



# VIDYA BHAWAN, BALIKA VIDYAPITH

Shakti Utthan Ashram, Lakhisarai-811311(Bihar)

(Affiliated to CBSE up to +2 Level)

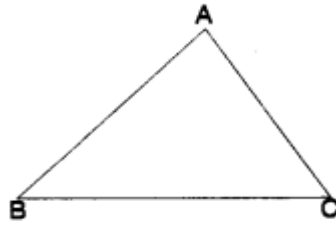
CLASS: VII

SUB.: MATHS (NCERT BASED)

DATE: 31-08-2020

## Chapter 6 The Triangle and its Properties

**Triangle:** A triangle is a simple closed curve made of three line segments. It has three vertices, three sides and three angles. Here in  $\triangle ABC$ , it has



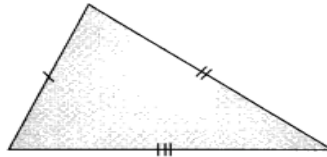
**Sides:**  $\overline{AB}$ ,  $\overline{BC}$ ,  $\overline{CA}$ .

**Vertices:** A, B, C.

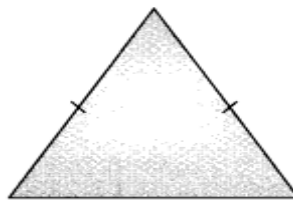
**Angles:**  $\angle BAG$ ,  $\angle ABC$ ,  $\angle BCA$ .

The side opposite to the vertex  $\angle A$  is BC. The angle opposite to the side AB is  $\angle BCA$ .  
Classification of triangles based on sides

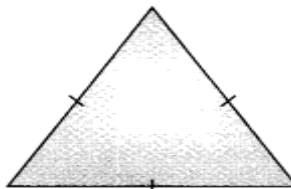
- A triangle having three unequal sides is called a scalene triangle.



- A triangle having two equal sides is called an isosceles triangle.

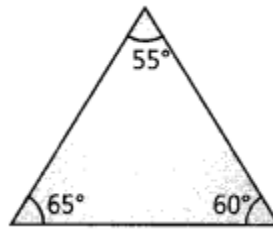


- A triangle having three equal sides is called an equilateral triangle.

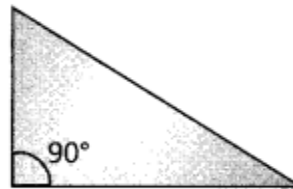


## Classification of triangles based on angles

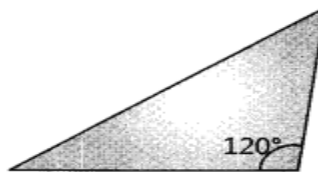
- If each angle is less than  $90^\circ$ , then the triangle is called an acute-angled triangle.



- If anyone angle is a right triangle, then the triangle is called a right-angled triangle.

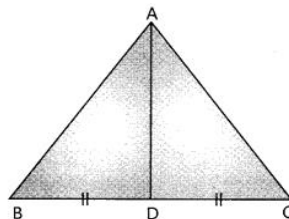


- If anyone angle is greater than  $90^\circ$ , then the triangle is called an obtuse-angled triangle.



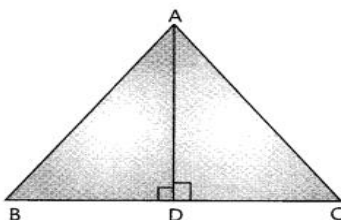
## Medians of a Triangle

The line-segment joining a vertex of a triangle to the mid-point of its opposite side is called a median of the triangle. Since there are three vertices in a triangle, therefore, a triangle has three medians.



## Altitudes of a Triangle

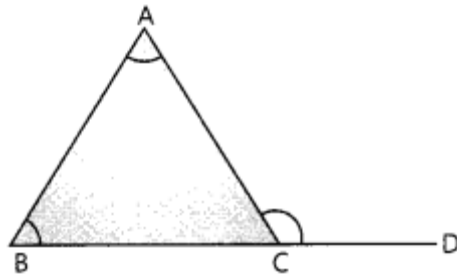
A line segment drawn from a vertex of a triangle perpendicular to its opposite side is called an altitude (height) of the triangle corresponding to the opposite side. Since there are three vertices in a triangle, therefore, a triangle has three altitudes.



AD is the altitude of triangle ABC.

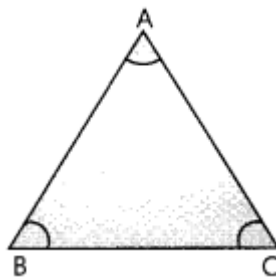
$$\angle ADB = \angle ADC = 90^\circ.$$

An exterior angle of a triangle is equal to the sum of its interior opposite angles.



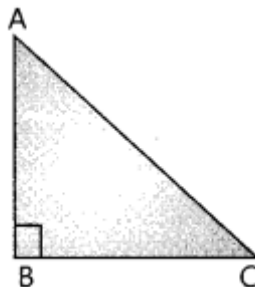
$$\angle ACD = \angle A + \angle B.$$

**Angle Sum Property:** The total measure of the three angles of a triangle is  $180^\circ$ .



$$\angle A + \angle B + \angle C = 180^\circ.$$

In right angled triangle, the square on the hypotenuse = sum of the squares on the legs.



$$AC^2 = AB^2 + BC^2$$

It is known as Pythagoras Property.