Surface area, volume and measurement - Practice test 1

Name: _____ Date: _____

16 questions | 40 marks | 55 minutes

Build from units and familiar prisms to cylinders, error and a tank model.

A scientific calculator may be used.

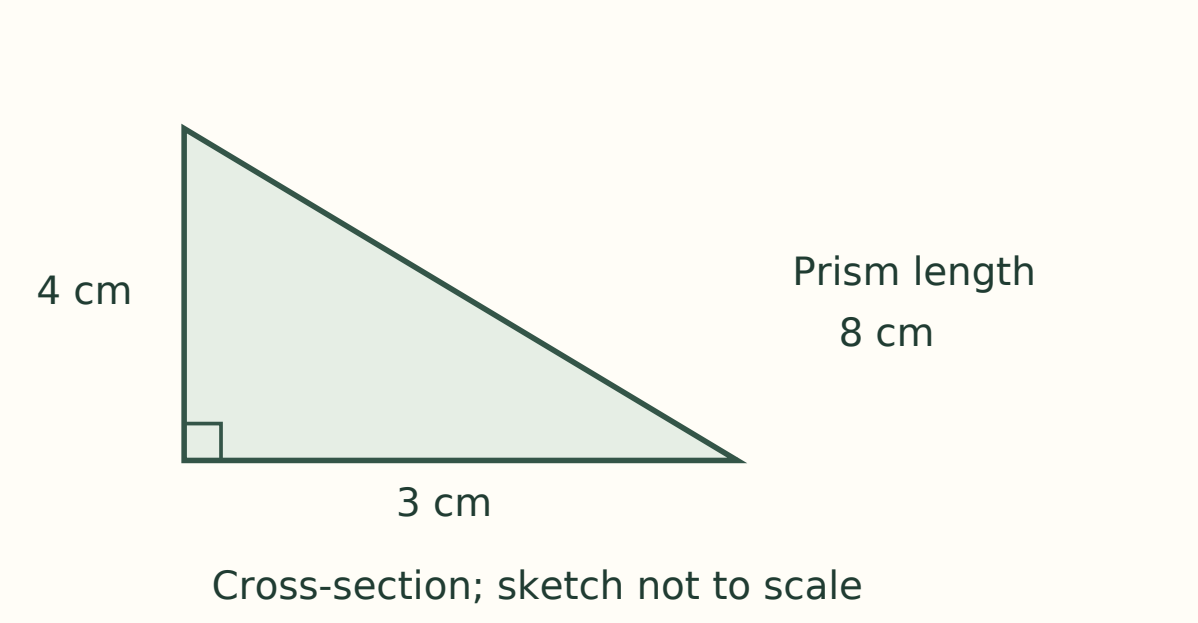
1. Which quantity measures the space inside a tank: surface area or volume? State a suitable metric unit. [1 mark]

2. Convert 1.8 m^2 into square centimetres. [2 marks]

3. Convert 3600 cm^3 into litres. [2 marks]

4. Find the total surface area of a closed rectangular prism 6 cm by 4 cm by 2 cm. [3 marks]

5. A right triangular prism has a cross-section with base 3 cm and perpendicular height 4 cm. Its length is 8 cm. Find its volume. [2 marks]

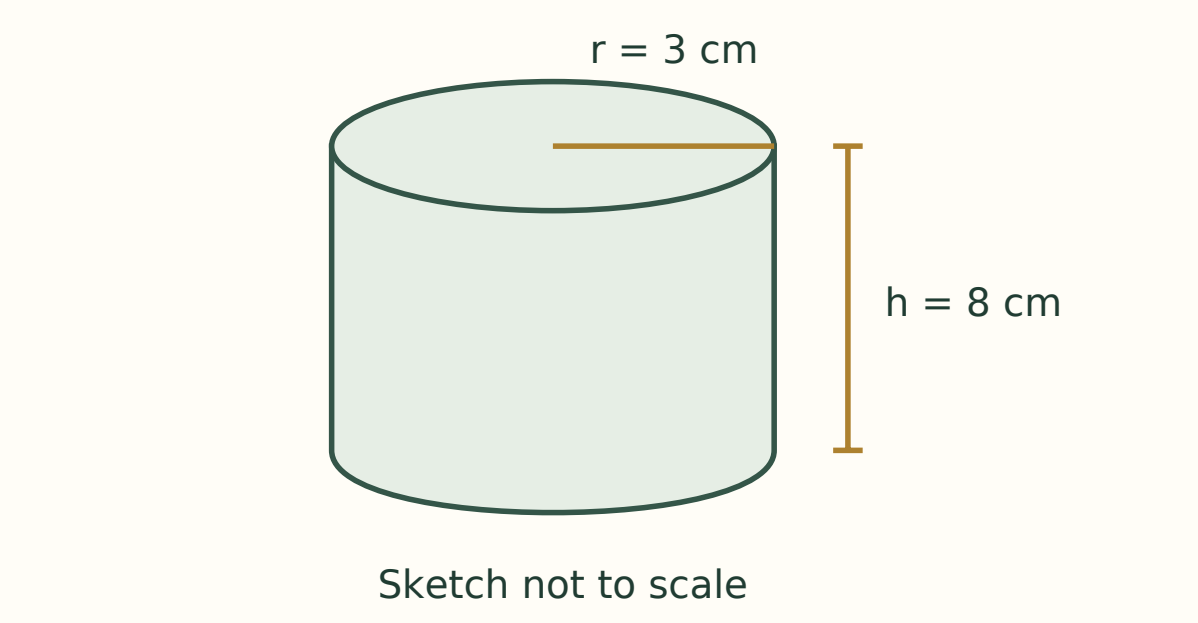


6. Find the curved area of a cylinder with radius 2 cm and height 9 cm. Give an exact answer. [2 marks]

7. A closed cylinder has diameter 8 cm and height 5 cm. Find its total surface area. [3 marks]

8. A right prism has cross-section area 14 cm², cross-section perimeter 18 cm and length 6 cm. Find its surface area. [2 marks]

9. A cylindrical container has internal radius 3 cm and height 8 cm. Find its capacity to the nearest millilitre. [3 marks]



10. A rectangular tank has internal dimensions 0.6 m by 0.4 m by 0.5 m. Find its full capacity in litres. [2 marks]

11. A reference capacity is 120 L. A measurement gives 117 L. Find the absolute and percentage error. [3 marks]

12. A length is recorded as 8.6 cm to the nearest 0.1 cm. [3 marks]

(a) State the maximum rounding error. [1 mark]

(b) Give the interval of unrounded lengths. [2 marks]

13. An open-top rectangular container is 12 cm long, 8 cm wide and 5 cm high. Find its material area, ignoring thickness. [3 marks]

14. A student writes $4\ \text{m}^2 = 400\ \text{cm}^2$. Explain the error and correct the conversion. [3 marks]

15. A label covers the curved wall of a cylinder. The circumference is 31.4 cm and the label height is 12 cm. Find the label area. [2 marks]

16. A rectangular tank has an internal base 25 cm by 10 cm and height 40 cm. It starts empty and fills at 2 L per minute. [4 marks]

(a) Find its full capacity in litres. [2 marks]

(b) How long does filling take, assuming a constant flow and no overflow? [2 marks]