

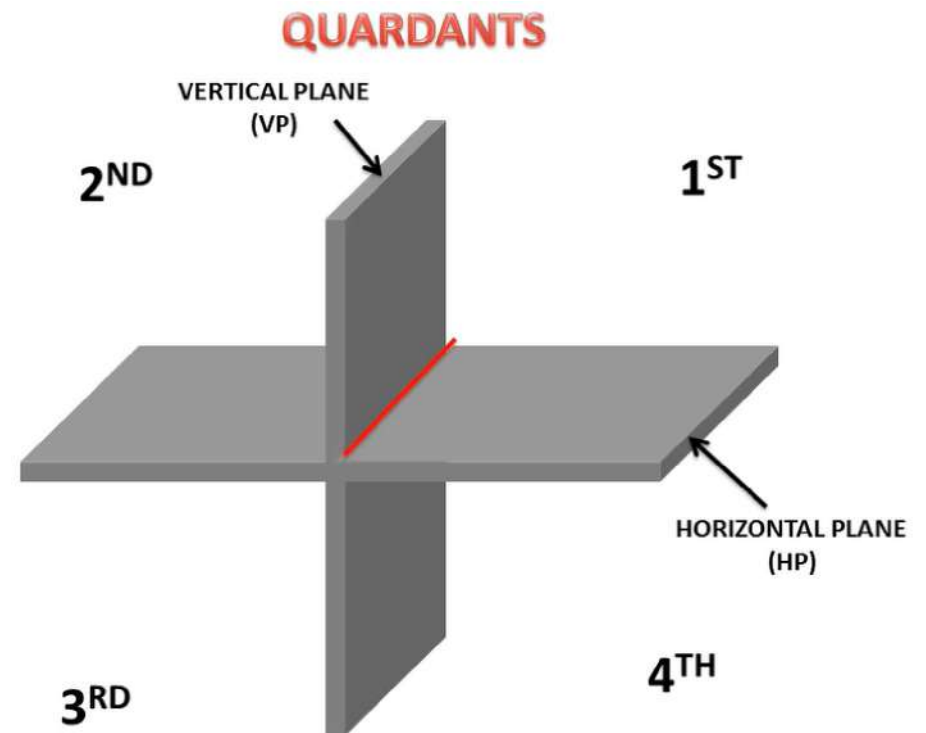
# Engineering Drawing Principles L-9



विद्यया जीयतामृतं ज्ञानम्  
**IITM Gwalior**

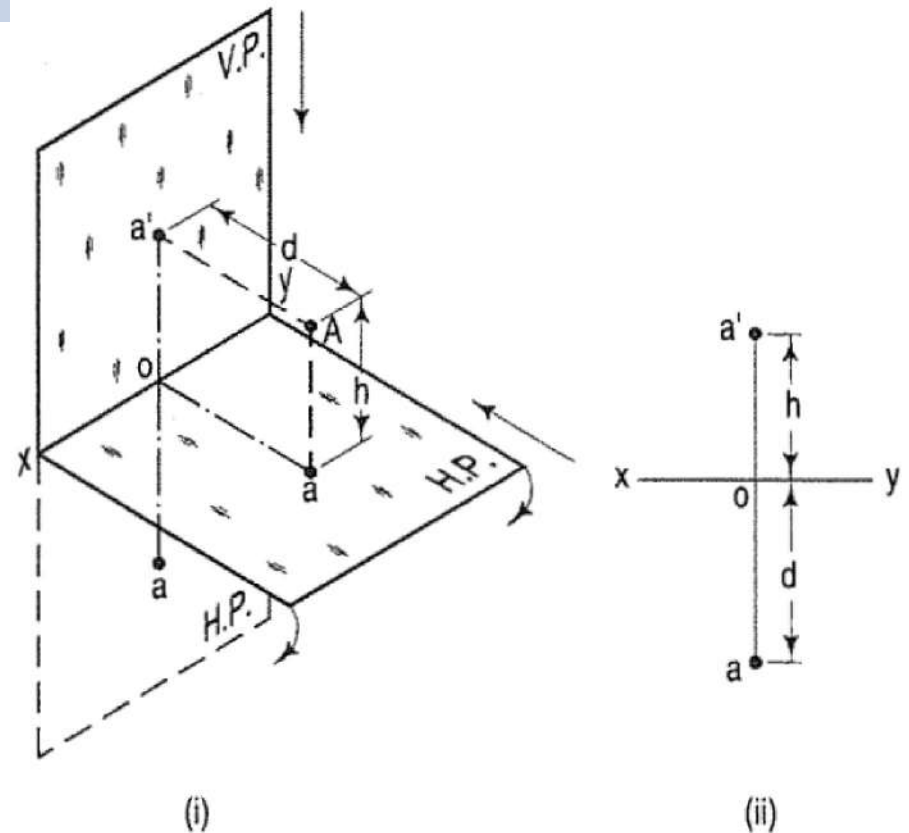
## Projection of Points

- A point may be situated, in space, in any one of the four quadrants formed by the two principal planes of projection or may lie in any one or both of them.
- Projections are obtained by extending projectors perpendicular to the planes.
- One of the planes is then rotated so that the first and third quadrants are opened out.
- The projections are shown on a flat surface in their respective positions either above or below or in  $xy$ .



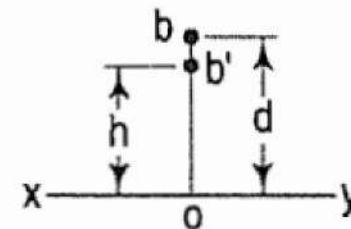
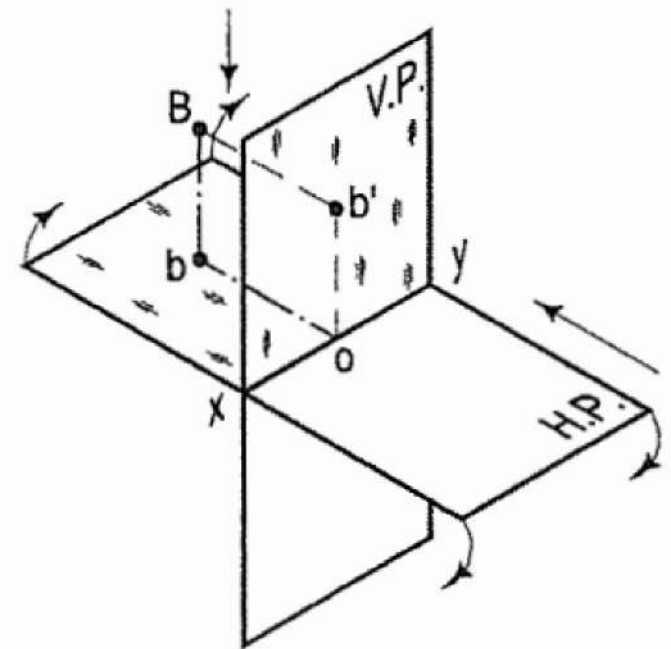
## A Point is Situated in First Quadrant

- The pictorial view [fig. (i)] shows a point  $A$  situated above the H.P. and in front of the V.P., i.e. in the first quadrant.
- $a'$  is its front view and  $a$  the top view. After rotation of the plane, these projections will be seen as shown in fig. (ii).
- The front view  $a'$  is above  $xy$  and the top view  $a$  below it. The line joining  $a'$  and  $a$  (which also is called a projector), intersects  $xy$  at right angles at a point  $o$ .
- It is quite evident from the pictorial view that  $a'o = Aa$ , i.e. the distance of the front view from  $xy$  = the distance of  $A$  from the H.P. viz.  $h$ . Similarly,  $ao = Aa'$ , i.e. the distance of the top view from  $xy$  = the distance of  $A$  from the V.P. viz.



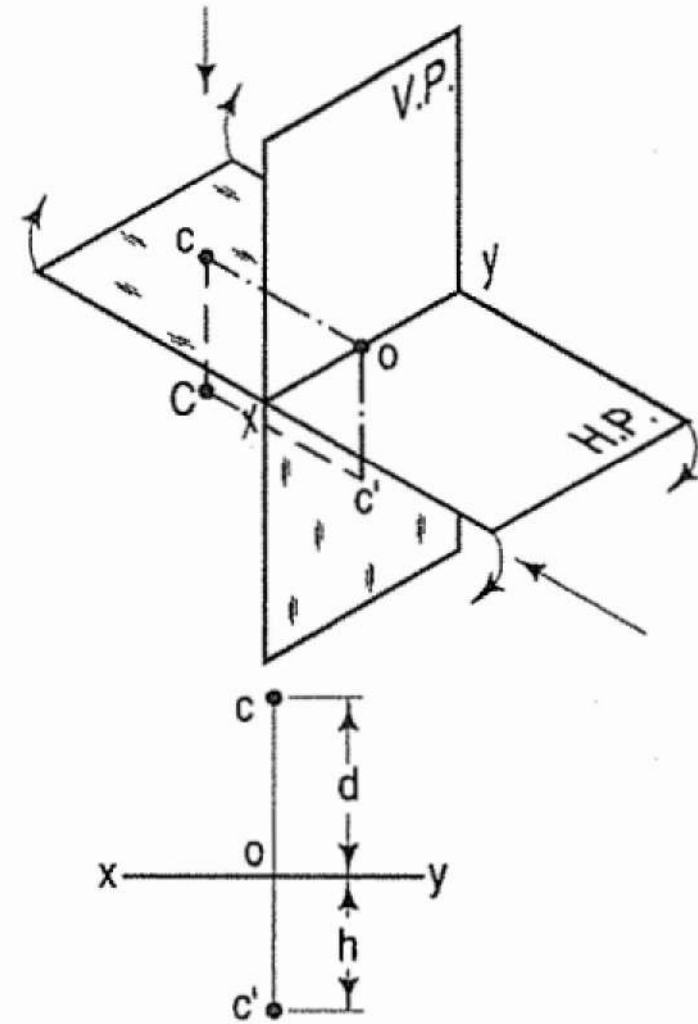
## *A Point is Situated in Second Quadrant*

- A point  $B$  (figure) is above the H.P. and behind the V.P., i.e. in the second quadrant.  $b'$  is the front view and  $b$  the top view.
- When the planes are rotated, both the views are seen above  $xy$ . Note that  $b'o = Bb$  and  $bo = Bb'$ .



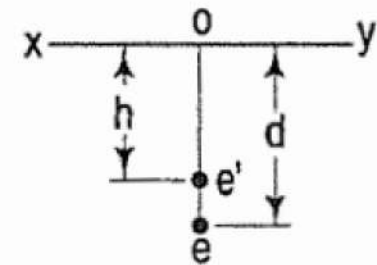
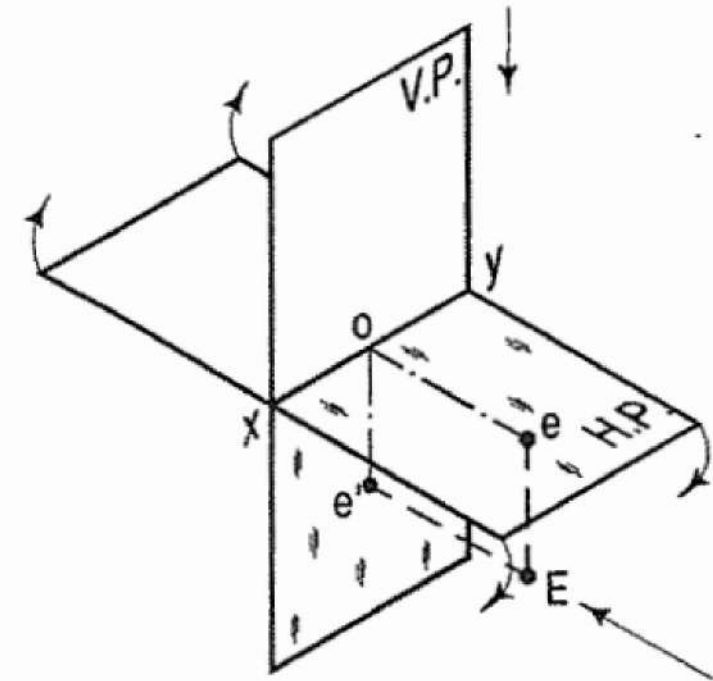
## *A Point is Situated in Third Quadrant*

- A point C (figure) is below the H.P. and behind the V.P., i.e. in the third quadrant.
- Its front view  $c'$  is below  $xy$  and the top view  $c$  above  $xy$ . Also  $c'o = Cc$  and  $co = C$



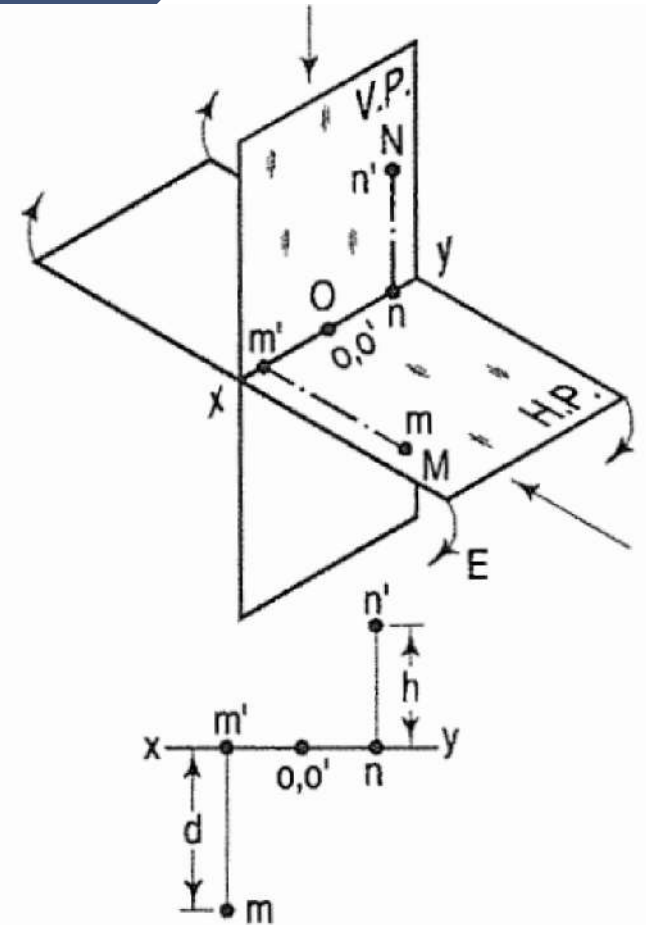
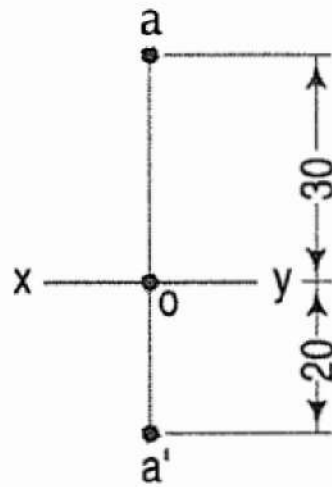
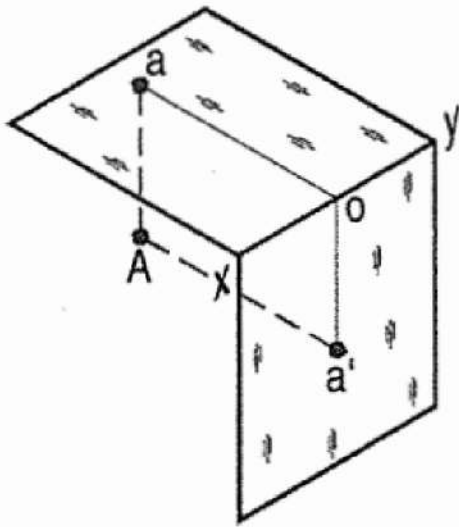
## *A Point is Situated in Fourth Quadrant*

- A point  $f$  (figure) is below the H.P. and in front of the V.P., i.e. in the fourth quadrant.
- Both its projections are below  $xy$ , and  $e'o = Ee$ .



## Problems

A point A is 20 mm below the H.P. and 30 mm behind the V.P.  
Draw its projection.



## *Problems*

Draw the projections of the following points on the same ground line, keeping the projectors 25 mm apart.

*A*, in the H.P. and 20 mm behind the V.P.

*B*, 40 mm above the H.P. and 25 mm in front of the V.P.

*C*, in the V.P. and 40 mm above the H.P.

*D*, 25 mm below the H.P. and 25 mm behind the V.P.

*E*, 15 mm above the H.P. and 50 mm behind the V.P.

*F*, 40 mm below the H.P. and 25 mm in front of the V.P.

*G*, in both the H.P. and the V.P.