

Name _____

Date _____

Stage 7 End-of-unit test 15 — mark scheme

22 questions · 54 marks · calculators are not allowed · allow about 45 minutes

- 1 A rectangle is 13 cm long and 6 cm wide. What is its perimeter, in centimetres? [2]

Answer: 38

$$2 \times (13 + 6) = 38 \text{ cm.}$$

- 2 A rectangle is 13 cm long and 6 cm wide. What is its area, in square centimetres? [2]

Answer: 78

$$13 \times 6 = 78 \text{ cm}^2.$$

- 3 Two shapes are congruent. That means ... [2]

- ☐ they have the same area
- ☐ corresponding sides and angles are equal
- ☐ they are both rectangles
- ☐ one is an enlargement of the other

Answer: corresponding sides and angles are equal

Same shape and same size.

- 4 A rectangle has area 96 cm^2 and length 12 cm. What is its width, in centimetres? [2]

Answer: 8

$$96 \div 12 = 8 \text{ cm.}$$

- 5 An L-shape is a 12 cm by 8 cm rectangle with a 5 cm by 3 cm corner removed. What is its area, in square centimetres? [3]

Answer: 81

$$12 \times 8 = 96 \text{ cm}^2 \text{ and } 5 \times 3 = 15 \text{ cm}^2, \text{ so } 96 - 15 = 81 \text{ cm}^2.$$

- 6 An L-shape is a 12 cm by 8 cm rectangle with a **rectangular** corner removed. What is its perimeter, in centimetres? [3]

Answer: 40Removing a rectangular corner does not change the perimeter: $2 \times (12 + 8) = 40 \text{ cm.}$

- 7 How many square centimetres are there in 1 square metre? [2]

Answer: 10000

$$100 \times 100 = 10000 \text{ cm}^2.$$

- 8 How many square metres are there in 3 hectares? [2]

Answer: 30000

$$1 \text{ ha} = 10000 \text{ m}^2, \text{ so } 3 \times 10000 = 30000 \text{ m}^2.$$

- 9 A field is 400 m by 250 m. What is its area, in hectares? [3]

Answer: 10

$$400 \times 250 = 100000 \text{ m}^2, \text{ and } 100000 \div 10000 = 10 \text{ ha.}$$

- 10** A triangle has base 12 cm and perpendicular height 7 cm. What is its area, in square centimetres? [2]

Answer: 42

$12 \times 7 = 84$, and $84 \div 2 = 42 \text{ cm}^2$.

- 11** Which height is used in the area formula for a triangle? [2]

- ☐ The longest side
- ☐ Any side
- ☐ The perpendicular height from the base
- ☐ The shortest side

Answer: The perpendicular height from the base

At right angles to the base, not along a sloping side.

- 12** A triangle has area 36 cm^2 and base 9 cm. What is its perpendicular height, in centimetres? [3]

Answer: 8

$36 \times 2 = 72$, and $72 \div 9 = 8 \text{ cm}$.

- 13** A shape is a 10 cm by 5 cm rectangle with a triangle of base 10 cm and height 6 cm on top. What is the total area, in square centimetres? [4]

Answer: 80

The rectangle is $10 \times 5 = 50 \text{ cm}^2$. The triangle is $10 \times 6 = 60$, then $60 \div 2 = 30 \text{ cm}^2$. Total $50 + 30 = 80 \text{ cm}^2$.

- 14** A cuboid is 7 cm by 4 cm by 3 cm. What is its volume, in cubic centimetres? [2]

Answer: 84

$7 \times 4 \times 3 = 84 \text{ cm}^3$.

- 15** A cube has edges of 6 cm. What is its volume, in cubic centimetres? [2]

Answer: 216

$6 \times 6 \times 6 = 216 \text{ cm}^3$.

- 16** A cuboid has volume 180 cm^3 , length 6 cm and width 5 cm. What is its height, in centimetres? [3]

Answer: 6

The base is $6 \times 5 = 30 \text{ cm}^2$, so the height is $180 \div 30 = 6 \text{ cm}$.

- 17** A tank is 40 cm by 25 cm by 20 cm. How many litres does it hold? [3]

Answer: 20

$40 \times 25 \times 20 = 20000 \text{ cm}^3$, and $20000 \div 1000 = 20 \text{ litres}$.

- 18** How many faces, edges and vertices has a cuboid? [2]

- ☐ 6, 8, 12
- ☐ 6, 12, 8
- ☐ 8, 12, 6
- ☐ 12, 6, 8

Answer: 6, 12, 8

Six faces, twelve edges, eight vertices.

- 19** A cuboid is 5 cm by 4 cm by 3 cm. What is its surface area, in square centimetres? [3]

Answer: 94

$5 \times 4 = 20$, $5 \times 3 = 15$ and $4 \times 3 = 12$. Adding gives $20 + 15 + 12 = 47$, and doubling gives $47 \times 2 = 94 \text{ cm}^2$.

- 20** A cube has edges of 5 cm. What is its surface area, in square centimetres? [2]

Answer: 150

$$6 \times 5 \times 5 = 150 \text{ cm}^2.$$

- 21** An open-topped box is 10 cm long, 6 cm deep and 4 cm tall. What area of card is needed, in square centimetres? [4]

Answer: 188

A closed box would be $2 \times (60 + 40 + 24) = 248 \text{ cm}^2$. Take off the top, which is $10 \times 6 = 60 \text{ cm}^2$: $248 - 60 = 188 \text{ cm}^2$.

- 22** Surface area is measured in ... [1]

- ☐ cm
- ☐ cm^2
- ☐ cm^3
- ☐ litres

Answer: cm^2

It is a total of areas, even though it belongs to a solid.

Total: 54 marks