

## Geometric Construction

Drawing consists of construction of primitive geometric forms viz. points, lines and planes that serve as the building blocks for more complicated geometric shapes and defining the position of object in space.

The use of lines for obtaining the drawing of planes is shown in figure 1.

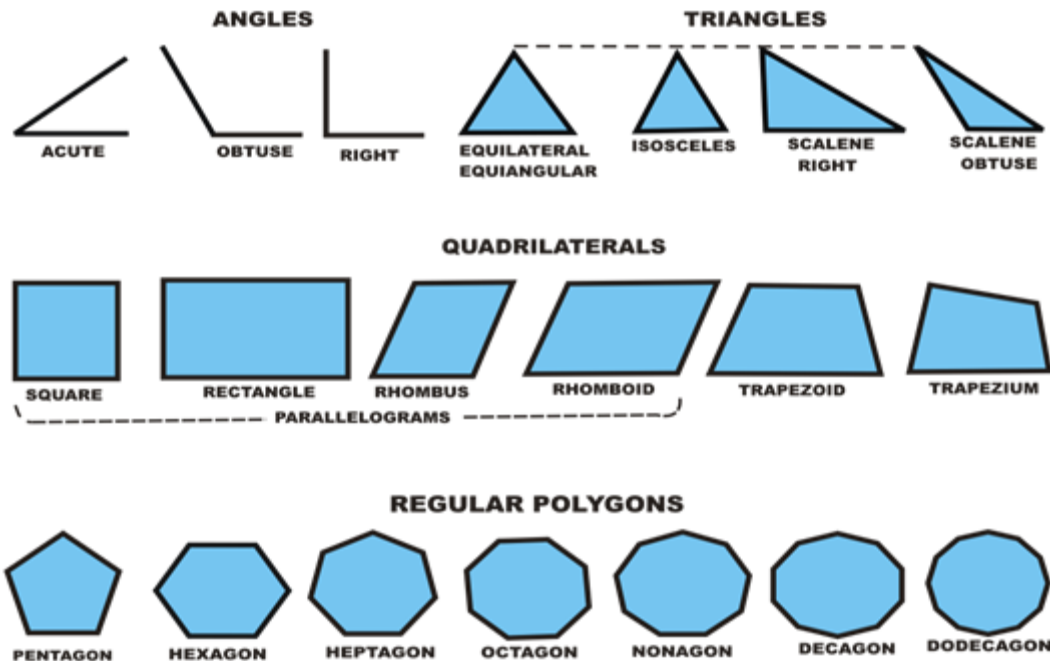


Figure 1 illustrates various planes generally encountered

Solids are obtained by combination of planes. Plane surfaces of simple solids are shown in figure 2.

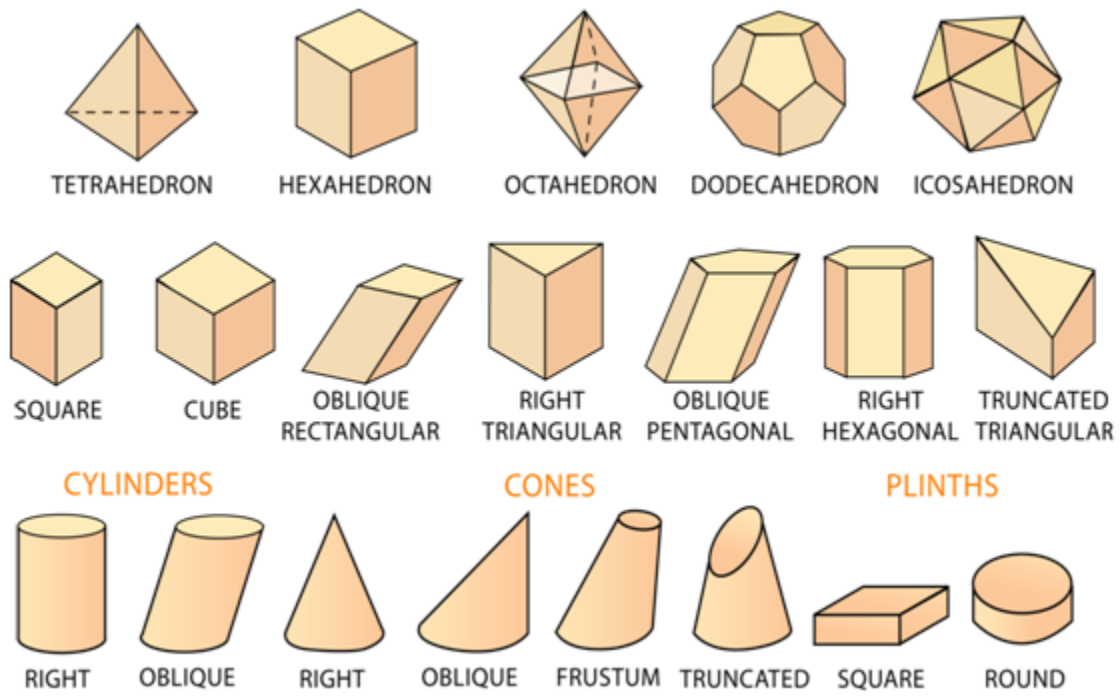


Figure 2 surfaces of few simple solids .

In addition curved surfaces also exists. Figure 3 shows some of solids having curved surfaces.

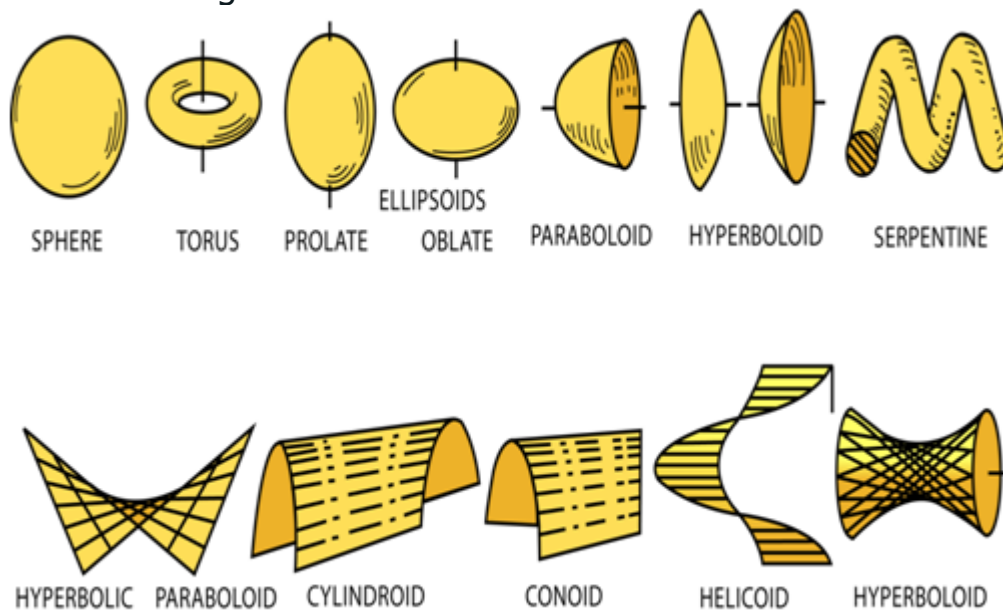


Figure 3. Solids having curved surfaces.

**Primitive geometric forms**

The shapes of objects are formed from primitive geometric forms .

These are

- **Point**
- **Line**
- **Plane**
- **Solid**
- **Doubly curved surface and object**
- **Warped surface**

The basic 2-D geometric primitives, from which other more complex geometric forms are derived.

- **Points,**
- **Lines,**
- **Circles, and**
- **Arcs**

### Point

A point is a theoretical location that has neither width, height, nor depth and describes exact location in space. A point is represented in technical drawing as a small cross made of dashes that are approximately 3 mm long. As shown in figure 4, a point is used to mark the locations of centers and loci, the intersection ends, middle of entities

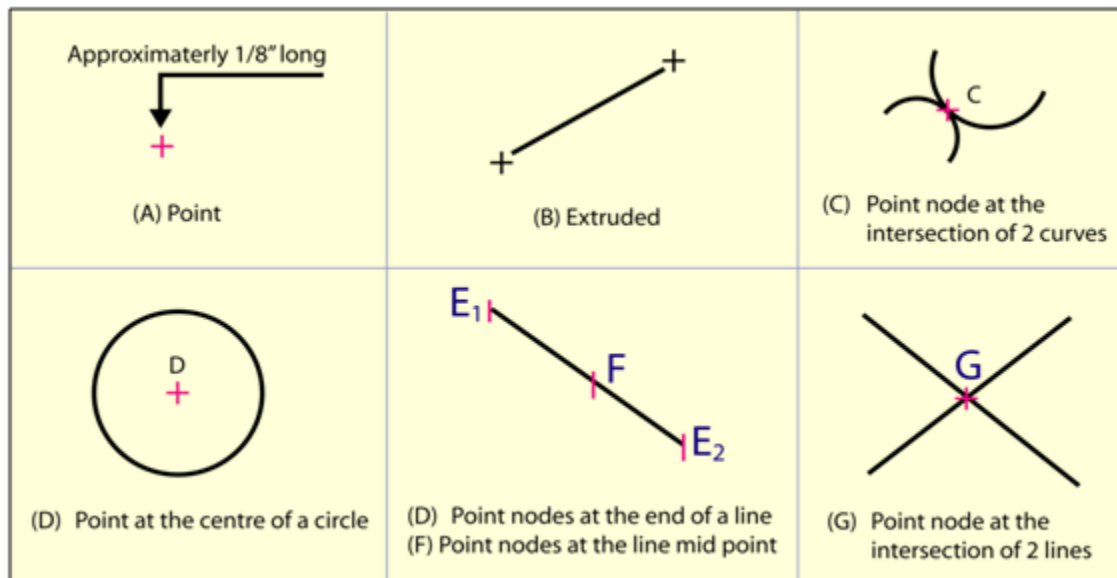


Figure 4. shows the various use of points.

### Line

A line is a geometric primitive that has length and direction, but no thickness. Lines may be straight, curved or a combination of these. As shown in figure 5, lines have few important relationship or conditions, such as parallel, intersecting, and tangent. Lines can be of specific length or non-specific length. A Ray is a sStraight line that extends to infinity from a specified point.

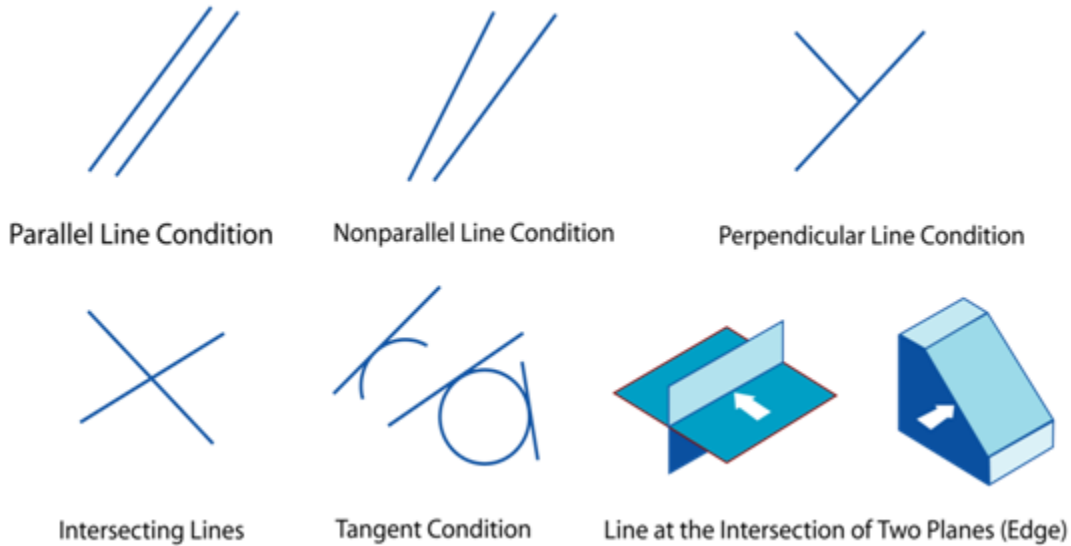


Figure 5. Relationship of one line to another line or arc

### **Bisecting a line**

The procedure of bisecting a given line AB is illustrated in figure 6. With A as centre and radius equal to higher than half AB, draw two arcs. With B as centre and with the same radius draw another arc intersecting the previous arcs. The line joining the intersection points is the perpendicular bisector of the line AB.

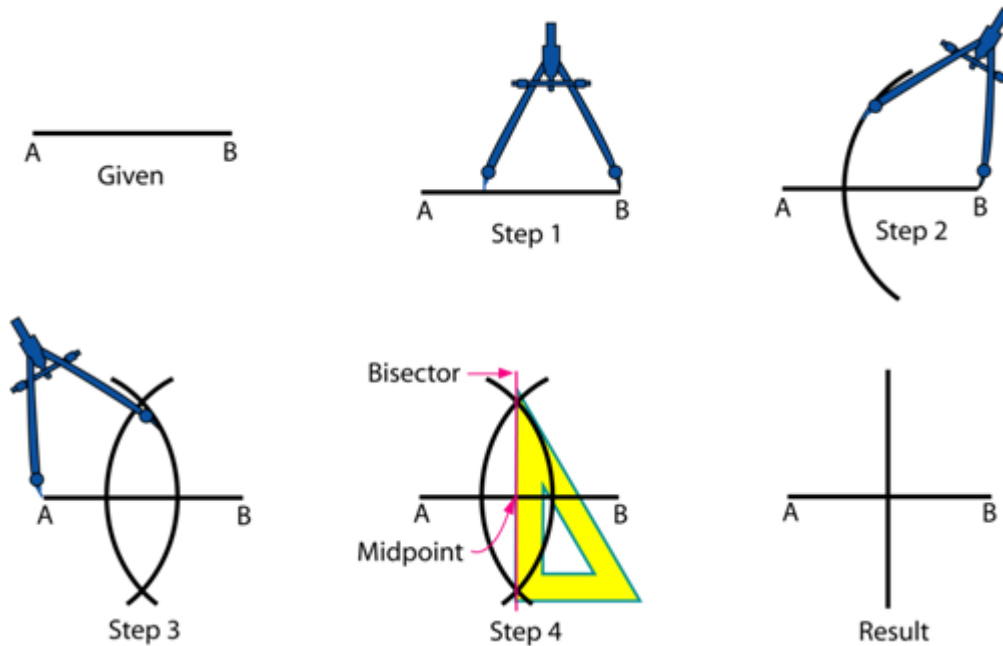


Figure 6. Illustrates the method of bisecting a line

### Dividing a line into equal parts

The method of dividing a line MO into equal number of parts is illustrated in figure 7.

- 1 Draw a line MO at any convenient angle (preferably an acute angle) from point M.
- 2 From M and along MO, cut off with a divider equal divisions (say three) of any convenient length.
- 3 Draw a line joining ON.
- 4 Draw lines parallel to MO through the remaining points on line MO.

The intersection of these lines with line MN will divide the line into (three) equal parts.

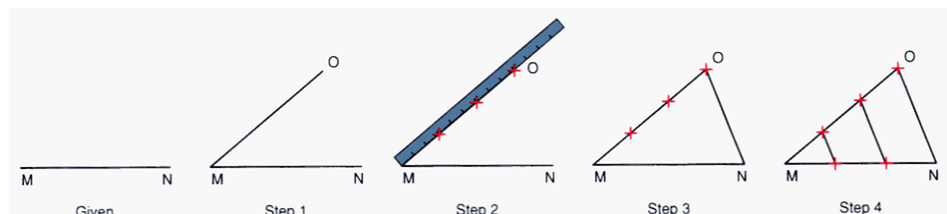


Figure 7. Dividing a line into equal number of parts