111U06C105 – Engineering Drawing

Module
ISOMETRIC DRAWING

Introduction

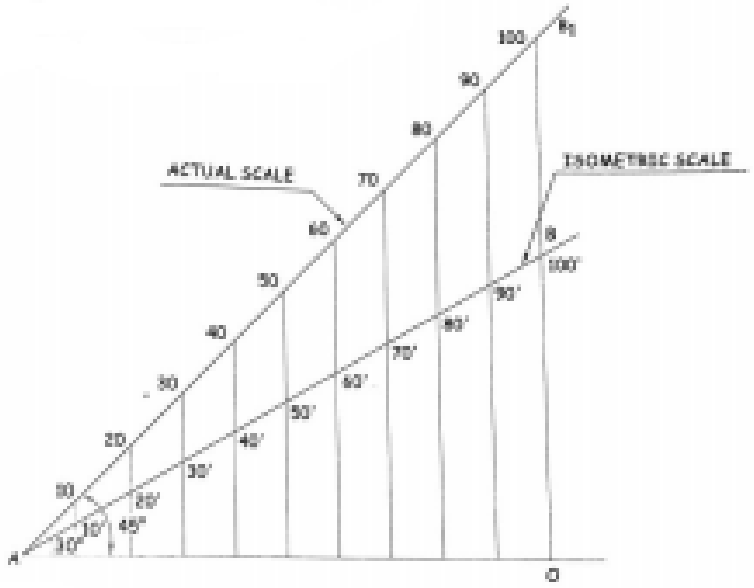
$\angle B_1AO = 45°$ $\quad \angle BAO = 30°$

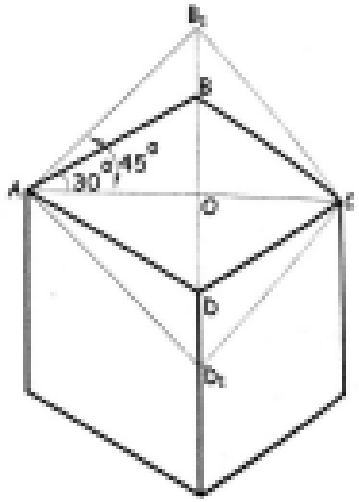
$\cos 45° = \frac{AO}{AB_1} = \frac{1}{\sqrt{2}}$ and $\cos 30° = \frac{AO}{AB} = \frac{\sqrt{3}}{2}$

$\therefore \frac{AB}{AB_1} = \frac{2}{\sqrt{3}} \times \frac{1}{\sqrt{2}} = \sqrt{\frac{2}{3}} \cong 0.816 = \frac{9}{11}$ (approximately)

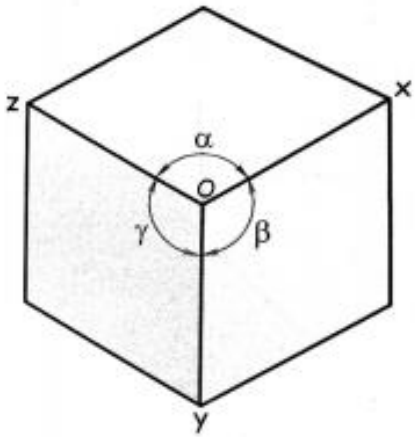
$\frac{AB}{AB_1} = \frac{\text{Isometric length}}{\text{True length}} = 0.816$

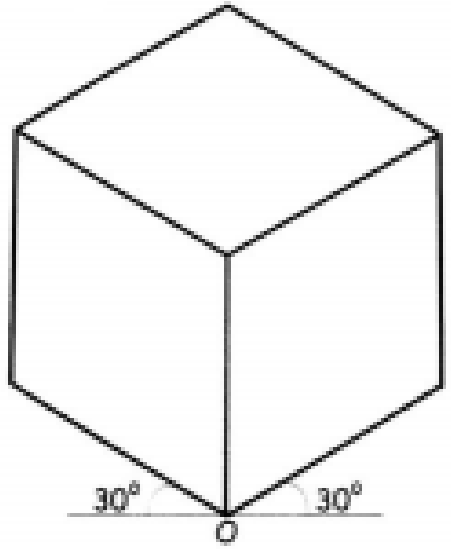
$\therefore$ Isometric length $= 0.816 \times$ True length



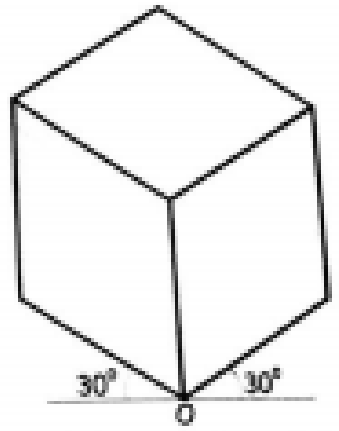


$\alpha = \beta = \gamma$
ox = oy = oz





Isonomial Drawing of Cube



Isometric Projection of Cube

Introduction contd…

Isometric Axes, Lines and Planes

Isometric Axes

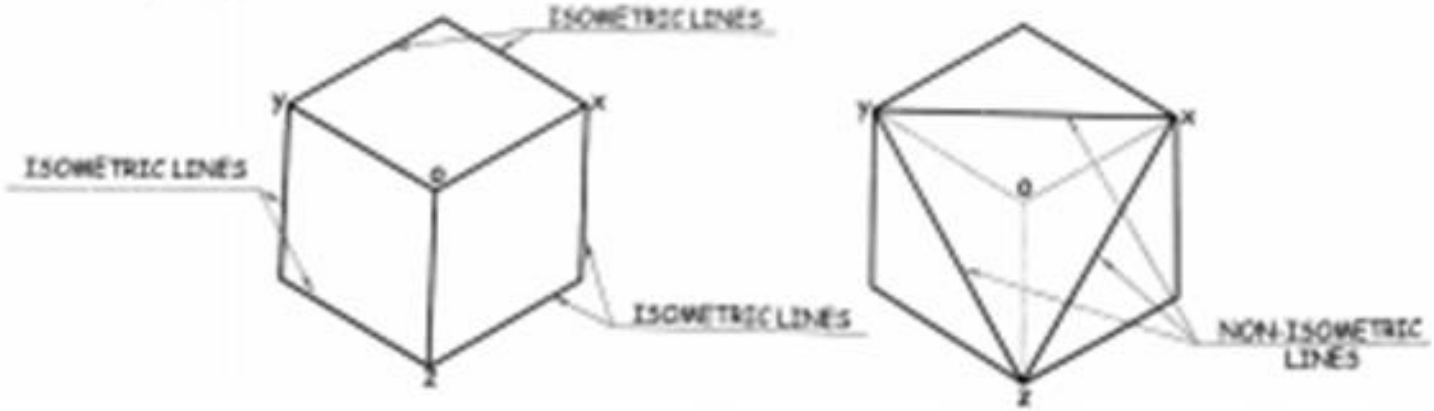
The three mutually perpendicular edges of the cube, *OX, OY* and *OZ* are foreshortened equally and are at equal inclination of 120° to each other and are called *Isometric Axes*.

Isometric Lines

The lines which are parallel to isometric axes are called *Isometric Lines*. We can mark or measure the true dimension on these lines.

Non Isometric Lines

The lines which are not parallel to isometric axes are called *Non Isometric Lines*. The lines *XY, YZ* and *XZ* are non-isometric lines. Since the non-isometric lines are not parallel to the isometric axes, they are not foreshortened in the same projection as the isometric lines. So we can not mark or measure true dimension on these lines. To draw non-isometric lines their ends should be located and then joined.



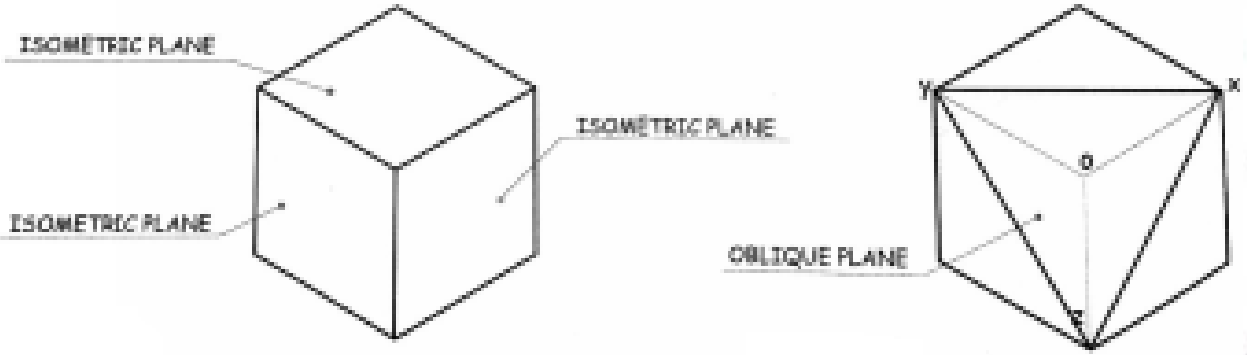
Introduction contd…

Isometric Plane

The plane formed by isometric lines are called isometric planes.

Non Isometric Plane

The plane formed by non-isometric lines are called non isometric plane (oblique plane).



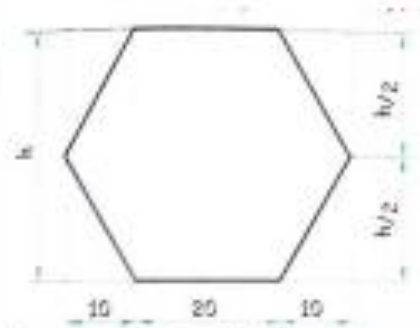
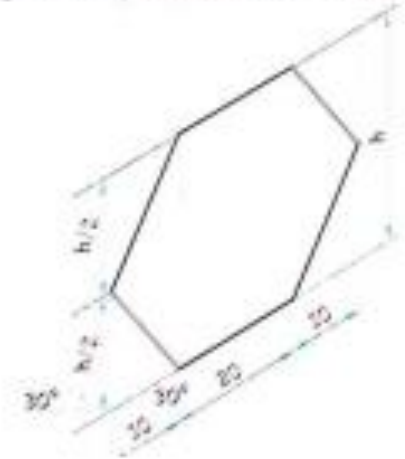
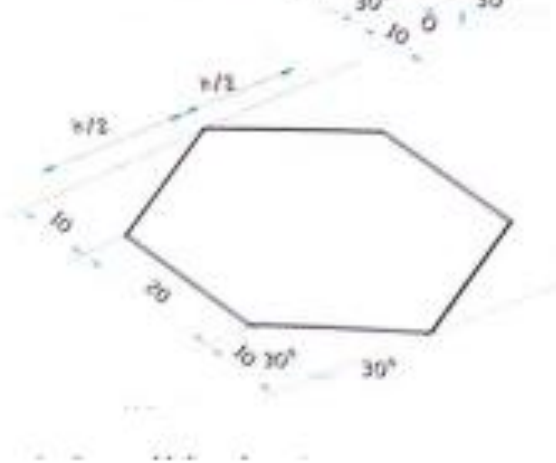
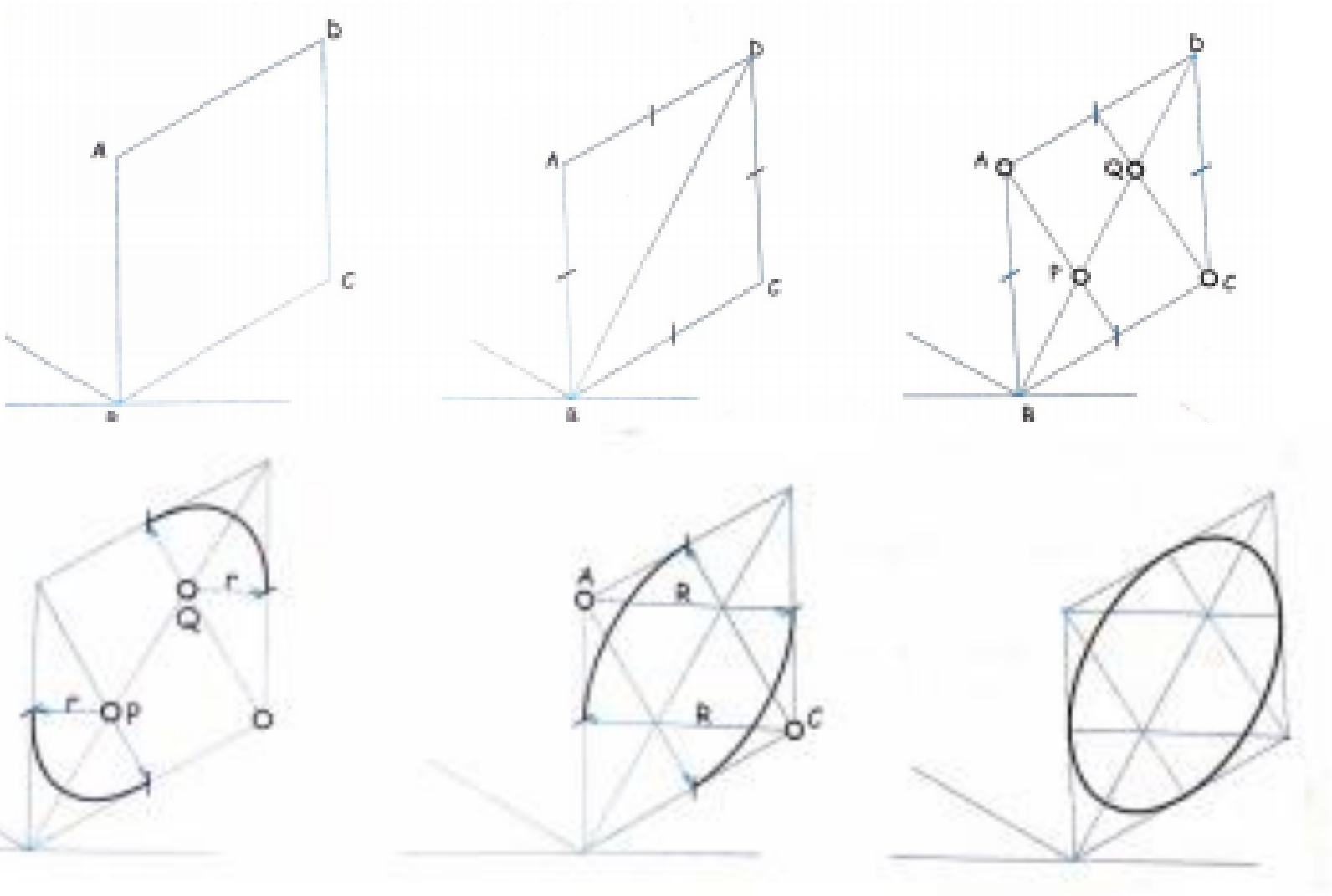


Figure to be placed in different isometric planes.

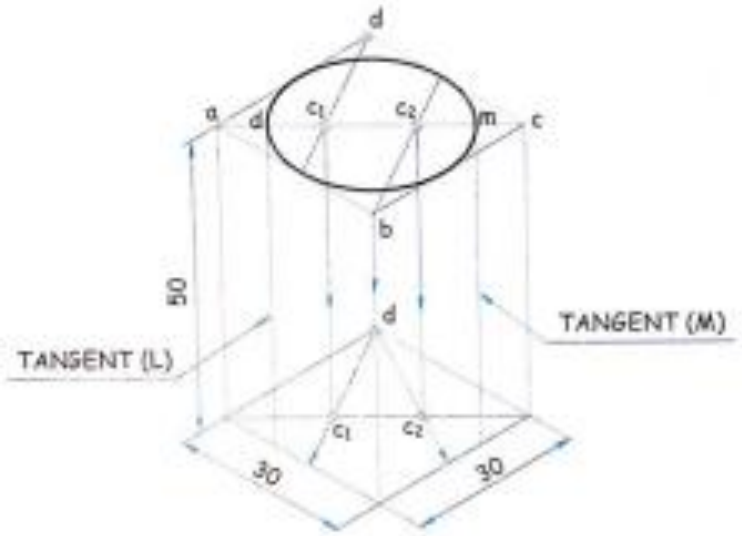


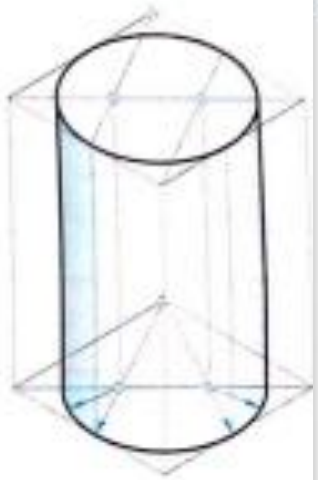


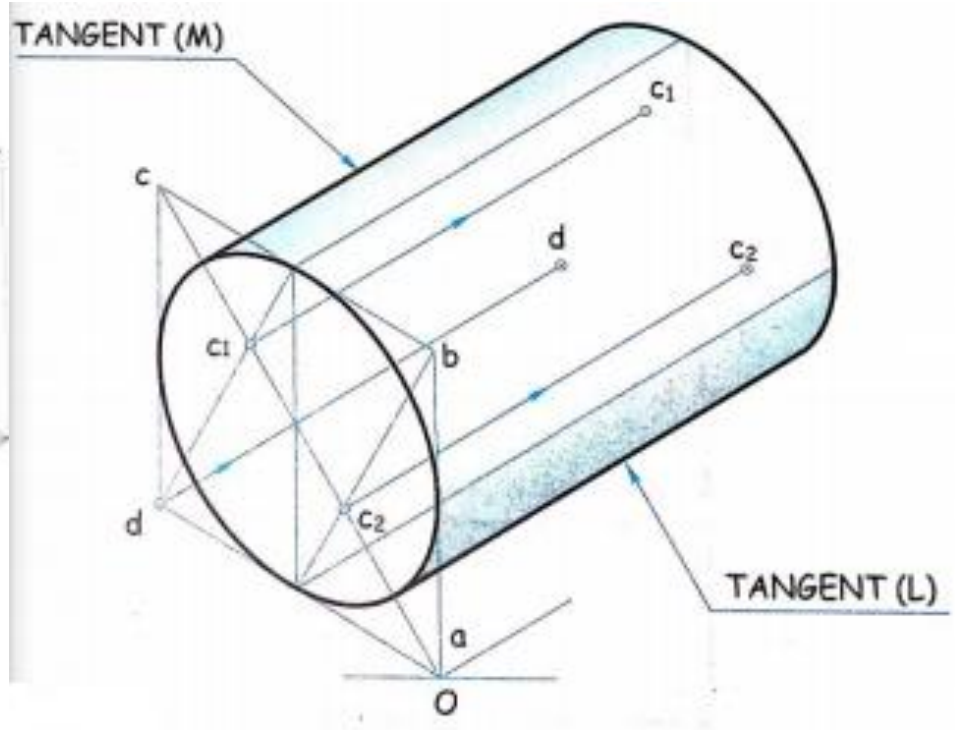
IsoCircle (Four Center Method)

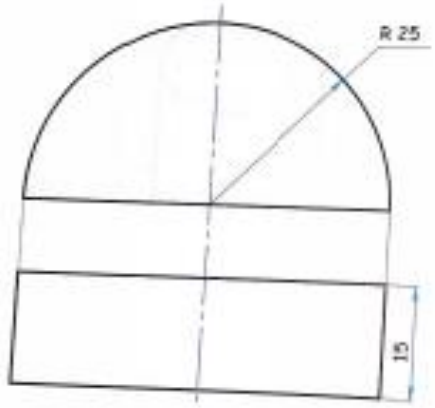


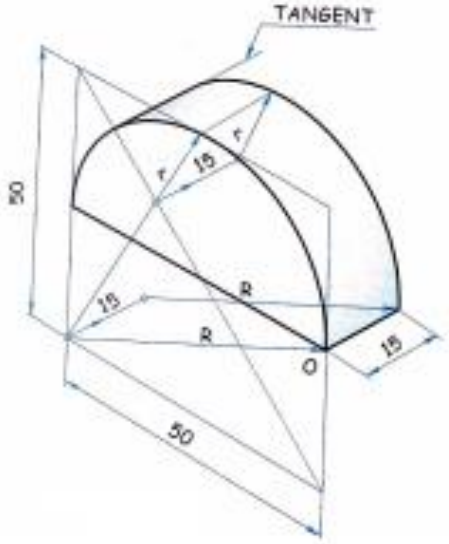
Isometric Projection of Cylinder





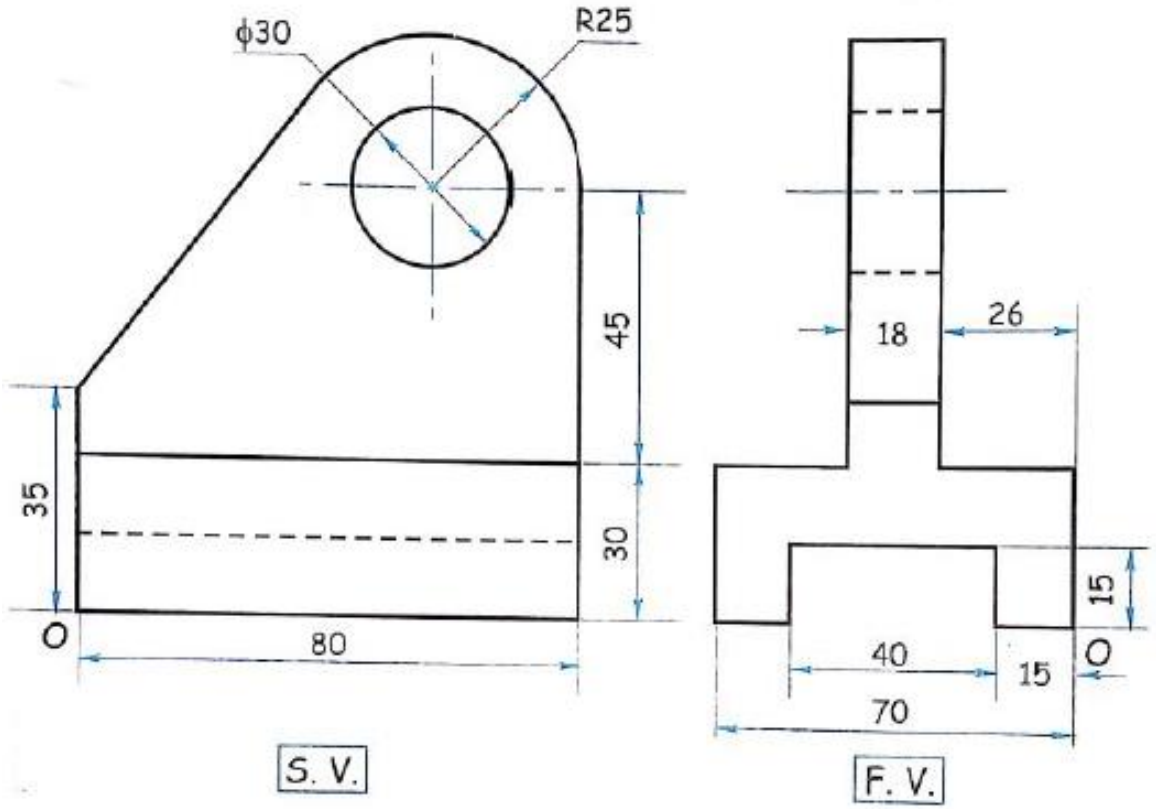




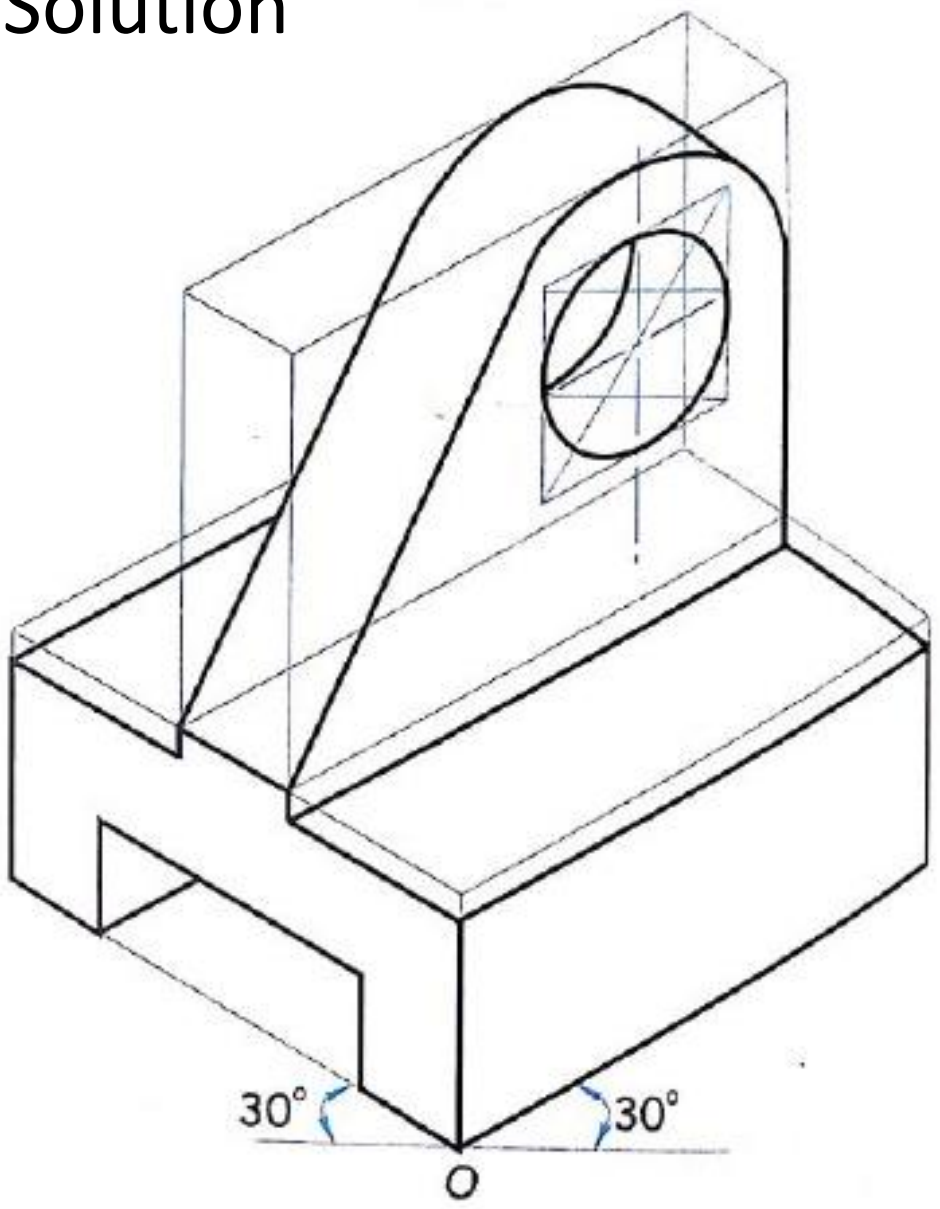


Isometric Drawing

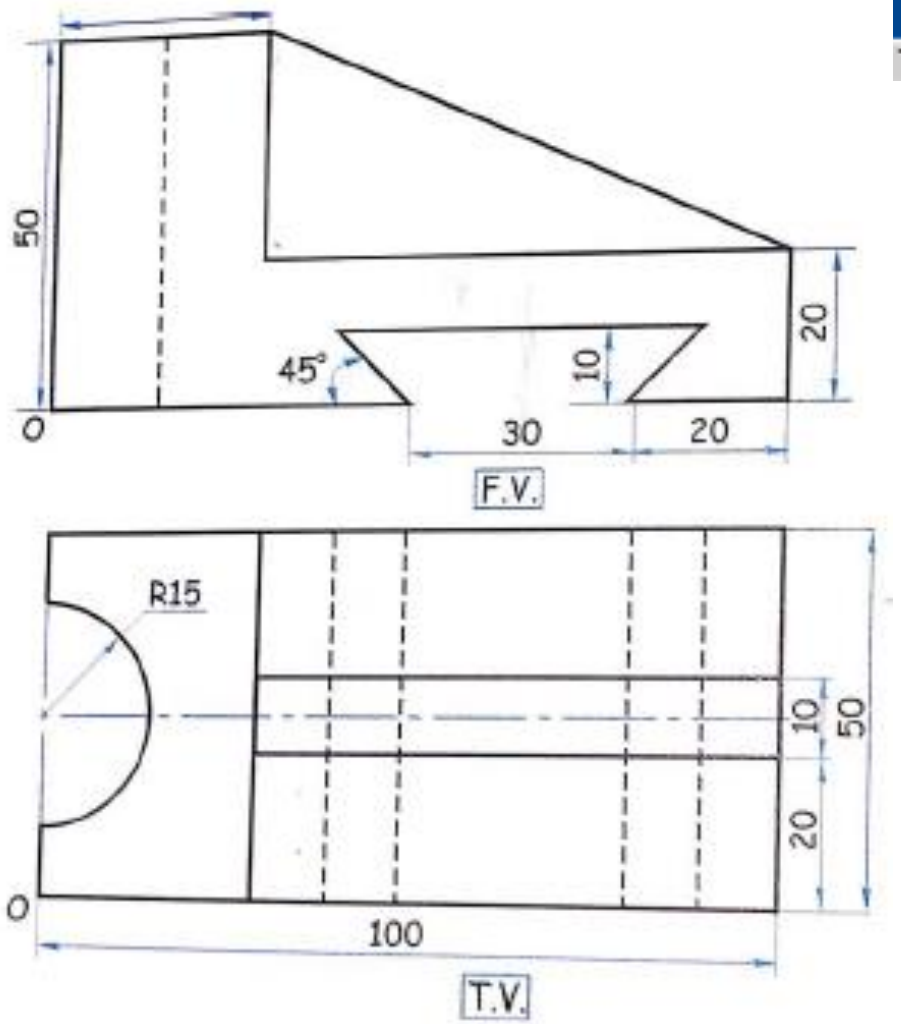
Problem 1



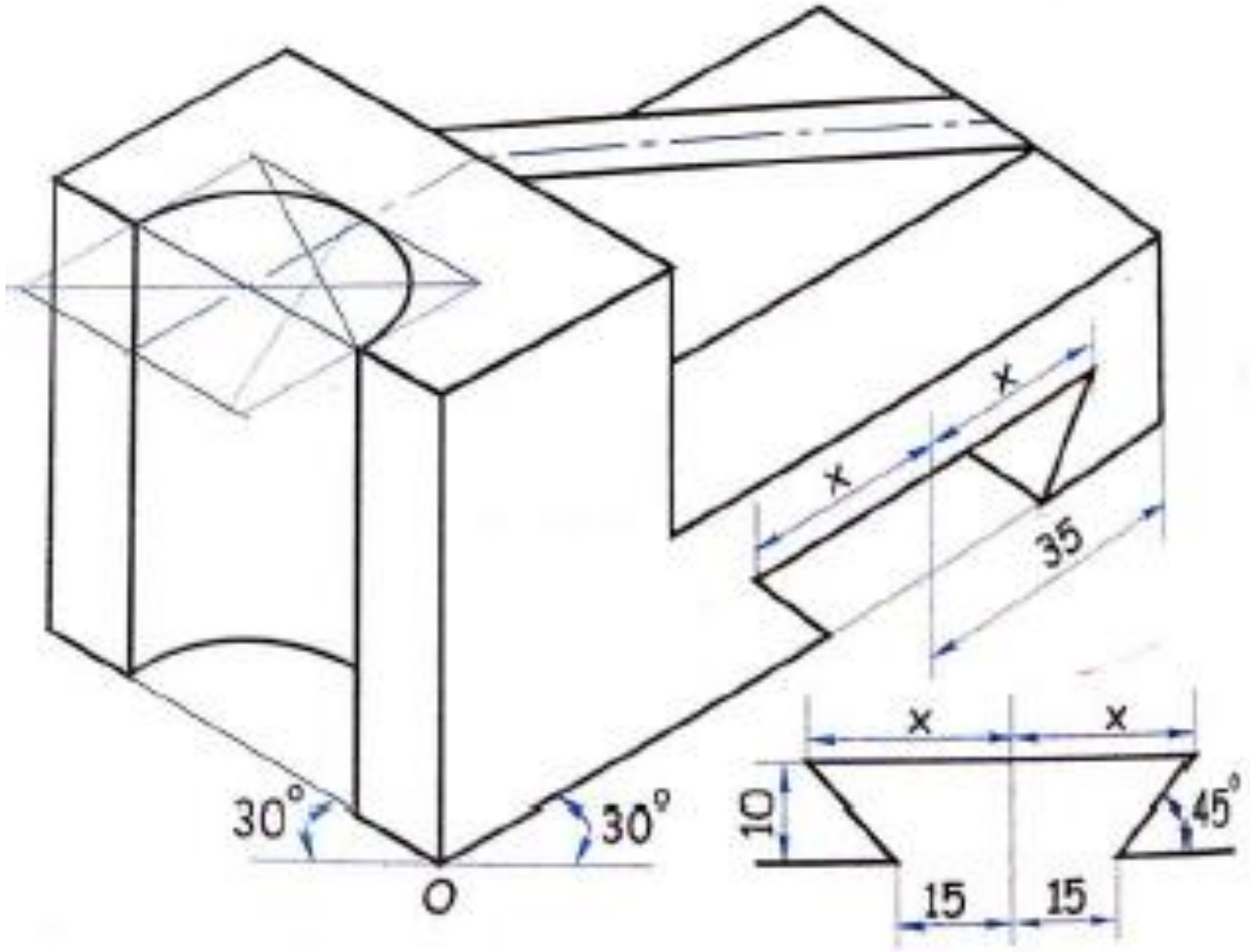
Solution



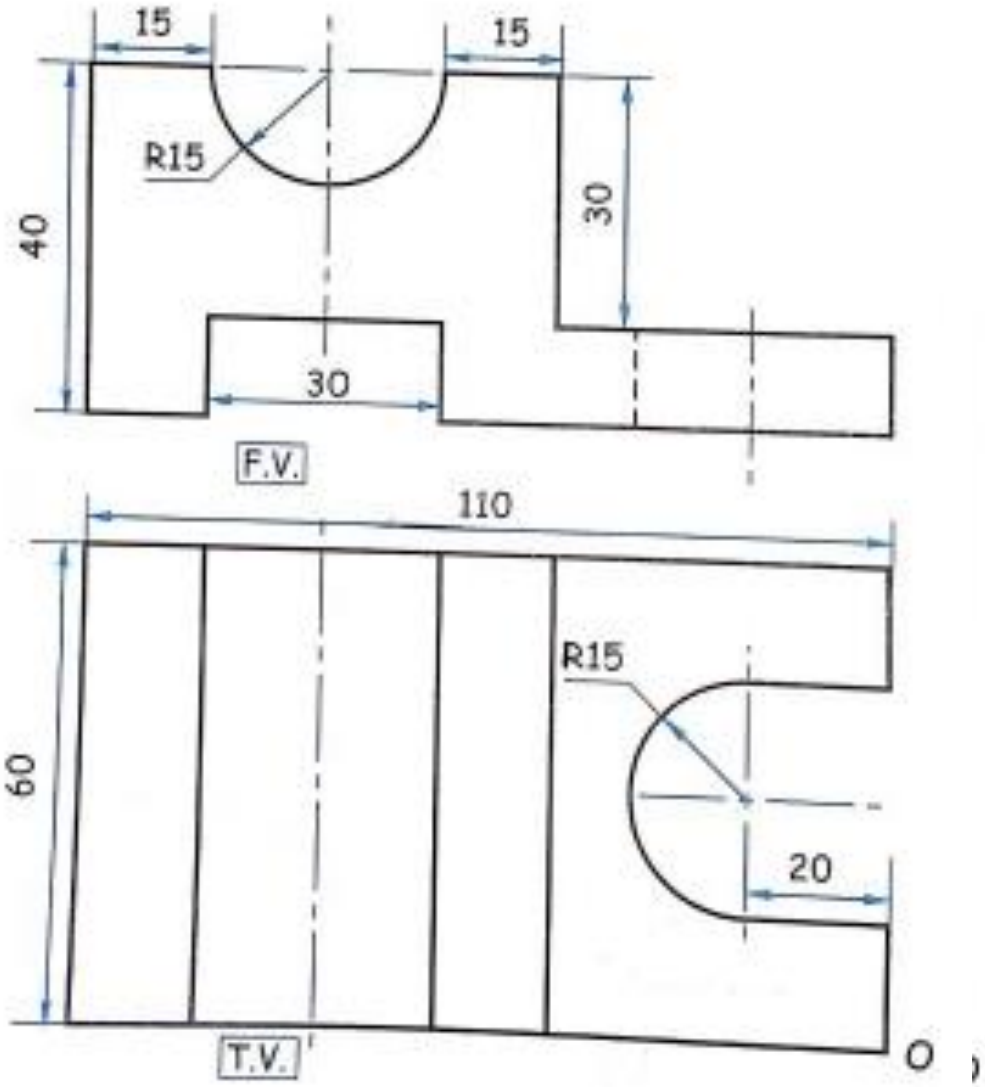
Problem 2



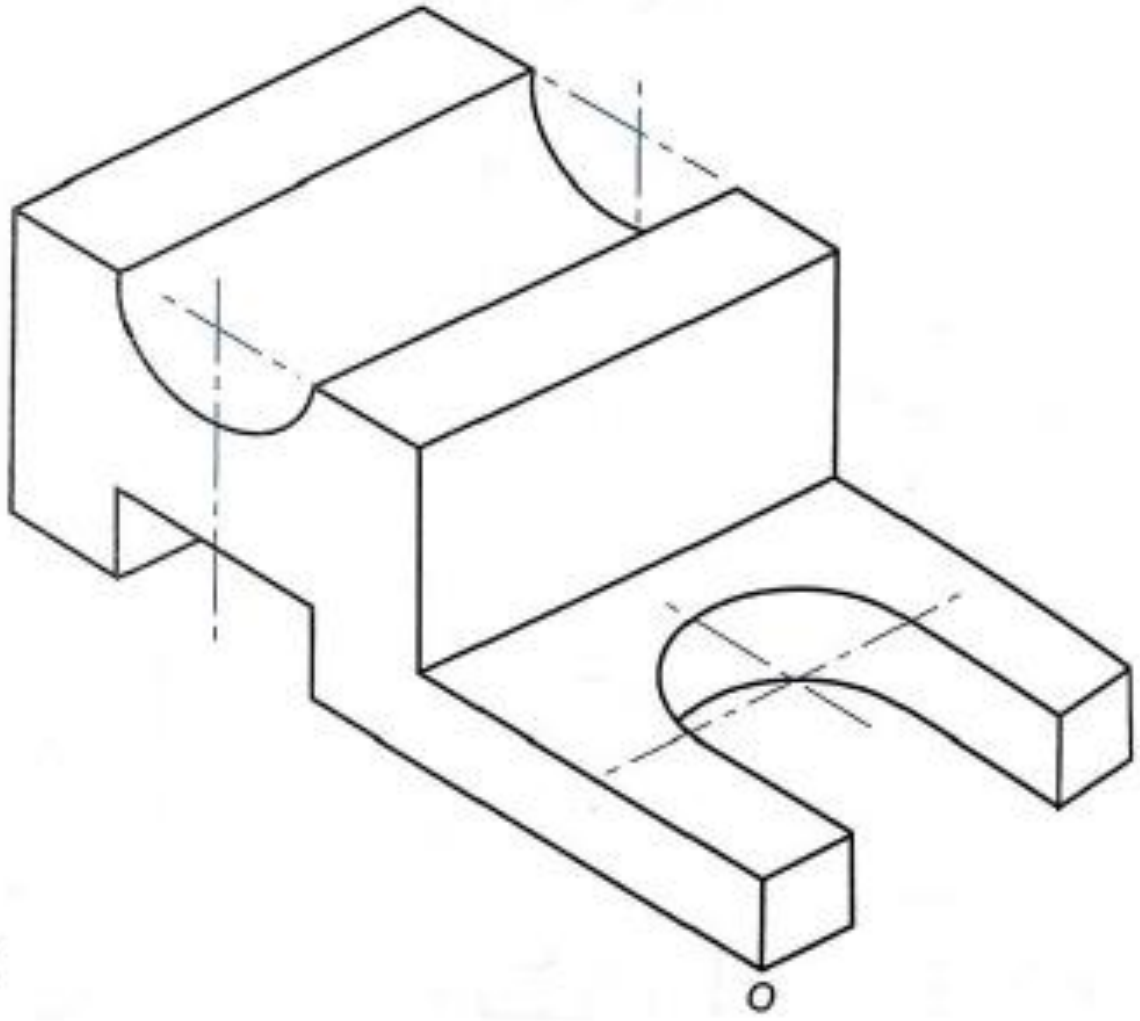
Solution



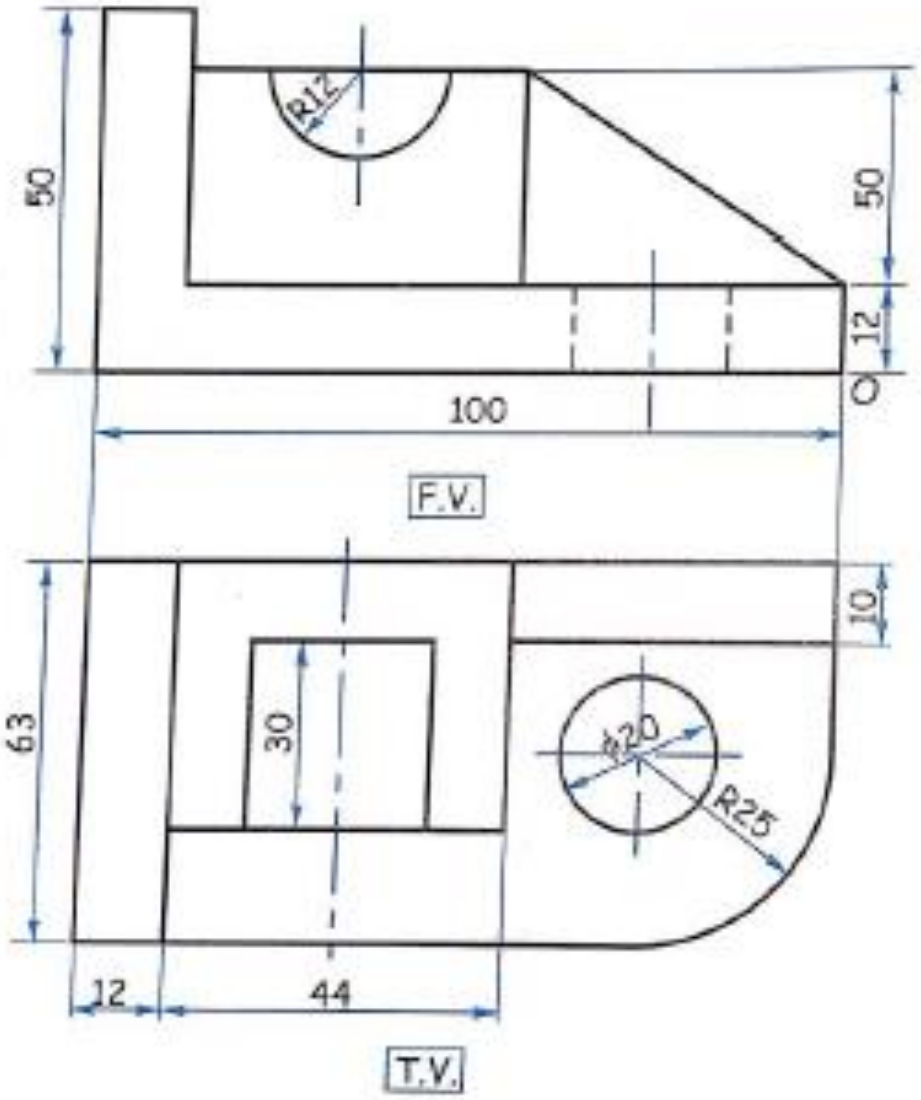
Problem 3

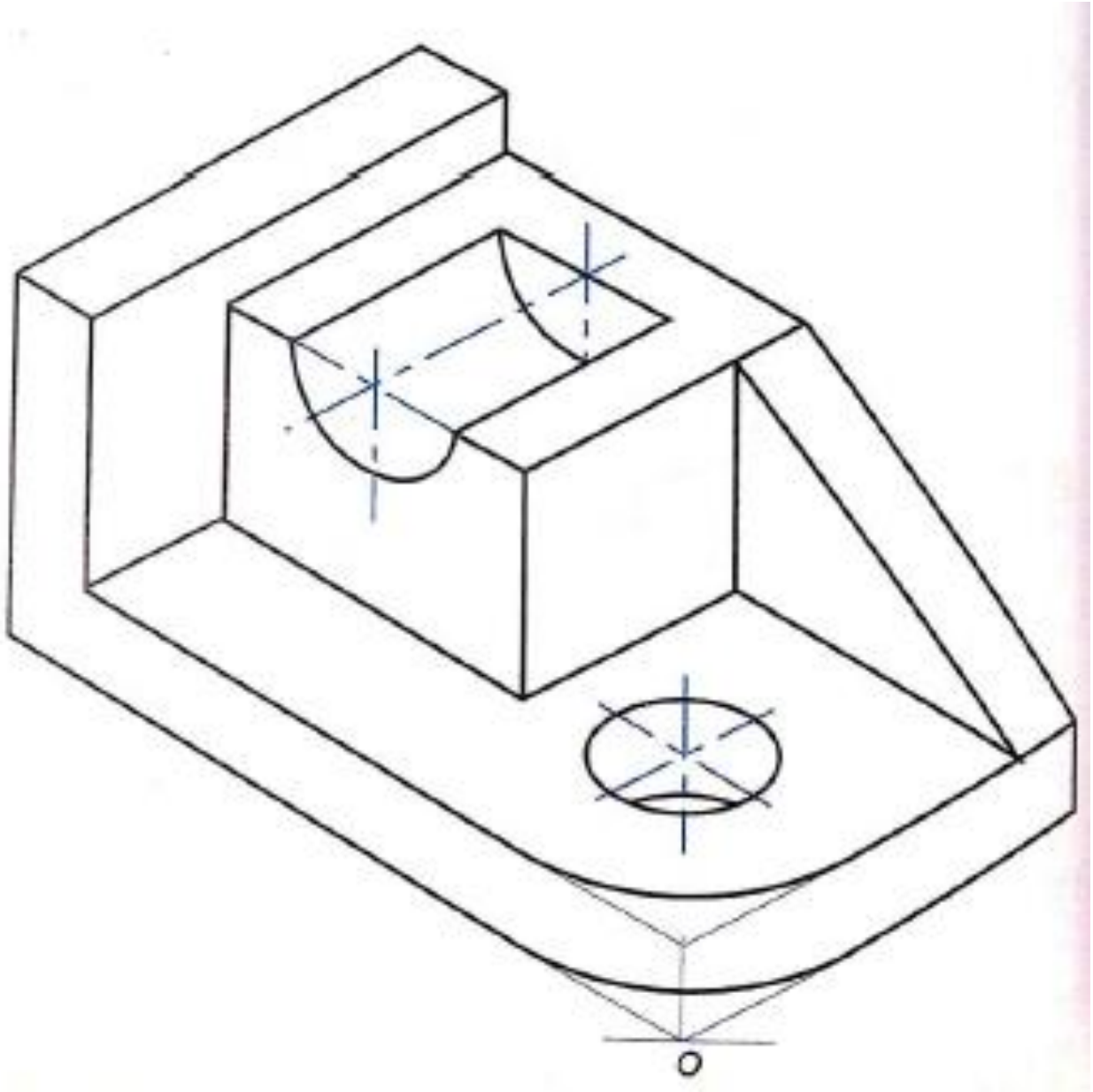


Solution

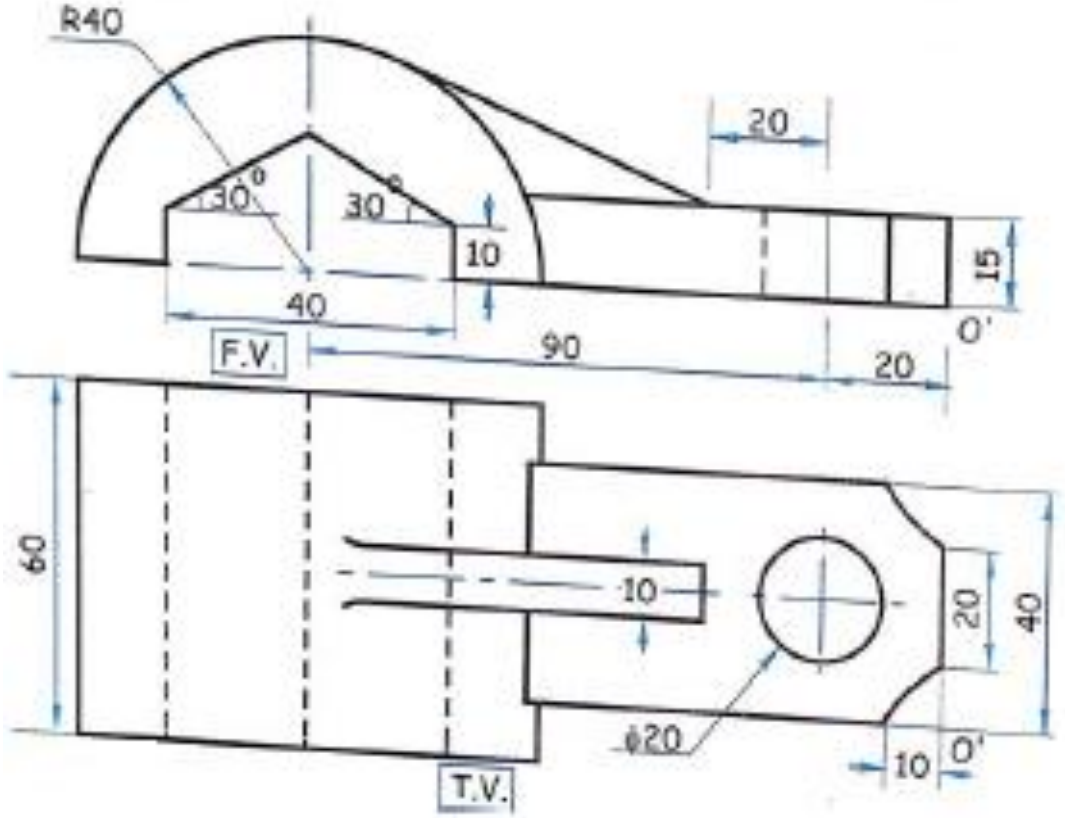
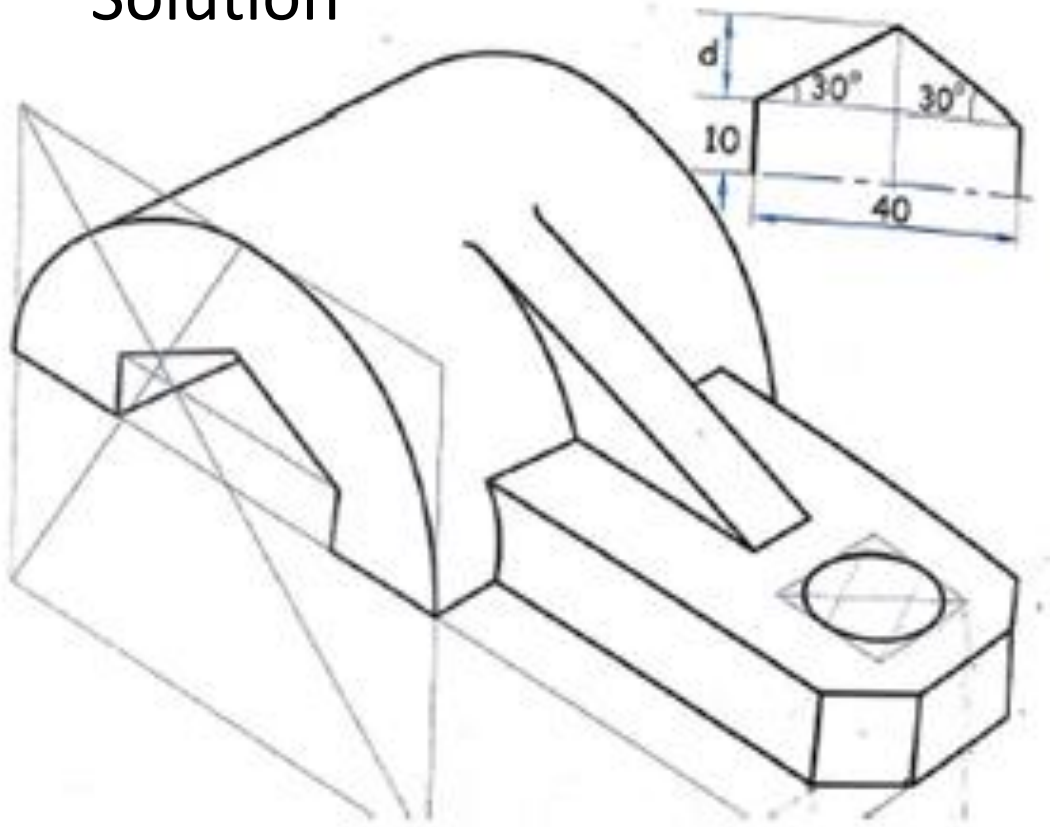


Problem 4





Problem 5



Solution