Measurement topic test 2

Name: _____ Date: _____

10 questions | 52 marks | 65 minutes

Composite shapes and capacity. Use a scientific calculator, show working and include units. Sketches are not to scale.

A scientific calculator may be used.

1. A gardener compares different measurement descriptions. [4 marks]

(a) Explain why square metres, not metres, describe lawn coverage. [2 marks]

(b) A device displays mass to 0.01 kg. State its displayed resolution in grams. [2 marks]

2. An 8 m by 3.5 m rectangular pool has a water layer 200 mm deep. [5 marks]

(a) Find the water volume in litres. [3 marks]

(b) How many litres raise the water level by 1 mm? [2 marks]

3. A semicircle of radius 3 m is attached externally along one 6 m side of a 10 m by 6 m rectangle. The shared diameter is internal. [6 marks]

(a) Find total area to 2 decimal places. [3 marks]

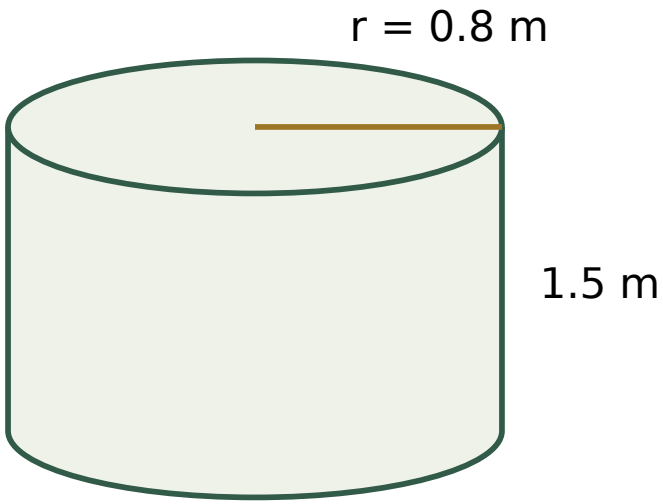
(b) Find outside perimeter to 2 decimal places. [3 marks]

4. A triangular prism has a right-triangle cross-section with sides 3 cm, 4 cm and 5 cm, and length 8 cm. [5 marks]

(a) Find its volume. [2 marks]

(b) Find the total surface area. [3 marks]

5. An open cylindrical tank has radius 0.8 m and height 1.5 m. Its inner base and curved wall need coating. Coverage is 2 m^2/L, sold in 2.5 L tins. [5 marks]



Sketch not to scale

(a) Calculate the area to be coated, to 2 decimal places. [3 marks]

(b) Find the tin order using the unrounded area. [2 marks]

6. A real room is 6 m by 4.2 m. A plan uses scale 1:80. [5 marks]

(a) Find its drawing dimensions in centimetres. [2 marks]

(b) Find drawing area and explain why dividing real area by 80 is wrong. [3 marks]

7. A cycle trip covers 14 km in 42 minutes. Separately, a car uses 6.8 L per 100 km and petrol costs AUD 1.95/L. [5 marks]

(a) Find average cycling speed. [2 marks]

(b) Find the petrol cost for 250 km. [3 marks]

8. A rectangular tank has internal dimensions 2 m by 1.2 m by 0.9 m. A pump fills it at a constant 18 L/min. [6 marks]

(a) Find full capacity and filling time from empty. [3 marks]

(b) Find filling time if the initial water depth is 0.3 m. [3 marks]

9. A rod measures 25.0 cm to the nearest 0.1 cm. A rigid gap is exactly 25.02 cm. [4 marks]

(a) State the measurement interval. [2 marks]

(b) Can you guarantee that the rod fits? Explain. [2 marks]

10. Two closed boxes have dimensions A: 10 cm by 6 cm by 4 cm, and B: 8 cm by 6 cm by 5 cm. [7 marks]

(a) Show that their volumes are equal. [2 marks]

(b) Compare surface areas and recommend the lower-material option, assuming either shape fits the product. [3 marks]

(c) Allow 5% waste on the recommended area. Find material needed per box. [2 marks]