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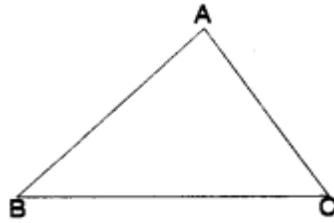
CLASS: VII

SUB.: MATHS (NCERT BASED)

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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



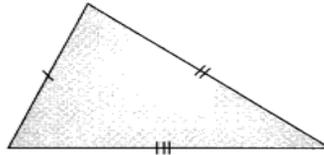
Sides: \overline{AB} , \overline{BC} , \overline{CA} .

Vertices: A, B, C.

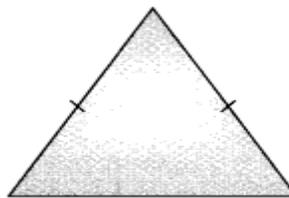
Angles: $\angle BAG$, $\angle ABC$, $\angle BCA$.

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

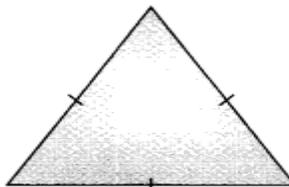
- A triangle having three unequal sides is called a scalene triangle.



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

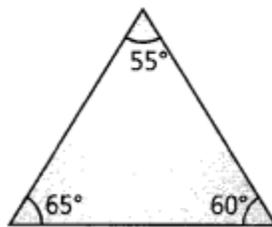


- A triangle having three equal sides is called an equilateral triangle.

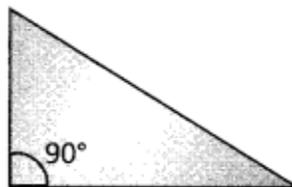


Classification of triangles based on angles

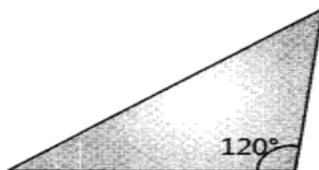
- If each angle is less than 90° , then the triangle is called an acute-angled triangle.



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

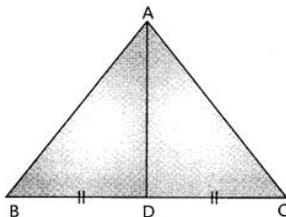


- If anyone angle is greater than 90° , then the triangle is called an obtuse-angled triangle.



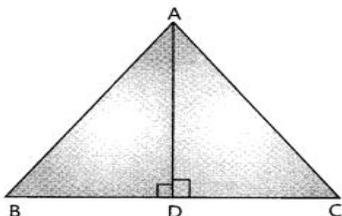
Medians of a Triangle

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

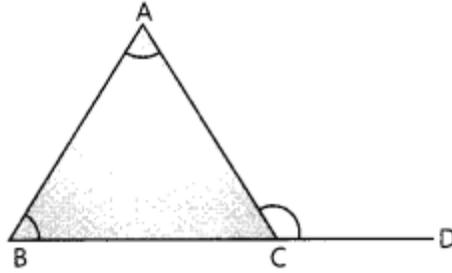
A line segment drawn from a vertex of a triangle perpendicular to its opposite side is called an altitude (height) of the triangle corresponding to the opposite side. Since there are three vertices in a triangle, therefore, a triangle has three altitudes.



AD is the altitude of triangle ABC.

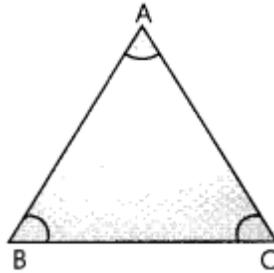
$$\angle ADB = \angle ADC = 90^\circ.$$

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



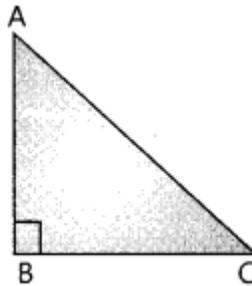
$$\angle ACD = \angle A + \angle B.$$

Angle Sum Property: The total measure of the three angles of a triangle is 180° .



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

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.