Accuracy and precision

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Write the interval for 7.2 m to the nearest 0.1 m. [2 marks]

Half a rounding unit is 0.05 m.

Answer: $7.15 \leq L < 7.25$ m.

2. Write the interval for 340 g to the nearest 10 g. [2 marks]

Half a 10 g unit is 5 g.

Answer: $335 \leq m < 345$ g.

3. A thermometer reads 21.4 degrees Celsius when a reference is 20.0 degrees Celsius. Find absolute error. [2 marks]

$|21.4 - 20.0| = 1.4$. No Celsius percentage error is required.

Answer: 1.4 degrees Celsius.

4. A measured length is 98 cm and its reference is 100 cm. Find percentage error. [2 marks]

$\frac{|98 - 100|}{100} \times 100 = 2\%$.

Answer: 2%.

5. A scale repeatedly reads 1.05 kg for a verified 1.00 kg mass. Describe its readings. [2 marks]

The readings agree with one another, not with the reference.

Answer: Repeatable but inaccurate by 0.05 kg.

6. A rectangle is recorded as 4.0 cm by 3.0 cm, each to the nearest 0.1 cm. Find minimum possible area. [3 marks]

Lower dimensions are 3.95 cm and 2.95 cm.

$3.95 \times 2.95 = 11.6525$ cm^2.

Answer: 11.6525 cm^2.