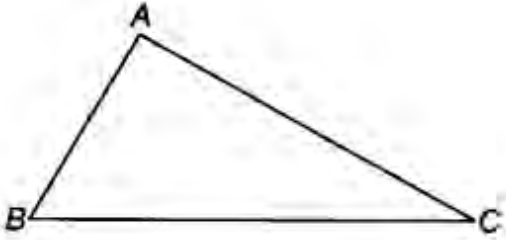


CBSE Class 9 Maths Notes Chapter 10 Heron's Formula

1. **Triangle:** A plane figure bounded by three line segments is called a triangle.

In $\triangle ABC$ has

- (i) three vertices, namely A, B and C.
- (ii) three sides, namely AB, BC and CA.
- (iii) three angles, namely $\angle A$, $\angle B$ and $\angle C$.



2. Types of Triangle on the Basis of Sides

(i) **Equilateral triangle:** A triangle having all sides equal is called an equilateral triangle.

In equilateral $\triangle ABC$,

i.e., $AB = BC = CA$

(ii) **Isosceles triangle:** A triangle having two sides equal is called an isosceles triangle.

In isosceles $\triangle ABC$,

i.e., $AB = AC$

(iii) **Scalene triangle:** A triangle in which all the sides are of different lengths is called a scalene triangle.

In scalene $\triangle ABC$,

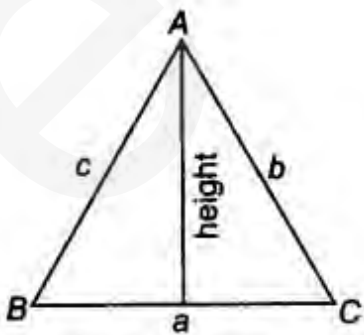
i.e., $AB \neq BC \neq CA$

3. **The perimeter of a Triangle:** The sum of the lengths of three sides of a triangle is called its perimeter.

Let, $AB = c$, $BC = a$, $CA = b$

i.e., Perimeter of $\triangle ABC$, $2s = a + b + c$

4. **Area of a Triangle:** The measure of the surface enclosed by the boundary of the triangle is called its area.



Area of triangle = $\frac{1}{2} \times \text{Base} \times \text{Height}$

Area of right angled triangle = $\frac{1}{2} \times \text{Base} \times \text{Perpendicular}$

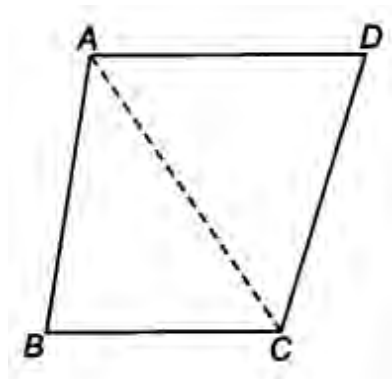
5. **Area of a Triangle (Heron's Formula):** If a triangle has a, b and c as sides, then the area of a triangle by

Heron's formula = $\sqrt{s(s-a)(s-b)(s-c)}$

where, s (semi-perimeter) = $\frac{a+b+c}{2}$

Note: This formula is highly applicable in the case when we don't have the exact idea about height.

6. **Application of Heron's Formula in Finding Areas of Quadrilaterals:** Let ABCD be a quadrilateral to find the area of a quadrilateral we need to divide the quadrilateral in triangular parts.



Area of quadrilateral ABCD = Area of $\triangle ABC$ + Area of $\triangle ADC$