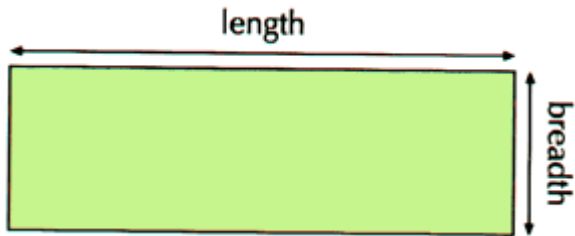


## Area/Perimeter [2D SHAPES]

Rectangle/Square



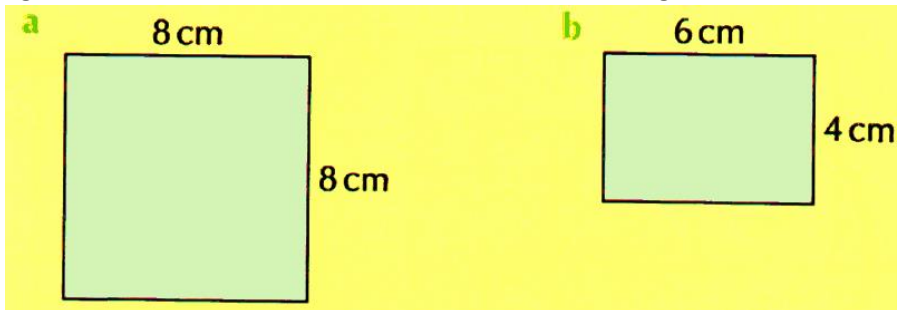
$$P = 2l + 2b$$

$$A = l \times b$$

The **perimeter** of the rectangle is the total distance around the shape. It can be calculated by adding the length of all the sides. Perimeter is measured in units of length. The unit of length used in this section is the centimetre (cm).

The **area** of the rectangle is the amount of space inside the shape. It can be calculated by counting any smaller units inside the rectangle. Area is measured in square units. The unit of area used in this section is the square centimetre (cm<sup>2</sup>).

Eg. Find the *Perimeter* and *Area* of each of the following:



$$\begin{aligned} \text{Perimeter} &= 8 + 8 + 8 + 8 \\ P &= 32 \text{ cm} \end{aligned}$$

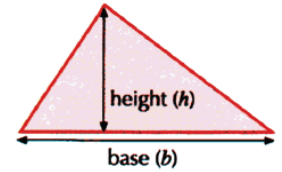
$$\begin{aligned} \text{Area} &= 8 \times 8 \\ A &= 64 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Perimeter} &= 6 + 4 + 6 + 4 \\ P &= 20 \text{ cm} \end{aligned}$$

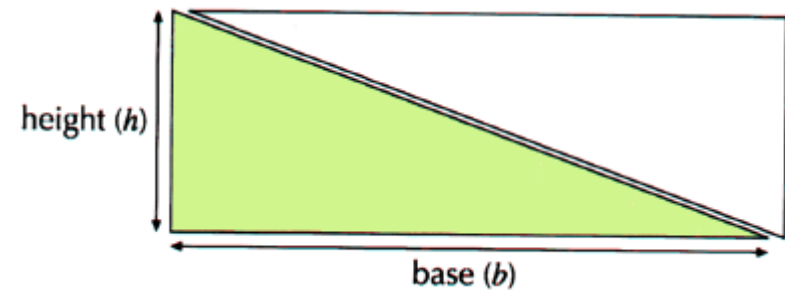
$$\begin{aligned} \text{Area} &= 6 \times 4 \\ A &= 24 \text{ cm}^2 \end{aligned}$$

Triangle

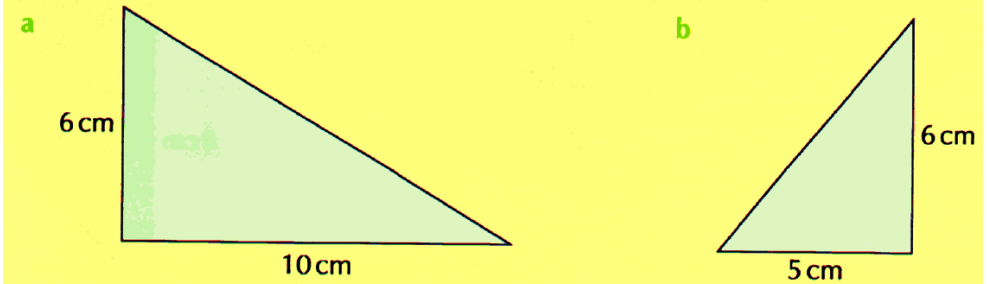
To find the area of a triangle, we need to know the length of its base and its height. The height of the triangle is sometimes known as its **perpendicular height**. The diagram shows that the area of the triangle is half of the area of a rectangle.



area of a triangle is  $\frac{1}{2} \times \text{base} \times \text{height}$ .



Calculate the area of these triangles.



$$\begin{aligned} \text{Area} &= \frac{1}{2} \times 10 \times 6 \\ A &= 30 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area} &= \frac{1}{2} \times 5 \times 6 \\ A &= 15 \text{ cm}^2 \end{aligned}$$

## Perimeter and Area of Compound/Composite Shapes

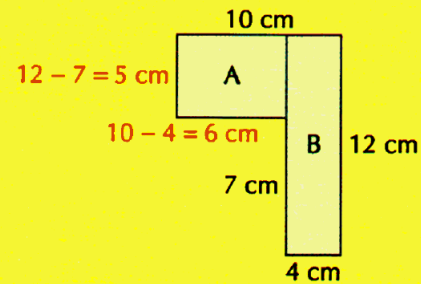
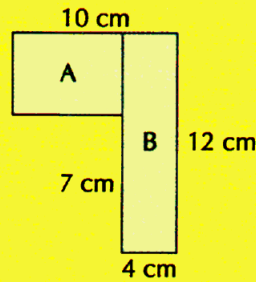
Find the perimeter and area of the compound shape on the right.

First copy the shape, then find and label the lengths of any sides which are not already shown as shown below.

Now the perimeter and area of the compound shape can be worked out as follows:

$$P = 10 + 12 + 4 + 7 + 6 + 5$$
$$= 44 \text{ cm}$$

$$\text{Total area} = \text{area of A} + \text{area of B}$$
$$= 6 \times 5 + 12 \times 4$$
$$= 30 + 48$$
$$= 78 \text{ cm}^2$$



## Volume [3D OBJECTS]

**Volume** is the amount of space inside a three-dimensional (3D) object.

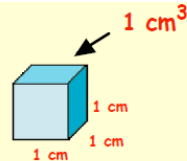
One Unit of volume is the "cubic centimetre".

The small cube shown measures 1 cm by 1 cm by 1 cm.

It has a volume of 1 cubic centimetre.

or for short :

$1 \text{ cm}^3$



$$V = l \times b \times h$$

Calculate the volume of the following cuboid.

The formula for the volume of a cuboid is:

$$V = lbh$$
$$= 5 \times 4 \times 3$$
$$= 60 \text{ cm}^3$$

