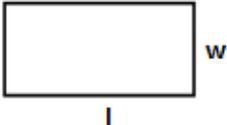
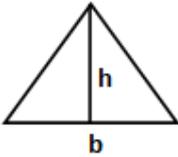
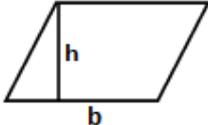
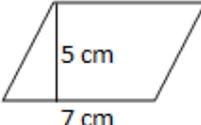
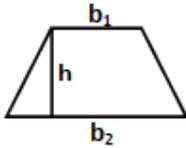
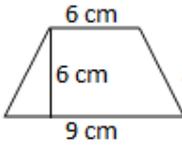
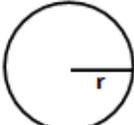
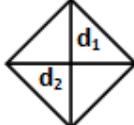


## Chapter 5: Area of 2-D figures

| Shape   | Formula   | Example  |
|---|---|--|
| Square<br>         | $A = l \times l = l^2$                                  | What is the area of a square of length 4 cm?<br>$A = 4 \times 4 = 16 \text{ cm}^2$   |
| Rectangle<br>      | $A = l \times w$  | What is the area of a rectangle of length 7 inches and width 5 inches?<br>$A = 7 \times 5 = 35 \text{ in}^2$                             |
| Triangle<br>       | $A = 1/2 \times b \times h$                             | What is the area of a triangle with height 6 inches and base 5 inches?<br>$A = 1/2 \times 6 \times 5 = 15 \text{ in}^2$                  |
| Parallelogram<br> | $A = h \times b$  |  $A = 5 \times 7 = 35 \text{ cm}^2$                   |
| Trapezoid<br>    | $A = 1/2 \times h \times (b_1 + b_2)$                   |  $A = 1/2 \times 6 \times (9 + 6) = 45 \text{ cm}^2$ |
| Circle<br>       | $A = \pi \times r^2$<br>$(\pi = 3.14 \text{ or } 22/7)$ | What is the area of a circle with radius 9 feet?<br>$A = \pi \times 9^2 = 81\pi = 254.34 \text{ ft}^2$                                   |
| Rhombus<br>      | $A = 1/2 \times d_1 \times d_2$                         | What is the area of a rhombus with diagonals 8 inches and 7 inches?<br>$A = 1/2 \times 8 \times 7 = 28 \text{ in}^2$                     |

**Area of a square**

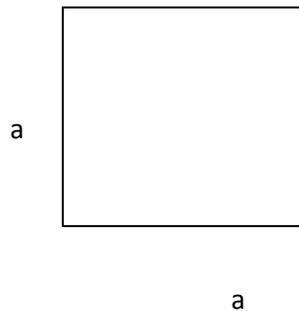
Area= width × height

Since the width and height are by definition the same,

Area= $a^2$  sq units. where,  $a$  is side of the square.

Perimeter =  $4a$  units.

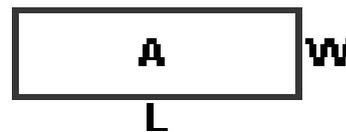
Diagonal=  $a\sqrt{2}$  units.



**The area of a rectangle**

The formula is:

$A = L \cdot W$  sq units



where  $A$  is the area,  $L$  is the length,  $W$  is the breadth,

Perimeter=  $2(L+W)$  units.

Diagonal= $\sqrt{L^2 + W^2}$  units.

**Area of a circle**

$\pi$  is the ratio of the circumference of a circle to the diameter.

Thus, for any circle, if you divide the circumference by the diameter, you get a value close to  $\pi$ . This relationship is expressed in the following formula:

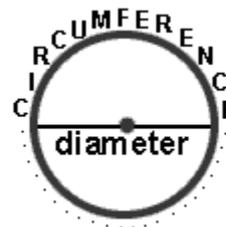
$\frac{c}{d} = \pi$  where,  $c$  is circumference and  $d$  is diameter.

Now

Diameter =  $2 \times$  radius

then Circumference=  $2\pi r$  units

Area=  $\pi r^2$  sq. units.



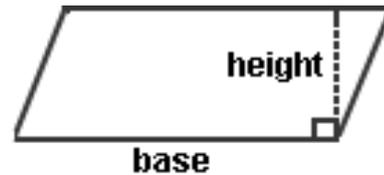
**Area of a parallelogram**

A parallelogram is a 4-sided shape formed by two pairs of parallel lines.

Opposite sides are equal in length and opposite angles are equal in measure.

#### Area of a parallelogram

$A = b \cdot h$  where  $b$  is the base,  $h$  is the height,



The base and height of a parallelogram must be perpendicular

#### Area of a triangle

A triangle is a three-sided polygon.



For example, in the diagram below, the area of each triangle is equal to one-half the area of the parallelogram.



Since the area of a parallelogram is  $A = b \cdot h$ , the area of a triangle must be one-half the area of a parallelogram.

**The area of a triangle is:**

$$A = \frac{1}{2} b \cdot h \Rightarrow A = \frac{bh}{2}$$

where  $b$  is the base and  $h$  is the height

The base and height of a triangle must be perpendicular to each other.

To know more, register for EDUINFINITE Classes