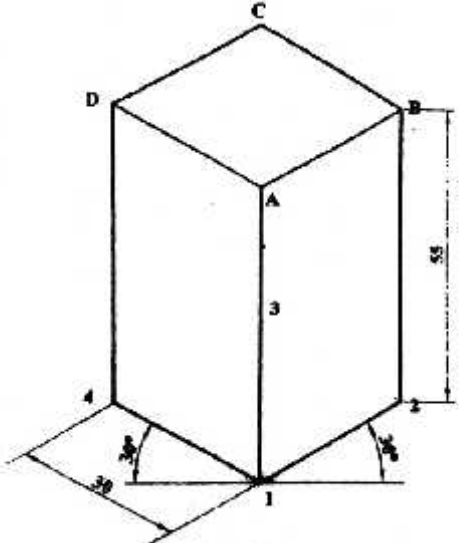
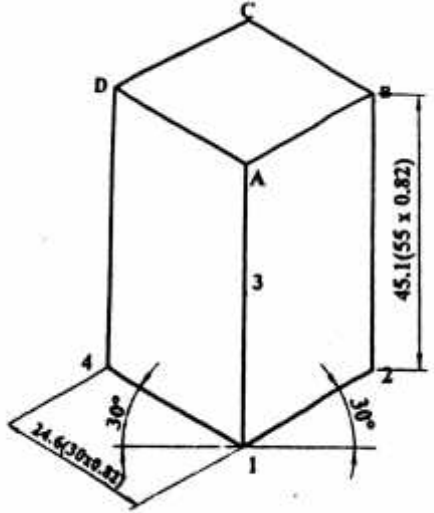


Topic 8 ISOMETRIC PROJECTION

(1) Differentiate between Isometric view & Isometric Projection.

Isometric View	Isometric Projection
1. The picture is drawn to the actual Scale. 2. The lines parallel to the isometric axes that represent the object are drawn to true lengths.	1. The picture is drawn to isometric scale. 2. The lines parallel to the isometric axes that represent the object are foreshortened to 0.82 times the actual lengths.
 <p style="text-align: center;">Isometric View</p>	 <p style="text-align: center;">Isometric Projection</p>
<ul style="list-style-type: none"> ▪ In practice, isometric views are drawn to the actual size and ▪ Isometric projections (drawn using isometric scale) have been used only for illustration. ▪ Since isometric drawings are prepared more easily than isometric projection, the former is being used extensively. 	

(2) Draw Isometric Scale for _____ length.

- In isometric projection, the actual length of the objects are foreshortened.
- The isometric length is less than the actual length of an object by about 18%.
- While drawing the isometric projection, it is necessary to convert true lengths into isometric lengths for measuring and marking edges in the projection.
- A Scale called, isometric Scale has to be constructed for this conversion.

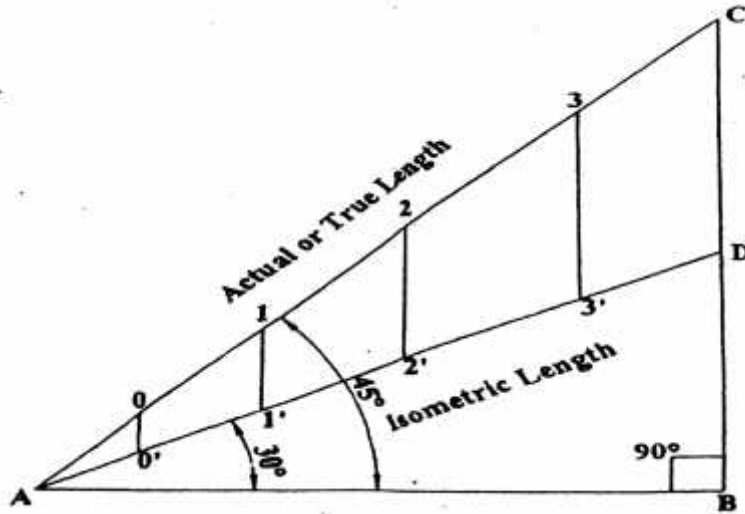


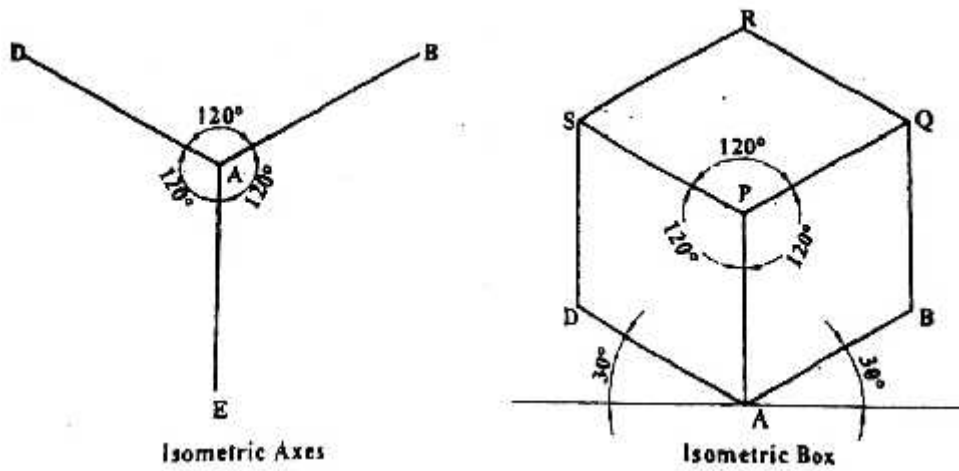
Fig. Isometric Scale

- The scale is constructed as explained below:
 1. Draw a line AB.
 2. Draw line AD inclined at 30° and line AC inclined at 45° to AB
 3. Mark the actual length on AC.
 4. Draw perpendiculars from the points to meet AD.
 5. The division points obtained on AD measures isometric lengths.
 6. Isometric length = $0.82 \times$ true length.

(3) Isometric projection:

- An isometric projection of an object is a single view on the plane of projection.
- In isometric projection, the object is placed so that all its principal axes are equally inclined to the plane of projection.
- The three principal axes of an isometric projection are:
 - (1) Length axis (X axis)
 - (2) Width axis (Z axis)
 - (3) Height axis (Y axis)
- **Terminology:**
 - (a) **Isometric Axes :**
 - The lines AB, AD and AE meeting at the point A and making an angle of 120° with each other are called the isometric axes.
 - $\angle BAD = \angle DAE = \angle EAB = 120^\circ$
 - AB and AD are referred to the inclined isometric axes and AE as the vertical axis.
 - If we draw the vertical axis AE above, then we can conveniently construct a box.

- This box is called the isometric box or bounding box, as shown in the figure below.



(b) Isometric lines :

- Lines parallel to the isometric axes are termed as isometric lines.
- From the figure , BC and DJ are parallel to the isometric axis AP;
- GH and CE are parallel to the isometric axis AB ;
- CG, EH and FJ are parallel to the isometric axis AD
- Therefore BC, DJ, GH, CE, CG, EH and FJ are isometric lines.

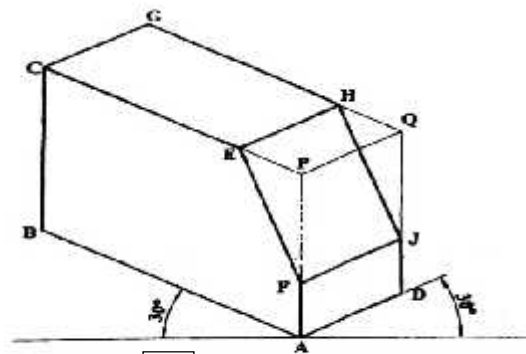


Figure 10.2 | 1 Isometric and Non-isometric Lines

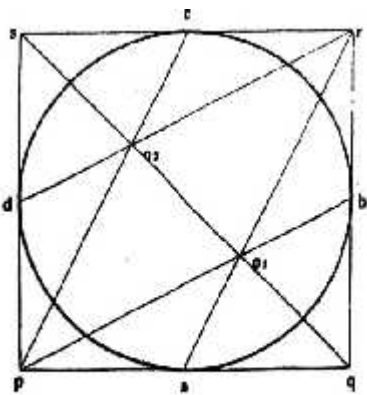
(c) Isometric Planes : (see figure Isometric box)

- The planes containing the faces of the isometric box and all other planes , which are parallel to these planes are termed as isometric planes.

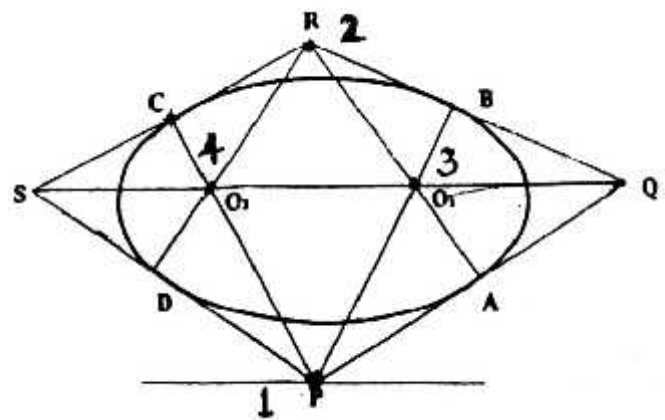
(d) Non-isometric Lines :

- Lines which are not parallel to any of the isometric axes, are termed as non-isometric lines.
- In Figure 1, the line EF and HJ are not parallel to any of the isometric axes AB, AP or AD.
- These two lines are non-isometric lines.
- Such lines could be drawn only by locating their end points and joining them.

4. Draw circle by Four centre method.



Circle



Circle in Isometric view

- Here, Four centres are available to draw circle in isometric view.
 1. 1 or P
 2. 2 or R
 3. 3 or O₁
 4. 4 or O₂.

-----XXX-----