Class -7

Triangles and its properties (Handout)

Sum important points:-

1. The **six elements** of a triangle are its **three angles** and the **three sides**.
2. The line segment joining a vertex of a triangle to the midpoint of its opposite side is called a **median** of the triangle. A triangle has 3 medians.
3. The perpendicular line segment from a vertex of a triangle to its opposite side is called an **altitude** of the triangle. A triangle has 3 altitudes.
4. An **exterior angle** of a triangle is formed, when a side of a triangle is produced. At each vertex, you have two ways of forming an exterior angle.
5. A property of exterior angles:

The measure of any exterior angle of a triangle is equal to the sum of the measures of its interior opposite angles.

6. The angle sum property of a triangle:

The total measure of the three angles of a triangle is 180°.

7. A triangle is said to be **equilateral,** if each one of its sides has the same length. In an equilateral triangle, each angle has measure 60°.

8. A triangle is said to be **isosceles,** if at least any two of its sides are of same length.

The non-equal side of an isosceles triangle is called its **base**; the base angles of an isosceles triangle have equal measure.

9. Property of the lengths of sides of a triangle:

(a) The sum of the lengths of any two sides of a triangle is greater than the length of the third side.
(b) The difference between the lengths of any two sides is smaller than the length of the third side.

© This property is useful to know if it is possible to draw a triangle when the lengths of the three sides are known.

10. In a right angled triangle, the side opposite to the right angle is called the **hypotenuse** and the other two sides are called its **legs**.

11. **Pythagoras property**: In a right-angled triangle, the square on the hypotenuse = the sum of the squares on its legs.

If a triangle is not right-angled, this property does not hold good. This property is useful to decide whether a given triangle is right-angled or not.