <li>• Other means of transport used ✓✓O</li> <li>• Durability - demand for new computers became less ✓✓O</li> </ul> Or any other valid factors with reasons | 2O factor with reason<br><br>2O factor with reason<br><br><br><br><br><br><br><br><br><br>(4)  | D<br>L4 |
| 1.2.2 | Q1 of 2012:<br>$(15,7 + 11,7 + 10,1 + 9 + 5,4) \text{ million}$ $= 51,9 \text{ million or } 51\,900\,000$ Q1 of 2013:<br>$= (12 + 11,7 + 9 + 6,2 + 4,4) \text{ million}$ $= 43,3 \text{ million or } 43\,300\,000$ Difference between 2013 and 2012<br>$= 51,9 \text{ mil} - 43,3 \text{ mil} = 8,6 \text{ million or } 8\,600\,000$ <p style="text-align: center;"><b>OR</b></p>   | 1MA adding correct values<br>1CA total shipment in 2012<br><br><br><br><br><br><br><br><br><br>1MA total shipment in 2013<br><br><br><br><br><br><br><br><br><br>1CA difference in million<br><br><br><br><br><br><br><br><br><br><p style="text-align: center;"><b>OR</b></p> | D<br>L2 |

| Ques  | Solution   | Explanation  | T&L     |
|-------|--|--|---------|
|       | Differences (in millions) for<br>$A = 15,7 - 12,0 = 3,7$<br>$B = 11,7 - 11,7 = 0$ ✓A<br>$C = 10,1 - 9,0 = 1,1$<br>$D = 9,0 - 6,2 = 2,8$ ✓A<br>$E = 5,4 - 4,4 = 1$<br>✓M<br>Total difference = $(3,7 + 1,1 + 2,8 + 1)$ million<br>$= 8,6$ million ✓CA   | 2A differences in millions<br><br>1M adding all differences<br>1CA total difference in million<br>Penalty if million omitted<br><br>(4)  |         |
| 1.2.3 | $\% \text{ change A} = \frac{12\,000\,000 - 15\,700\,000}{15\,700\,000} \times 100\% \quad \checkmark\text{RT} \quad \checkmark\text{M}$ $= -23,56687898\% \quad \checkmark\text{CA}$ $\% \text{ change D} = \frac{6\,200\,000 - 9\,000\,000}{9\,000\,000} \times 100\% \quad \checkmark\text{M}$ $= -31,11111111\% \quad \checkmark\text{CA}$ The statement is NOT VALID. ✓O<br><br><p style="text-align: center;"><b>OR</b></p> Percentage of 2012 shipped in 2013:<br>By A: $\frac{12,0}{15,7} \times 100\% \quad \checkmark\text{RT}$<br>$= 76,43\% \quad \checkmark\text{A}$<br>$\therefore \text{Percentage decrease} = 100\% - 76,43\% = 23,57\% \quad \checkmark\text{M}$<br>$\text{By D: } \frac{6,2}{9} \times 100\% \quad \checkmark\text{RT}$ $= 68,89\% \quad \checkmark\text{A}$<br>$\therefore \text{Percentage decrease} = 100\% - 68,89\% = 31,11\% \quad \checkmark\text{M}$<br>D shows the greatest decrease, the statement is NOT VALID ✓O | 1RT correct values<br>1M calculating % change<br>1CA % change<br><br>1RT correct values<br>1M calculating % change<br><br>1CA % change<br>1O conclusion<br><br><p style="text-align: center;"><b>OR</b></p> 1RT correct values<br><br>1A percentage<br>1M % change<br><br>1RT correct values<br><br>1A percentage<br>1M % change<br>1O conclusion<br><br>NP<br>(7) | D<br>L4 |
|       |  | [36]   |         |

| <b>QUESTION 2 [47 MARKS]</b> |  |  |                |
|------------------------------|--|--|----------------|
| <b>Ques</b>                  | <b>Solution</b>  | <b>Explanation</b>   | <b>T&amp;L</b> |
| 2.1.1<br>(a)                 | $\begin{aligned} \text{Amount} \times 109,7\% &= \text{R}218,9 \text{ billion} \\ \text{Total amount spent} &= \frac{\text{R}218,9 \text{ billion}}{109,7\%} \\ &= \text{R}199\,544\,211\,500 \\ &\text{or} \\ &\text{R}199,54 \text{ billion or } 1,9954 \times 10^{11} \end{aligned}$  | 1A correct value and %<br><br>1M dividing by 109,7%<br><br>1CA total amount<br>NP<br>(3)   | F<br>L2        |
| 2.1.1<br>(b)                 | $\begin{aligned} &\text{It is more appropriate to round to one decimal place.} \\ &\text{If a rand value in billions is rounded off to a whole number,} \\ &\text{the amount that is added or lost is hundreds of millions of} \\ &\text{rands.} \\ &\text{OR} \\ &\text{It is not appropriate to round to off to a whole number since it} \\ &\text{has a big financial implication.} \end{aligned}$  | 1A statement<br><br>2O explanation<br><br>(Note: More appropriate can be implied in the statement)<br><br>(3)  | F<br>L4        |
| 2.1.2                        | $\begin{aligned} &\text{International: } 43\% \text{ of R } 218,9 \text{ billion} = \text{R}94,127 \text{ billion} \\ &\text{Number of visitors} = 14,3 \text{ million or } 14\,300\,000 \\ &\text{Average spent per visitor} = \frac{\text{R}94\,127\,000\,000}{14\,300\,000} \\ &= \text{R}6\,582,31 \\ &\text{This is NOT correct.} \\ &\text{OR} \\ &\text{International: } 43\% \times \text{R } 218,9 \text{ billion} = \text{R}94,127 \text{ billion} \\ &\text{Average spent per visitor} = \frac{\text{R}94,127 \times 1000 \text{ million}}{14,3 \text{ million}} \\ &= \text{R}6\,582,31 \\ &\text{This is NOT correct.} \end{aligned}$ | 1A percentage<br>1A amount<br><br>1C conversion<br>1MA average<br><br>1CA value<br><br>1O conclusion<br><br>OR<br>1A percentage<br>1A amount<br><br>1C conversion<br>1MA average<br><br>1CA value<br><br>1O conclusion<br><br>OR | F<br>L3        |

| Ques  | Solution  | Explanation  | T&L     |
|-------|---|--|---------|
|       | <p>Amount spent by the International visitors</p> $= R6\,580 \times 14,3 \text{ million}$ $= R94\,094 \text{ million} = R94,094 \text{ billion}$ <p>But spent by international tourists is</p> $43\% \times R\,218,9 \text{ billion} = R94,127 \text{ billion}$ <p>The amount was NOT CORRECT</p>   | <p>1MA multiplying</p> <p>1A amount<br/>1C conversion</p> <p>1A percentage<br/>1A amount</p> <p>1O conclusion</p>                            | (6)     |
| 2.1.3 | Air transport and road transport  | 1A for each item   | F<br>L2 |
| 2.1.4 | <p>Payment of tourism levy</p> <p>Purchase of souvenirs</p> <p>Entrance fees to tourist attractions</p> <p>Any other suitable</p>   | 2O example   | F<br>L4 |
| 2.1.5 | <p>Growth in 2014 = 2,9% × R103,6 billion</p> <p>GDP contribution (2014) = (R3,0044 + R103,6) billion</p> <p>Growth in 2015 = 2,9% × R106,6044 billion</p> <p>GDP contribution (2015) = (R3,0915276 + R106,6044) billion</p> <p>Growth in 2016 = 2,9% × R109,6959276 billion</p> <p>GDP contribution (2016) = (R3,1811819 + R109,6959276) bil.</p> <p>or R112 877 000 000 or R112,877 billion</p> | <p>1M multiplying</p> <p>1M adding<br/>1CA amount in 2014</p> <p>1CA amount in 2015</p> <p>1CA amount in 2016</p> <p>1R correct rounding</p> | OR      |





| Ques         | Solution   | Explanation   | T&L   |
|--------------|--|---|---|
| 2.2.1<br>(c) | <p>Actual train travel time:</p> <p style="text-align: center;">✓RT</p> <p>13:24 (day2) to 17:30 (day1) – stopover time</p> <p style="text-align: center;">✓CA</p> <p>= 19 hr 54 min – 2 hr 18 min ✓M</p> <p>= 17 hr 36 min = 17,6 hr ✓C</p> <p><math>D = S \times T</math></p> <p>992 km = S × 17hr 36 min ✓SF</p> <p><math>S = \frac{992 \text{ km}}{17,6 \text{ hour}} \quad \checkmark S</math></p> <p>= 56,36 km/h ✓CA</p> <p style="text-align: center;"><b>OR</b></p> <p>Total time = 24 hours – 17h30 + 13h24 = 19hr 54 min<br/> <span style="margin-left: 100px;">✓RT</span> <span style="margin-left: 100px;">✓CA</span></p> <p>19hr 54 min – 2 hrs 18 min = 17 hrs 36 min = 17,6 hr<br/> <span style="margin-left: 100px;">✓M</span> <span style="margin-left: 100px;">✓C</span></p> <p><math>D = S \times T</math></p> <p>992 km = S × 17,6 hr ✓SF</p> <p><math>S = \frac{992 \text{ km}}{17,6 \text{ hour}} \quad \checkmark S</math></p> <p>≈ 56 km/h ✓CA</p> <p style="text-align: center;"><b>OR</b></p> <p>From 17:30 to 00:00 = 6 hrs 30 min }<br/>         From 00:00 to 13:24 = 13hrs 24 min } ✓RT</p> <p>Time of journey = 19 hrs and 54 minutes ✓CA</p> <p>Travel time = 19 hr 54 min – 2 hr 18 min ✓M</p> <p>= 17 hr 36 min</p> <p><math>D = S \times T</math></p> <p>992 km = S × 17,6 hr ✓SF</p> <p>Average Speed = <math>\frac{992 \text{ km}}{17,6 \text{ hour}} \quad \checkmark S</math><br/> <span style="margin-left: 100px;">✓C</span></p> <p>= 56,36 km/h ✓CA</p> | <p>CA From Q2.2.1(a)</p> <p>1RT start and end time</p> <p>1CA 19 hours 54 min</p> <p>1M subtracting stopover time</p> <p>1C conversion</p> <p>1SF substitution</p> <p>1S changing subject of formula</p> <p>1CA simplification</p> <p style="text-align: center;"><b>OR</b></p> <p>1RT start and end time</p> <p>1CA 19 hours 54 min</p> <p>1M subtracting stopover time</p> <p>1C conversion</p> <p>1SF substitution</p> <p>1S changing subject of formula</p> <p>1CA simplification</p> <p style="text-align: center;"><b>OR</b></p> <p>1RT start and end times</p> <p>1CA trip time</p> <p>1M subtracting stopover time</p> <p>1SF substitution</p> <p>1S changing subject of formula</p> <p>1C conversion</p> <p>1CA simplification</p> | <p>M<br/>L3</p> <p style="text-align: center;">NP</p> <p style="text-align: right;">(7)</p> |

| Ques  | Solution   | Explanation   | T&L               |
|-------|--|---|-------------------|
| 2.2.2 | <p><b>Forward trip in January:</b></p> <p>Parents = <math>2 \times R560 = R1\ 120</math> ✓MA</p> <p>Father = <math>R560 - R560 \times 25\%</math> ✓MA <b>OR</b> <math>R560 \times 75\%</math><br/> = <math>R420</math> ✓CA</p> <p>Children's fare = <math>R560 \times 80\% = R448</math> ✓MA<br/> Two children = <math>2 \times R448 = R896</math> ✓CA</p> <p>Total fare for family: <math>R1\ 120 + R420 + R896 = R2\ 436</math> ✓CA</p> <p><b>Return trip in February:</b></p> <p>Parents fare = <math>2 \times R490 = R980</math> ✓A</p> <p>Father = <math>R490</math> minus <math>R490 \times 25\%</math> or <math>R490 \times 75\%</math><br/> = <math>R367,50</math> ✓A</p> <p>Two children = <math>2 \times (R490 - R490 \times 50\%)</math><br/> = <math>R490</math> ✓A</p> <p>Total fare for return trip = <math>R980 + R490 + R367,50</math><br/> = <math>R1\ 837,50</math> ✓CA</p> <p>Total cost for both trips = <math>R2\ 436 + R1\ 837,50</math><br/> = <math>R4\ 273,50</math> ✓CA</p> <p style="text-align: center;"><b>OR</b></p> | <p>1MA two adult price</p> <p>1MA discounted price for over 55 yrs<br/> 1CA father's fare</p> <p>1MA children fare<br/> 1CA total children's fare</p> <p>1CA Jan total fares</p> <p>1A adults Feb fare</p> <p>1A senior citizen fare</p> <p>1A children Feb fare</p> <p>1CA total Feb trip's fare</p> <p>1CA total trip fare<br/> (Note: Max of 6 marks if only one trip is calculated ; Max of 9 marks for using the same fare for both trip)</p> <p style="text-align: center;"><b>OR</b></p> | <p>Fin<br/>L3</p> |

| Ques | Solution   | Explanation  | T&L                     |
|------|--|--|-------------------------|
|      | $\begin{aligned} \text{Father's fare} &= (R560 + R490) \times 75\% \\ &= R787,50 \\ \text{Parents' fare} &= 2 \times (R560 + 490) \\ &= R2\ 100 \\ \text{Children's fare} &= (R560 \times 80\% + R490 \times 50\%) \times 2 \\ &= R1\ 386 \\ \text{Total fare for both trips} &= R787,50 + R2\ 100 + R1\ 386 \\ &= R4\ 273,50 \end{aligned}$ | <p>1MA adding correct values<br/>1MA 75 %<br/>1M % calculation<br/>1CA simplification</p> <p>1MA adding and multiplying<br/>1CA simplification<br/>1MA 80%<br/>1MA 50%<br/>1A correct values</p> <p>1CA simplification</p> <p>1CA total return trip fare</p> | <p>(11)</p> <p>[47]</p> |
|      |  |  |                         |

| <b>QUESTION 3 [31 MARKS]</b> |   |   |                |
|------------------------------|---|---|----------------|
| <b>Ques</b>                  | <b>Solution</b>   | <b>Explanation</b>  | <b>T&amp;L</b> |
| 3.1.1                        | <p>Capacity of section C = <math>5 \text{ m} \times 1,2 \text{ m} \times 15 \text{ m} \checkmark\text{SF}</math><br/> <math>= 90 \text{ m}^3 \checkmark\text{CA}</math></p> <p>Capacity of section A = <math>2 \text{ m} \times 12,5 \text{ m} \times 15 \text{ m} \checkmark\text{SF}</math><br/> <math>= 375 \text{ m}^3 \checkmark\text{CA}</math></p> <p>Maximum capacity = <math>90 \text{ m}^3 + 375 \text{ m}^3 + 300 \text{ m}^3 \checkmark\text{MA}</math><br/> <math>= 765 \text{ m}^3</math></p> <p style="text-align: center;"><b>OR</b></p> <p>Maximum capacity = Capacity of section (A + B + C)<br/> <math>= 2 \text{ m} \times 12,5 \text{ m} \times 15 \text{ m} + 300 \text{ m}^3 + 5 \text{ m} \times 1,2 \text{ m} \times 15 \text{ m} \checkmark\text{SF}</math><br/> <math>= 375 \text{ m}^3 + 300 \text{ m}^3 + 90 \text{ m}^3 \checkmark\text{CA} \checkmark\text{MA}</math><br/> <math>= 765 \text{ m}^3</math></p> <p style="text-align: center;"><b>OR</b></p> <p>Volume = <math>30 \text{ m} \times 15 \text{ m} \times 2 \text{ m} \checkmark\text{SF}</math><br/> <math>= 900 \text{ m}^3 \checkmark\text{CA}</math></p> <p>Volume beneath C = <math>5 \text{ m} \times 15 \text{ m} \times 0,8 \text{ m}</math><br/> <math>= 60 \text{ m}^3</math></p> <p>Volume beneath B = <math>\frac{1}{2} \times 12,5 \text{ m} \times 15 \text{ m} \times 0,8 \text{ m} \checkmark\text{SF}</math><br/> <math>= 75 \text{ m}^3 \checkmark\text{CA}</math></p> <p>Maximum capacity = <math>900 \text{ m}^3 - 60 \text{ m}^3 - 75 \text{ m}^3 \checkmark\text{MA}</math><br/> <math>= 765 \text{ m}^3</math></p> | <p>1SF correct values<br/>1CA capacity section C</p> <p>1SF correct values<br/>1CA capacity section A</p> <p>1MA adding capacities in <math>\text{m}^3</math></p> <p style="text-align: center;"><b>OR</b></p> <p>1SF Correct values for A</p> <p>1SF correct values for C<br/>1CA capacity section A<br/>1CA capacity section C<br/>1MA adding capacities in <math>\text{m}^3</math></p> <p style="text-align: center;"><b>OR</b></p> <p>1SF volume</p> <p>1CA volume section A</p> <p>1SF volume beneath B</p> <p>1CA volume beneath B</p> <p>1MA subtracting volume in <math>\text{m}^3</math></p> <p style="text-align: right;">(5)</p> | M<br>L3        |
| 3.1.2                        | <p>Volume of water = <math>94\% \times 765 \text{ m}^3 \checkmark\text{M}</math><br/> <math>= 719 100 \ell \checkmark\text{C}</math><br/> <math>= \frac{719 100 \times 1}{3,785} \text{ gallons} \checkmark\text{C}</math><br/> <math>\approx 189 986,79 \text{ gallons} \checkmark\text{CA}</math></p> <p style="text-align: center;"><b>OR</b></p>  | <p>1M calculating %<br/>1C convert to litres</p> <p>1C convert to gal.</p> <p>1CA simplification</p> <p style="text-align: center;"><b>OR</b></p>   | M<br>L3        |

| Ques         | Solution   | Explanation   | T&L |
|--------------|--|---|-----|
|              | <p>Capacity (in litres) = <math>765 \text{ m}^3 \times 1\,000 = 765\,000 \text{ l}</math> ✓C</p> <p>Capacity( in gallons) = <math>\frac{765\,000}{3,785}</math> ✓C<br/>= 202 113,6063</p> <p>Volume of water = <math>94\% \times 202\,113,6063</math> ✓M<br/>= 189 986,79 gallons ✓CA</p>  | <p>1C convert to litres</p> <p>1C convert to gal.</p> <p>1M calculating %</p> <p>1CA simplification</p> <p>NP</p> <p>(4)</p>  |     |
| <p>3.1.3</p> | <p>In 1 hour 2 350 litres of water will flow.</p> <p>In 1 day: <math>24 \times 2\,350</math> litres ✓MA<br/>= 56 400 litres will flow ✓CA</p> <p>In <math>2\frac{1}{2}</math> days amount of water flowing = <math>2\frac{1}{2} \times 56\,400</math> litres ✓M<br/>= 141 000 litres ✓CA</p> <p>∴ Statement is NOT VALID. ✓O</p> <p style="text-align: center;"><b>OR</b></p> <p>Time to fill swimming pool = <math>\frac{135\,000\text{l}}{2\,350\text{l/h}}</math> ✓MA<br/>≈ 57,4468 hours ✓CA</p> <p>57,4468 hrs = 2 days and 9 h 27 min ✓M</p> <p>Two and a half days = 2 days 12 hours ✓C</p> <p>∴ Statement is NOT VALID ✓O</p> <p style="text-align: center;"><b>OR</b></p> <p>Time to fill swimming pool = <math>\frac{135\,000\text{l}}{2\,350\text{l/h}}</math> ✓MA<br/>≈ 57,4468 hours ✓CA</p> <p>· Two and a half days = <math>(2 \times 24 + 12)</math> hours = 60 hours ✓A</p> <p>∴ Statement is NOT VALID ✓O</p> <p style="text-align: center;"><b>OR</b></p> | <p>1MA using flow rate<br/>1CA water in 1 day</p> <p>1M multiplying</p> <p>1CA simplification</p> <p>1O conclusion</p> <p style="text-align: center;"><b>OR</b></p> <p>1MA finding time taken</p> <p>1CA time</p> <p>1M splitting calc. hrs</p> <p>1C converting two and a half days</p> <p>1O conclusion</p> <p style="text-align: center;"><b>OR</b></p> <p>1MA finding time taken</p> <p>1CA time</p> <p>1MA multiply with 24 and add 12</p> <p>1A hours</p> <p>1O conclusion</p> <p style="text-align: center;"><b>OR</b></p> |     |

| Ques  | Solution   | Explanation   | T&L        |
|-------|--|---|------------|
| 3.1.3 | <p>Time to fill swimming pool = <math>\frac{135\,000\ell}{2\,350\ell/h}</math> ✓MA</p> <p><math>\approx 57,4468</math> hours ✓CA</p> <p><math>57,4468 \text{ hours} \div 24 \text{ hours/day} = 2,3936</math> ✓MA ✓CA</p> <p>NOT VALID ✓O</p> <p style="text-align: center;"><b>OR</b></p> <p><math>2\frac{1}{2}</math> days <math>\times 24 \text{ h/d} = 60</math> hours ✓MA ✓A</p> <p>Volume of water = <math>60 \text{ hours} \times 2\,350 \ell/\text{hour}</math> ✓MA</p> <p><math>= 141\,000 \ell</math> ✓CA</p> <p>This is more than the <math>135\,000 \ell</math> to be topped up</p> <p>The statement is NOT VALID ✓O</p> | <p>1MA finding time taken</p> <p>1CA time</p> <p>1MA dividing by 24 h/d</p> <p>1CA days</p> <p>1O conclusion</p> <p style="text-align: center;"><b>OR</b></p> <p>1MA multiplying with 24 h/d</p> <p>1A number of hours</p> <p>1MA multiplying hours with flow rate</p> <p>1CA simplification</p> <p>1O conclusion</p> <p style="text-align: right;">(5)</p> | M<br>L3    |
| 3.2.1 | <p>Total = <math>18 \times 15 = 270</math> ✓MA</p> <p>Difference = <math>270 - 236 = 34</math> ✓M</p> <p><math>x = 34 \div 2</math> ✓M</p> <p><math>= 17</math> ✓CA</p> <p style="text-align: center;"><b>OR</b></p> <p>Mean = <math>\frac{2x + 236}{18} = 15</math> ✓MA</p> <p><math>2x = 270 - 236</math> ✓M</p> <p><math>= 34</math></p> <p><math>x = \frac{34}{2}</math> ✓M</p> <p><math>= 17</math> ✓CA</p> <p style="text-align: center;"><b>OR</b></p>  | <p>1MA multiplying</p> <p>1M subtracting totals</p> <p>1M dividing by 2</p> <p>1CA value of <math>x</math></p> <p style="text-align: center;"><b>OR</b></p> <p>1MA adding correct values</p> <p>1M subtracting totals</p> <p>1M dividing by 2</p> <p>1CA value of <math>x</math></p> <p style="text-align: center;"><b>OR</b></p>                           | Data<br>L3 |

| Ques  | Solution  | Explanation  | T&L        |
|-------|---|--|------------|
|       | $\text{Mean} = \frac{2x + 236}{18} = \frac{2x}{18} + 13,1111 \quad \checkmark M$ $15 - 13,1111 = 1,8888\dots$ $\frac{2x}{18} = 1,8888\dots \quad \checkmark CA$ $x = 1,888\dots \times 18 \div 2$ $= 17 \quad \checkmark CA$  | 1M adding correct values<br>1M mean concept<br><br>1CA manipulating formula<br><br>1CA value of x<br>AO<br>(4) |            |
| 3.2.2 | $Q_1 = 15 \quad \checkmark RG \quad \text{and} \quad Q_3 = 20 \quad \checkmark RG$ $\text{IQR} = 20 - 15 \quad \checkmark M$ $= 5 \quad \checkmark CA$  | 1RG finding $Q_1$<br>1RG finding $Q_3$<br><br>1M subtracting<br><br>1CA IQR value<br>AO<br>(4)                 | Data<br>L3 |
| 3.2.3 | It is more convenient for them to go in the evening $\checkmark \checkmark O$<br><b>OR</b><br>During daytime other distractions keep people away. $\checkmark \checkmark O$<br><b>OR</b><br>Small groups receive individual attention $\checkmark \checkmark O$<br><b>OR</b><br>Any other sensible reason $\checkmark \checkmark O$     | 2O reason<br><br>(2)   | D<br>L4    |
| 3.2.4 | $P_{(\text{Day Group full attendance})} = \frac{6}{18} \times 100\% \quad \checkmark A$ $\approx 33\% \quad \checkmark R$   | 1A numerator<br>1A denominator<br><br>1R whole %<br>AO<br>(3)  | P<br>L2    |
| 3.2.5 | The range of the afternoon group was smaller. $\checkmark \checkmark O$<br>The afternoon group has a higher median. $\checkmark \checkmark O$<br>The afternoon group has smaller inter-quartile range. $\checkmark \checkmark O$<br>Minimum of the afternoon group is higher. $\checkmark \checkmark O$<br>(Any TWO acceptable reasons) | 2O reason<br><br>2O reason<br><br>(4)  | D<br>L4    |
|       |   | [31]   |            |



| <b>QUESTION 4 [36 marks]</b> |  |  |                |
|------------------------------|--|--|----------------|
| <b>Ques</b>                  | <b>Solution</b>  | <b>Explanation</b>   | <b>T&amp;L</b> |
| 4.1.1                        | $0,21875 \text{ miles} = \frac{\sqrt{\text{MA}}}{0,21875} \times 385 \text{ yards}$ <p>Hence, 1 mile = <math>\frac{385}{0,21875}</math> yards <math>\checkmark\text{MA}</math></p> $= 1\,760 \text{ yards}$ <p style="text-align: center;"><b>OR</b></p> $\frac{1}{0,21875} = 4,571428571 \quad \checkmark\text{MA}$ $385 \times 4,571428571 = 1760 \text{ yards}$ | 1MA recognising equal parts<br><br>1MA correct fraction<br><br><p style="text-align: center;"><b>OR</b></p> 1MA conversion factor<br><br>1MA multiplying 385 with conversion factor<br><br>(2) | M<br>L2        |
| 4.1.2                        | Approximately 4,5 miles $\checkmark\checkmark\text{RG}$<br><br>(Accept distances in the range 4,3 miles to 4,7 miles)  | 2RG correct distance.<br><br>(2)   | MP<br>L2       |
| 4.1.3                        | $700 \text{ ft} = 700 \times 0,3038 \text{ m} = 212,66 \text{ m}$ <p>(Accept heights in the range 700 ft to 710 ft)</p>  | 1RG correct distance<br>1C converting to m<br>1CA max height<br><br>NP<br><br>(3)  | MP<br>L2       |
| 4.1.4                        | It is uphill. (steep) $\checkmark\checkmark\text{O}$<br><br><p style="text-align: center;"><b>OR</b></p> This runner found it difficult to run uphill. $\checkmark\checkmark\text{O}$<br><br><p style="text-align: center;"><b>OR</b></p> It is easier to run downhill. $\checkmark\checkmark\text{O}$   | 2O reason<br><br><br><br><br><br><br><br><br>(2)   | MP<br>L4       |
| 4.2.1                        | $\frac{\sqrt{\text{A}}}{6+3} \text{ or } 9$ <p>[Due to the annexure of Limpopo full marks can be awarded if only 6 is given as the number of venues]</p>   | 2A number of venues<br><br><br><br>(2)   | MP<br>L2       |
| 4.2.2                        | Hippo $\checkmark\checkmark\text{A}$   | 2A correct enclosure<br><br>(2)  | MP<br>L2       |

| Ques  | Solution  | Explanation  | T&L      |
|-------|---|--|----------|
| 4.2.3 | Zoo is 6 times bigger than the elephant exhibit. <sup>✓✓A</sup><br>$\therefore 6 \times 4 = 24$ football fields <sup>✓M</sup> <sup>✓CA</sup><br>Also accept 5 or 7 as a correct estimation.<br>ANSWER ONLY full marks if 20 to 28 football fields.  | 2 A estimation<br>1M multiplying<br>1CA solution<br>(Max 2 marks for number of football fields for estimated areas of 3,4,8 or 9.)<br>(4)  | MP<br>L4 |
| 4.2.4 | The distance on the map = 85 mm <sup>✓A</sup><br>Bar scale 20 mm is 200 m <sup>✓A</sup> <sup>✓M</sup><br>Real distance using the bar scale = $\frac{85 \text{ mm}}{20 \text{ mm}} \times 200 \text{ m}$ <sup>✓M</sup><br>$= 850 \text{ m}$ <sup>✓CA</sup><br>1,6 km = 1 600 m <sup>✓C</sup><br>$\therefore$ The scale is NOT correct. <sup>✓O</sup><br><b>OR</b><br>Bar scale 20 mm is 200 m <sup>✓A</sup> <sup>✓M</sup><br>1,6 km = 1 600 m <sup>✓C</sup><br>Calculated map distance = $\frac{1 600 \text{ m}}{200 \text{ m}} \times 20 \text{ mm}$ <sup>✓M</sup><br>$= 160 \text{ mm}$ <sup>✓CA</sup><br>Measured distance = 85 mm <sup>✓A</sup><br>$\therefore$ The scale is NOT correct. <sup>✓O</sup><br>(Accept a range from 82 mm to 87 mm for the distance between streets and 18 mm to 22 mm for the bar scale.) | 1A measured distance<br>1A measured bar<br>1M relating to bar to measurement<br>1M using the given scale<br>1CA simplification<br>1C conversion<br>1O conclusion<br><b>OR</b><br>1A measured bar<br>1M relating to bar to measurement<br>1C conversion<br>1M using the given scale<br>1CA simplification<br>1A measured distance<br>1O conclusion<br>(7) | MP<br>L4 |
| 4.3.1 | Saturday <sup>✓✓A</sup>   | 2A correct day<br>(2)  | D<br>L2  |
| 4.3.2 | Monday is NOT reflected on the given graph. <sup>✓✓O</sup>  | 2O reasoning<br>(2)  | P<br>L4  |

