**Symbol** | **Explanation**  
---|---  
M | Method  
M/A | Method with accuracy  
CA | Consistent accuracy  
A | Accuracy  
C | Conversion  
S | Simplification  
RT/RG | Reading from a table/Reading from a graph  
SF | Correct substitution in a formula  
O | Opinion/Example  
P | Penalty, e.g. for no units, incorrect rounding off etc.  
R | Rounding off  

This memorandum consists of 17 pages.
# QUESTION 1 [24 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1 (a)</td>
<td>$7\frac{1}{2}$ 8 $8\frac{1}{2}$ $8\frac{1}{2}$ 9 9 9 $9\frac{1}{2}$</td>
<td>✓M 1M arranging in order</td>
<td>12.4.3 L3</td>
</tr>
<tr>
<td></td>
<td>The median score = 9 ✓ ✓ A</td>
<td>✓ ✓ 2A correct identification Answer only full marks</td>
<td></td>
</tr>
<tr>
<td>1.1.1 (b)</td>
<td>Range = $9\frac{1}{2} - 7\frac{1}{2}$ ✓M</td>
<td>✓M 1M subtraction ✓ ✓ 1A simplification Answer only full marks</td>
<td>12.4.3 L2</td>
</tr>
<tr>
<td></td>
<td>= 2 ✓ A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.2 (a)</td>
<td>To eliminate scores of judges who are biased. ✓ ✓ O</td>
<td>✓ ✓ 2O opinion</td>
<td>12.4.4 L4</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eliminating the highest and lowest scores will have the effect that the mean is calculated without extreme values ✓ ✓ O</td>
<td>✓ ✓ 2O opinion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any other valid, well-thoughtout opinion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.2 (b)</td>
<td>Bongani’s mean = $\frac{9+8+9+9+8\frac{1}{2}+8\frac{1}{2}}{7}$ ✓M 1M concept of mean</td>
<td>✓ ✓ 1A correct numerator ✓ ✓ 1A correct denominator 1CA simplification</td>
<td>12.4.3 L4</td>
</tr>
<tr>
<td></td>
<td>= $\frac{61}{7}$ ✓ A ✓ ✓</td>
<td>✓ ✓ 1A correct numerator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 8,714....</td>
<td>✓ ✓ 1A concept of mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 8,71 ✓ CA</td>
<td>✓ ✓ 1CA simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graham’s mean = $\frac{9+9+7\frac{1}{2}+8+8\frac{1}{2}+9+9}{7}$ ✓ A</td>
<td>✓ ✓ 1A correct numerator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= $\frac{60}{7}$ ✓ A ✓ ✓</td>
<td>✓ ✓ 1A concept of mean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 8,5714...</td>
<td>✓ ✓ 1A correct denominator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 8,57 ✓ CA</td>
<td>✓ ✓ 1CA simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>∴ Bongani attained the higher mean score ✓ CA</td>
<td>✓ ✓ 1CA conclusion</td>
<td></td>
</tr>
<tr>
<td>Ques</td>
<td>Solution</td>
<td>Explanation</td>
<td>AS</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>-------------</td>
<td>----</td>
</tr>
</tbody>
</table>
| 1.2.1 | Total points scored  

\[ (20 \times g) + (10 \times s) + (5 \times b) \]  

OR  

\[ (20 \times g) + (10 \times s) + \left( \frac{1}{2} \times 10 \times b \right) \] 

1A correct values  
2M adding and multiplying  

<table>
<thead>
<tr>
<th>12.2.1</th>
<th>12.4.1</th>
</tr>
</thead>
</table>

| 12.2.2 | Total points scored by China  

\[ 20(9) + 10(3) \]  

= 265  

Total points scored by Australia  

\[ 20(8) + 10(5) + 5(10) \]  

= 260  

Total points scored by South Africa  

\[ 20(5) + 10(15) + 5(3) \]  

= 265  

Although South Africa and China had an equal number of points, China performed the best because they had more gold medals.  

OR  

Any other well-thoughtout opinion  

1M substitution  
1A simplification  
1A simplification  

<table>
<thead>
<tr>
<th>12.2.1</th>
<th>12.4.1</th>
</tr>
</thead>
</table>

2O conclusion  

[24]
## QUESTION 2 [30 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 2.1.1 | 800 km = 500 miles ✓A  
2 798 km = \( \frac{500 \times 2798}{800} \) miles ✓C  
\[ = 1 \, 748,75 \text{ miles} \] ✓CA  
**OR**  
l = the length of South African coastline  
2 798 \( \frac{l}{800} = \frac{500 \times 2798}{500} \) ✓M  
l = \( \frac{500 \times 2798}{800} \) ✓M  
\[ l = 1 \, 748,75 \text{ miles} \] ✓CA  
**OR**  
800 km = 500 miles  
So 1 km = \( \frac{500}{800} \) miles ✓M  
\[ \therefore 2 \, 798 \text{ km} = \frac{500}{800} \times 2 \, 798 \text{ miles} \] ✓C  
\[ = 1 \, 748,75 \text{ miles} \] ✓CA  
|  | 1A equating distances  
1C correct conversion  
1CA simplification  
**OR**  
1M concept  
1M manipulation  
1CA simplification  
| 12.1.1 | L3 |
| 2.1.2 | ✓A Western Cape, Eastern Cape, Kwazulu Natal, Northern Cape ✓✓M  | 1A naming the coastal provinces  
2M correct order  | 12.3.1 | L4 |
| 2.1.3 | ✓A 223 mm on the map represents 2 798 km ✓C  
223 mm on the map represents 2 798 000 000 mm ✓C  
1 mm on the map represents \( \frac{2798000000000}{223} \) ✓C  
\[ = 12 \, 547 \, 085,2 \text{ mm} \] ✓S  
Scale is 1: 12 500 000 ✓R  | 1C correct conversion values  
1C conversion  
1S simplification  
| 12.3.3 | L3 |
| 2.2.1 | ✓A Crew = (3 × 10) + 14 + (2 × 22) ✓A  
\[ = 88 \] ✓CA  | 1A ski-boat crew  
1A medium freezer crew  
1CA simplification  | 12.2.1(2)  
12.1.1(1) | L3  
(3) |
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 2.2.2| Number of extra crew members = $102 - 88 = 14$ ✓CA ✓J  

He should buy one Small freezer boat as he can operate it with a maximum of 14 crew members. | 1M difference  
1CA simplification | 12.1.1 (1)  
12.2.1 (3)  
L3 (1)  
L4 (3) |
| 2.3.1| Temperature in °C = $18 - \left(14,5 \times \frac{\text{time in minutes}}{60}\right)$  
\[D = 18 - \left(14,5 \times \frac{120}{60}\right)\] ✓SF  

= $18 - 29 = -11$ ✓CA  

Temperature in °C = $18 - \left(14,5 \times \frac{\text{time in minutes}}{60}\right)$  
\[0 = 18 - \left(14,5 \times \frac{E}{60}\right)\] ✓SF  

$14,5 \times \frac{E}{60} = 18$  

$0,24166... \times E = 18$  

OR \[E = \frac{18 \times 60}{14,5}\] ✓M  

\[E = 74,482...\] ✓CA  

\[E \approx 74,48\text{ minutes}\] ✓CA | 1SF substituting  
1CA value of D  
1SF substituting  
1M making E the subject  
1CA value of E | 12.2.1 (2)  
L3 (3)  
L3 (3)  
L2 (2)  
L3 (3) |
### 2.3.2

**TEMPERATURE AND TIME GRAPH**

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| 2.3.2 | ![Temperature Graph](image) | 1A plotting $(0;20)$  
1A plotting $(240;–40)$  
1A plotting $(360;–40)$  
1A joining points with a straight line  
1A horizontal line |

### 2.3.3

Cooling rate = 14,5 °C per hour  
= 14,5 °C per 60 minutes ✓C  
= 2,4166... °C per 10 minutes ✓M  
≈ 2,42 °C per 10 minutes ✓M

**YES** the claim is valid. ✓CA

**OR**

Cooling rate = \[
\frac{14,5 \, ^\circ C}{60 \, \text{min}} \times 10 \, \text{min}
\] ✓M  
= 2,41666 °C per 10 minutes ✓CA

**YES** the claim is valid. ✓CA

<table>
<thead>
<tr>
<th>AS</th>
<th>12.2.2 L3(4) L4(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>12.2.3 L4</td>
<td></td>
</tr>
</tbody>
</table>
### QUESTION 3 [31 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.1</td>
<td>( x = \frac{98 - 26}{2} ) ( \checkmark ) M</td>
<td>OR ( 26 + x + x = 98 ) ( \checkmark ) M</td>
<td>12.4.4(1)</td>
</tr>
<tr>
<td></td>
<td>( x = 36 ) ( \checkmark ) M</td>
<td>( 2x = 72 ) ( \checkmark ) CA</td>
<td>12.2.1(3)</td>
</tr>
<tr>
<td></td>
<td>OR ( y = 16 + 8 + \frac{1}{3}(36) ) ( \checkmark ) M</td>
<td>( \frac{1}{3} \times 36 = 12 ) ( \checkmark ) CA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( y = 16 + 8 + 12 ) ( \checkmark ) CA</td>
<td>( y = 36 ) ( \checkmark ) CA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \text{Answer only full marks} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.2</td>
<td>Ms Nana could have calculated her scores incorrectly ( \checkmark ) O</td>
<td>OR ( \checkmark ) O</td>
<td>12.4.4</td>
</tr>
<tr>
<td></td>
<td>OR One of the learners was absent and did not complete and submit the questionnaire. ( \checkmark ) O ( \checkmark ) O</td>
<td></td>
<td>L4</td>
</tr>
<tr>
<td></td>
<td>OR Any other valid reason</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.1</td>
<td>Cost (in rand) = ( m \times (375 + 150) ) ( \checkmark ) A</td>
<td></td>
<td>12.2.1</td>
</tr>
<tr>
<td></td>
<td>OR Cost (in rand) = ( m \times (525) ) ( \checkmark ) A</td>
<td>2 A equation</td>
<td>L4</td>
</tr>
<tr>
<td>3.2.2</td>
<td>There are seven learners under 18 years old. ( \checkmark ) A</td>
<td></td>
<td>12.2.1</td>
</tr>
<tr>
<td></td>
<td>This would mean that 4 family rooms can be booked.</td>
<td>1A counting</td>
<td>L4</td>
</tr>
<tr>
<td></td>
<td>Four family rooms could accommodate 16 people in total ( \checkmark ) CA</td>
<td>1CA total number of people in the family rooms.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The teacher can book one twin room since the teacher will not share a room ( \checkmark ) CA</td>
<td>1CA recognising 1 twin room for the teacher</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimum number of rooms needed is 4 family rooms and 1 twin room. ( \checkmark ) CA</td>
<td>1CA minimum number of rooms.</td>
<td></td>
</tr>
</tbody>
</table>
3.2.3 Cost per night for one twin room = 1 \times (R375 + R150) \checkmark M
= R525 \checkmark A

Cost per night for four family rooms = 4 \times R679 \checkmark M
= R2 716 \checkmark A

Cost per night for accommodation = R525 + R2 716
= R3 241 \checkmark CA

Total cost for two nights = R3 241 \times 2
= R6 482 \checkmark CA

Cost per person = \frac{R6 482}{16} \approx R405,13 \checkmark CA

Mrs Suzman estimation is INCORRECT. \checkmark C

OR

Total cost for two nights = R3 241 \times 2
= R6 482 \checkmark CA

Cost per person = \frac{R6 482}{16} \approx R405,13 \checkmark CA

Mrs Suzman’s estimation is INCORRECT. \checkmark C

1M concept
1A cost of one twin room per night
1M concept
1A cost of four family rooms per night

1CA accommodation cost per night
1CA cost per two nights
1M dividing
1CA simplification
1C conclusion

OR

2M formula
2A use of correct values
1CA for two nights
1CA simplification

1M dividing
1CA simplification
1C conclusion

3.3.1 B2 \checkmark \checkmark A
2A grid reference
12.3.4
L2

3.3.2 North West \checkmark \checkmark A
2A direction
12.3.4
L3

3.3.3 Hamilton Street \checkmark \checkmark A
2A answer
12.3.3
L2
### 3.3.4

From the Hotel, turn left into Proes St. ✓
- At the intersection of Proes and Beatrix St, turn right into Beatrix St. ✓
- Continue on Beatrix St, which later becomes Voortrekkers St
- Travel until the intersection of Voortrekkers and Jacobs St.
- Turn right into Jacobs Street and right into Tenth Ave. ✓

**OR**

**WITH THE NEW STREET NAMES:**
From the Hotel, turn left into Johannes Ramohoase St. ✓
- At the intersection of Johannes Ramohoase St. and Steve Biko St, turn right into Steve Biko St ✓
- Travel until the intersection of Steve Biko St. and Jacob St.
- Turn right into Jacobs Street and right into Tenth Ave. ✓

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3.4</td>
<td>From the Hotel, turn left into Proes St. ✓</td>
<td>1A correct direction from the hotel</td>
<td>12.3.3 L3</td>
</tr>
<tr>
<td></td>
<td>At the intersection of Proes and Beatrix St, turn right into Beatrix St. ✓</td>
<td>1A Beatrix St</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continue on Beatrix St, which later becomes Voortrekkers St</td>
<td>1A Voortrekkers and Jacob St.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel until the intersection of Voortrekkers and Jacobs St.</td>
<td>1A Jacobs St and Tenth Av.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turn right into Jacobs Street and right into Tenth Ave. ✓</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>OR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>From the Hotel, turn left into Johannes Ramohoase St. ✓</td>
<td>1A correct direction from the hotel</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>At the intersection of Johannes Ramohoase St. and Steve Biko St, turn right into Steve Biko St ✓</td>
<td>1A Steve Biko St</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel until the intersection of Steve Biko St. and Jacob St.</td>
<td>1A Steve Biko St and Jacob St.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turn right into Jacobs Street and right into Tenth Ave. ✓</td>
<td>1A Jacobs St and Tenth Av.</td>
<td></td>
</tr>
</tbody>
</table>
QUESTION 4 [29 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| 4.1.1 | Breadth of tent increased by 15%  
= 1,8 m + (0,15 × 1,8 m) OR 1,8 m × 1,15 ✓M 
= 2,07 m ✓A | 1M increased %  
1A increased breadth | 12.3.1  
L3 (4)  
L4 (4) |
|  | Length of tent increased by 15%  
= 2,4 m + 0,15 × 2,4 m M OR 2,4 m × 1,15 ✓M 
= 2,76 m ✓A | ✓A | ✓CA |
|  | Area needed for one tent  
= 2,76 m × 2,07 m M ✓CA | 1M substitution  
1CA simplification | ✓CA |
|  | Area needed for 36 tents  
= 36 × 5,7132 m² ✓A  
= 205,6752 m²  
≈ 205,68 m² ✓CA | 1A for the 36  
1M multiplication  
1CA simplification | ✓CA |

OR

Breadth of tent increased by 15%  
= 1,8 m + (0,15 × 1,8 m) OR 1,8 m × 1,15 ✓M 
= 2,07 m ✓A

Length of tent increased by 15%  
= 2,4 m + 0,15 × 2,4 m OR 2,4 m × 1,15 ✓M  
= 2,76 m ✓A

Area of camp site  
= ([6 × 2,76 m] + [4 × 2,07 m]) + ([4 × 2,76]  
× [3 × 2,07 m])  
= 137,1168 m² + 68,5584 m² ✓CA  
= 205,6752 m²  
≈ 205,68 m² ✓CA

1M increased %  
1A increased breadth

1A increased length

1M substitution

1CA simplification

1A for the 36

1M multiplication

1CA simplification

1M substitution

2CA use of correct values

1CA simplification

1CA solution
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
</table>
| OR  | Breadth of tent increased by 15%  
= 1,8 m + (0,15 × 1,8 m) OR 1,8 m × 1,15 ✓M  
= 2,07 m ✓A  
Length of tent increased by 15%  
= 2,4 m + 0,15 × 2,4 m OR 2,4 m × 1,15  
= 2,76 m ✓A  
Breadth 1 = 4 × 2,07 m = 8,28 m  
Breadth 2 = 3 × 2,07 m = 6,21 m ✓CA  
Length 1 = 6 × 2,76 m = 16,56 m ✓CA  
Length 2 = 4 × 2,76 m = 11,04 m ✓CA  
Area of camp site  
= (16,56 m × 8,28 m) + (11,04 m × 6,21 m) ✓S  
= 137,1168 m² + 68,5584 m²  
= 205,6752 m²  
= 205, 68 m² ✓CA  
| OR | 1M increased %  
1A increased breadth  
1A increased length  
1CA breadths  
2CA lengths  
1S substitution  
1CA simplification (8) |
| 4.1.2 | The probability of it raining is very high. ✓✓O | | 12.4.5 L4 |
| OR | There is an 80% chance that it will rain. ✓✓O | | 2O Opinion |
| OR | There is a 20% chance that it will not rain. ✓✓O | | (2) |
### Question 4.2

**Solution**

Time spent on group activities on Day 1, 2, 3 and 4

\[= 2 \text{ hours } + 2 \text{ hours } 15 \text{ min } + 2 \text{ hours } + 2 \text{ hours} \]

\[= 8 \text{ hours } 15 \text{ min } \checkmark \text{M} \]

Total time for first four days

\[= 4 \times (8 \text{ hours } 15 \text{ min}) \]

\[= 33 \text{ hours } \checkmark \text{A} \]

Time spent on group activities on Day 5

\[= 2 \text{ hours } + 2 \text{ hours } 15 \text{ min } + 2 \text{ hours} \]

\[= 6 \text{ hours } 15 \text{ min } \checkmark \text{A} \]

Total time spent on group activities

\[= 33 \text{ hours } + 6 \text{ hours } 15 \text{ min} \]

\[= 39,25 \text{ hours } \checkmark \text{CA} \]

Total time spent at the camp from 07:00 on Day 1 to 15:30 on Day 5

\[= 4 \times 24 \text{ hours } + 8 \text{ hours } 30 \text{ min} \]

\[= 104 \text{ hours } 30 \text{ min} \]

\[= 104,5 \text{ hours } \checkmark \text{CA} \]

Percentage time spent on group activities

\[= \frac{39,25}{104,5} \times 100\% \checkmark \text{M} \]

\[= 37,5598\ldots\% \checkmark \text{CA} \]

\[\approx 38\% \]

\[\therefore \text{ The teacher is not correct. } \checkmark \text{C} \]

**Explanation**

1M adding time

1A total time for four days

1A time for day 5

1CA total workshop time

1CA total camp time

1M calculating %

1CA simplification

1C conclusion

**(8)**

### Question 4.3.1

BEM means brown bread with egg and mayonnaise \(\checkmark \checkmark \text{A}\)

**Solution**

2A correct explanation

**(2)**

### Question 4.3.2

The following should be found on the tree diagram:

- **(a) WEN** \(\checkmark \text{A}\)
- **(b) WFN** \(\checkmark \text{A}\)
- **(c) HEM** \(\checkmark \text{A}\)
- **(d) HFM** \(\checkmark \text{A}\)

4A (1 for each correct outcome)

**(4)**
<table>
<thead>
<tr>
<th>Ques</th>
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<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3.3 (a)</td>
<td>$\frac{1}{12}$ ✓A OR $0,08$ ✓A OR $8,33%$ ✓A</td>
<td>1A numerator 1A denominator</td>
<td>12.4.5 L3</td>
</tr>
<tr>
<td>4.3.3 (b)</td>
<td>$\frac{8}{12}$ ✓A = $\frac{2}{3}$ OR $0,67$ OR $66,67%$ ✓CA</td>
<td>1A numerator 1A denominator 1CA simplification</td>
<td>12.4.5 L3</td>
</tr>
<tr>
<td></td>
<td>✓A $\frac{1}{3} = \frac{2}{3}$ ✓CA</td>
<td>1A for 1 1A for $\frac{1}{3}$ 1CA simplification</td>
<td></td>
</tr>
</tbody>
</table>

Answer only full marks (3) [29]
QUESTION 5 [35 MARKS]

<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1 (a)</td>
<td>Difference in cost per kWh = ( \frac{\text{R} 467,43 - \text{R} 94,99}{600} )</td>
<td>1RT using correct values</td>
<td>12.4.4(2)</td>
</tr>
<tr>
<td></td>
<td>( \approx \text{R} 0,77905 )</td>
<td>1M finding the rate</td>
<td>12.1.1(2)</td>
</tr>
<tr>
<td></td>
<td>( = \text{R} 0,77905 - \text{R} 0,63326 )</td>
<td>1CA simplification</td>
<td>L2 (2)</td>
</tr>
<tr>
<td></td>
<td>( = \text{R} 0,145 ) OR ( 14,5 ) cents</td>
<td>1CA difference (accept the answer in rand or cents)</td>
<td>L3 (2)</td>
</tr>
<tr>
<td></td>
<td>( \approx \text{R} 0,15 ) OR ( 15 ) cents</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FAIR</td>
<td>UNFAIR</td>
<td></td>
</tr>
<tr>
<td>5.1.1 (b)</td>
<td>The more electricity you use, the more you should pay.</td>
<td>All people who use electricity should pay the same rate because they are using the same resource</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 cents per kWh is not a big difference.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Any suitable reason.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.2</td>
<td>( A = \text{R} 467,43 - \text{R} 393,67 )</td>
<td>1A simplification</td>
<td>12.1.3(4)</td>
</tr>
<tr>
<td></td>
<td>( = \text{R} 73,76 )</td>
<td>1M calculating %</td>
<td>12.4.4(2)</td>
</tr>
<tr>
<td></td>
<td>( B = \frac{\text{R} 888,83 - \text{R} 728,63}{\text{R} 728,63} \times 100% )</td>
<td>1A simplification</td>
<td>L2</td>
</tr>
<tr>
<td></td>
<td>( = 21,986% )</td>
<td>1M increasing by a 25,12%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \approx 21,99% )</td>
<td>1A correct values used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( C = \text{R} 147,33 \times 123,38% )</td>
<td>1A simplification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = \text{R} 147,33 \times 1,2338 )</td>
<td>1M increasing by a 25,12%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = \text{R} 145,58 )</td>
<td>1A correct values used</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>( C = \text{R} 147,33 + 23,38% \text{ of } \text{R} 147,33 )</td>
<td>1M increasing by 25,12%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( = \text{R} 147,33 + 268,245754 )</td>
<td>1A correct values used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \approx \text{R} 147,33 + \text{R} 268,25 )</td>
<td>1A simplification</td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td>( \approx \text{R} 145,58 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>( C = 123,38% \text{ of } \text{R} 148,33 )</td>
<td>2M concept</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \approx \text{R} 146,81 )</td>
<td>1A simplification</td>
<td>(6)</td>
</tr>
<tr>
<td>Ques</td>
<td>Solution</td>
<td>Explanation</td>
<td>AS</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>-------------</td>
<td>----</td>
</tr>
</tbody>
</table>
| 5.1.3 | Monthly increase  
\[
= R888,83 - R728,63 \quad \text{OR} \quad 21.99\% \times R728,63 
\]
\[
= R160,20 \quad = R160,23 
\]
\[
\text{Annual increase} = 12 \times R160,20 \quad \text{OR} \quad 12 \times R160,23 
\]
\[
\text{CA} \quad = R1\,922,40 \quad = R1\,922,76 
\]
\[
\text{Annual increase including VAT} \quad \text{OR} \quad \text{R1}\,922,76 \times 1.14 
\]
\[
= R2\,191,54 \quad \text{CA} \quad = R2\,191,9464 \quad \approx R2\,191,95 \quad \text{CA} 
\]
\[
\text{Monthly increase} \quad \text{OR} \quad 
\]
\[
= R888,83 - R728,63 \quad \text{OR} \quad 21.99\% \times R728,63 
\]
\[
= R160,20 \quad = R160,23 
\]
\[
\text{Annual increase} = 12 \times R160,20 \quad \text{OR} \quad 12 \times R160,23 
\]
\[
\text{CA} \quad = R1\,922,40 \quad \text{OR} \quad R1\,922,76 
\]
\[
\text{Annual increase including VAT} \quad \text{OR} \quad R1\,922,76 \times 1.14 
\]
\[
= R2\,191,54 \quad \text{CA} \quad = R2\,191,9464 \quad \approx R2\,191,95 \quad \text{CA} 
\]

**Please note the small differences in the final answer depending on where the rounding off occurred**
<table>
<thead>
<tr>
<th>Ques</th>
<th>Solution</th>
<th>Explanation</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1(a)</td>
<td>First two members will need an area of 2 m² $\checkmark$ A There are four other members who need $4 \times 0.7 \text{ m}^2 = 2.8 \text{ m}^2$ Total area $= 2 \text{ m}^2 + 2.8 \text{ m}^2 = 4.8 \text{ m}^2 \checkmark$ CA Length $= \frac{\text{area}}{\text{breadth}} \checkmark$ M $= \frac{4.8 \text{ m}^2}{1.5 \text{ m}} \checkmark$ CA $= 3.2 \text{ m} \checkmark$ A</td>
<td>1 A recognising the 2 m² $\checkmark$ M 1M multiplying 1CA total 1M using area formula 1CA simplification 1A unit Answer only full marks</td>
<td>12.3.1 L3</td>
</tr>
<tr>
<td>5.2.1(b)</td>
<td>Volume of cylinder $= \pi \times r^2 \times \text{height}$ $150 \ell = 3.14 \times r^2 \times 1.2 \text{ m} \checkmark$ SF $150 \text{ 000 cm}^3 = 3.14 \times r^2 \times 120 \text{ cm} \checkmark$ C $r^2 = \frac{150 \text{ 000}}{3.14 \times 120} \text{ cm}^2 \checkmark$ CA $= 398.089172 \text{ cm}^2$ $r = 19.9521... \text{ cm} \checkmark$ CA $\approx 20 \text{ cm} \checkmark$ R</td>
<td>1SF substitution 2C conversion 1CA manipulation 1CA finding square root 1R rounding</td>
<td>12.3.1(4) 12.3.2(2) L3</td>
</tr>
<tr>
<td>Ques</td>
<td>Solution</td>
<td>Explanation</td>
<td>AS</td>
</tr>
<tr>
<td>------</td>
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<td>----</td>
</tr>
</tbody>
</table>
| 5.2.2 | Cost of supplying and installing the geyser  
\[= \text{R12 490} - \text{R4 500}\]  
\[= \text{R7 990} \checkmark \text{CA}\]  
\[\checkmark \text{M}\]  
Monthly cost of heating water \[= 0.45 \times \text{R888,83}\]  
\[= \text{R399,97} \checkmark \text{A}\]  
Number of months \[= \frac{\text{R7990}}{\text{R399,97}} \checkmark \text{M}\]  
\[= 19,976 \ldots \checkmark \text{CA}\]  
\[\approx 19,98\]  
\[\checkmark \text{J}\]  
YES  her statement is valid. | | 12.1.1 \(L4\) |
| OR | Cost of supplying and installing the geyser  
\[= \text{R12 490} - \text{R4 500}\]  
\[= \text{R7 990} \checkmark \text{CA}\]  
\[\checkmark \text{M}\]  
Monthly cost of heating water \[= 0.45 \times \text{R888,83}\]  
\[= \text{R399,97} \checkmark \text{A}\]  
Saving R399,97 per month for 2 years  
Total saving \[= \text{R399,97} \times 24 \text{ months} \checkmark \text{M}\]  
\[= \text{R9 599,28} \checkmark \text{CA}\]  
\[\checkmark \text{J}\]  
YES  her statement is valid. | | 1J justification |
| | | | |