

Area of Compound Shapes

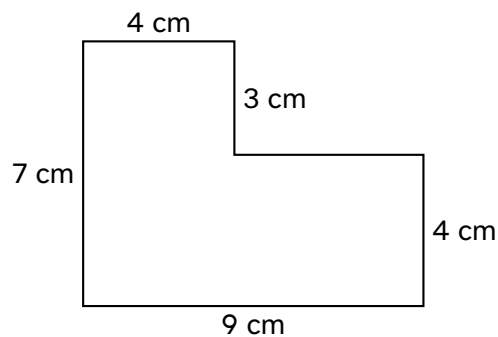
Solutions

For AQA GCSE Mathematics (8300) • Foundation tier

Each question is shown in grey, followed by the working, one step per line. The final answer is in a box. *Marks* shows how the marks are usually given in the exam, and **Tip** points out a common mistake.

1 (3 marks)

All the corners are right angles.



Not drawn accurately

Work out the area of the shape.

Split the shape into two rectangles with a horizontal line.

Bottom rectangle: 9 cm by 4 cm

$$9 \times 4 = 36 \text{ cm}^2$$

Top rectangle: 4 cm wide and $7 - 4 = 3$ cm tall

$$4 \times 3 = 12 \text{ cm}^2$$

Total area: $36 + 12 = 48 \text{ cm}^2$

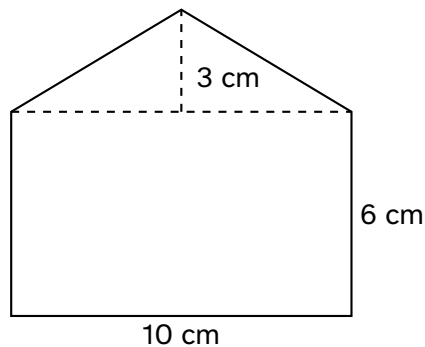
Answer: 48 cm^2

Tip: Multiplying all the lengths together, or adding them, is a common mistake. Split the shape into rectangles first.

Marks: 1 mark for splitting the shape into rectangles. 1 mark for both areas (36 and 12). 1 mark for 48.

2 (3 marks)

The shape is made from a rectangle and a triangle.



Not drawn accurately

Work out the area of the shape.

Split the shape into a rectangle and a triangle.

Rectangle: $10 \times 6 = 60 \text{ cm}^2$

Triangle: base 10 cm, height 3 cm

$$\frac{1}{2} \times 10 \times 3 = 15 \text{ cm}^2$$

Total area: $60 + 15 = 75 \text{ cm}^2$

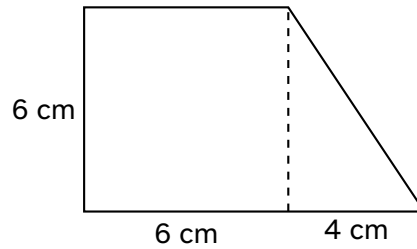
Answer: 75 cm^2

Tip: Remember the $\frac{1}{2}$ for the triangle. Without it you get 30 instead of 15.

Marks: 1 mark for 60. 1 mark for 15. 1 mark for 75.

3 (2 marks)

The shape is made from a square and a right-angled triangle.



Not drawn accurately

Work out the area of the shape.

Square: $6 \times 6 = 36 \text{ cm}^2$

Triangle: base 4 cm, height 6 cm (the same as the side of the square)

$\frac{1}{2} \times 4 \times 6 = 12 \text{ cm}^2$

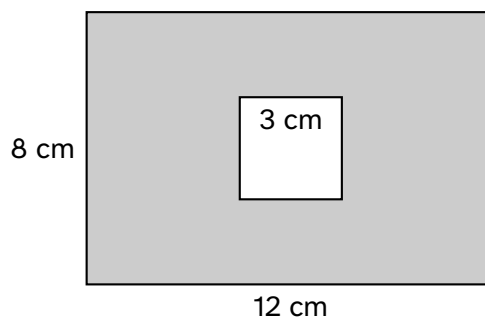
Total area: $36 + 12 = 48 \text{ cm}^2$

Answer: 48 cm^2

Marks: 1 mark for 36 and 12. 1 mark for 48.

4 (2 marks)

A square hole of side 3 cm is cut from a rectangle.



Not drawn accurately

Work out the shaded area.

Area of the rectangle: $12 \times 8 = 96 \text{ cm}^2$

Area of the square hole: $3 \times 3 = 9 \text{ cm}^2$

The hole is not shaded, so subtract it.

Shaded area: $96 - 9 = 87 \text{ cm}^2$

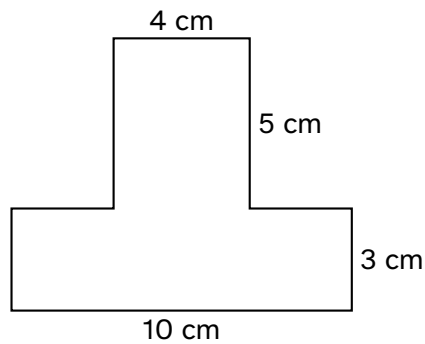
Answer: 87 cm^2

Marks: 1 mark for $12 \times 8 - 3 \times 3$. 1 mark for 87.

5 (3 marks)

All the corners are right angles.

The shape is symmetrical.



Not drawn accurately

Work out the area of the shape.

Split the shape into two rectangles with a horizontal line.

Bottom rectangle: 10 cm by 3 cm

$$10 \times 3 = 30 \text{ cm}^2$$

Top rectangle: 4 cm by 5 cm

$$4 \times 5 = 20 \text{ cm}^2$$

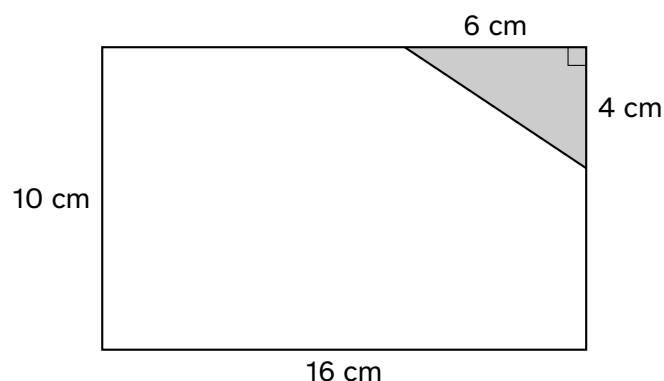
Total area: $30 + 20 = 50 \text{ cm}^2$

Answer: 50 cm^2

Marks: 1 mark for a correct split. 1 mark for both areas. 1 mark for 50.

6 (3 marks)

A rectangular piece of card measures 16 cm by 10 cm.
The shaded right-angled triangle is cut off one corner.



Not drawn accurately

What fraction of the card is cut off?
Give your answer in its simplest form.

Area of the whole card: $16 \times 10 = 160 \text{ cm}^2$

The cut-off part is a right-angled triangle with sides 6 cm and 4 cm.

Area of the triangle: $\frac{1}{2} \times 6 \times 4 = 12 \text{ cm}^2$

Fraction cut off: $\frac{12}{160}$

Divide top and bottom by 4: $\frac{3}{40}$

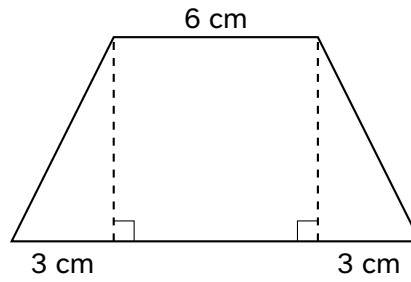
Answer: $\frac{3}{40}$

Tip: The area of a triangle is **half** of base $\times$ height. Using $6 \times 4 = 24$ gives $\frac{3}{20}$, which is wrong.

Marks: 1 mark for 160 and 12. 1 mark for $\frac{12}{160}$. 1 mark for $\frac{3}{40}$.

7 (3 marks)

A logo is made from a square of side 6 cm and two identical right-angled triangles.



Not drawn accurately

Work out the area of the logo.

Split the logo along the dashed lines into a square and two triangles.

Square: $6 \times 6 = 36 \text{ cm}^2$

Each triangle has base 3 cm and height 6 cm.

One triangle: $\frac{1}{2} \times 3 \times 6 = 9 \text{ cm}^2$

Two triangles: $2 \times 9 = 18 \text{ cm}^2$

Total area: $36 + 18 = 54 \text{ cm}^2$

Answer: 54 cm^2

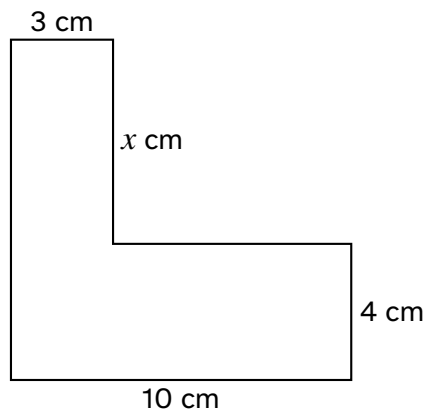
Tip: The height of each triangle is the side of the square, 6 cm. Remember there are **two** triangles.

Marks: 1 mark for 36. 1 mark for $\frac{1}{2} \times 3 \times 6$ or 18 for both triangles. 1 mark for 54.

8 (3 marks)

All the corners are right angles.

The area of the shape is 58 cm^2



Not drawn accurately

Work out the value of x .

Split the shape into two rectangles with a horizontal line.

Bottom rectangle: $10 \times 4 = 40 \text{ cm}^2$

Top rectangle: $58 - 40 = 18 \text{ cm}^2$

The top rectangle is 3 cm wide, so its height is $18 \div 3 = 6 \text{ cm}$.

x is the height of the top rectangle.

Answer: $x = 6$

Tip: Use the area of the part you know to find the area of the part you don't know, then divide by its width.

Marks: 1 mark for $10 \times 4 = 40$. 1 mark for $58 - 40 = 18$. 1 mark for 6.

9 (4 marks)

Dev is paving a rectangular patio that is 6 m by 4.5 m.

A square flower bed of side 1.5 m in one corner will not be paved.

Paving slabs are sold in packs.

One pack covers 2.5 m^2 and costs £17.60

Work out the cost of the packs of slabs Dev needs to buy.

Area of the patio: $6 \times 4.5 = 27 \text{ m}^2$

Area of the flower bed: $1.5 \times 1.5 = 2.25 \text{ m}^2$

Area to be paved: $27 - 2.25 = 24.75 \text{ m}^2$

Number of packs: $24.75 \div 2.5 = 9.9$

He cannot buy part of a pack, so he needs 10 packs.

Cost: $10 \times 17.60 = £176$

Answer: £176

Tip: Round the number of packs **up**: 9 packs would not cover the patio. Also, $1.5^2 = 2.25$, not 3.

Marks: 1 mark for 27 and 2.25. 1 mark for 24.75. 1 mark for 10 packs. 1 mark for £176.
