POLYGONS

A polygon is a two dimensional closed figure formed with straight lines.

Sides, vertices and diagonals:

The line segments forming a polygon are called its sides.

The meeting point of a pair of sides is called its vertex.

Any two sides with a common end point are called adjacent sides of the polygon.

The end points of the same side of the polygon are called adjacent vertices.

The line segments joining the non-adjacent vertices are called diagonals.

Some well known polygons are:

No. of sides	Name of polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon

Convex Polygon: Each angle of a polygon is less than 180°.

Concave Polygon: Atleast one angle of a polygon is greater than 180°.

Regular Polygon: All sides and angles of the polygon are equal.

Irregular Polygon: Sides and angles of the polygon may not be equal.

Theorems:

- The sum of interior angles of a convex polygon = $(2n - 4) \times 90°$.
- The sum of exterior angles of a convex polygon $= 360^{o}$.

Some important results:

- Each interior angle of a regular polygon = $\frac{(n-2)\times 180°}{n}$, where n = number of sides of the polygon.
- Each exterior angle of a regular polygon = $\left(\frac{360}{\text{Number of sides}}\right)^{\circ}$.
- Each interior angle = 180° - (exterior angle)
- Number of diagonals of a polygon having n sides = $\frac{n(n-3)}{2}$.