



KS2.M-Y5M2 Perimeter, Area and Volume

Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** A rectangle has length 8 m and width 3 m. Work out its area.

(2)

- 2** A garden bed is a rectangle 250 cm long and 120 cm wide. What is the area in square centimetres?

(2)

- 3** Write down the perimeter of a rectangle with sides 7 cm and 5 cm.

(1)

- 4** A classroom carpet is made from two rectangles joined along their short side. One rectangle is 4 m by 3 m, the other is 4 m by 2 m. Calculate the total area of the carpet.

(2)

- 5** A rectangular water tray holds 6 layers of cubes. Each layer is 5 cubes long and 3 cubes wide. How many cubes fit in the tray altogether?

(2)

- 6** A rectangle has area 48 cm^2 and one side is 6 cm. Work out the length of the other side.

(2)

- 7** A border around a square flower bed is 1 m wide. The outside edge of the border makes a larger square 8 m by 8 m. What is the area of the flower bed (the inner square)?

(2)

- 8** Estimate the area of this irregular shape by counting full 1 cm by 1 cm squares and sensible halves.

The shape covers 7 full squares and 5 half squares.

(1)

- 9** A storage box is 40 cm by 30 cm by 20 cm. A small cube has side 10 cm. What is the largest number of small cubes that can fit into the box without breaking them?

(2)

- 10** A rectangle has perimeter 30 m. One side is 8 m. Work out the length of the opposite side.

(2)

- 11** Sana builds a tower with cubes. The base layer is 6 cubes by 2 cubes. She stacks 4 identical layers. How many cubes are in the tower? Show your working.

(2)

- 12** A playground has a rectangular patch of sand 9 m by 4 m. A square seesaw area of 2 m by 2 m is inside the sand. What is the area of sand not covered by the seesaw?

(1)

- 13** Here is a rectangle 12 cm by 5 cm. A 4 cm by 2 cm rectangle is cut out from one corner. Work out the area of the remaining shape.

(2)

- 14** Explain why two rectangles with the same area can have different perimeters. Give a short example using whole-number sides.

(1)

- 15** A fish tank is 60 cm long and 25 cm wide. The base is filled with a layer of stones 5 cm deep made from small cubes of size 5 cm. How many small cubes are needed to make the layer?

(2)

- 16** A rectangle has length 9 m and area 63 m². A smaller similar rectangle has length 3 m. What is the area of the smaller rectangle?

(2)

- 17** A model made from identical small cubes has three layers. The bottom layer is 4 by 3 cubes, the middle is 3 by 3, the top is 2 by 3. How many cubes are in the model? Explain your method.

(2)

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- 18** Estimate the area of a pond drawn on a 1 cm grid where about 13 full squares and 6 quarters are covered. Give your estimate in square centimetres.

(1)

Mark scheme · KS2.M-Y5M2 Perimeter, Area and Volume

Question 1

- **M1** Multiply length by width or show 8×3
- **B1** 24 m² cao
- Answer: **24 m²**

Question 2

- **M1** Multiply 250×120 or show correct method
- **B1** 30,000 cm² cao
- Answer: **30000 cm²**

Question 3

- **B1** 24 cm cao
- Answer: **24 cm**

Question 4

- **M1** Correct area for each rectangle or method shown (4×3 and 4×2)
- **B1** 20 m² cao
- Answer: **20 m²**

Question 5

- **M1** Multiply layer area $5 \times 3 = 15$ and show times 6
- **B1** 90 cao
- Answer: **90**

Question 6

- **M1** Divide 48 by 6 or show correct method
- **B1** 8 cm cao
- Answer: **8 cm**

Question 7

- **M1** Subtract border twice from 8 to get inner side 6 (or show $8 - 1 - 1$)
- **B1** 36 m² cao
- Answer: **36 m²**

Question 8

- **B1** 9.5 cm² or 9.5 cao
- Answer: **9.5 cm²**

Question 9

- **M1** Divide each dimension by 10 to find how many cubes in each direction: 4, 3, 2
- **B1** 24 cao
- Answer: **24**

Question 10

- **M1** Use perimeter formula $2(l + w) = 30$ or show $2 \times (8 + w) = 30$
- **B1** 7 m cao
- Answer: **7 m**

Question 11

- **M1** Find layer area $6 \times 2 = 12$ and multiply by 4
- **B1** 48 cao
- Answer: **48**

Question 12

- **B1** 32 m² cao
- Answer: **32 m²**

Question 13

- **M1** Find whole rectangle area $12 \times 5 = 60$ and subtract cut-out $4 \times 2 = 8$
- **B1** 52 cm² cao
- Answer: **52 cm²**

Question 14

- **B1** Correct explanation and example, e.g. 6×4 and 8×3 both area 24 but perimeters 20 and 22 respectively, showing why perimeters differ
- Answer: **Example: 6 and 4 (area 24) and 8 and 3 (area 24); perimeters 20 and 22**

Question 15

- **M1** Compute number across length $60/5 = 12$, across width $25/5 = 5$, and depth $5/5 = 1$ then multiply $12 \times 5 \times 1$
- **B1** 60 cao
- Answer: **60**

Question 16

- **M1** Find scale factor for length $3/9 = 1/3$ and square it or use area proportionality
- **B1** 7 m² cao
- Answer: **7 m²**

Question 17

- **M1** Add each layer: $12 + 9 + 6$ or show correct layer totals
- **B1** 27 cubes cao
- Answer: **27**

Question 18

- **B1** 14.5 cm² or 14.5 cao
- Answer: **14.5 cm²**