These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.
QUESTION 1

1.1 Monthly repayments = \( \frac{R290,000}{1,000} \times 10.66 \)  
= \( R3,091.40 \)

1.2 \( - R290,000 \) \( \)  
The outstanding amount is \( R2,992.80 \) and not \( R290,000 \). The initial bond was \( R290,000 \), but the missed monthly payment was \( R2,992.80 \)  
- Just writes \( R2,992.80 \)

\( -10.5 \) The interest rate should be divided by 100. It should also be a monthly interest rate and therefore it should also be divided by 12
- Just writes 0.00875
- Just writes 0.11
- Just writes 10.5%

\( -16 \) This is the number of years and not the number of months that the money has been outstanding.
- Just writes \( 16 \times 12 = 192 \)

1.3 B  
Or D

1.4 \( 7.1 \times 1,000 = 71 \)

1.4.1 \( \frac{7.1}{100} \times 1,000 = 71 \)  
\( \therefore 75 \) is incorrect

Or

\( \frac{75}{1,000} \times 100 = 7.5 \)  
\( \therefore 75 \) is incorrect

Or 7.1%
1.4.2 Thando presumed all the provinces had the same number of houses or households
Or calculated the average of percentage and not the average of the homes
Or Used rounded figures
Or He calculated the mean himself instead of reading it off the graph

QUESTION 2

2.1 2.1.1 \( (1,4 \text{ mg} \times 20) \div 1\,000\,000 \)
\[ = 2,8 \times 10^{-5} \text{ kg} \]
\[ = 0,000028 \text{ kg} \]
Or Conversion incorrect

2.1.2 \( (1,4 \text{ mg} \times 20) - (0,6 \text{ mg} \times 20) \)
\[ = 16 \text{ mg} \]
Or \( (1,4 \text{ mg} - 0,6 \text{ mg}) \times 20 \)
\[ = 16 \text{ mg} \]

Note: Mark allocation: Subtraction
Both correct figures
X 20
Answer

2.2 2.2.1 \( 100\% - 25\% - 35\% \)
\[ = 40\% \]
\[ 40\% \times 44\,000 \]
\[ = 17\,600 \]

OR
\[ 25\% \times 44\,000 = 11\,000 \]
\[ 35\% \times 44\,000 = 15\,400 \]
\[ \div \ 44\,000 - 11\,000 - 15\,400 \]
\[ = 17\,600 \]
2.2.2

\[
\frac{17\,600}{44\,000} \times 360^\circ = 144^\circ
\]

OR

\[
\frac{40^\circ}{100} \times 360^\circ = 144^\circ
\]

OR

25\% = 90^\circ
35\% = 126^\circ
360^\circ - 90^\circ - 126^\circ = 144^\circ

OR

Just 144^\circ

(4)

[15]

QUESTION 3

3.1

3.1.1 Mean  = \frac{16 + 19 + 18 + \cdots + 18}{16}
= \frac{269^\circ}{16}
= 16,81^\circ

OR

Just 16,81

OR

\[
\frac{452}{16} = 28,25
\]

OR

Just 252,13

(5)
3.1.2 Mode = 29
Greater than the mode = 5

OR

5

OR

Correct 5 cities

3.2

3.2.1 Steenbras Lower: 87,5% × 33 517 million litres
= 29 327,375 million litres
Steenbras Upper: 90,2% × 31 767 million litres
=28 653,834 million litres
∴ Steenbras Lower Dam contained more water

OR

Correct values, but divided instead of multiply

3.2.2 Picture A. The dam is 103,3% full and thus water
is higher than the dam wall and so it is
overflowing.
### 3.3

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost (in cents) per kilolitre</th>
<th>Number of kilolitres used</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 0 to 6 kl</td>
<td>0,00</td>
<td>6</td>
<td>0,00</td>
</tr>
<tr>
<td>More than 6 kl to 15 kl</td>
<td>605,62</td>
<td>9</td>
<td>5 450,38</td>
</tr>
<tr>
<td>More than 15 kl to 20 kl</td>
<td>660,05</td>
<td>5</td>
<td>3 300,25</td>
</tr>
<tr>
<td>More than 20 kl to 40 kl</td>
<td>720,06</td>
<td>4</td>
<td>2 880,24</td>
</tr>
<tr>
<td>More than 40 kl</td>
<td>750,03</td>
<td>0</td>
<td>0,00</td>
</tr>
</tbody>
</table>

Total kilolitres used and cost (excluding VAT) **11 631,07**

VAT **1 628,3498**

Total Owing (in cents) **13 259,4198**

Total Owing (in Rands and cents) **R132,59**

**Note:** 7 marks only (final mark lost due to rounding)

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### OR

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost (in cents) per kilolitre</th>
<th>Number of kilolitres used</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 0 to 6 kl</td>
<td>0,00</td>
<td>6</td>
<td>0,00</td>
</tr>
<tr>
<td>More than 6 kl to 15 kl</td>
<td>605,62</td>
<td>9</td>
<td>R 545,51</td>
</tr>
<tr>
<td>More than 15 kl to 20 kl</td>
<td>660,05</td>
<td>5</td>
<td>R 330,00</td>
</tr>
<tr>
<td>More than 20 kl to 40 kl</td>
<td>720,06</td>
<td>4</td>
<td>R 288,80</td>
</tr>
<tr>
<td>More than 40 kl</td>
<td>750,03</td>
<td>0</td>
<td>R 0,00</td>
</tr>
</tbody>
</table>

Total kilolitres used and cost (excluding VAT) **R 116,31**

VAT **R 16,28**

Total Owing (in cents) **13 259,4198**

Total Owing (in Rands and cents) **R132,59**

**Note:** 7 marks only (final mark lost due to rounding)
QUESTION 4

4.1 Accepted range of measurement: 65 – 69 mm (6.5 – 6.9 cm)  

**Ratio Method:**

\[
\begin{align*}
65 \text{ mm} & : 433 \text{ km} \\
65 \text{ mm} & : 433 \times 1000000 \\
65 \text{ mm} & : 433000000 \text{ mm} \\
1 \text{ mm} & : 433000000 \text{ mm} ÷ 65 \text{ m} \\
1 \text{ mm} & : 6661538.46 \text{ mm} \\
1 & : 7000000 
\end{align*}
\]

**Division Method:**

\[
\begin{align*}
433 \text{ km} & \times 1000000 = 433000000 \text{ mm} ÷ 65 \text{ mm} \\
& = 6661538.46 \\
& = 7000000 \\
\therefore \text{ Scale:} & \quad 1 : 7000000
\end{align*}
\]

**Measurement**  
**Pre-rounded answer**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Pre-rounded answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 mm (6.5 cm)</td>
<td>6661538.46</td>
</tr>
<tr>
<td>66 mm (6.6 cm)</td>
<td>6560606.06</td>
</tr>
<tr>
<td>67 mm (6.7 cm)</td>
<td>6462686.57</td>
</tr>
<tr>
<td>68 mm (6.8 cm)</td>
<td>6367647.06</td>
</tr>
<tr>
<td>69 mm (6.9 cm)</td>
<td>6275362.32</td>
</tr>
</tbody>
</table>

OR

1 : 7000000 or 1 : 6000000
4.2 Accepted Range of measurement: 89 – 94 mm
(8,9 – 9,4 cm)

**Ratio Method:**

\[
\frac{1}{6 \, 000 \, 000} \\
89 \text{ mm} : 6 \, 000 \, 000 \times 89 \text{ mm} \\
89 \text{ mm} : 534 \, 000 \, 000 \text{ mm} \\
89 \text{ mm} : 534 \, 000 \, 000 \text{ mm} \div 1 \, 000 \, 000 \\
89 \text{ mm} : 534 \text{ km}
\]

**Multiplication Method:**

\[
89 \text{ mm} \times 6 \, 000 \, 000 = 534 \, 000 \, 000 \text{ mm} \div 1 \, 000 \, 000
= 534 \text{ km}
\]

<table>
<thead>
<tr>
<th>Measurement</th>
<th>1 : 6 000 000</th>
<th>1 : 7 000 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>89 mm (8,9 cm)</td>
<td>534 km</td>
<td>623 km</td>
</tr>
<tr>
<td>90 mm (9,0 cm)</td>
<td>540 km</td>
<td>630 km</td>
</tr>
<tr>
<td>91 mm (9,1 cm)</td>
<td>546 km</td>
<td>637 km</td>
</tr>
<tr>
<td>92 mm (9,2 cm)</td>
<td>552 km</td>
<td>644 km</td>
</tr>
<tr>
<td>93 mm (9,3 cm)</td>
<td>558 km</td>
<td>651 km</td>
</tr>
<tr>
<td>94 mm (9,4 cm)</td>
<td>564 km</td>
<td>658 km</td>
</tr>
</tbody>
</table>

**OR**

Using raw (non-rounded scale values):
(e.g. using 6 661 538,46 instead of 7 000 000)

**OR**

Ratio scale method:

\[
\frac{65 \text{ mm}}{89 \text{ mm}} = \frac{433 \text{ km}}{592,9 \text{ km}} \approx \frac{593 \text{ km}}{65 \times 89}
\]

4.3 \[75 \text{ BWP} \times 9 \text{ people} \times 9 \text{ days} = 6 \, 075 \text{ BWP} \div 0,9057 \text{ BWP/R} = \text{ R6 707,52}

**OR:** \[\times 0,9057 \text{ (Max 5 marks only)}\]

**OR:** \[\div 0,9723 \text{ (Max 5 marks only)}\]

**OR:** \[\times 0,9723 \text{ (Max 4 marks only)}\]
4.4 4.4.1 If one does not exchange any money, then no commission can be charged.

OR: Any indication that no commission was charged

4.4.2 There is a fixed minimum charge

OR: Any indication of a constant / steady amount (e.g. no change)

NOT: There was no commission charged OR The same amount of money was exchanged

4.4.3 R57,50

4.4.4 There is a constant charge for commission

OR: Any indication of a constant / steady rate (e.g. steady increase / increased by same amount, etc.)

OR: Direct proportion / relationship

NOT: There was a positive increase OR any comment on increase without the sense of understanding a constant rate

4.4.5 \[ R157,25 \times \frac{100}{1,85} = R8\ 500 \]

OR

\[ \frac{1,85}{100} \times R8\ 500 = R157,25 \]

OR

\[ \frac{R157,25}{0,0185} = R8\ 500 \]

OR

\[ \frac{R157,25}{R5\ 800} \times 100 = 1,85\% \]

4.5 \[ 3 \times (50\% \times R250) = 3 \times R125 = R375,00 \]

\[ 1 \times (25\% \times R250) = 1 \times R62,50 = R62,50 \]

\[ 5 \times R250 = 5 \times R250 = R1\ 250,00 \]

R1 687,50

4.6 4.6.1 A 2

B 29

C 5

D 6

E 5

F 12
4.6.2 (a) \[ \frac{16}{45} \]  

(b) \[ \frac{21}{45} = 0.47 \]  

(c) \[ \frac{5}{45} \times 100 = 11.1\% \]  

\[ V = \pi \times r^2 \times h \]  
\[ = 3.14 \times (3 \text{ cm})^2 \times 12 \text{ cm} \times \frac{3}{4} \times 45 \text{ passengers} \times 3 \text{ cups} \]  
\[ = 339.12 \text{ cm}^3 (339.29 \text{ with } \pi) \times \frac{3}{4} \times 45 \text{ passengers} \times 3 \text{ cups} \]  
\[ = 34335.9 \text{ cm}^3 (34353.32 \text{ with } \pi) \]  

No. of litres = \[ 34335.9 \text{ cm}^3 \div 1000 \text{ cm}^3 = 34.3359 \text{ ℓ} (34.35332 \text{ with } \pi) \]  

No. of 2 ℓ bottles = \[ 34.3359 \text{ ℓ} \div 2 \text{ ℓ} = 17.16795 \text{ (17.18 with } \pi) \]  
\[ = 18 \text{ bottles} \]
QUESTION 5

5.1 5.1.1
Area to be painted = (15 mm × 180 mm × 2) +
(60 mm × 15 mm × 2) + (180 mm × 60 mm) +
((180 mm − 40 mm − 30 mm) × 60 mm)
= 5 400 mm² + 1 800 mm² + 10 800 mm² + 6 600 mm²
= 24 600 mm²

OR
Can be calculated into cm² and then converted.

5.1.2 Area to be painted

= (50 mm × 60 mm) +

(½ × 40 mm × 30 mm × 2)
= 3 000 mm² + 1 200 mm²
= 4 200 mm²
∴ Bongani’s statement is incorrect

OR
Area to be painted

= (5 cm × 6 cm) +

(½ × 4 cm × 3 cm × 2)
= 3 0 cm² + 1 2 cm²
= 4 2 cm²
∴ Bongani’s statement is incorrect

5.1.3 Total Area = Part A + Part B + Part C

= 24 600 mm² + 5 400 mm² + 4 200 mm²
= 34 200 mm²

NOTE Must add the figures from the questions 5.1.1 and 5.1.2.
5.1.4

\[ 34 \text{ 200 mm}^2 \div 1 \text{ 000 000 m}^2 = 0,0342 \text{ m}^2 \]

\[ 5 \text{ m}^2 \div 0,0342 \text{ m}^2 = 146,1988304 \times 5 \text{ ℓ m} \]

\[ = 730,994 \ldots \]

\[ = 730 \text{ trucks} \]

\[ \therefore \text{ yes he has enough paint} \]

OR

\[ 5 \text{ m}^2 \times 1 \text{ 000 000} \times 5 \text{ ℓ m} \]

\[ = 25 \text{ 000 000 mm}^2 \div 34 \text{ 200 mm}^2 \text{ m} \]

\[ = 730,994 \ldots \]

\[ = 730 \text{ trucks} \]

\[ \therefore \text{ yes he has enough paint} \]

OR

\[ \frac{34 \text{ 200}}{1 \text{ 000 000}} = 0,0342 \text{ m}^2 \]

\[ \therefore 700 \text{ trucks} = 0,0342 \times 700 \]

\[ = 23,94 \text{ m}^2 \]

OR

\[ 23,94\text{m}^2 \div 5 \text{ m}^2 = 4,79 \text{ ℓ} \quad 5 \times 5 = 25 \text{ m}^2 \]

\[ \approx 5 \text{ ℓ} \]

\[ \therefore \text{ yes he has enough paint} \]

Be aware of \(65 \text{ m}^2 \div 0,03 \text{ m}^2 = 2 \text{ 166 trucks}\)

(5)
5.2

5.2.1 Amount in Rand
OR: Income, expense and profit (All three must be there)

5.2.2
(a) Expenses OR: Cost
(b) Income
(c) Profit OR: Loss
(d) –R180 or –180

5.2.3
(a) \[ I = R20 \times t \]
(b) \[ E = R180 + R8 \times t \]

OR: Can be in words

5.2.4
\[ I = E \]
\[ R20 \times t = R180 + R8 \times t \]
\[ 20t = 180 + 8t \]
\[ 20t - 8t = 180 \]
\[ 12t = 180 \]
\[ t = 15 \]

OR
Trial and error

- Correct Method, but not correct answer

OR

\[ \text{Profit} = R20 - R8 = R12 \]
\[ \therefore \frac{R180}{R12} = 15 \]

5.2.5
\[ P = I - E \]
\[ = (R20 \times t) - (R180 + R8 \times t) \]
\[ = (R20 \times 16) - (R180 + R8 \times 16) \]
\[ = R12 \]

OR
1 truck above breakeven point, so R12 profit