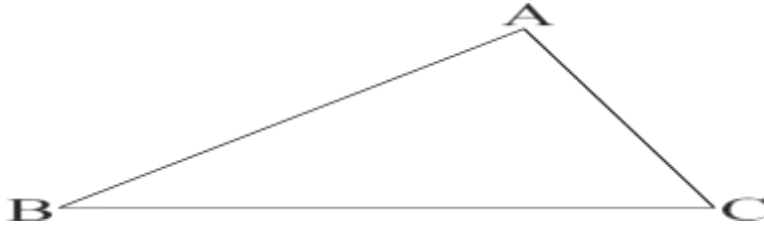# Handout for module-1

- **_DEFINITION:-_**A triangle is a simple closed curve of three line segments.

- It has three vertices, three sides and three angles.

- _In a_ △ABC. _I_t has sides: AB,BC and CA(all line segments)

- It has angles:- ∠BAC, ∠ABC, ∠BCA

- Vertices:- A,B,C(all points).

- In this triangle A is the opposite vertex of side BC,

- B is the opposite vertex of side AC,

- C is the opposite vertex of side AB.

- And vice- versa , you can identify

- the opposite sides of vertices A,B, and C.

- **_CLASSIFICATION OF TRIANGLES:-_**

- On the basis of sides:-

- Equilateral triangle

- Isosceles triangle

- Scalene triangle

- On the basis of angles:-

- Acute angled triangle

- Right angled triangle

- Obtuse angled triangle

- *EQUILATERAL TRIANGLE:-*

- Properties:-

- Its all sides are of equal length.

- Its all angles are of equal measure i.e. 60 degrees.
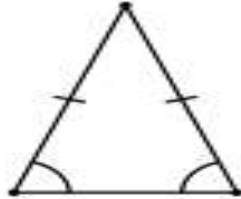
- *ISOSCELES TRIANGLE:-*

- Its 2 sides are always same. In this triangle they are AB and AC.

- Its 2 angles are always same. In this triangle they are $\angle$B and $\angle$C.

- SCALENE TRIANGLE:- A triangle whose all sides are of different lengths and all angles are of unequal measure is called a scalene triangle.

- ACUTE-ANGLEDTRIANGLE:- A triangle whose all angles are acute i.e. more than 0° and less than 90°,are called acute angled triangles.

- RIGHT-ANGLED TRIANGLE:- A triangle whose one angle is a right angle(90 degrees) is called a right angled triangle.

- The side opposite to right angle is called a hypotenuse and other sides are called legs.

- OBTUSE–ANGLED TRIANGLE:- A triangle whose one angle is an obtuse angle i.e. more than 90° and less than 180° is called an obtuse angled triangle.

- SPECIAL FACT:-Triangle is the strongest polygon. Due to this it is used in architecture.

- Median:- Median is a line segment which joins the midpoint of a side to the opposite vertex.

- Centroid:- the point of intersection of the medians of a triangle is called centroid.

- Altitude:- The perpendicular drawn from a vertex to its opposite sides is called the altitude.

- The point of intersection of all the altitudes of a triangle is called orthocentre.

- ***Altitudes of an acute angled triangle-***In an acute angled triangle the three altitudes lie inside the triangle.

- The orthocenter is always inside the triangle.

- Orthocenter of an obtuse angled triangle-The three altitudes do not intersect inside the triangle.

- The orthocenter of an obtuse angled triangle always lies outside it.

- Orthocenter of a right angled triangle-In a right – angled triangle the two arms are perpendicular to each other, therefore they are the two altitudes of the triangle.

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