





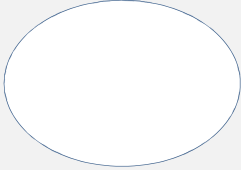
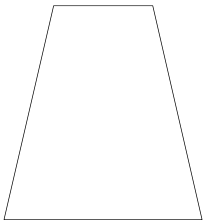
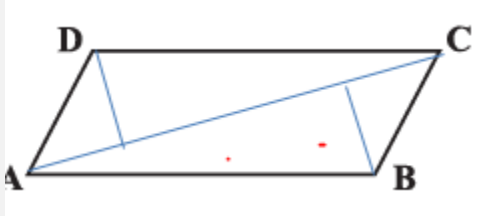
# Class 8 Important Formulas

## Chapter 11 - Mensuration

| S.no | Term        | Description   |
|------|-------------|---|
| 1    | Mensuration | It is branch of mathematics which is concerned about the measurement of length, area and Volume of plane and Solid figure           |
| 2    | Perimeter   | a) The perimeter of plane figure is defined as the length of the boundary<br>b) It units is same as that of length i.e. m, cm, km   |
| 3    | Area        | a) The area of the plane figure is the surface enclosed by its boundary<br>b) It unit is square of length unit. i.e. $m^2$ , $km^2$ |

### Shapes where Area and Perimeter are known

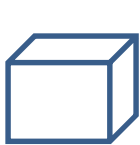
| Shapes  | Perimeter  | Area   |
|---|--|--|
| <b>Rectangle</b><br> | $P= 2(L+B)$<br>L and B are Length and Breadth of the rectangle | $A=L \times B$   |
| <b>Square</b><br>    | $P=4a$<br>a is the side of the square                          | $A=a^2$  |
| <b>Triangle</b><br>  | $P=$ Sum of sides  | $A=(1/2) \times (\text{Base}) \times (\text{Height/Altitude})$ |

|  |  |  |
|--|--|--|
| <p><b>Parallelogram</b></p>             | <p><math>P=2(\text{Sum of Adjacent sides})</math></p>          | <p><math>A=(\text{Base}) \times (\text{Height})</math></p>   |
| <p><b>Circle</b></p>                    | <p><math>P=2\pi r</math><br/>r is the radius of the circle</p> | <p><math>A=\pi r^2</math></p>  |
| <p><b>Trapezium</b></p>  | <p><math>P= \text{Sum of length of all the sides}</math></p>   | <p><math>A=(1/2)h( a+b)</math><br/>Half the product of the sum of</p>  |
|                                        |  | <p>the lengths of parallel sides and the perpendicular distance between them gives the area of trapezium</p>                       |
| <p><b>General Quadrilaterals</b></p>  | <p><math>P= \text{Sum of length of all the sides}</math></p>   | <p><math>A=(1/2)d(h_1+ h_2)</math></p>   |
| <p><b>Rhombus</b></p>  | <p><math>P=4a</math></p>                                       | <p><math>A= (1/2)\times d_1\times d_2</math><br/>Where <math>d_1</math> and <math>d_2</math> are the diagonals of the Rhombus.</p> |

## Important Terms to remember in case of Solid Figures

|                             |   |
|-----------------------------|---|
| <b>Surface Area</b>         | <b>Surface area of a solid is the sum of the areas of its faces</b>   |
| <b>Lateral Surface Area</b> | The faces excluding the top and bottom) make the lateral surface area of the solid  |
| <b>Volume</b>               | <p>Amount of space occupied by a three dimensional object (Solid figure) is called its volume.</p> <p>we use square units to find the area of a two dimensional region. In case of volume we will use cubic units to find the volume of a solid, as cube is the most convenient solid shape (just as square is the most convenient shape to measure area of a region)</p> <p>Volume is sometimes refer as capacity also</p> |

## Surface Area and Volume of Cube and Cuboid



Cube



Cuboid

| Type  | Measurement              |
|---|--------------------------|
| <b>Surface Area of Cuboid of Length L, Breadth B and Height H</b> | $2(LB + BH + LH).$       |
| <b>Lateral surface area of the cuboids</b>                        | $2( L + B ) H$           |
| <b>Diagonal of the cuboids</b>                                    | $\sqrt{L^2 + B^2 + H^2}$ |
| <b>Volume of a cuboids</b>  | LBH                      |
| <b>Length of all 12 edges of the cuboids</b>                      | $4 (L+B+H).$             |
| <b>Surface Area of Cube of side L</b>                             | $6L^2$                   |
| <b>Lateral surface area of the cube</b>                           | $4L^2$                   |

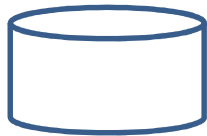
**Diagonal of the cube**

$$L\sqrt{3}$$

**Volume of a cube**

$$L^3$$

### Surface Area and Volume of Right circular cylinder



**Radius**

The radius (r) of the circular base is called the radius of the cylinder

**Height**

The length of the axis of the cylinder is called the height (h) of the cylinder

**Lateral Surface**

The curved surface joining the two base of a right circular cylinder is called Lateral Surface.

| Type  | Measurement    |
|---|----------------|
| <b>Curved or lateral Surface Area of cylinder</b> | $2\pi rh$      |
| <b>Total surface area of cylinder</b>             | $2\pi r (h+r)$ |
| <b>Volume of Cylinder</b>                         | $\pi r^2h$     |