This memorandum consists of 19 pages.
### QUESTION 1 [36 MARKS]

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<th>Explanation</th>
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</thead>
<tbody>
<tr>
<td>1.1.1</td>
<td>$P(\text{even number date}) = \frac{11}{22} = \frac{1}{2} \text{ or } 0.5 \text{ or } 50%$</td>
<td>2A numerator 1A denominator</td>
<td>P L2</td>
</tr>
</tbody>
</table>
| 1.1.2 | - Quality of bank services / security / perks. ✓✓O  
- Proximity or accessibility of the bank. ✓✓O  
- Marketing/advertising appeal ✓✓O  
- Loyalty to bank ✓✓O  
- Religious reasons / Economical reasons ✓✓O  
Any other suitable reason | 2O reason | F L4 |
| 1.1.3 | 2014 Fee = R3,50 + 1,1% × R1 000 ✓SF  
= R14,50 ✓CA  
% change = $\left( \frac{R14,50}{R14,50} - 1 \right) \times 100\%$ ✓SF  
= $\left( \frac{R1,00}{R14,50} \right) \times 100\%$ ✓CA  
= 6,8965517… ✓  
A $\approx$ 6,9% ✓ R | 1SF substituting R1000  
1CA 2014 fee  
1SF correct values  
1CA simplification  
1R rounding | F L2 |
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</thead>
</table>
| 1.1.4 | Withdrawal fee R15 000 at Bank X  
SF  
= R3,95 + 0,013 × R15 000  
= R198,95  
Fees for 4 withdrawals  
= R198,95 × 4  
= R795,80  
Withdrawal fee for R15 000 at Bank Y  
= R4,00 + R15 000 × 1,15%  
= R176,50  
Fees for 4 withdrawals = 4 × R176,50  
= R706,00  
Difference in fees = R795,80 – R706,00  
= R89,80 | 1SF substituting  
1CA weekly charges  
1CA fees for 4 withdrawals  
1CA charges  
1CA fees for 4 withdrawals  
1CA difference  
1O conclusion | F  
L4 |

OR

Withdrawal fee R15 000 at Bank X  
MA  
= R3,95 + 0,013 × R15 000  
= R198,95  
Withdrawal fee for R15 000 at Bank Y  
= R4,00 + R15 000 × 1,15%  
= R176,50  
Difference in fees = R198,95 – R176,50 = R22,45  
Saving on 4 withdrawals = R22,45 × 4 = R89,80  
It is NOT VALID | 1MA substituting  
1CA weekly charges  
1CA charges  
1CA difference  
1M fees for 4 withdrawals  
1CA October charges  
1O conclusion | OR  
OR |
### Ques 1.1.5

<table>
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</thead>
</table>
| **Bank X:**
Fee per R1 000 = R3,95 + R1,30 ÷ 100 × 1 000  ✓MA
= R16,95  ✓CA
Withdrawal fee for R15 000 = R16,95 × 15
= R254,25  ✓M
For 4 withdrawals : R254,25 × 4  ✓M
= R 1 017

| Bank Y: Withdrawal fee for 4 times R15 000
= R15,50 × 4 × 15  ✓CA
= R930  ✓CA
| Difference in fees = R 1 017 – R930 = R87  ✓CA
It is NOT VALID |

| Wage for 4 full weeks = R2 142,85 × 4  ✓A
= R8 571,40
Wage for 2 days = \( \frac{R2142,85}{5} \times 2 \) ✓M
= R857,14
| Total wage = R8 571,40 + R857,14
= R9 428,54  ✓CA
| OR
Average day wage = \( \frac{R2142,85}{5} \) ✓M OR \( \frac{R2142,85 \times 4}{20} \)
= R428,57  ✓A
Total wage for October = 22 × R428,57 ✓M
= R9 428,54  ✓CA
| 1A 4 weeks wage  F L2
1M divide by 5
1M multiply by 2
1CA total wage  OR
1M divide by 5
1A daily wage
1M multiply by 22
1CA total wage  OR
1M divide by 5
1A number of weeks
1M multiply by weekly wage
1CA total wage  OR |
### Monthly wage

Monthly wage = \( R2 \times 142.85 \times \frac{52}{12} \)  

\[ = R9 \, 285.68 \]  

### 1.2.1

- More small/local companies may have entered the market
- The increased use of smartphones, laptops and tablets
- Locally produced no need to import.
- Cost of transport increased
- Economical reasons / factors
- Maritime piracy / security
- Other means of transport used
- Durability - demand for new computers became less

Or any other valid factors with reasons

2O factor with reason

### 1.2.2

**Q1 of 2012:**  
\( (15.7 + 11.7 + 10.1 + 9 + 5.4) \) million  

\[ = 51.9 \, \text{million or} \, 51 \, 900 \, 000 \]  

**Q1 of 2013:**  
\( (12 + 11.7 + 9 + 6.2 + 4.4) \) million  

\[ = 43.3 \, \text{million or} \, 43 \, 300 \, 000 \]  

Difference between 2013 and 2012  
\[ = 51.9 \, \text{mil} - 43.3 \, \text{mil} \, = 8.6 \, \text{million or} \, 8 \, 600 \, 000 \]  

OR
<table>
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</thead>
<tbody>
<tr>
<td>Differences (in millions) for</td>
<td></td>
<td>2A differences in millions</td>
<td></td>
</tr>
<tr>
<td>A = 15,7 − 12,0 = 3,7</td>
<td>✓ A</td>
<td>1M adding all differences</td>
<td></td>
</tr>
<tr>
<td>B = 11,7 − 11,7 = 0</td>
<td>✓ M</td>
<td>1CA total difference in million</td>
<td></td>
</tr>
<tr>
<td>C = 10,1 − 9,0 = 1,1</td>
<td>✓ A</td>
<td>Penalty if million omitted</td>
<td></td>
</tr>
<tr>
<td>D = 9,0 − 6,2 = 2,8</td>
<td>✓ M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E = 5,4 − 4,4 = 1</td>
<td>✓ M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total difference = (3,7 + 1,1 + 2,8 + 1) million</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 8,6 million</td>
<td>CA</td>
<td></td>
</tr>
<tr>
<td><strong>1.2.3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% change A = ( \frac{12,000,000 - 15,700,000}{15,700,000} \times 100% )</td>
<td>✓ M</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>= −23,56687898%</td>
<td>✓ CA</td>
<td>L4</td>
<td></td>
</tr>
<tr>
<td>% change D = ( \frac{6,200,000 - 9,000,000}{9,000,000} \times 100% )</td>
<td>✓ M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= −31,11111111%</td>
<td>✓ CA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The statement is NOT VALID.</td>
<td>✓ O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>∴ Percentage decrease = 100% − 76,43% = 23,57%</td>
<td>✓ M</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OR</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of 2012 shipped in 2013:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By A: ( \frac{12,0}{15,7} \times 100% )</td>
<td>✓ M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= 76,43%</td>
<td>✓ A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>∴ Percentage decrease = 100% − 76,43% = 23,57%</td>
<td>✓ M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By D: ( \frac{6,2}{9} \times 100% )</td>
<td>✓ M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= 68,89%</td>
<td>✓ A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>∴ Percentage decrease = 100% − 68,89% = 31,11%</td>
<td>✓ O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D shows the greatest decrease, the statement is NOT VALID</td>
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### QUESTION 2 [47 MARKS]

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| 2.1.1 (a) | Amount × 109,7% = R218,9 billion  
Total amount spent = \[
\frac{R218,9 \text{ billion}}{109,7\%} \]
\[
\text{or} \quad R199,54 \text{ billion or } R1,9954 \times 10^{11} \]
| 1A correct value and %  
1M dividing by 109,7%  
1CA total amount |
| F L2 |
| 2.1.1 (b) | It is more appropriate to round to one decimal place.  
If a rand value in billions is rounded off to a whole number, the amount that is added or lost is hundreds of millions of rands.  
OR  
It is not appropriate to round to off to a whole number since it has a big financial implication |
| 1A statement  
2O explanation  
(Note: More appropriate can be implied in the statement) |
| F L4 |
| 2.1.2 | International: 43% of R 218,9 billion = R94,127 billion  
Number of visitors = 14,3 million or 14 300 000  
Average spent per visitor = \[
\frac{R94,127 \text{ billion}}{14,3\text{ million}} \]
\[
= R6,582,31 \quad \text{CA} \]
This is NOT correct.  
OR  
International: 43% × R 218,9 billion = R94,127 billion  
Average spent per visitor = \[
\frac{R94,127 \times 10^{10}}{14,3\text{ million}} \]
\[
= R6,582,31 \quad \text{CA}
\]
This is NOT correct.  
OR  
OR |
| 1A percentage  
1A amount  
1C conversion  
1MA average  
1CA value  
1O conclusion |
<p>| F L3 |</p>
<table>
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<tbody>
<tr>
<td></td>
<td>Amount spent by the International visitors</td>
<td>✓MA 1MA multiplying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓A 1A amount</td>
<td>✓C 1C conversion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R6 580 × 14.3 million</td>
<td>✓A 1A percentage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R94 094 million = R94,094 billion</td>
<td>✓A 1A amount</td>
<td></td>
</tr>
<tr>
<td></td>
<td>But spent by international tourists is</td>
<td>✓A 1A percentage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>43% × R 218,9 billion = R94,127 billion</td>
<td>✓A 1A amount</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The amount was NOT CORRECT ✓O 1O conclusion</td>
<td>✓O 1O conclusion</td>
<td>(6)</td>
</tr>
<tr>
<td>2.1.3</td>
<td>Air transport and road transport</td>
<td>✓A 1A for each item</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓A 1A for each item</td>
<td>✓A 1A for each item</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>✓O 2O example</td>
<td>L2</td>
</tr>
<tr>
<td>2.1.4</td>
<td>Payment of tourism levy ✓✓O 2O example</td>
<td>✓O 2O example</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>✓O 2O example</td>
<td>L4</td>
</tr>
<tr>
<td></td>
<td>Purchase of souvenirs ✓✓O 2O example</td>
<td>✓O 2O example</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>✓O 2O example</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Entrance fees to tourist attractions ✓✓O 2O example</td>
<td>✓O 2O example</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>✓O 2O example</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any other suitable example ✓✓O 2O example</td>
<td>✓O 2O example</td>
<td></td>
</tr>
<tr>
<td>2.1.5</td>
<td>Growth in 2014 = 2.9% × R103.6 billion ✓M 1M multiplying</td>
<td>✓M 1M multiplying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R3,0044 billion</td>
<td>✓M 1M multiplying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GDP contribution (2014) = (R3,0044 + R103,6) billion ✓M 1M adding</td>
<td>✓M 1M adding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R106,6044 billion ✓CA 1CA amount in 2014</td>
<td>✓CA 1CA amount in 2014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Growth in 2015 = 2.9% × R106,6044 billion</td>
<td>✓M 1M multiplying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R3,0915276 billion</td>
<td>✓M 1M multiplying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GDP contribution (2015) = (R3,0915276 + R106,6044) billion</td>
<td>✓M 1M adding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R109,6959276 billion ✓CA 1CA amount in 2015</td>
<td>✓CA 1CA amount in 2015</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Growth in 2016 = 2.9% × R109,6959276 billion</td>
<td>✓M 1M multiplying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R3,1811819 billion</td>
<td>✓M 1M multiplying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GDP contribution (2016) = (R3,1811819 + R109,6959276) billion</td>
<td>✓M 1M adding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R112,8771095 billion ✓CA 1CA amount in 2016</td>
<td>✓CA 1CA amount in 2016</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= R112 877 million ✓R 1R correct rounding</td>
<td>✓R 1R correct rounding</td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td>or R112 877 000 000 or R112,877 billion</td>
<td>✓R 1R correct rounding</td>
<td>OR</td>
</tr>
<tr>
<td>Ques</td>
<td>Solution</td>
<td>Explanation</td>
<td>T&amp;L</td>
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<td>------</td>
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<td>-----</td>
</tr>
</tbody>
</table>
| 2.1.5 | GDP contribution (2014) = 102,9% × R103,6 billion  
\[= 106,6044 \text{ billion} \]
GDP contribution 2015 = 102,9% × R106,6044 billion  
\[= 109,6959276 \text{ billion} \]
GDP contribution 2016 = 102,9% × R109,6959276 billion  
\[= R112,8771095 \text{ billion} \]
\[= R112 877 \text{ million} \]
\[= R112 877 000 000 \]
OR
GDP contribution 2016  
\[= R103,6 \text{ billion} \times 102,9\% \times 102,9\% \times 102,9\% \]
\[= R112,8771095 \text{ billion} \]
\[= R112,877 \text{ billion} \]
\[= R112,877 000 000 \]
1M multiplying  
1A 102,9\%  
1CA amount in 2014  
1CA amount in 2015  
1CA amount in 2016  
1R correct rounding  
| 2.2.1 | (a) Stopover times = 5 + 20 + 5 + 2 + 8 + 2 + 2 + 2 + 23 +  
\[26 + 3 + 17 + 3 + 14 + 3 + 3 \]
\[= 138 \text{ minutes} \]
\[= 2 \text{ hrs and 18 minutes} \]
\[= 2,3 \text{ hours} \]
3RT correct stopover times  
1M adding stopover times  
1CA total stopover time  
Stopover times:  
One or two errors only 1 mark penalty,  
Three or four errors 2 mark penalty  
AO | D L2 |
| (b) 2 and 3 minutes | CA From Q2.2.1 (a)  
2CA modal time | D L2 |
2.2.1 (c)

Actual train travel time:
\[ RT 13:24 \text{ (day2)} \to 17:30 \text{ (day1)} \) – stopover time
\[ CA = 19 \text{ hr 54 min} - 2 \text{ hr 18 min} \] \[ M \] \[ C \]
\[ = 17 \text{ hr 36 min} = 17,6 \text{ hr} \]

D = S × T
\[ 992 \text{ km} = S \times 17\text{hr 36 min} \] \[ SF \] \[ S \]
\[ S = \frac{992 \text{ km}}{17,6 \text{ hour}} \] \[ CA \]
\[ = 56,36 \text{ km/h} \] \[ CA \]

**OR**

Total time = 24 hours – 17h30 + 13h24 = 19hr 54 min
\[ M \] \[ C \] \[ SF \] \[ S \] \[ CA \]
\[ D = S \times T \] \[ S \]
\[ 992 \text{ km} = S \times 17,6 \text{ hr} \] \[ CA \]
\[ S = \frac{992 \text{ km}}{17,6 \text{ hour}} \] \[ CA \]
\[ \approx 56 \text{ km/h} \] \[ CA \]

**OR**

From 17:30 to 00:00 = 6 hrs 30 min
\[ RT \] \[ S \]
From 00:00 to 13:24 = 13hrs 24 min
\[ CA \] \[ M \]
Time of journey = 19 hrs and 54 minutes
\[ M \] \[ S \]
Travel time = 19 hr 54 min – 2 hr 18 min
\[ = 17 \text{ hr 36 min} \] \[ C \] \[ CA \]

D = S × T
\[ 992 \text{ km} = S \times 17,6 \text{ hr} \] \[ SF \] \[ S \]
\[ \text{Average Speed} = \frac{992 \text{ km}}{17,6 \text{ hour}} \] \[ C \] \[ CA \]
\[ = 56,36 \text{ km/h} \] \[ CA \]

---

**Explanation**

- **CA** From Q2.2.1(a)
- **1RT** start and end time
- **1CA** 19 hours 54 min
- **1M** subtracting stopover time
- **1C** conversion
- **1SF** substitution
- **1S** changing subject of formula
- **1CA** simplification
- **OR**
- **1RT** start and end time
- **1CA** 19 hours 54 min
- **1M** subtracting stopover time
- **1C** conversion
- **1SF** substitution
- **1S** changing subject of formula
- **1CA** simplification
- **OR**
- **1RT** start and end times
- **1CA** trip time
- **1M** subtracting stopover time
- **1SF** substitution
- **1S** changing subject of formula
- **1C** conversion
- **1CA** simplification

---

**NP**

(7)
### Forward trip in January:

Parents = $2 \times R560 = R1\ 120$  **MA**

Father = $R560 - R560 \times 25\%$  **MA**

OR $R560 \times 75\%$

= $R420$  **CA**

Children's fare = $R560 \times 80\% = R448$  **MA**

Two children = $2 \times R448 = R896$  **CA**

Total fare for family: $R1\ 120 + R420 + R896 = R2\ 436$

### Return trip in February:

Parents fare = $2 \times R490 = R980$  **A**

Father = $R490$ minus $R490 \times 25\%$  or $R490 \times 75\%$

= $R367.50$  **A**

Two children = $2 \times (R490 - R490 \times 50\%)$

= $R490$  **A**

Total fare for return trip = $R980 + R490 + R367.50$

= $R1\ 837.50$  **CA**

Total cost for both trips = $R2\ 436 + R1\ 837.50$

= $R4\ 273.50$  **CA**

**OR**

1MA two adult price

1MA discounted price for over 55 yrs

1CA father's fare

1MA children fare

1CA total children's fare

1CA Jan total fares

1A adults Feb fare

1A senior citizen fare

1A children Feb fare

1CA total Feb trip's fare

1CA total trip fare

(Note: Max of 6 marks if only one trip is calculated; Max of 9 marks for using the same fare for both trip)
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓MA  ✓MA</td>
<td>1MA adding correct values</td>
<td>✓CA</td>
</tr>
<tr>
<td></td>
<td>Father's fare = (R560 + R490) × 75% ✓M</td>
<td>1MA 75%</td>
<td>✓CA</td>
</tr>
<tr>
<td></td>
<td>= R787,50 ✓CA</td>
<td>1M % calculation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parents' fare = 2 × (R560 + 490) ✓MA</td>
<td>1CA simplification</td>
<td>✓CA</td>
</tr>
<tr>
<td></td>
<td>= R2 100 ✓CA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children's fare = (R560 × 80% + R490 × 50%) × 2 ✓MA ✓MA</td>
<td>1MA adding and multiplying</td>
<td>✓A</td>
</tr>
<tr>
<td></td>
<td>= R1 386 ✓CA</td>
<td>1CA simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total fare for both trips = R787,50 + R2 100 + R1 386</td>
<td>1A correct values</td>
<td>✓CA</td>
</tr>
<tr>
<td></td>
<td>= R4 273,50 ✓CA</td>
<td>1C total return trip fare</td>
<td>(11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[47]</td>
</tr>
</tbody>
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### QUESTION 3 [31 MARKS]

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</tr>
</thead>
</table>
| 3.1.1 | Capacity of section C = 5 m × 1, 2 m × 15 m \(\check{SF}\)  
= 90 m³ \(\check{CA}\)  
Capacity of section A = 2 m × 12,5 m × 15 m \(\check{SF}\)  
= 375 m³ \(\check{CA}\)  
Maximum capacity = 90 m³ + 375 m³ + 300 m³ \(\check{MA}\)  
= 765 m³  
**OR**  
Maximum capacity = Capacity of section (A + B + C)  
= 2 m × 12,5 m × 15 m + 300 m³ + 5 m × 1,2 m × 15 m \(\check{SF}\)  
= 375 m³ + 300 m³ + 90 m³ \(\check{MA}\)  
= 765 m³  
**OR**  
Volume = 30 m × 15 m × 2 m \(\check{SF}\)  
= 900 m³ \(\check{CA}\)  
Volume beneath C = 5 m × 15 m × 0,8 m  
= 60 m³  
Volume beneath B = \(\frac{1}{2}\) × 12,5 m × 15 m × 0,8 m \(\check{SF}\)  
= 75 m³ \(\check{CA}\)  
Maximum capacity = 900 m³ – 60 m³ – 75 m³  
= 765 m³ \(\check{MA}\)  
| 1SF correct values  
1CA capacity section C  
1SF correct values  
1CA capacity section A  
1MA adding capacities in m³  
1SF Correct values for A  
1CA capacity section A  
1MA adding capacities in m³  
1SF volume  
1CA volume section A  
1SF volume beneath B  
1CA volume beneath B  
1MA subtracting volume in m³  |
| 3.1.2 | Volume of water = 94% × \(\check{M}\) 765 m³ = 719,1 m³  
= 719 100 ℓ \(\check{C}\)  
= \(\frac{719 100 \times 1}{3,785}\) gallons \(\check{C}\)  
≈ 189 986,79 gallons \(\check{CA}\)  
| 1M calculating %  
1C convert to litres  
1C convert to gal.  
1CA simplification  |

(5)
### Ques 3.1.3

In 1 hour 2 350 litres of water will flow.

- **In 1 day:** $24 \times 2\,350$ litres \(\checkmark\) \(\text{MA}\)
  
  \[= 56\,400 \text{ litres will flow} \checkmark\] \(\text{CA}\) \(\text{M}\)

- **In 2\(\frac{1}{2}\) days amount of water flowing**
  
  \[= 2\frac{1}{2} \times 56\,400 \text{ litres} \checkmark\]
  
  \[= 141\,000 \text{ litres} \checkmark\] \(\text{CA}\)

\[\therefore \text{Statement is NOT VALID.} \checkmark\] \(\text{O}\)

**OR**

- **Time to fill swimming pool**
  
  \[= \frac{135\,000 \ell}{2\,350 \ell/h} \checkmark\] \(\text{MA}\)

  \[\approx 57,4468 \text{ hours} \checkmark\] \(\text{CA}\)

  \[57,4468 \text{ hrs} = 2 \text{ days} \, 9 \text{ h} \, 27 \text{ min} \checkmark\]

  \[\text{Two and a half days} = 2 \text{ days} \, 12 \text{ hours} \checkmark\] \(\text{C}\)

\[\therefore \text{Statement is NOT VALID} \checkmark\] \(\text{O}\)

**OR**

- **Time to fill swimming pool**
  
  \[= \frac{135\,000 \ell}{2\,350 \ell/h} \checkmark\] \(\text{MA}\)

  \[\approx 57,4468 \text{ hours} \checkmark\] \(\text{CA}\)

  \[\checkmark\] \(\text{MA}\)

  \[\checkmark\] \(\text{A}\)

\[\therefore \text{Statement is NOT VALID} \checkmark\] \(\text{O}\)

**OR**

Copyright reserved Please turn over
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>T&amp;L</th>
</tr>
</thead>
</table>
| 3.1.3 | Time to fill swimming pool = \( \frac{135000\ell}{2350\ell/h} \) \( \checkmark \text{MA} \)  
\[ \approx 57,4468 \text{ hours} \] \( \checkmark \text{CA} \)  
57,4468 hours ÷ 24 hours/day = 2,3936  
\[ \checkmark \text{MA} \] \( \checkmark \text{CA} \)  
NOT VALID \( \checkmark \ O \)  
OR  
\[ \checkmark \text{MA} \] \( \checkmark \ A \)  
2 1/2 days × 24 h/d = 60 hours  
\[ \checkmark \text{MA} \] \( \checkmark \ CA \)  
Volume of water = 60 hours × 2 350 ℓ/hour  
= 141 000 ℓ  
\( \checkmark \text{CA} \)  
This is more than the 135 000 ℓ to be topped up  
The statement is NOT VALID \( \checkmark \ O \)  

| 3.2.1 | Total = 18 × 15 = 270 \( \checkmark \text{MA} \)  
\( \checkmark \ M \)  
Difference = 270 – 236 = 34  
x = 34 ÷ 2 \( \checkmark \ M \)  
\[ = 17 \] \( \checkmark \text{CA} \)  
OR  
\[ \checkmark \text{MA} \]  
Mean = \[ \frac{2x + 236}{18} = 15 \]  
2x = 270 – 236 \( \checkmark \ M \)  
\[ = 34 \]  
x = \[ \frac{34}{2} \] \( \checkmark \ M \)  
\[ = 17 \] \( \checkmark \text{CA} \)  
OR  
\[ \checkmark \text{MA} \]  
1MA finding time taken  
1CA time  
1MA dividing by 24 h/d  
1CA days  
1O conclusion  
OR  
1MA multiplying with 24 h/d  
1A number of hours  
1MA multiplying hours with flow rate  
1CA simplification  
1O conclusion  

Data L3
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>T&amp;L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[\text{Mean} = \frac{2x + 236}{18} = \frac{2x}{18} + 13,1111] (\sqrt{\text{M}})</td>
<td>1M adding correct values</td>
<td>1M mean concept</td>
</tr>
<tr>
<td></td>
<td>(15 - 13,1111 = 1,8888\ldots)</td>
<td>1CA manipulating formula</td>
<td>1CA value of (x)</td>
</tr>
<tr>
<td></td>
<td>(\frac{2x}{18} = 1,8888\ldots) (\sqrt{\text{CA}})</td>
<td>1CA numerator</td>
<td>AO</td>
</tr>
<tr>
<td></td>
<td>(x = 1,888\ldots \times 18 \div 2)</td>
<td>1CA denominator</td>
<td>1M subtracting</td>
</tr>
<tr>
<td></td>
<td>= 17 (\sqrt{\text{CA}})</td>
<td>1CA IQR value</td>
<td>1CA IQR value</td>
</tr>
<tr>
<td>3.2.2</td>
<td>(Q_1 = 15) (\sqrt{\text{RG}}) and (Q_3 = 20) (\sqrt{\text{RG}})</td>
<td>1RG finding Q1</td>
<td>AO</td>
</tr>
<tr>
<td></td>
<td>(\text{IQR} = 20 - 15) (\sqrt{\text{M}})</td>
<td>1RG finding Q3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>= 5 (\sqrt{\text{CA}})</td>
<td>1M subtracting</td>
<td>1CA IQR value</td>
</tr>
<tr>
<td>3.2.3</td>
<td>It is more convenient for them to go in the evening (\sqrt{\text{O}})</td>
<td>2O reason</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>(\text{OR}) During daytime other distractions keep people away. (\sqrt{\text{O}})</td>
<td>(2)</td>
<td>L4</td>
</tr>
<tr>
<td></td>
<td>(\text{OR}) Small groups receive individual attention (\sqrt{\text{O}})</td>
<td>2O reason</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>(\text{OR}) Any other sensible reason (\sqrt{\text{O}})</td>
<td>(2)</td>
<td>L4</td>
</tr>
<tr>
<td>3.2.4</td>
<td>(P(\text{Day Group full attendance}) = \frac{6}{18} \times 100%)</td>
<td>1A numerator</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>(\approx 33%) (\sqrt{\text{R}})</td>
<td>1A denominator</td>
<td>1R whole %</td>
</tr>
<tr>
<td>3.2.5</td>
<td>The range of the afternoon group was smaller. (\sqrt{\text{O}})</td>
<td>2O reason</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>The afternoon group has a higher median. (\sqrt{\text{O}})</td>
<td>2O reason</td>
<td>L4</td>
</tr>
<tr>
<td></td>
<td>The afternoon group has smaller inter-quartile range (\sqrt{\text{O}})</td>
<td>(Any TWO acceptable reasons)</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>Minimum of the afternoon group is higher. (\sqrt{\text{O}})</td>
<td>(Any TWO acceptable reasons)</td>
<td>(4)</td>
</tr>
</tbody>
</table>
## QUESTION 4 [36 marks]

<table>
<thead>
<tr>
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</thead>
</table>
| 4.1.1 | 0.21875 miles = 385 yards  
Hence, 1 mile = \( \frac{385}{0.21875} \) yards  
\( \sqrt{MA} \)  
\( OR \)  
\( \frac{1}{0.21875} = 4.571428571 \)  
\( \sqrt{MA} \)  
385 \times 4.571428571 = 1760 yards  
\( \sqrt{MA} \) | 1MA recognising equal parts  
1MA correct fraction  
1MA conversion factor  
1MA multiplying 385 with conversion factor | M L2 |
| 4.1.2 | Approximately 4.5 miles  
(Accept distances in the range 4.3 miles to 4.7 miles)  
\( \sqrt{RG} \) | 2RG correct distance. | MP L2 |
| 4.1.3 | 700 ft = 700 \times 0.3038 m = 212.66 m  
(Accept heights in the range 700 ft to 710 ft)  
\( \sqrt{RG} \)  
\( \sqrt{C} \)  
\( \sqrt{CA} \) | 1RG correct distance  
1C converting to m  
1CA max height | MP L2 |
| 4.1.4 | It is uphill. (steep)  
\( \sqrt{O} \)  
OR  
This runner found it difficult to run uphill.  
\( \sqrt{O} \)  
OR  
It is easier to run downhill.  
\( \sqrt{O} \) | 2O reason | MP L4 |
| 4.2.1 | 6 + 3  
or 9  
[Due to the annexure of Limpopo full marks can be awarded if only 6 is given as the number of venues]  
\( \sqrt{A} \)  
\( \sqrt{A} \)  
\( A \) | 2A number of venues | MP L2 |
| 4.2.2 | Hippo  
\( \sqrt{A} \) | 2A correct enclosure | MP L2 |
<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| 4.2.3 | Zoo is 6 times bigger than the elephant exhibit.  
\[ 6 \times 4 = 24 \text{ football fields} \]  
Also accept 5 or 7 as a correct estimation.  
ANSWER ONLY full marks if 20 to 28 football fields. | 2 A estimation  
1M multiplying  
1CA solution  
(Max 2 marks for number of football fields for estimated areas of 3, 4, 8 or 9.) | MP L4 |
| 4.2.4 | The distance on the map = 85 mm  
Real distance using the bar scale = \[ \frac{85 \text{ mm}}{20 \text{ mm}} \times 200 \text{ m} = 850 \text{ m} \]  
1,6 km = 1 600 m  
\[ \therefore \] The scale is NOT correct. | 1A measured distance  
1A measured bar  
1M relating to bar to measurement  
1M using the given scale  
1CA simplification  
1C conversion  
1O conclusion | MP L4 |
| 4.3.1 | Saturday | 2A correct day | D L2 |
| 4.3.2 | Monday is NOT reflected on the given graph. | 2O reasoning | P L4 |
### Ques 4.3.3
The number of visitors increase to about 12:00.
- **OR**
  - on weekdays and then decrease again till 16:00. ✓ ✓ O
  - The number of visitors on weekends is more than the visitors on weekdays. ✓ ✓ O
  - The number of visitors increase to about 13:00 on weekends and then decrease again till 16:00. ✓ ✓ O

Any TWO trends relating time and number of visitors.

**Explanation**

- 2O trend
- 2O trend

**T&L**

- D L4

### Ques 4.3.4
The number indicated by the height of the column on Saturday is a little more than double the height of the mean number for a Tuesday ✓ ✓ O

- **OR**
  - People work during the week ✓ ✓ O
  - Saturdays they go with their families to the zoo. ✓ ✓ O
  - Cheaper to go during the weekends ✓ ✓ O
  - More activities at the zoo on Saturday. ✓ ✓ O

**Explanation**

- 2O reason
- 2O reason

**T&L**

- D L4

**[36]**

TOTAL: 150