Talent & Olympiad

Practical Geometry

- A ruler and compasses are used for constructions.
- Given a line 1 and a point not on it, a line parallel to 1 can be drawn using the idea of 'equal alternate angles' or 'equal corresponding angles'.
- Three independent measurements are required to construct a triangle.
- A rough sketch is drawn with the given measurements before actually constructing the triangle.
- The sum of lengths of any two sides of a triangle is greater than its third side.
- The difference of lengths of any two sides of a triangle is lesser than its third side.
- The sum of angles in a triangle is 180°.
- The exterior angle of a triangle is equal in measure to the sum of interior opposite angles.
- The following cases of congruence of triangles are used to construct a triangle.

(i) **S.S.S:** A triangle can be drawn given the lengths of its three sides.

(ii) **S.A.S:** A triangle can be drawn given the lengths of any two sides and the measure of the angle between them.

(iii) **A.S.A:** A triangle can be drawn given the measures of two angles and the length of the side included between them.

(iv) **R.H.S:** A triangle can be drawn given the length of hypotenuse of a right angled triangle and the length of one of its legs.

A triangle is said to be,

(a) an equilateral triangle, if all of its sides are equal.(b) an isosceles triangle, if any two of its sides are equal.

(c) a scalene triangle, if all of its sides are of different lengths.

A triangle is said to be,

(a) an acute angled triangle, if each one of its angles measures less than 90° .

(b) a right angled triangle, if any one of its angles measures 90° .

(c) an obtuse angled triangle, if any one of its angles measures more than 90°.

Pythagoras' theorem: In a right angled triangle, the square of the hypotenuse is equal to the sum of the squares of the remaining two sides.



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