



PROJECTION OF SOLIDS

Projection of simple solids like prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes by rotating object method and auxiliary plane method.

INTRODUCTION

An object having three dimensions, i.e., length, breadth and height is called as solid. In orthographic projection, minimums of two views are necessary to represent a solid. Front view is used to represent length and height and the top view is used to represent length and breadth. Sometimes the above two views are not sufficient to represent the details. So a third view called as side view either from left or from right is necessary.

OBJECTIVES

At the end of this session, you will be able to

Classify the different types of solids

Draw the projections of solids in various positions in the given quadrant

CLASSIFICATION OF SOLIDS

Solids are classified into two groups. They are

- Polyhedra
- Solids of Revolution



POLYHEDRA

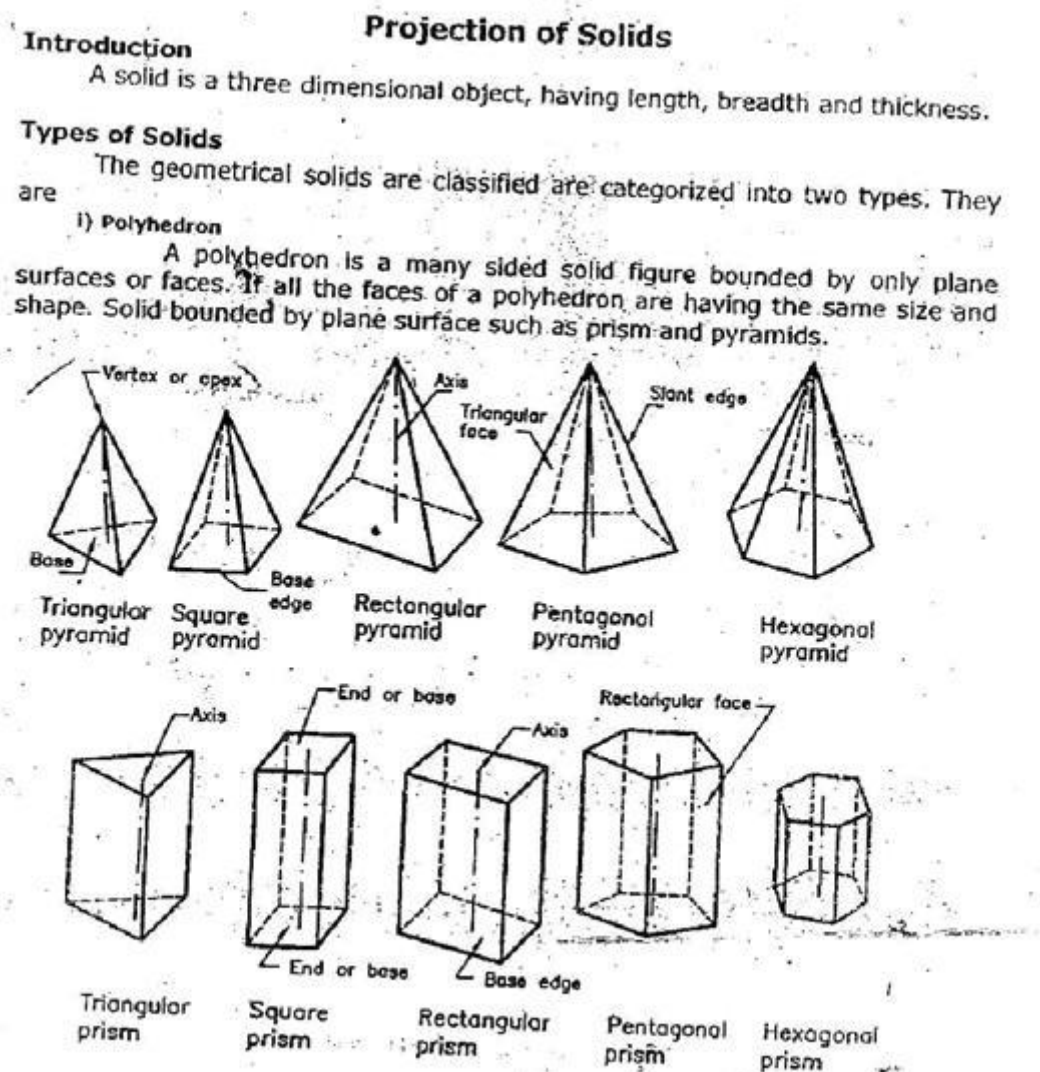
A solid, which is bounded by plane surfaces or faces, is called a polyhedron.

Polyhedra are classified into three sub groups; these are

1. Regular Polyhedra
2. Prisms
3. Pyramids

REGULAR POLYHEDRA

Polyhedra are regular if all their plane surfaces are regular polygons of the same shape and size. The regular plane surfaces are called "Faces" and the lines connecting adjacent faces are called



"edges



PRISMS

A Prism is a polyhedron having two equal and similar faces (called top face and bottom face or base), parallel to each other and joined by other faces which may be rectangular or parallelograms. An imaginary line joining the centers of faces is axis.

TYPES OF REGULAR PRISMS

Prism is named according to the shape of its base as triangular (Fig. 3.1), square (Fig.3.2), rectangular (Fig.3.3), Pentagonal (Fig.3.4), Hexagonal (Fig.3.5), etc.

NOMENCLATURES OF A PRISM

Axis, Top face, Bottom face, rectangular faces and longer edges are indicated in Fig. 3.1

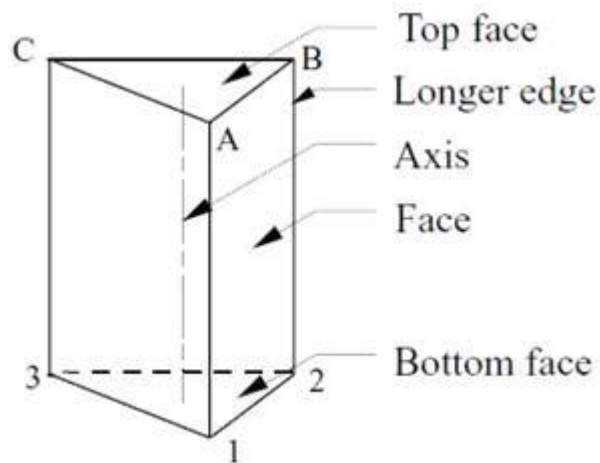


Fig. 3.1. Triangular Prism

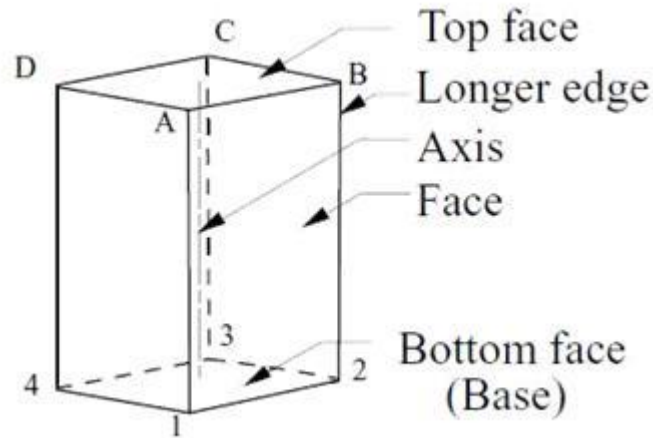


Fig.3.2. Square prism

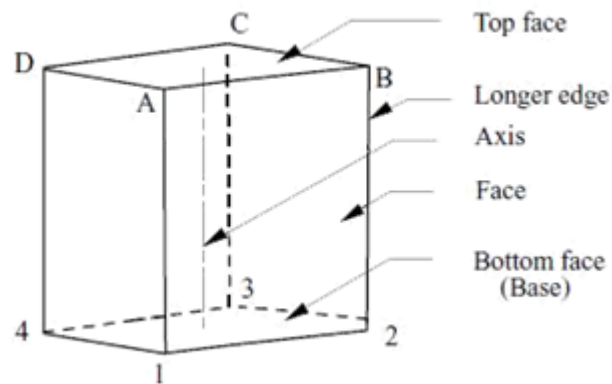


Fig.3.3. Rectangular Prism

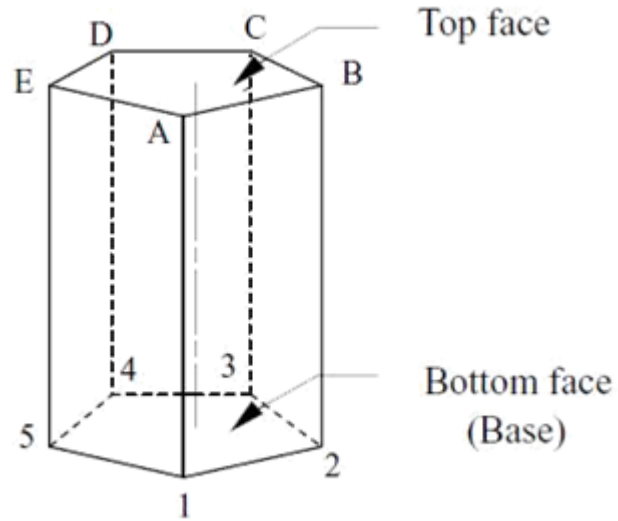


Fig.3.4.Pentagonal Prism

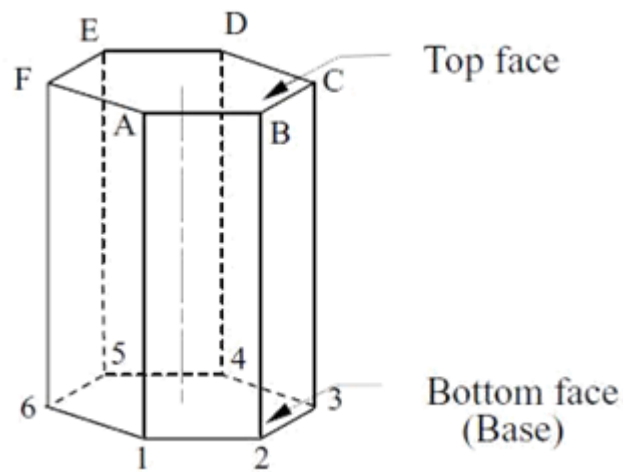
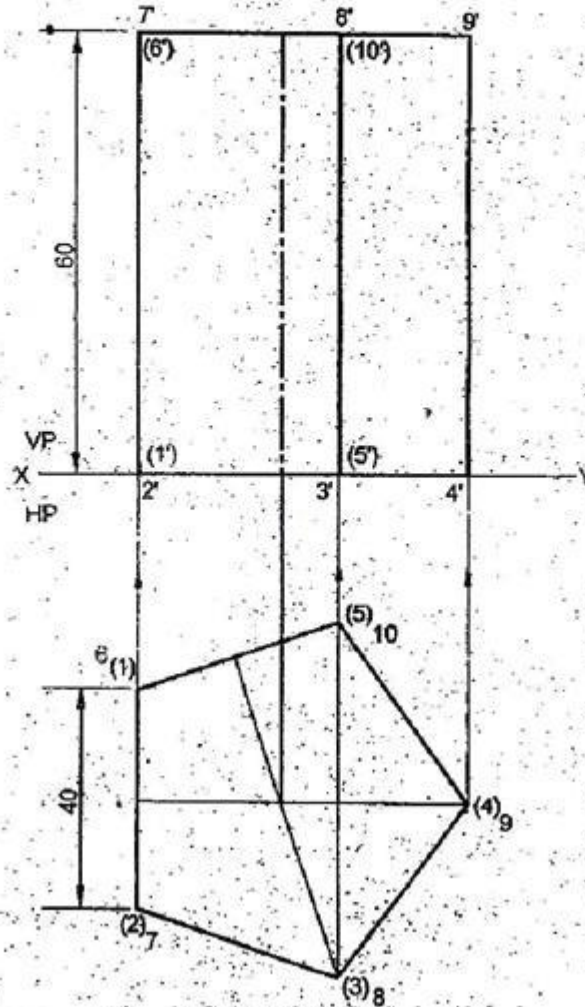


Fig.3.5.Hexagonal Prism



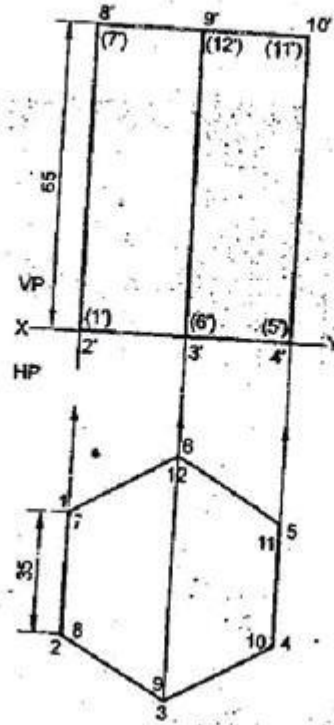
1) Axis of the solid parallel to VP and perpendicular to HP.

P1. A pentagonal prism of base side 40 mm and axis 60 mm is resting on HP on one of its base with a side of base perpendicular to VP. Draw its projections.





P2. A hexagonal prism side of base side, 35 mm and axis 65 mm is resting on HP on one of its bases with of its base sides perpendicular to VP. Draw its projections.



P3. A cylinder of base diameter 40 mm and axis 60 mm is resting on HP on its base with its axis 60 mm in front of VP. Draw its projections.

