Measurement topic test 3

Name: _____ Date: _____

10 questions | 49 marks | 65 minutes

Reverse problems and material orders. Use a scientific calculator, show working and include units. Sketches are not to scale.

A scientific calculator may be used.

1. A contractor works with large area and liquid quantities. [4 marks]

(a) Convert 0.025 km^2 to m^2. [2 marks]

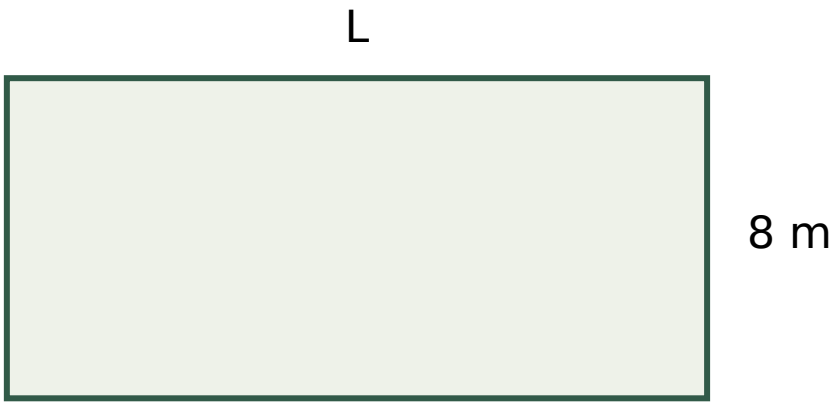
(b) Convert 1.2 ML to m^3. [2 marks]

2. A scale gives repeated readings of 2.04 kg for a verified 2.00 kg reference. [5 marks]

(a) Describe repeatability and accuracy. [2 marks]

(b) Find percentage error and explain why more repeated readings alone will not remove the offset. [3 marks]

3. A rectangular enclosure has perimeter 42 m and width 8 m. [4 marks]



Sketch not to scale

(a) Find its length. [2 marks]

(b) Find its area. [2 marks]

4. A cylindrical container has internal radius 0.7 m and capacity 490π L. [5 marks]

(a) Express the volume in cubic metres. [2 marks]

(b) Find the internal height. [3 marks]

5. A model tank has capacity 64 L and external surface area 2.4 m^2. A geometrically similar tank doubles every linear dimension. [4 marks]

(a) Find the new capacity. [2 marks]

(b) Find the new external surface area. [2 marks]

6. On a scale plan, a region has area 12 cm^2. Its actual area is 192 m^2. [5 marks]

(a) Find the area scale factor using centimetres on both sides. [2 marks]

(b) Find the linear plan scale. [3 marks]

7. A paved design contains a 14 m by 3 m rectangular strip and a non-overlapping triangle of base 14 m and perpendicular height 6 m. [5 marks]

(a) Find the combined area. [3 marks]

(b) A sealant covers 7 m^2/L. Find the amount for one coat and the number of 5 L tins. [2 marks]

8. An aluminium plate is 20 cm by 15 cm by 0.4 cm. Density is 2.7 g/cm^3. The supplier allows 3% extra mass for cutting, at AUD 12/kg. [6 marks]

(a) Find the plate mass before the allowance. [3 marks]

(b) Find the quoted material cost to the nearest cent. [3 marks]

9. A staircase has 14 risers of height 0.18 m and 13 horizontal goings of 0.27 m. Its width is 1.2 m. [5 marks]

(a) Find the total vertical rise. [2 marks]

(b) Find horizontal run and the rectangular floor footprint. [3 marks]

10. A 4.2 m by 3.6 m floor uses tiles measuring 300 mm by 600 mm. Add 10% to the basic tile count for cuts. Tiles come in packs of eight at AUD 34.50 per pack. [6 marks]

(a) Find the basic tile count. [3 marks]

(b) Find the pack order and cost. [3 marks]