

- Solids have fixed shape and occupy a space.
- A solid is made up of polygonal regions, which are called its faces.
- **Polyhedron** : A solid shape bounded by polygons is called polyhedron (platonic solid).

A polyhedron has some number of plane faces, edges and vertices, which satisfy the relationship :

$$F + V - E = 2,$$

where

'F' stands for number of faces.

'V' stands for number of vertices and

'E' stands for number of edges.

The relation $F + V - E = 2$ is called Euler's formula.

- **Prism** : A prism is a solid, whose side faces are parallelograms and whose ends (or bases) are congruent parallel polygons.
A prism has 2 triangular faces, 3 rectangular faces, 6 vertices and 9 edges.
- **Pyramid** : A pyramid is a polyhedron whose base is a polygon of any number of sides and whose other faces are triangles with a common vertex.
A pyramid has 1 square face, 4 triangular faces, 5 vertices and 8 edges.
- **Tetrahedron** : A pyramid is called a triangular pyramid, if its base is a triangle. A triangular pyramid is also called a tetrahedron.
Tetrahedron has 4 triangular faces, 4 vertices and 6 edges.
- **Hexahedron** : Cube is the only platonic solid whose every face is a square and cube is also known as hexahedron.
A hexahedron has 6 square faces, 8 vertices and 12 edges.
- **Octahedron** : The platonic solid which has four equilateral triangles meeting at each vertex is known as octahedron.
An octahedron has 8 triangular faces, 6 vertices and 12 edges.
- **Icosahedron** : The platonic solid in which 5 equilateral triangles meet a point to form a vertex, is known as an icosahedron.
An icosahedron has 20 triangular faces, 12 vertices and 30 edges.
- **Dodecahedron** : The platonic solid whose every face is a pentagon is known as dodecahedron.
A dodecahedron has 12 triangular faces, 20 vertices and 30 edges.