

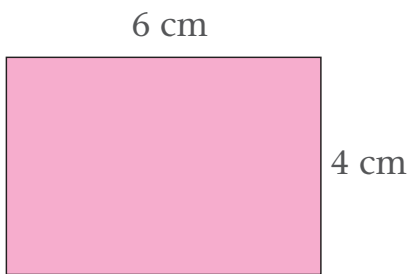
On these pages you will find the perimeter and area of rectangles and shapes made from rectangles.

The area of a shape is the amount of surface it covers.  
It is measured in squares, usually square metres (m<sup>2</sup>) or square centimetres (cm<sup>2</sup>).

The perimeter of a shape is the distance around its edges.  
It is a length and is measured in units of length such as metres or centimetres.

To understand the difference between area and perimeter think of a field.  
The perimeter is the fence. The area is the field itself.

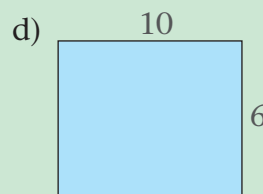
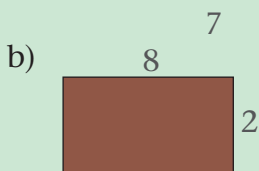
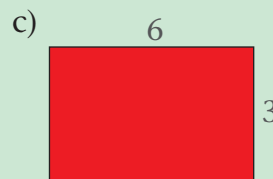
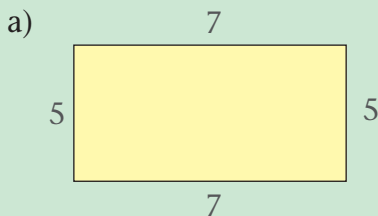
### Example



$$\begin{aligned} \text{Area} &= \text{length} \times \text{width} (l \times w) \\ &= (6 \times 4) \text{ cm}^2 = 24 \text{ cm}^2 \\ \text{Perimeter} &= 6 + 4 + 6 + 4 \\ &= 20 \text{ cm} \end{aligned}$$

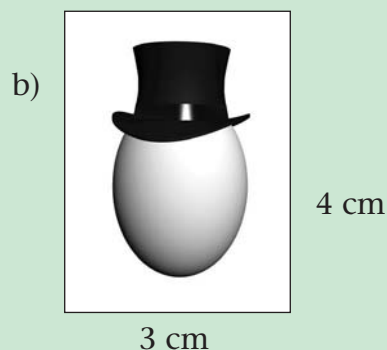
### M

1 Find the perimeter of each rectangle. All lengths are in cm.



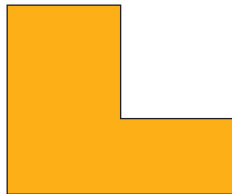
2 Find the area of each rectangle in Question 1 above.

3 Find the perimeter of each picture.

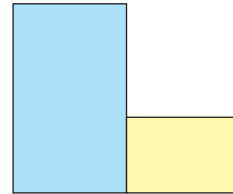


- 4 Use squared paper. Draw 3 different rectangles each with a perimeter of 24 cm. Work out the area of each rectangle.
- 5 Use squared paper. Draw 3 different rectangles each with an area of  $24 \text{ cm}^2$ . Work out the perimeter of each rectangle.
- 6 Find the area of a square where each side is 6 cm.
- 7 Find the perimeter of a rectangle with a length of 9 cm and a width of 7 cm.

Many shapes are made from rectangles.

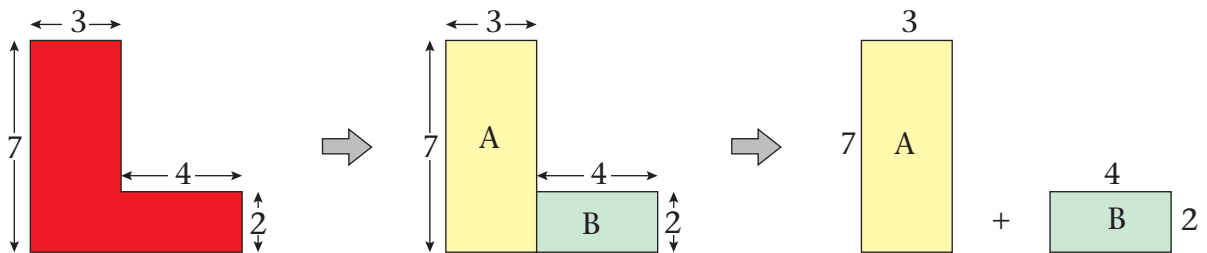


can be cut into  
2 rectangles



To find the area of the large shape, find the area of each rectangle then add them together.

### Example



$$\text{Area rectangle A} = 3 \times 7 = 21$$

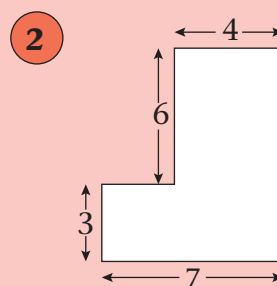
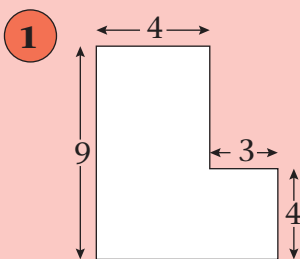
$$\text{Area rectangle B} = 2 \times 4 = 8$$

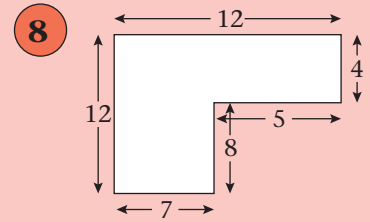
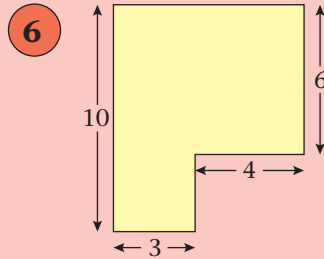
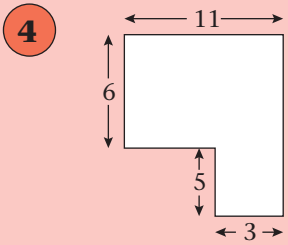
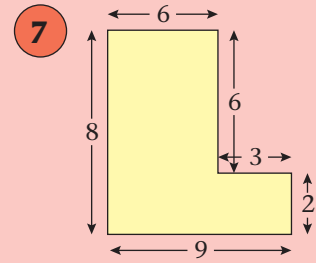
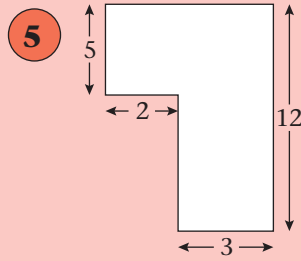
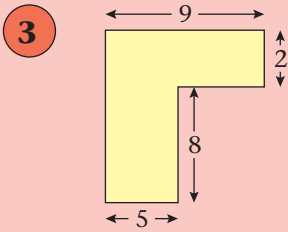
$$\text{Total area} = 21 + 8 = 29$$

If each length is given in cm, the area of the shape is  $29 \text{ cm}^2$ .

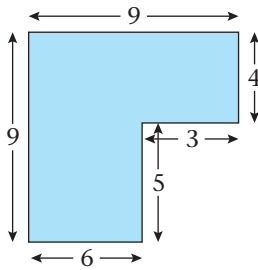
## E

Use rectangles to find the area of each shape in Questions 1 to 8. All lengths are in cm.





### Example

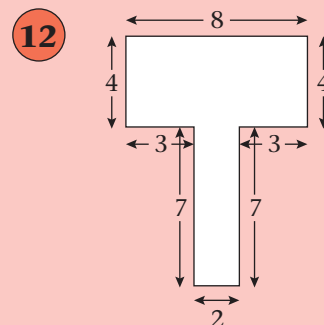
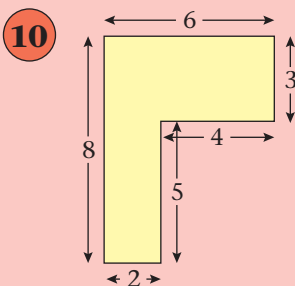
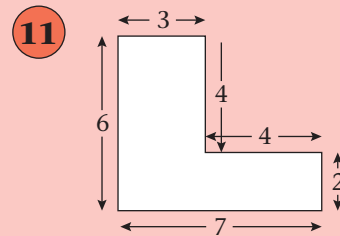
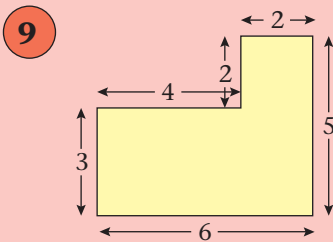


The perimeter of this shape is

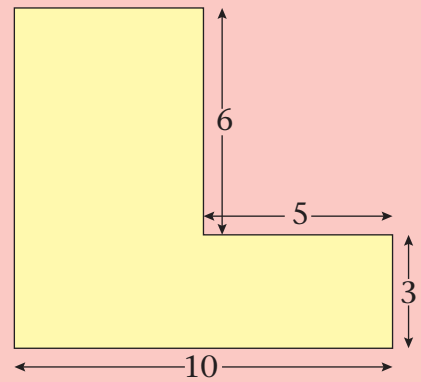
$$9 + 4 + 3 + 5 + 6 + 9 = 36$$

If the lengths are in cm, the perimeter is 36 cm.

In Questions **9** to **12**, find the perimeter of each shape. All lengths are in cm.

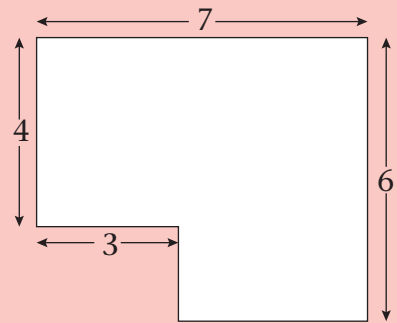


- 13** Find the perimeter of this shape.  
(Warning: some sides have no numbers.  
You must work these out first.)  
All lengths are in cm.

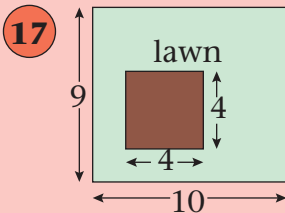


- 14** Find the area of the shape in Qn. **13**.

- 15** Find the perimeter of this shape.  
(Warning: some sides have no numbers.  
You must work these out first.)  
All lengths are in cm.

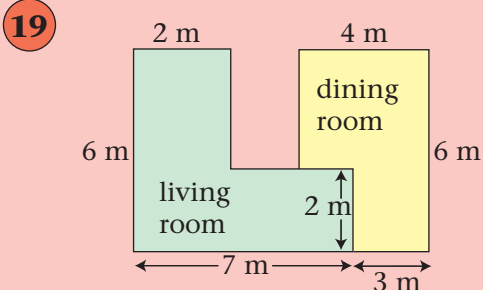
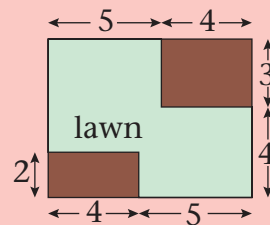


- 16** Find the area of the shape in Qn. **15**.



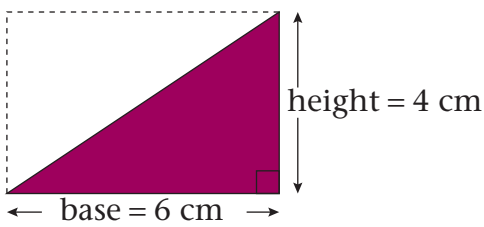
- a) Find the area of the lawn. All lengths are in metres.  
b) A can of weedkiller covers  $10 \text{ m}^2$  and costs £2. How much will it cost to spray the whole lawn with this weedkiller?

- 18** Repeat question **17** for this new lawn.



Shannon wants to carpet her living room and dining room. What is the total area of carpet she will need?

On these pages you will find the perimeter and area of triangles and shapes made from triangles and rectangles.

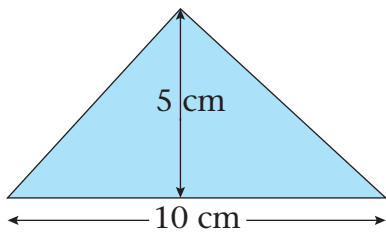


$$\begin{aligned} \text{Area of triangle} &= \frac{1}{2} \text{ area of rectangle} \\ &= \frac{1}{2} \text{ of } (6 \times 4) \\ &= \frac{1}{2} \text{ of } 24 \\ &= 12 \text{ cm}^2 \end{aligned}$$

We say

$$\text{area of triangle} = \frac{1}{2} (\text{base} \times \text{height})$$

### Example



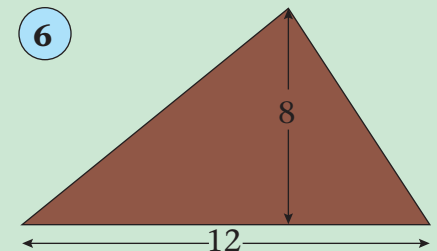
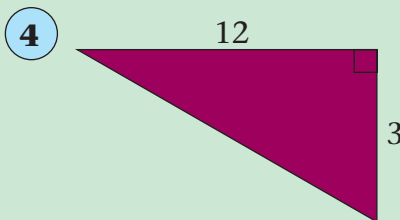
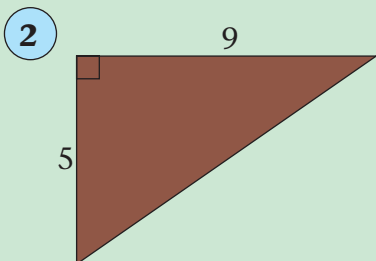
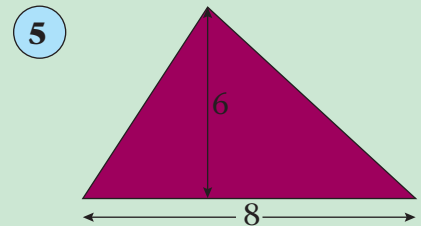
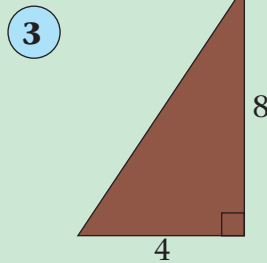
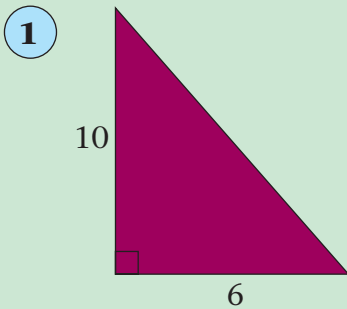
height = 5 cm  
base = 10 cm

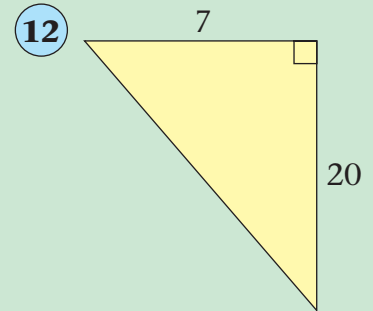
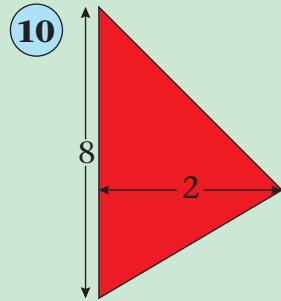
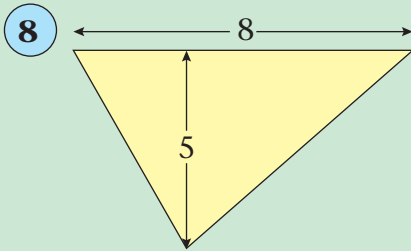
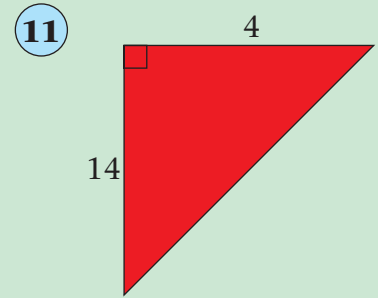
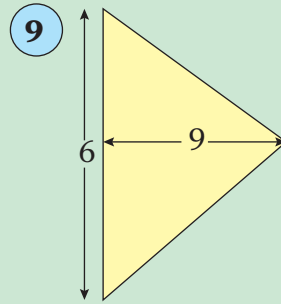
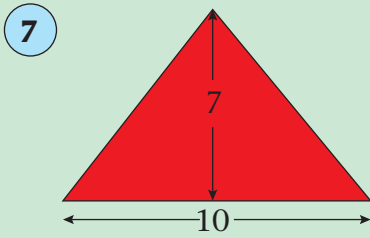
$$\begin{aligned} \text{area of triangle} &= \frac{1}{2} (\text{base} \times \text{height}) \\ &= \frac{1}{2} (10 \times 5) = \frac{1}{2} (50) = 25 \text{ cm}^2 \end{aligned}$$

## M

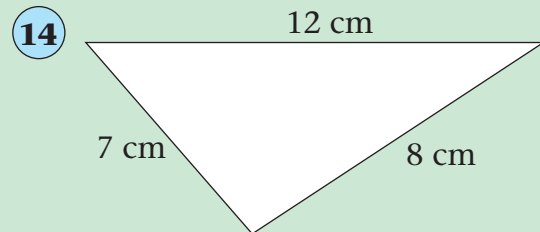
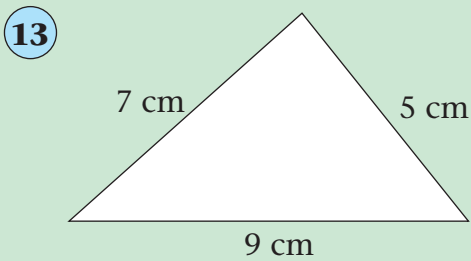
In Questions **1** to **12**, find the area of each triangle.

All lengths are in cm.





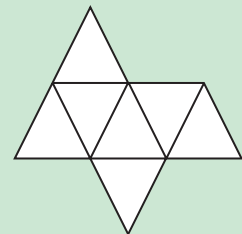
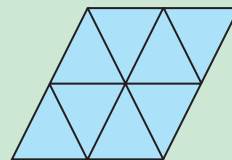
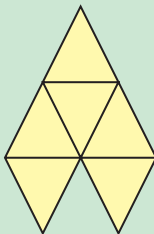
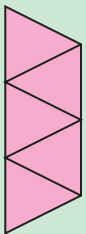
In Questions **13** and **14**, find the perimeter of each triangle.



**15** Find the area of a triangle with a base of 12 cm and a height of 7 cm.

**16** Find the area of a triangle with a base of 30 cm and a height of 20 cm.

**17** Here are five shapes made from equilateral triangles of side 1 cm.

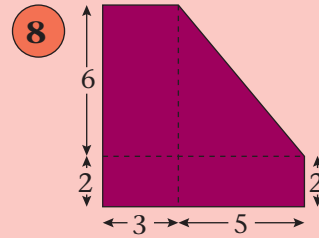
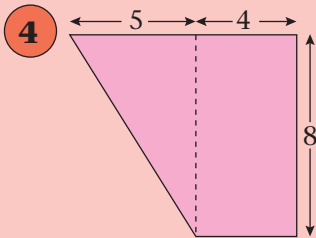
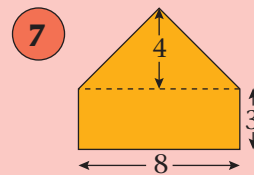
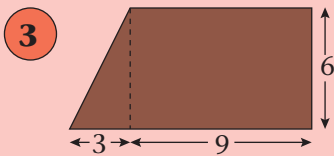
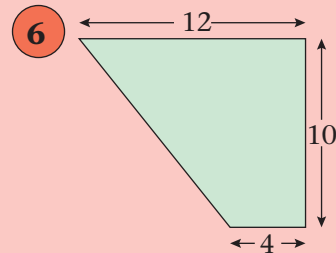
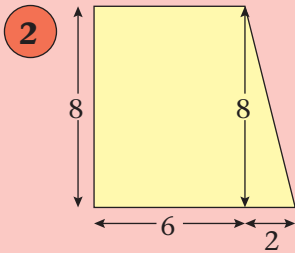
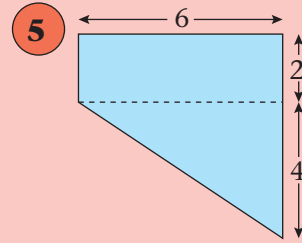
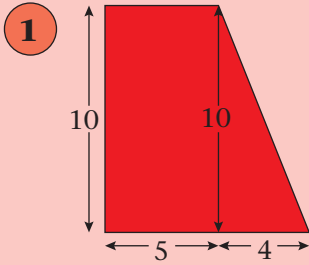


- Which shape has the longest perimeter?
- Which shape has the smallest area?
- Which shape has the same perimeter as D?

**E**

Use triangles and rectangles to find the area of each shape in Questions **1** to **8**.

All lengths are in cm.



In each of Questions **9** to **12**, find the blue area.

All lengths are in cm.

