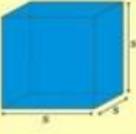
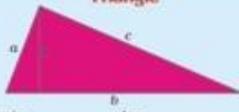
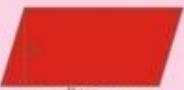


Mensuration

Closed figure: A figure with **no open ends** is a closed figure.

Regular closed figures: A closed figure in which **all the sides** and **angles equal**.

MENSURATION	
A graphical list of the formulae for measurement concepts.	
<p style="text-align: center;">Rectangle</p>  <p>Perimeter $P = 2l + 2b$</p> <p>Area Length \times breadth $A = lb$</p>	<p style="text-align: center;">Cube</p>  <p>Lateral Surface area = $4s^2$ Total Surface area = $6s^2$ Volume = s^3</p> <p>$S = \text{Side}$</p>
<p style="text-align: center;">Circle</p>  <ul style="list-style-type: none"> • Diameter = 2 radius • Circumference = π diameter or 2π radius • Area = π radius² ($\pi = 3.14$) 	<p style="text-align: center;">Rectangular Solid (Cuboid)</p>  <p>Volume Length \times Breadth \times Height $V = lbh$</p> <p>Surface Area $A = 2(lb + bh + lh)$</p>
<p style="text-align: center;">Triangle</p>  <p>Perimeter $P = a + b + c$</p> <p>Area $\frac{1}{2}$ of the base \times the height $A = \frac{1}{2}bh$</p>	<p style="text-align: center;">Cylinder</p>  <p>Volume $V = \pi r^2 h$</p> <p>Surface Area = 2radius \times height $S = 2\pi rh$</p>
<p style="text-align: center;">Trapezium</p>  <p>Perimeter $P = a + b1 + b2 + c$</p> <p>Area $\frac{(b1 + b2)h}{2}$</p>	<p style="text-align: center;">Cone</p>  <p>Volume $V = \frac{1}{3} \pi r^2 h$</p> <p>Total Surface Area = $(\pi rl + \pi r^2)$</p>
<p style="text-align: center;">Parallelogram</p>  <p>Area = Base \times height $A = bh$</p>	<p style="text-align: center;">Sphere</p>  <p>Volume $V = \frac{4}{3} \pi r^3$</p> <p>Surface Area $= 4\pi r^2$</p>

Perimeter:

Perimeter is the distance covered along the boundary forming a closed figure when we go round the figure once. The concept of perimeter is widely used in real life.

Eg: 1) For fencing land.

2) For building a compound wall around a house.

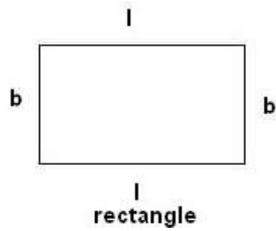
The perimeter of a regular closed figure is equal to the sum of its sides.

Perimeter of a rectangle:

$$= \text{Length}(l) + \text{Breadth}(b)$$

$$+ \text{Length}(l) + \text{Breadth}(b)$$

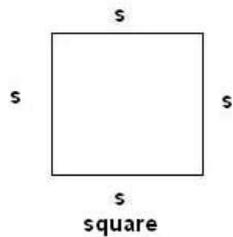
$$= 2(l + b)$$



Perimeter of a square:

$$= s + s + s + s$$

$$= 4 \times s$$

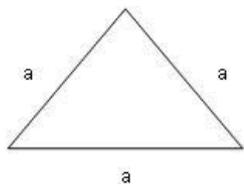


Equilateral triangle:

A triangle with **all its sides and angles equal** is called an equilateral triangle.

The perimeter of an equilateral triangle with the side 'a' = $a + a + a$

$$= 3 \times a$$



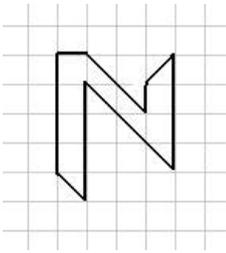
Area

The **amount of surface** enclosed by a **closed figure** is called its **area**.

The following conventions are to be adopted while calculating the area of a closed figure using a squared or graph paper.

- Count the **fully-filled squares** covered by the closed figure as **one square unit** or unit square each.
- Count the **half-filled squares** as **half a square unit**.
- Count the squares that are **more than half-filled** as **one square unit**.
- Ignore the squares filled less than half.

For example, the area of this shape can be calculated as shown:



Covered area	Number	Area estimate (sq. units)
Fully filled squares	6	6
Half-filled squares	7	$7 \times \frac{1}{2}$
Squares filled more than half	0	0
Squares filled less than half	0	0

Area covered by full squares = $6 \times 1 = 6$ sq. units

Area covered by half squares = $7 \times \frac{1}{2} = \frac{7}{2} = 3 \frac{1}{2}$ sq. units

Total area of the given shape = $6 + 3 \frac{1}{2}$ sq. units

Thus, the total area of the given shape = $9 \frac{1}{2}$ sq. Units

Area of a rectangle can be obtained by multiplying length by breadth. Area of the square can be obtained by multiplying side by side.