

## AREAS

After completing this unit, you will be able to:

- find the area of a rectangular space
- use the correct units of measurement for area

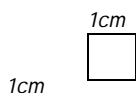
### AREAS

Area is the amount of space taken up by a flat surface.  
It is measured in square units.

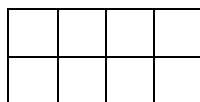
*example*

square centimetres or  $cm^2$   
square millimetres or  $mm^2$   
square metres or  $m^2$   
square feet or  $ft^2$

A square with sides 1 centimetre has an area of  $1\text{ cm}^2$ .



Imagine a rectangle 4 cm long and 2 cm wide.



Eight 1cm squares can fit in this rectangle, so the area of the rectangle is  $8\text{ cm}^2$ .

This can be calculated easily by multiplying the length by the width.

$$4 \times 2\text{ cm}^2 = 8\text{ cm}^2$$

*example*

a rectangle is 5 millimetres long and 3 millimetres wide. Find its area.

# KEYSKILLS

Answer

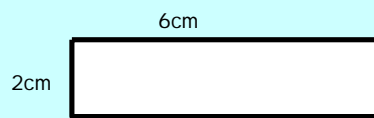
$$5 \times 3 \text{ mm}^2 = 15 \text{ mm}^2$$

## Self assessment one

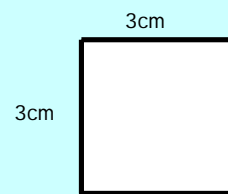
(Make sure you use the correct units of measurement for each answer.)

Find the area of the following rectangles.

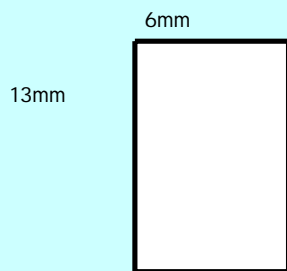
1.



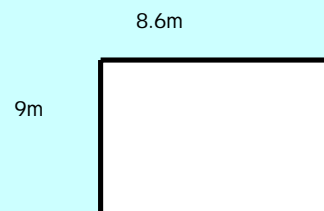
2.



3.



4.



5. A corridor has a rectangular floor of length 10 metres and width 1.5 metres. Find its area.

6. What is the area of a window 0.4 metres wide and 3 metres long ?

7. An envelope is 12.5cm wide and 20cm long. What is its area ?

8. A noticeboard is six metres long and one and a half metres wide. What is its area ?

9. A wall is 4m long and 3m high. 1 litre of paint will cover 6 square metres of wall.

a) What is the area of the wall ?

b) How many litres of paint are needed to paint the wall ?

# KEYSKILLS

Now check your answers

Let's look at the problem from a different angle.

Suppose you know the area and the width, say, of a rectangle, and you need to work out its length. How do you do this ?!

*examples*

1. A rectangle has a width of  $3\text{ cm}$  and an area of  $12\text{ cm}^2$ .  
Find its length ?

*answer*

We know that  $3 \times \text{length } \text{cm}^2 = 12\text{ cm}^2$ .

$$3 \times 4 = 12$$

$$\text{OR } 12 \div 3 = 4$$

Length = 4 cm.

2. Find the width of a rectangle if its area is 0.8 square metres and its length is 2 metres.

*answer*

$2 \times \text{width} = 0.8$  square metres.

$$\begin{array}{r} 0.4 \\ \times 2 \\ \hline 0.8 \end{array}$$

or  $0.8 \div 2 = 0.4$

Width = 0.4 metres.

3. A sticky label is a rectangle. The area is 9 square centimetres and the width is  $1\frac{1}{2}$  centimetres.  
Select which of the following is the length of the label.

A 5 cm      B 4 cm      C 6 cm      D 9 cm

*answer*  $\frac{1}{2} \times 6 = 3$       so  $1\frac{1}{2} \times 6 = 6 + 3 = 9$

# KEYSKILLS

so the answer is C 6cm

## Self assessment two

(Make sure you use the correct units of measurement for each answer.)

Find the length of the following rectangles.

1. Area =  $20 \text{ cm}^2$ , width =  $4 \text{ cm}$
2. Area =  $16 \text{ cm}^2$ , width =  $4 \text{ cm}$
3. Area =  $15\,000 \text{ mm}^2$ , width =  $100 \text{ mm}$
4. Area =  $22 \text{ m}^2$ , width =  $10 \text{ m}$

Find the width of the following rectangles.

5. Area =  $50 \text{ m}^2$ , length =  $100 \text{ m}$
6. Area =  $2.5 \text{ cm}^2$ , length =  $10 \text{ cm}$
7. A wall has to have an area of 12 square metres.  
The wall is a rectangle,  $1\frac{1}{2}$  metres from top to bottom.  
Select which of the following is the length of the wall.  
A 8 m    B 18 m    C 9 m    D 10 m

8. A rectangular noticeboard has an area of 6 square feet.

The width of the noticeboard is  $1\frac{1}{2}$  feet. Select which of the following is the length of the noticeboard.

- A 6 ft    B 7.5 ft    C 9 ft    D 4 ft

# KEYSKILLS

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*Now check your answers*

## ANSWERS

### *Self assessment one*

- |   |       |                   |
|---|-------|-------------------|
| 1 | 12    | $cm^2$            |
| 2 | 9     | $cm^2$            |
| 3 | 78    | $mm^2$            |
| 4 | 77.4  | $cm^2$            |
| 5 | 15    | $m^2$             |
| 6 | 1.2   | $m^2$             |
| 7 | 250   | $cm^2$            |
| 8 | 9     | $m^2$             |
| 9 | a) 12 | $m^2$             |
|   | b)    | 2 litres of paint |

### *Self assessment two*

- |   |         |
|---|---------|
| 1 | 5 cm    |
| 2 | 4 cm    |
| 3 | 150 mm  |
| 4 | 2.2 m   |
| 5 | 0.5 m   |
| 6 | 0.25 cm |
| 7 | A 8 m   |
| 8 | D 4ft   |