

Functional Skills Maths

Level 1

Work out area and perimeters in practical situations

v1.0

Functional Skills Maths:

Level 1

Skill Standard:

9

Coverage and Range:

Work out areas and perimeters in practical situations.

- Know that the perimeter is a boundary of a shape and is measured in units of length.
- Know that area is a measure of 2D space, measured in square units and that the area of a rectangle = length x width.
- Know that volume is a measure of 3D space, measured in cubic units and the volume of a cuboid = length x width x height.
- Know that measurements must be in the same units before calculating.¹

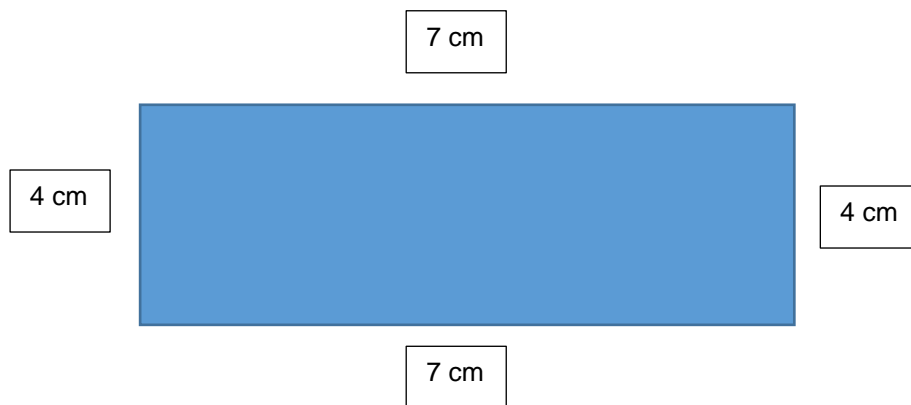
¹ QCA Functional Skills guidance: amplification of the standards June 2008 QCA/08/3700

Explain the Skill

Perimeter

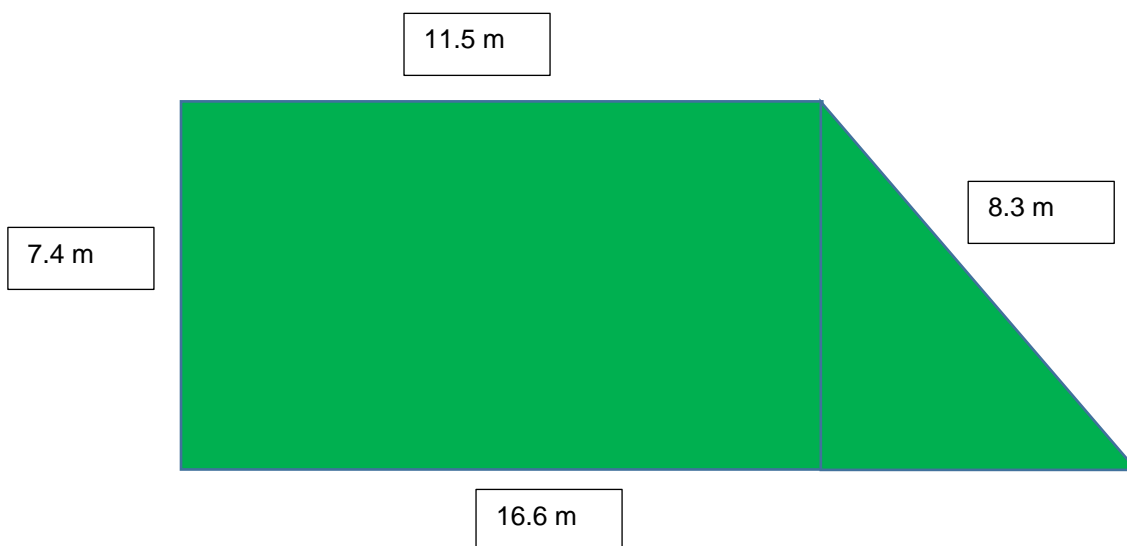
Perimeter is the distance all the way around the edge of a shape. Perimeter is a length and is measured in kilometres, metres or centimetres.

To find the perimeter of a rectangle you add the lengths of all the sides.



$$\text{Perimeter} = 7 + 4 + 7 + 4 = 22 \text{ cm}$$

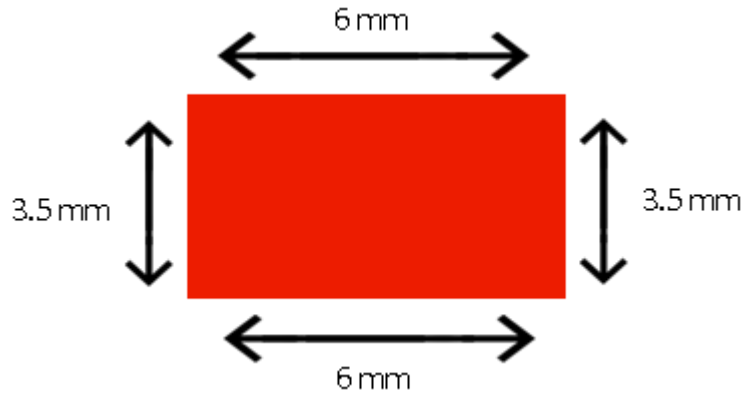
What is the perimeter of this shape?



$$\text{Add the lengths of the sides} = 11.5 + 8.3 + 16.6 + 7.4 = 43.8 \text{ m}$$

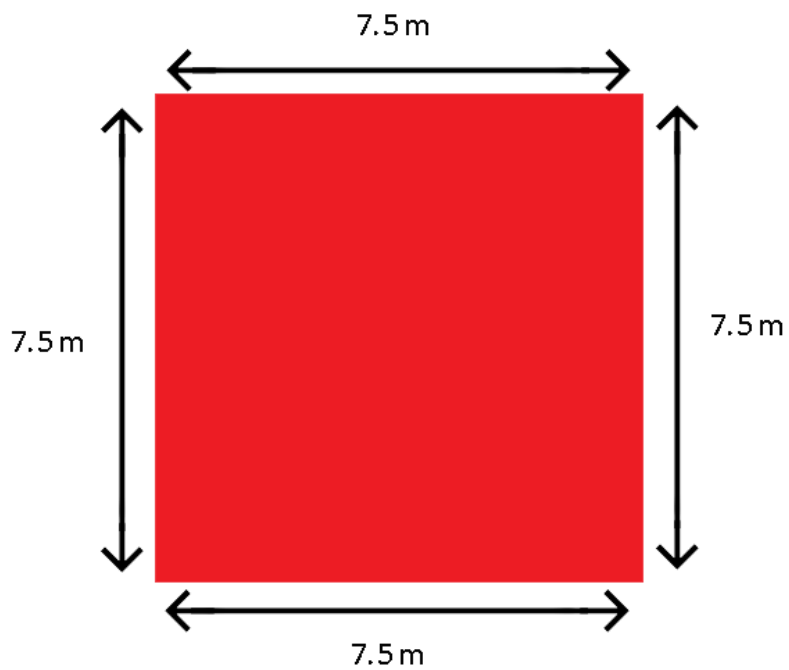
Practise the Skill

1) Find the perimeter of following shapes.



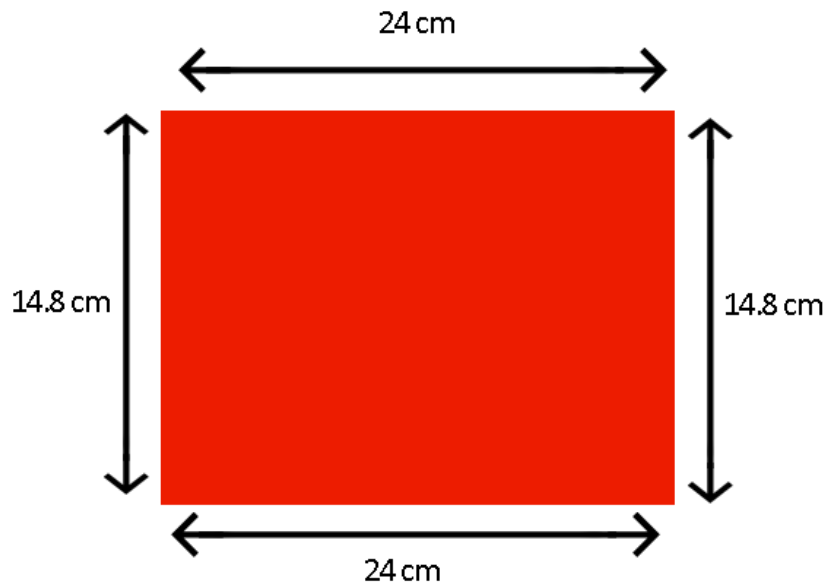
_____ mm

2)



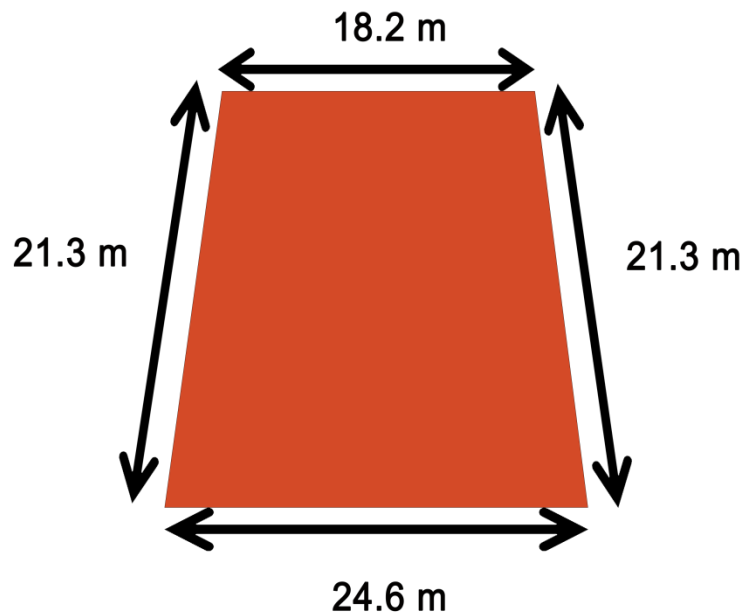
_____ m

3) Find the perimeter of following shapes.



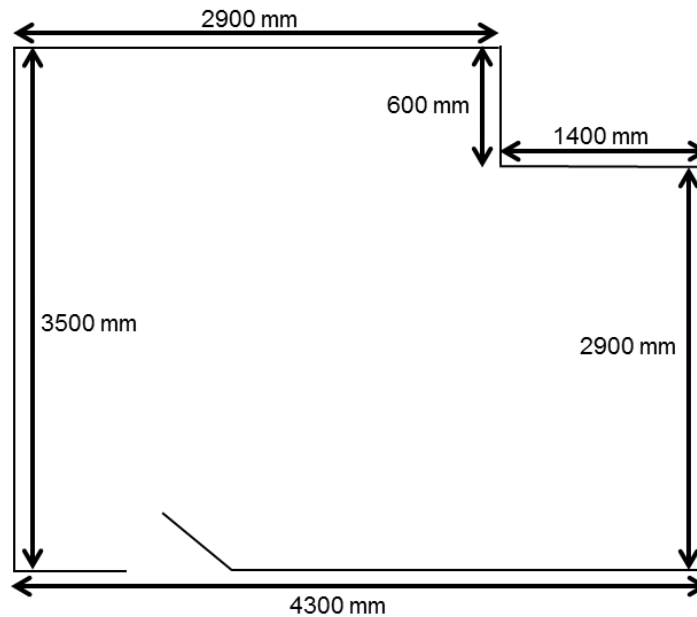
_____ cm

4)



_____ m

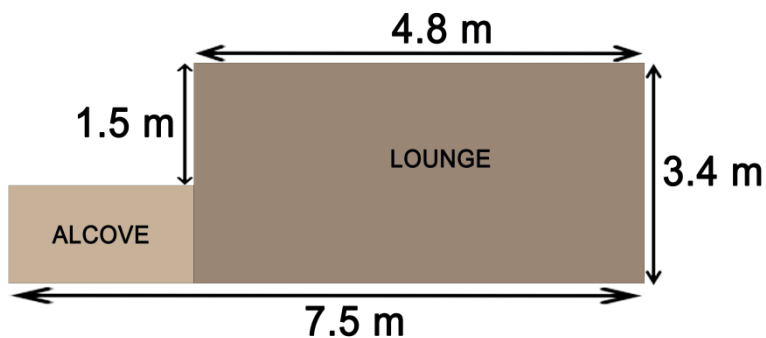
- 5) This is a plan of Peter's kitchen.



What is the perimeter of the kitchen?

_____ m

- 6) Peter is buying a new rug for his lounge. He isn't sure if the rug will fit into the alcove. The rug dimensions are 345 cm x 275 cm.



- a) Will the rug fit into the alcove?

Yes / No

- b) What is the perimeter of the whole room?

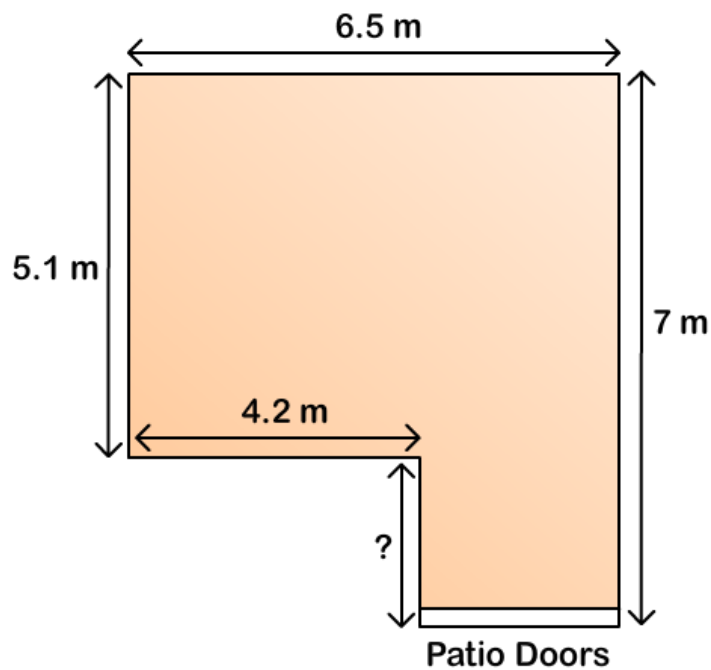
_____ m

- 7) The perimeter of Jenny's dining room is 16.6 m. The length is 5.2 m.

What is the width of the dining room?

_____ m

- 8) Mick wants to buy skirting board to go around the edge of the L-shaped room, as shown in the diagram.



What would be the minimum amount of skirting board Mick would need to buy?

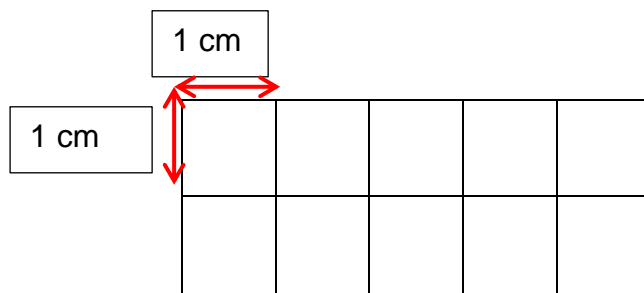
_____ m

Explain the Skill

Area

Area is the size of a surface. It is the amount of space inside a shape and is measured in square units. Square units written in shorthand are: mm^2 cm^2 m^2 km^2 .

All the measurements must be in the same units.



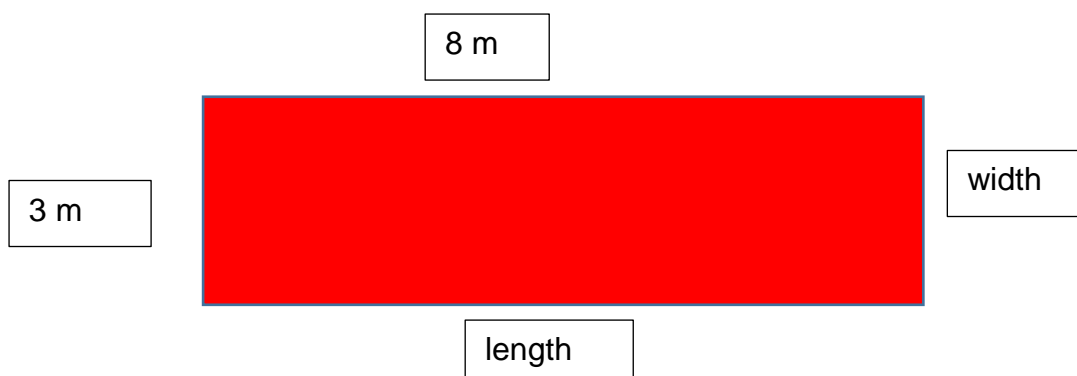
Each of these squares measures 1 cm by 1 cm. So the area of each square is 1 cm^2 .

There are 5 rows and 2 columns so the rectangle is 5 cm by 2 cm.

The area of the rectangle is $5 \text{ cm} \times 2 \text{ cm} = 10 \text{ cm}^2$

The area of a rectangle is length x width

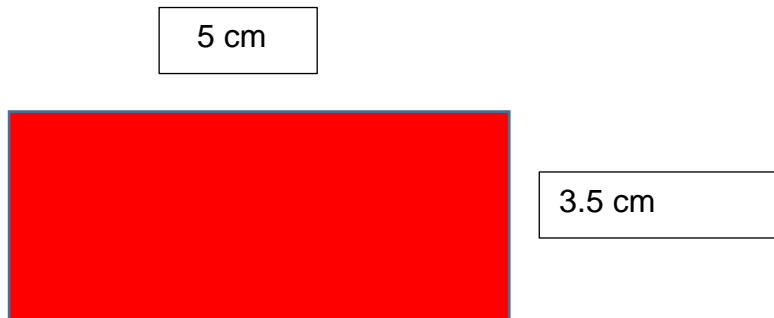
What is the area of this rectangle?



The area of a rectangle is length x width

So the area = $8 \text{ m} \times 3 \text{ m}$
 $= 24 \text{ m}^2$

What is the area of this rectangle?



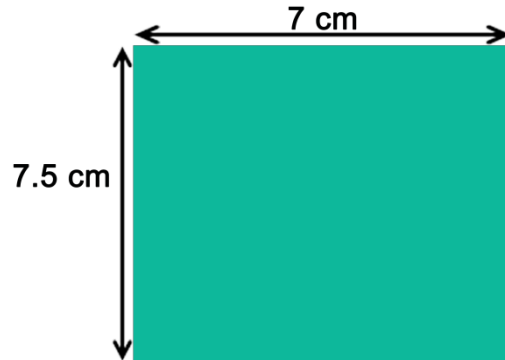
The area of a rectangle is length x width

$$\begin{aligned} \text{Area} &= 5 \text{ cm} \times 3.5 \text{ cm} \\ &= 17.5 \text{ cm}^2 \end{aligned}$$

Practise the Skill

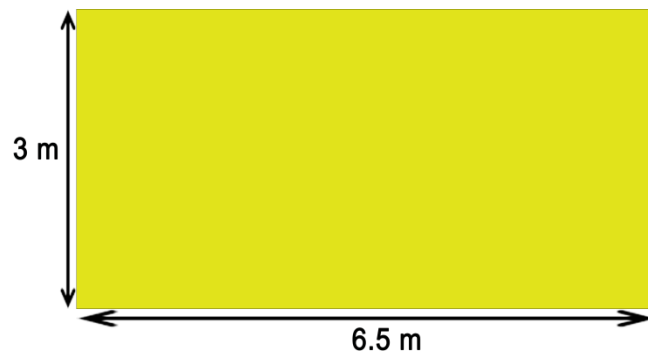
1) Find the area of these rectangles.

a)



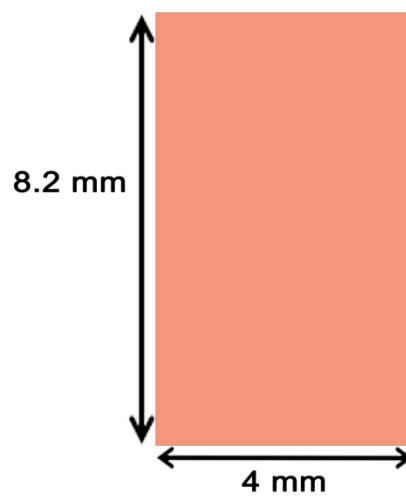
_____ cm²

b)



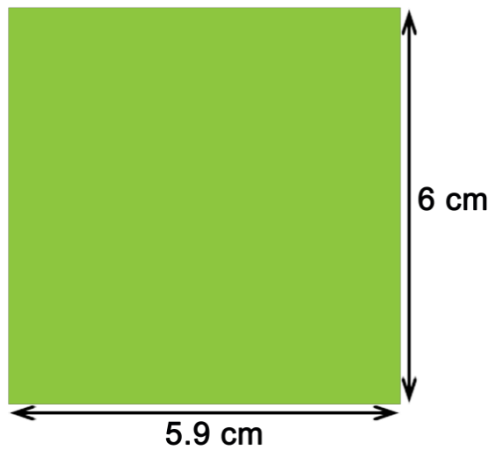
_____ m²

c)

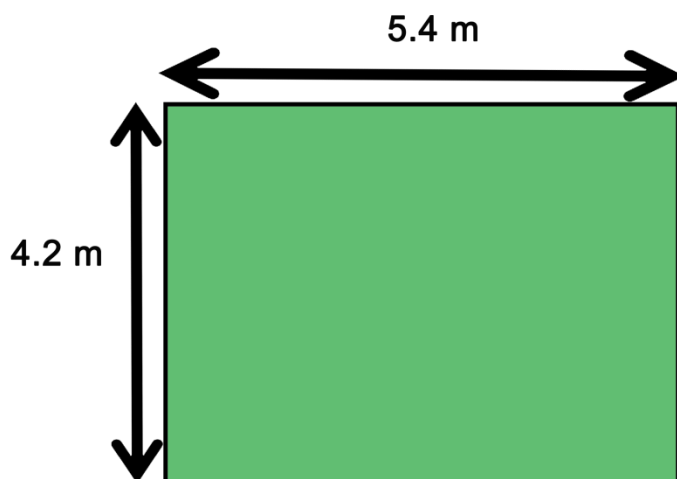


_____ mm²

d)


 _____ cm²

2) Bob is going to lay a patio in his garden.



a) What is the area of the patio?

 _____ m²

A slab measures 600 mm x 600 mm.

b) How many slabs does he need for the patio?

- 3) He buys rectangular plant containers for the patio. Each container is 38 cm long and 20 cm wide.

What is the area of the base of each container?

_____ cm²

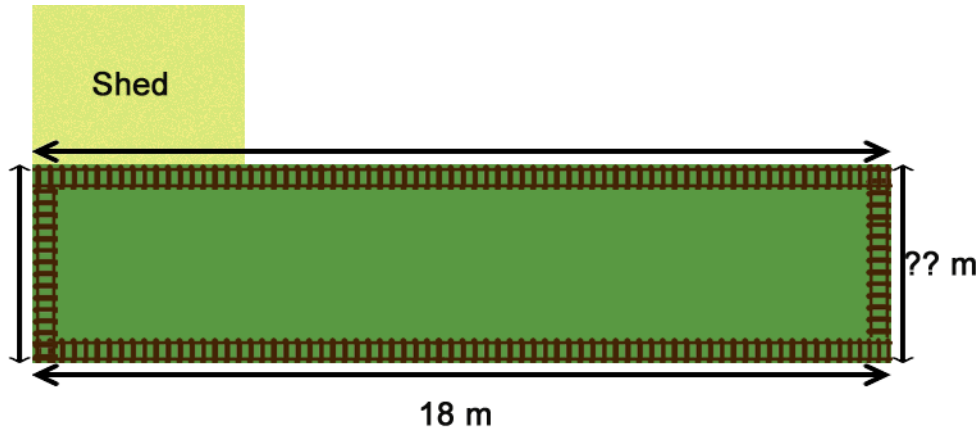
- 4) There is a small rectangular pond in the garden. The area of the pond is 24.5 m². The length of the pond is 7 m.

What is the width of the pond?

_____ m

Apply the Skill

- 1) Nancy has got an allotment.



The perimeter of the fenced part of the allotment is 50 m.

What is the width?

_____ m

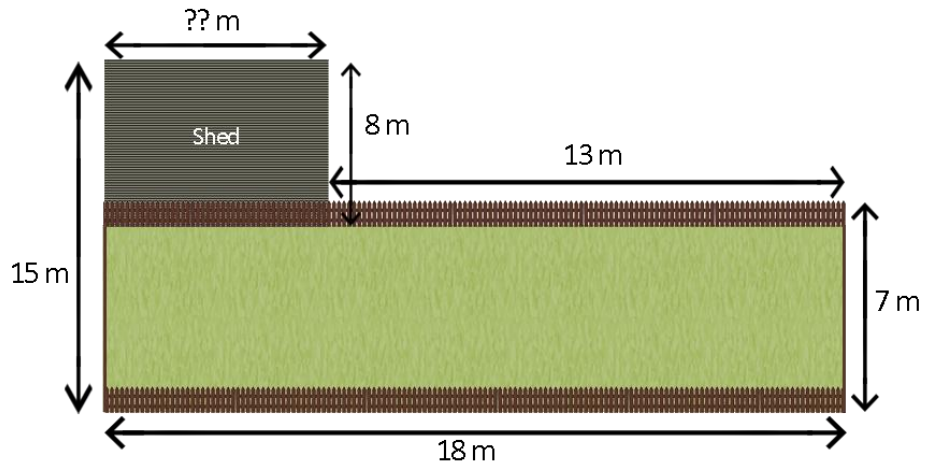
- 2) The perimeter of the allotment is 50 m. She works out that allowing for a gate and posts she can take 5 m off the total perimeter. Each fence panel is 1.8 m long.

How many fence panels will she need to buy?

- 3) Nancy decides to buy 30 panels for her allotment and her garden. The panels need to be treated with wood preservative. Each panel is 1.8 m long and 2 m high. 1 litre tin of wood preservative covers 12 square metres.

How many tins will she need?

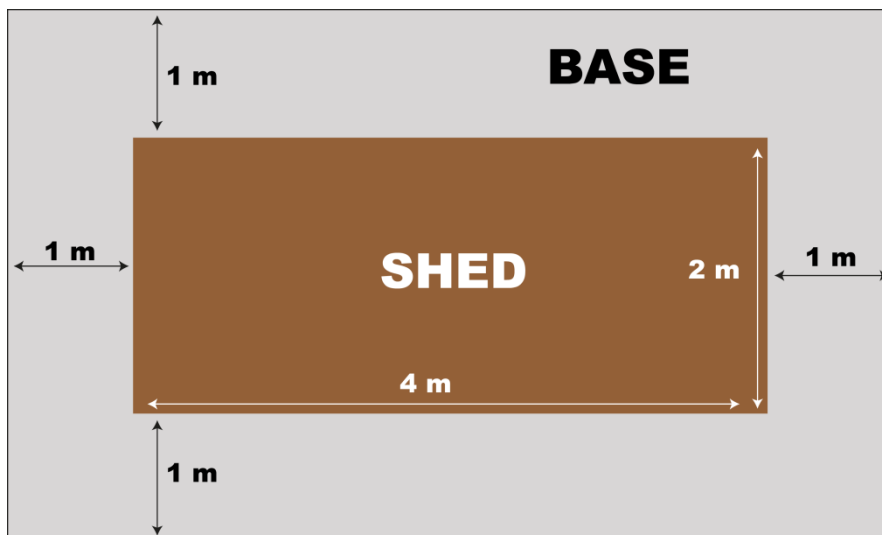
- 4) She is putting a new shed on the shaded area.



What is the area of the shaded part of the allotment?

_____ m²

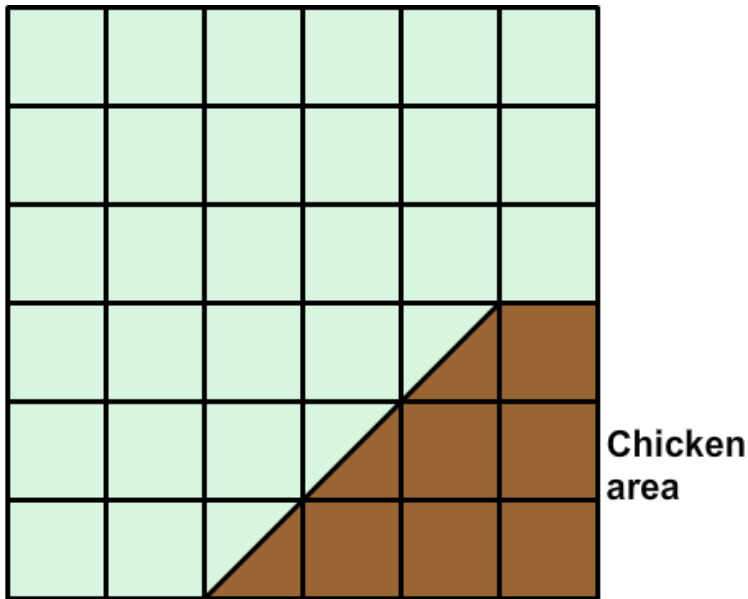
- 5) Nancy wants the concrete base to be bigger than the shed.



What is the perimeter of the **base**?

_____ m

- 6) Nancy keeps free range chickens on part of her allotment.



Key : 1 square on the grid is 1 m on the allotment

- a) What is the area of the space where the chickens are kept?

_____ m²

Nancy keeps the feed for the chickens in a large square bin. The **base** of the bin is square and has an area of 16 900 cm².

- b) What is the length of the base?

_____ cm