

# PROJECTIONS OF PLANES

# 10

## 10-1 INTRODUCTION

In this chapter we deal with two dimensional objects called planes. Planes are having length, breadth and negligible thickness (i.e. thickness equivalent to a line). Only those solids are considered in the chapter whose shape can be defined geometrically and are regular in nature. Some of them are shown in Fig. 10.1.

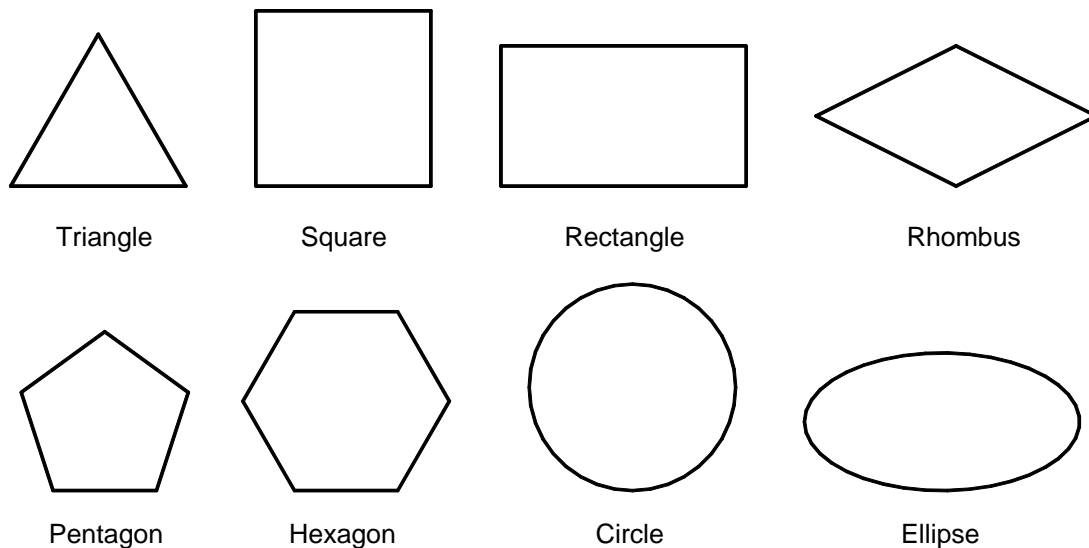


Fig. 10.1 Planes

## 10-2 ORIENTATIONS OF PLANES

The possible orientations of the surface of a plane with respect to the principal planes are given below:

1. Surface of plane is parallel to HP (and perpendicular to VP).
2. Surface of plane is parallel to VP (and perpendicular to HP).
3. Surface of plane is perpendicular to both HP and VP (i.e. parallel to profile plane).
4. Surface of plane is inclined to HP and perpendicular to VP.
5. Surface of plane is inclined to VP and perpendicular to HP.
6. Surface of plane is inclined to both HP and VP.

## MULTIPLE CHOICE QUESTIONS

Choose the most appropriate answer out of the given alternatives:

- i) If a thin set-square is kept perpendicular to both the horizontal and vertical planes, its true shape is seen in
  - (a) Horizontal plane
  - (b) Vertical plane
  - (c) Auxiliary inclined plane
  - (d) Profile plane
- ii) Planes which are inclined to both the horizontal and vertical planes are called
  - (a) Oblique planes
  - (b) Profile planes
  - (c) Auxiliary planes
  - (d) None of these
- iii) If a thin rectangular plate of 60 mm X 30 mm is inclined at an angle of  $60^\circ$  to HP its top view may be
  - (a) Square of 60 mm side
  - (b) Square of 30 mm side
  - (c) Rectangle of 60 mm X 45 mm
  - (d) Rectangle of 45 mm X 30 mm
- iv) In multi-view orthographic projection, the front view of a circular plane may be
  - (a) A circle
  - (b) An ellipse
  - (c) A straight line
  - (d) Any one of these
- v) If both front and top views of a plane are straight lines the true shape will lie on
  - (a) Profile plane
  - (b) Horizontal plane
  - (c) Vertical plane
  - (d) Any of these
- vi) If a circular plane is inclined at  $30^\circ$  with the HP and  $60^\circ$  with the VP its side view will be
  - (a) An ellipse
  - (b) A straight line
  - (c) A circle
  - (d) True shape
- vii) The front view of an elliptical plane may be
  - (a) An ellipse
  - (b) A circle
  - (c) A straight line
  - (d) Any of these
- viii) If the top view of a plane is a rhombus the object may be
  - (a) A square
  - (b) A rhombus
  - (c) Either (a) or (b)
  - (d) Neither (a) nor (b)
- ix) The trace of a hexagonal plane may be
  - (a) A straight line
  - (b) A point
  - (c) A hexagon
  - (d) An equilateral triangle
- x) A  $60^\circ$  set-square has its shortest edge in the VP. The surface is perpendicular to the HP and inclined to the VP. Its front view may appear as.
  - (a) An equilateral triangle
  - (b) An isosceles triangle
  - (c) An obtuse angled triangle
  - (d) A acute angled triangle
- xi) A  $60^\circ$  set-square has its shortest edge in the HP and the surface is perpendicular to the VP. Its top view may appear as.
  - (a) An isosceles triangle
  - (b) A right angled triangle
  - (c) A straight line
  - (d) Any of these

- xii) If both the principle views of a plane object are ellipse of the same size, the side view will be  
(a) A horizontal line (b) A vertical line (c) An inclined line (d) An ellipse

Answer: (i) d (ii) a (iii) b (iv) d (v) d (vi) b (vii) d (viii) c (ix) d (x) b (xi) d (xii) b