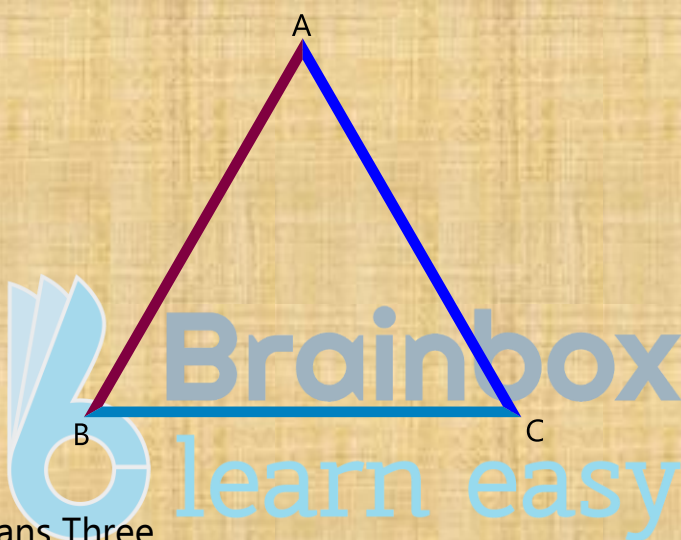


CHAPTER 07

Triangles

Introduction:

A closed figure formed by three intersecting lines is called a triangle. It is denoted by ' Δ '.



'Tri' means Three.

A triangle has three sides, three angles and three vertices.

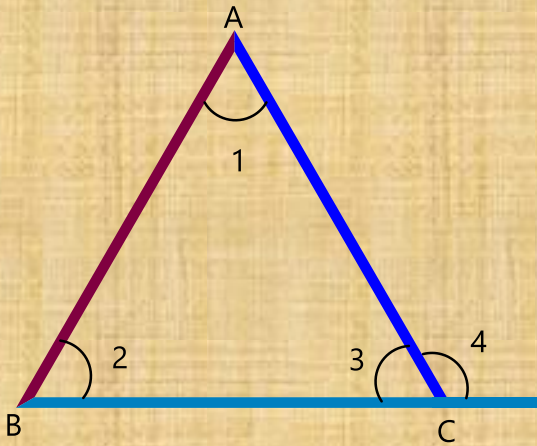
That means,

- $\overline{AB}$, $\overline{BC}$ and $\overline{CA}$ are three sides.
- $\angle A$, $\angle B$ and $\angle C$ are three angles.
- A, B and C are three vertices.

Here, $\angle A$, $\angle B$ and $\angle C$ are the interior angles.

The sum of three interior angles of a triangle is 180° .

i.e. $\angle 1 + \angle 2 + \angle 3 = 180^\circ$.



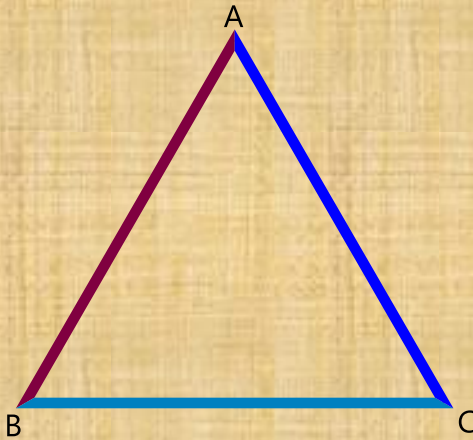
$\angle 1$ and $\angle 2$ are the three interior opposite angles and $\angle 3$ is the interior adjacent angle with respect to $\angle 4$.

Types of triangles with respect to their angles:

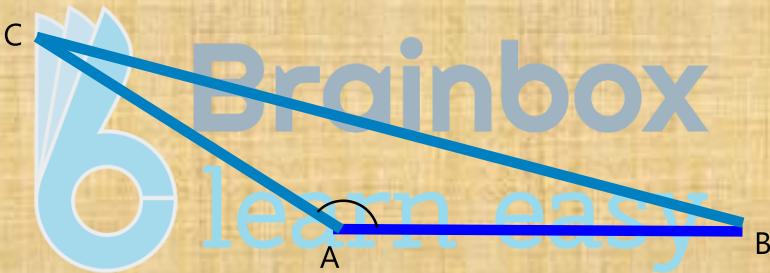
- Acute angled triangle
- Obtuse angled triangle
- Right angled triangle

In a triangle, if all three angles are less than 90° then that triangle is called acute angled triangle.

When all the three angles are equal, then all the three sides are also equal.

**Obtuse – angled triangle:**

In a triangle one of its angles greater than 90° and less than 180° , then that triangle is called obtuse angled triangle.



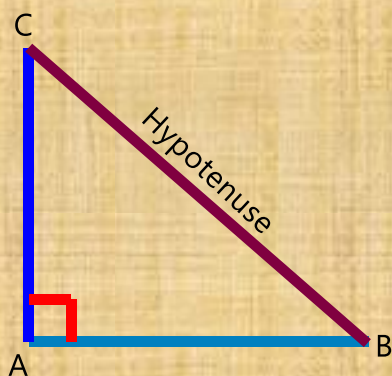
$90^\circ < A < 180^\circ$, B and C are necessarily acute angles.

Right – angled triangle:

in a triangle, one of its angle is 90° , then that triangle is called right angled triangle.

- The side opposite to the right angle is called the hypotenuse and it is the longest side.

- The sum of the other two angles is equal to 90° when the other two angles are equal, then the other two sides are also equal.



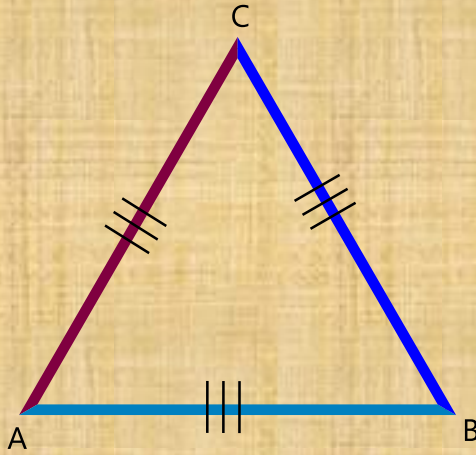
Types of triangles with respect to their sides:

- Equilateral triangle
- Isosceles triangle
- Scalene triangle

Equilateral triangle:

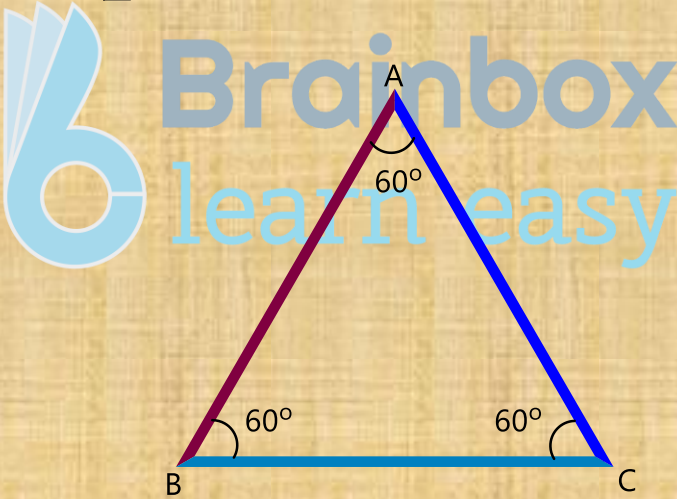
A triangle, which has all its sides are equal is called equilateral triangle.

i.e. $AB = BC = CA$



All the three sides and three angles are equal. This triangle is also called an equilateral triangle. Here, each angle is 60° .

i.e. $\angle A = \angle B = \angle C = 60^\circ$.

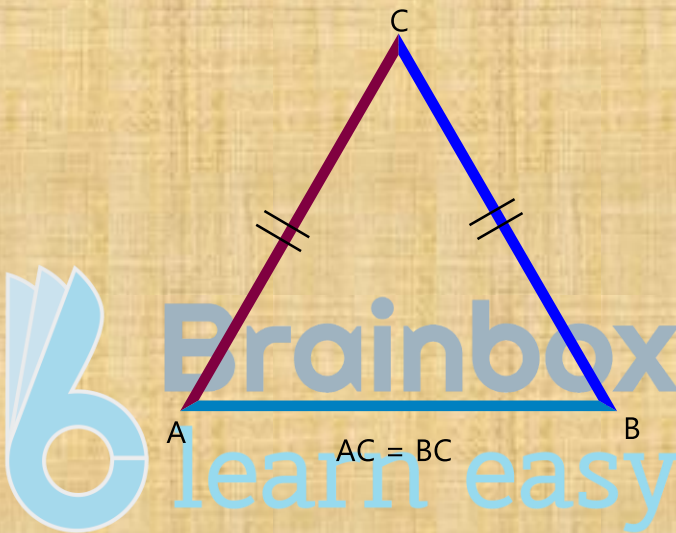


Isosceles triangle:

A triangle in which two sides are equal, then that triangle is called isosceles triangle.

Here the angles opposite to these two sides are also equal.

$$\Rightarrow \angle A = \angle B$$



In this opposite angles of equal sides are equal.

Scalene triangle:

A triangle in which all the three sides are of different lengths is called a scalene triangle.

Here, we can say that

$$AB \neq BC, BC \neq AC \text{ and } AC \neq AB$$

