

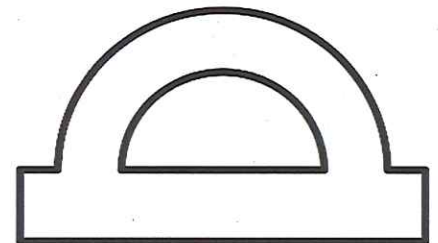
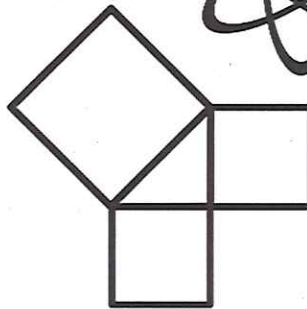
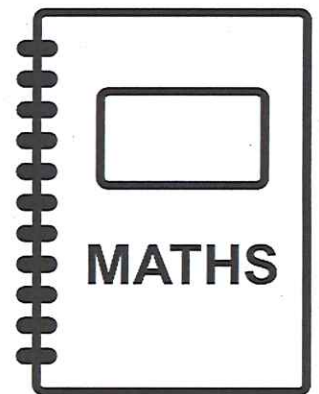
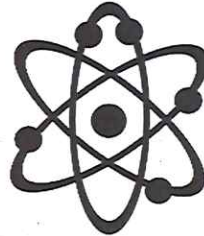
MATHSDIY

GCSE TOPIC BOOKLET AREA & PERIMETER

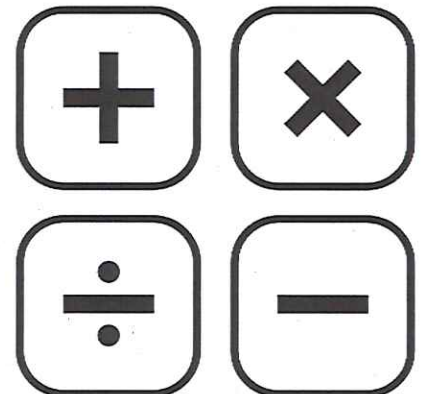
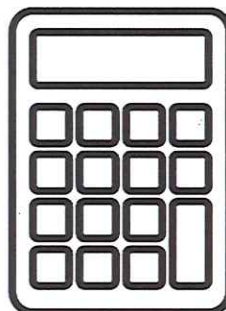
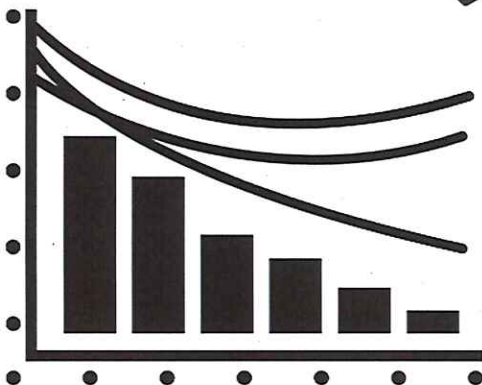
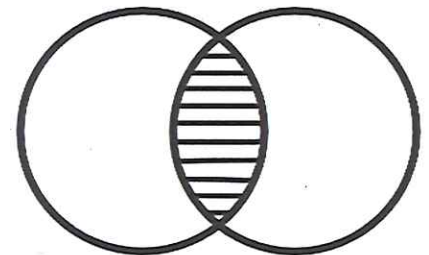
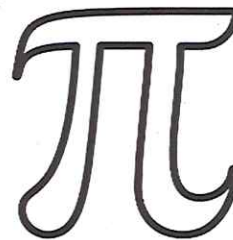
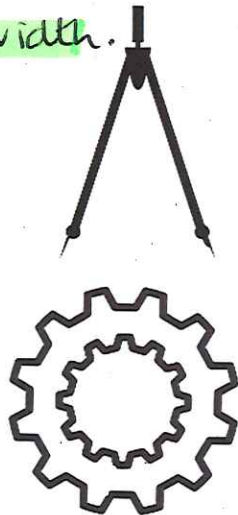
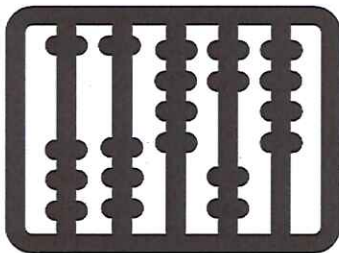
SOLUTIONS

Tips

1. **Perimeter** questions are badly done. Make sure you **label all the sides** with the lengths and '**walk around**' the whole shape.
2. When counting squares be systematic and count all squares that are half or more.
3. **Area rectangle** = **length x width**.



$$a^2 = b^2 + c^2$$



1.

The diagram represents an 11 cm by 5 cm rectangle.

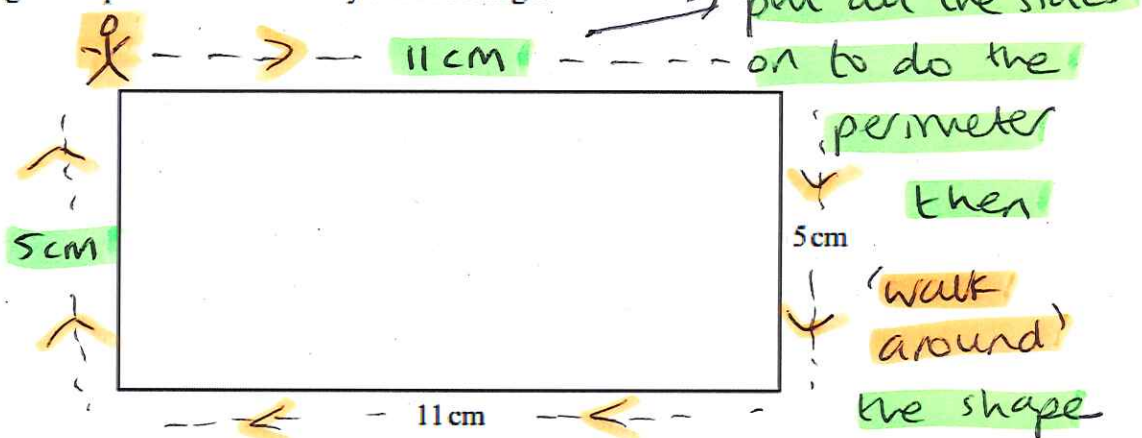


Diagram not drawn to scale

(a) Calculate the area of the rectangle, giving the units of your answer.

$$\text{Area} = L \times W$$

$$= 11 \times 5$$

$$= \underline{\underline{55 \text{ cm}^2}}$$

[3]

(b) Calculate the perimeter of the rectangle.

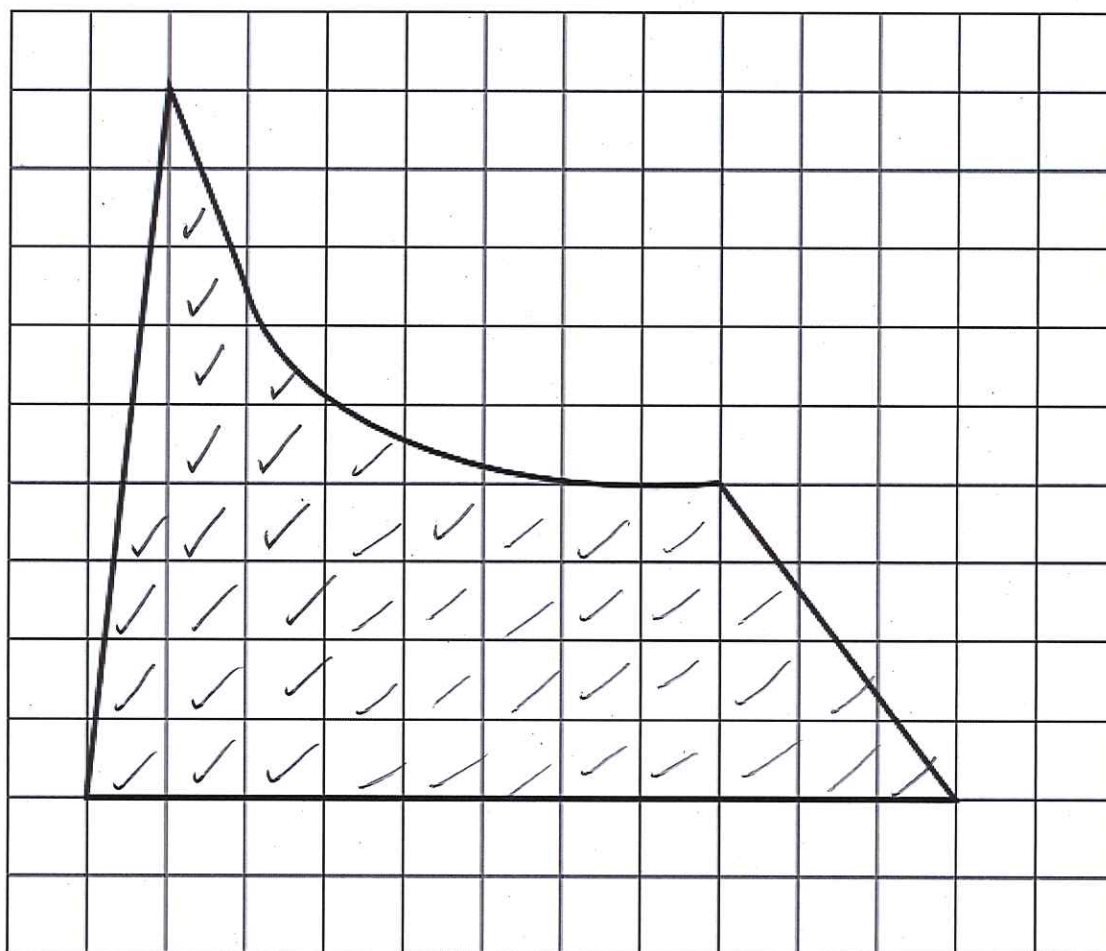
$$\text{Perimeter} = 11 + 5 + 11 + 5$$

$$= 16 + 16$$

$$= \underline{\underline{32 \text{ cm}}}$$

[1]

2.



The above shape, drawn on a square grid, represents a garden. By counting squares, estimate the area of the garden when every square represents an area of 5 m^2 .

Method ① Count all the squares that are $\frac{1}{2}$ or more.
= 45 (allow 43-47)

② Each square represents 5 m^2

Area = 225 m^2

(allow 215 - 235)

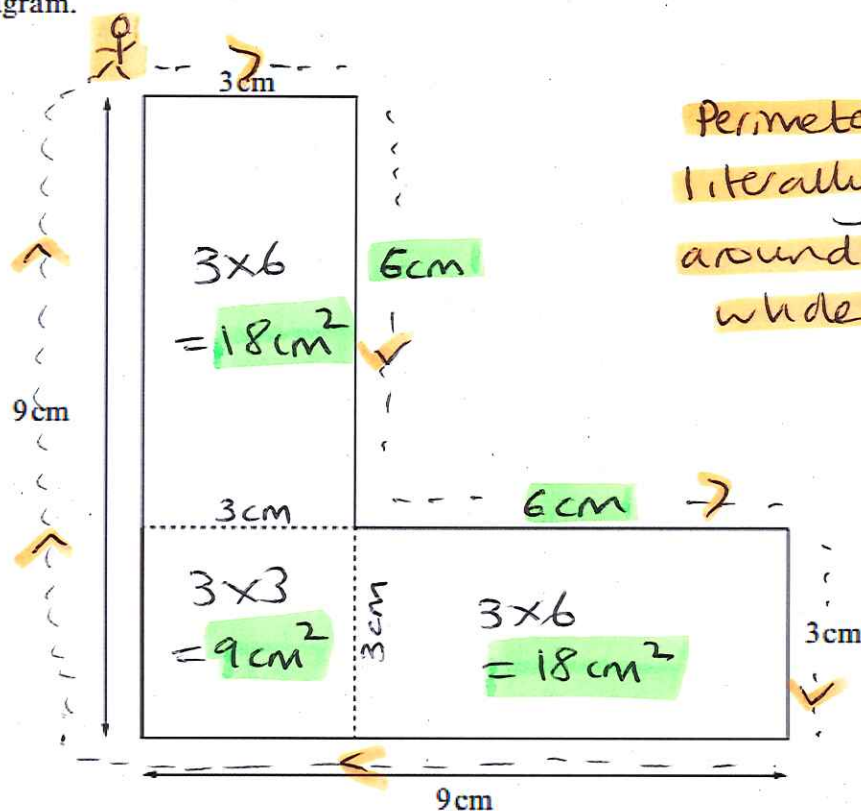
$$\begin{array}{r} 45 \\ \times 5 \\ \hline 225 \end{array}$$

2

[3]

3.

Two overlapping rectangles, each 9 cm by 3 cm, are placed so as to make an L shape as shown in the diagram.



Perimeter is literally walking around the whole shape.

Diagram not drawn to scale

(a) Calculate the perimeter of the shape.

$$\begin{aligned} \text{Perimeter} &= 3 + 6 + 6 + 3 + 9 + 9 \\ &= 9 + 9 + 18 \\ &= 36 \text{ cm} \end{aligned}$$

[3]

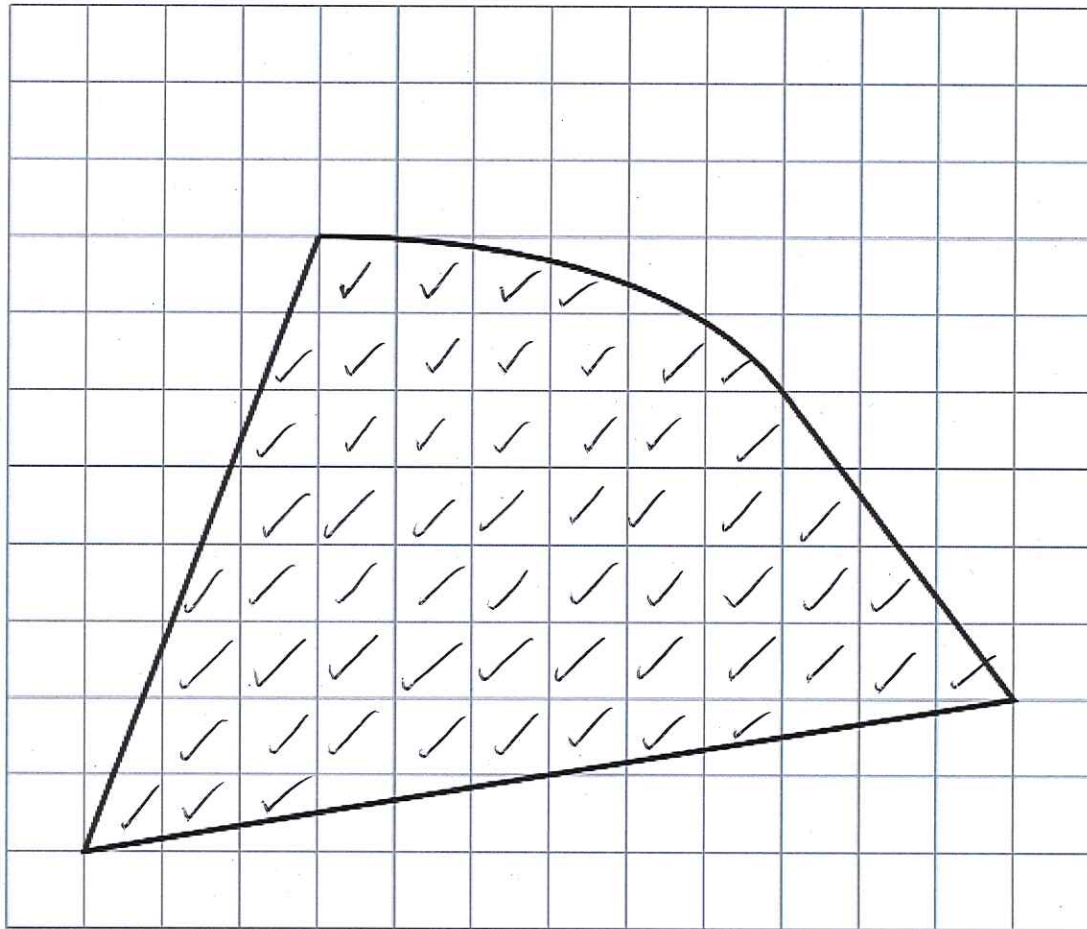
(b) Calculate the area of the shape.
Write down the units of your answer.

Separate the shape carefully into rectangles

$$\text{Area} = 18 + 18 + 9 = 45 \text{ cm}^2$$

[3]

4.



The above shape has been drawn on a centimetre square grid.
By counting squares, estimate the area of the above shape.

58 squares (allow 56-60)

Area of the shape = 58 cm² (56-60 cm²)

[2]

5.

Three identical rectangles, each 10cm by 2cm, are placed to make the shape shown in the diagram.

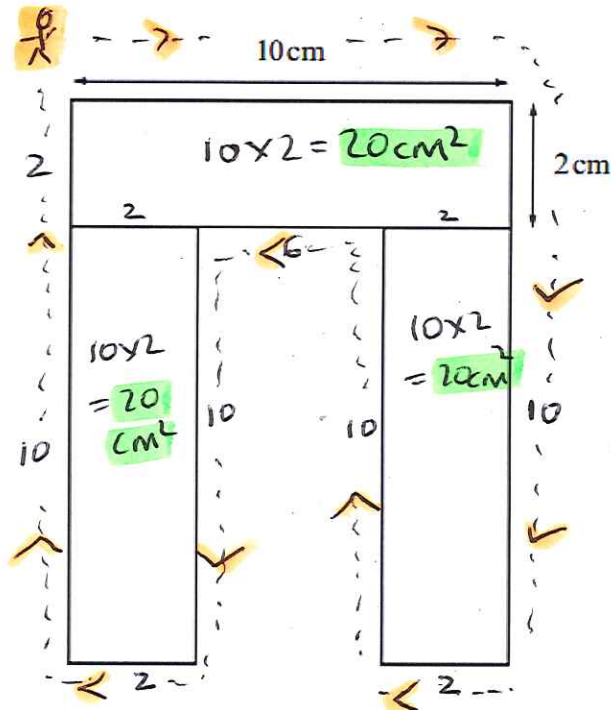


Diagram not drawn to scale

(a) Calculate the perimeter of the shape.

$$\begin{aligned} \text{Perimeter} &= 10 + 2 + 10 + 2 + 10 + 6 + 10 + 2 + 10 + 2 \\ &= 12 + 12 + 16 + 12 + 12 \\ &= 24 + 28 + 12 = \underline{\underline{64 \text{ cm}}} \end{aligned}$$

[3]

(b) Calculate the area of the shape.
Write down the units of your answer.

$$\begin{aligned} \text{Area} &= \text{Area of 3 rectangles} \\ &= 20 + 20 + 20 \\ &= \underline{\underline{60 \text{ cm}^2}} \end{aligned}$$

[3]

6.

Three overlapping rectangles, each 8 cm by 3 cm, are placed so as to make the shape shown in the diagram.

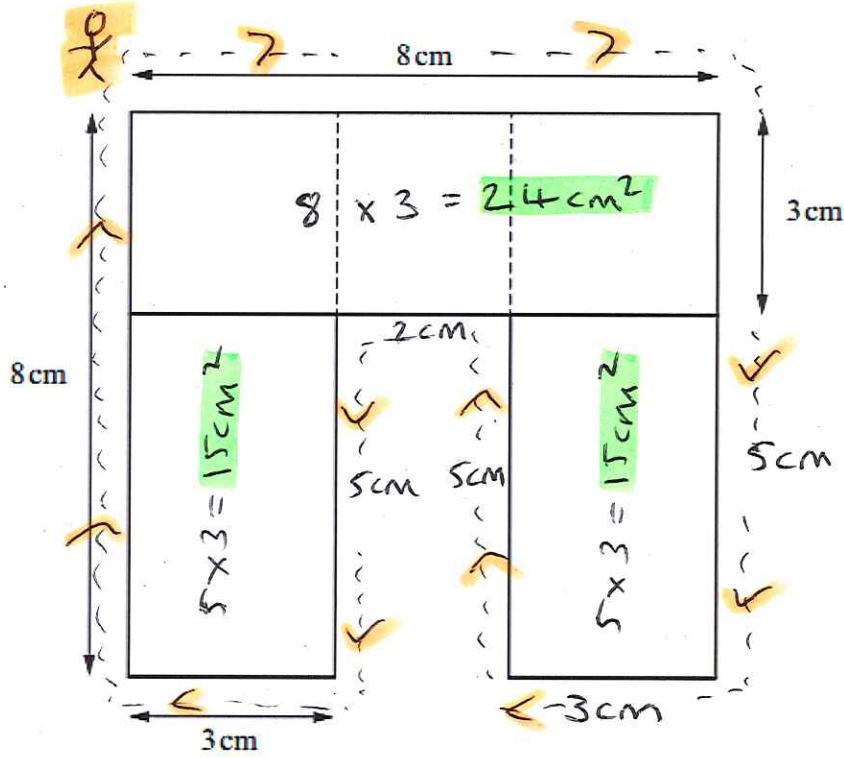


Diagram not drawn to scale

(a) Calculate the perimeter of the shape.

$$\begin{aligned} \text{Perimeter} &= 8 + 3 + 5 + 3 + 5 + 2 + 5 + 3 + 8 \\ &= 8 + 7 + 8 + 8 = 42 \text{ cm} \end{aligned}$$

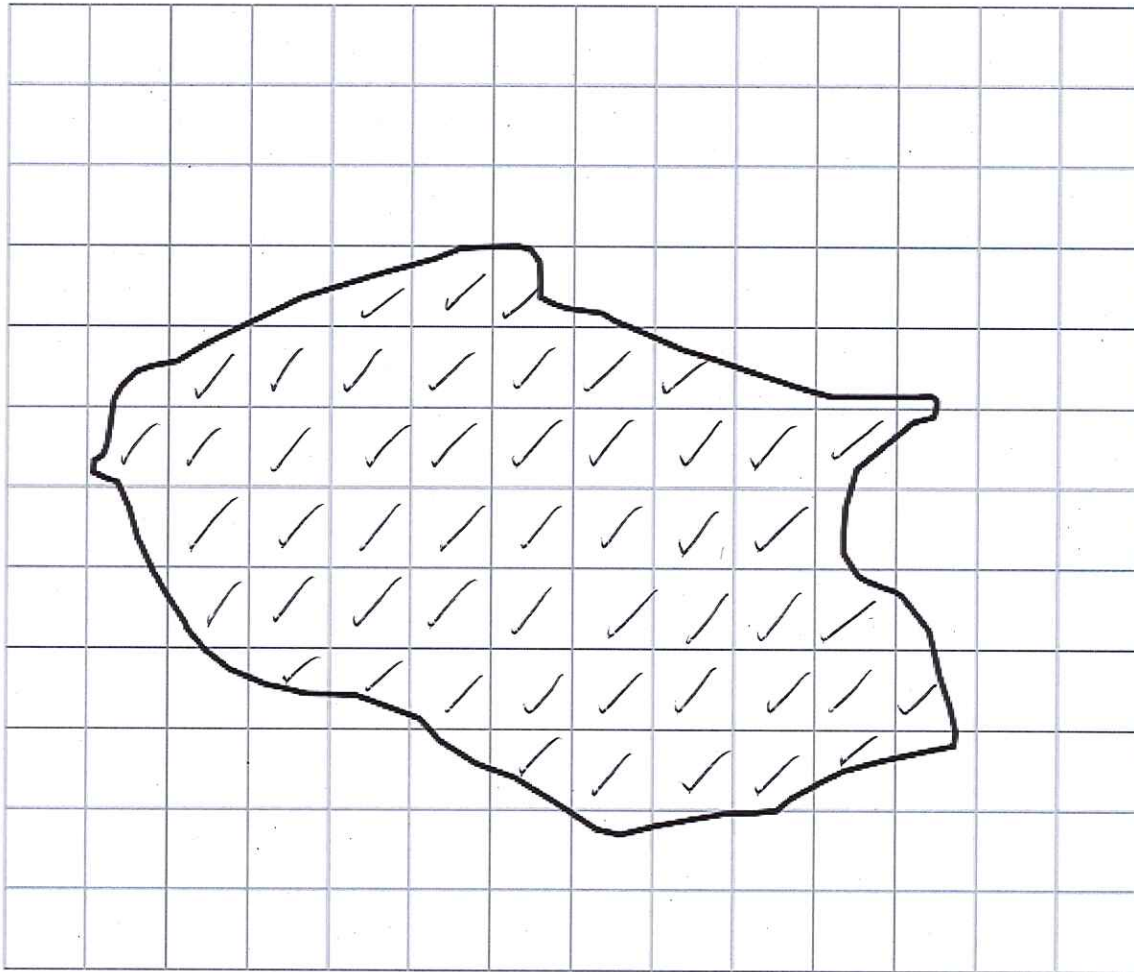
[3]

(b) Calculate the area of the shape.
Write down the units of your answer.

$$\begin{aligned} \text{Area} &= 15 + 24 + 15 \\ &= 54 \text{ cm}^2 \end{aligned}$$

[3]

7.



The above shape is the outline of a pond in a park.
It is drawn on a square grid where each square represents 6m^2 .
Estimate the area of the surface of the pond.

51 squares (allow 49 - 53)

$$51 \times 6 = 306\text{m}^2$$

Area of the surface of the pond = 306 m^2

(allow 294 - 318)

[3]

8.

Two identical rectangles, each measuring 8 cm by 3 cm, are placed with two identical squares to make the shape shown in the diagram.

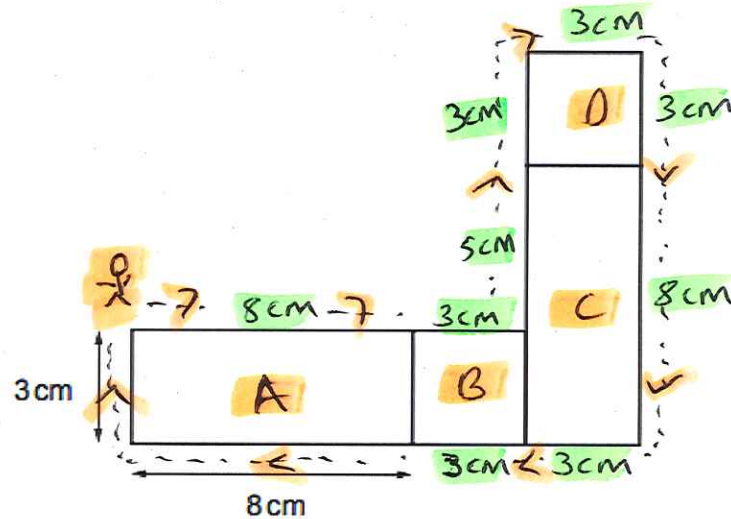


Diagram not drawn to scale

(a) Calculate the perimeter of the shape.

[3]

$$\begin{aligned}
 &= 8 + 3 + 5 + 3 + 3 + 3 + 8 + 3 + 3 + 8 + 3 \\
 &= 11 + 8 + 6 + 11 + 11 + 3 \\
 &= 19 + 17 + 14 = \underline{50 \text{ cm}}
 \end{aligned}$$

(b) Calculate the area of the shape.

Write down the units of your answer.

[3]

$$\text{Area A} = 8 \times 3 = 24 \text{ cm}^2$$

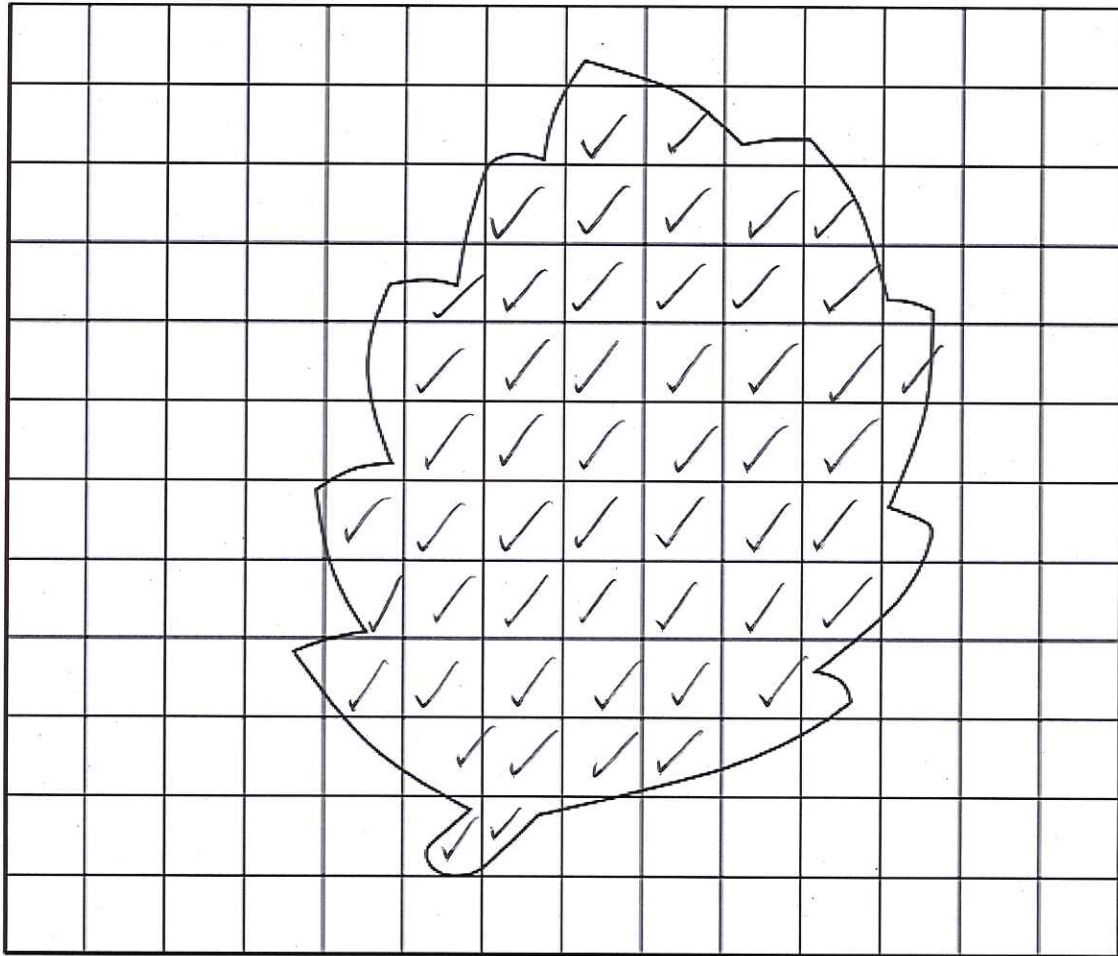
$$\text{Area B} = 3 \times 3 = 9 \text{ cm}^2$$

$$\text{Area C} = 8 \times 3 = 24 \text{ cm}^2$$

$$\text{Area D} = 3 \times 3 = 9 \text{ cm}^2$$

$$\begin{aligned}
 \text{Total area} &= 24 + 9 + 24 + 9 \\
 &= \underline{66 \text{ cm}^2}
 \end{aligned}$$

9.



The above shape is the outline of a leaf.
It is drawn on a square grid where each square represents 4cm^2 .
Estimate the area of the surface of the leaf.

[3]

52 squares (allow 50-54)

$$52 \times 4 = 208$$

Area of the surface of the leaf = 208 cm^2

(allow 200-216)