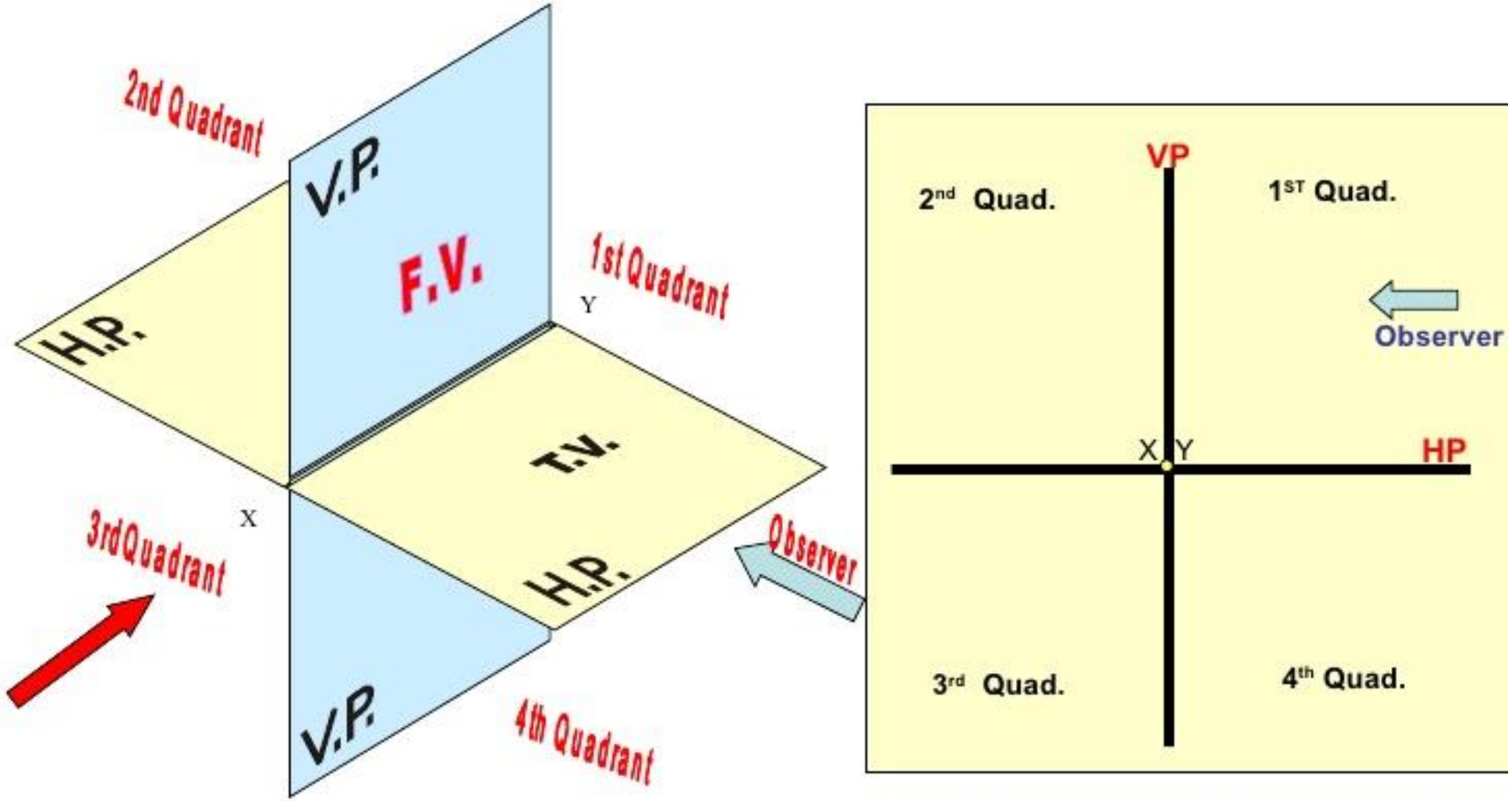
PROJECTION OF POINTS

PROJECTION OF POINTS

- A point is a dimensionless geometric entity which can be represented by a dot in engineering graphics.
- In fact, a point is the basic block which can be used to build all geometrical objects like line, plane and solid.
- 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.
- Its 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.

PROJECTION OF POINTS



PROJECTION OF POINTS

- This quadrant pattern, if observed along x-y line (in red arrow direction) will exactly appear as shown on right side and hence, it is further used to understand illustration properly.
- To draw projections of any object, One must have following information

1. Object { with it's description, well defined.}
2. Observer { always observing perpendicular to respective Reference Plane}.
3. Location of object, { means it's position with reference to HP & VP}

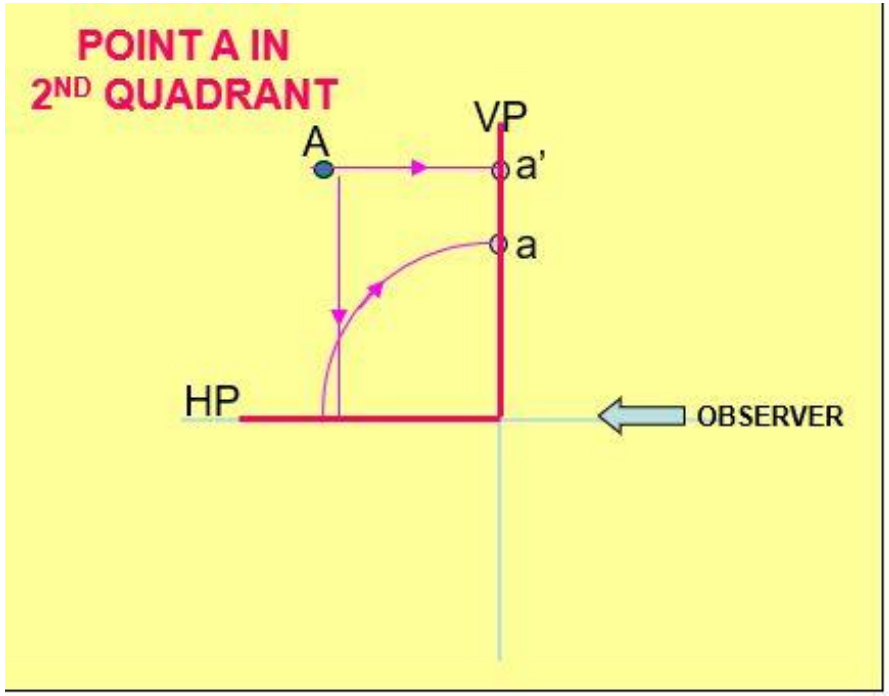
PROJECTION OF POINTS

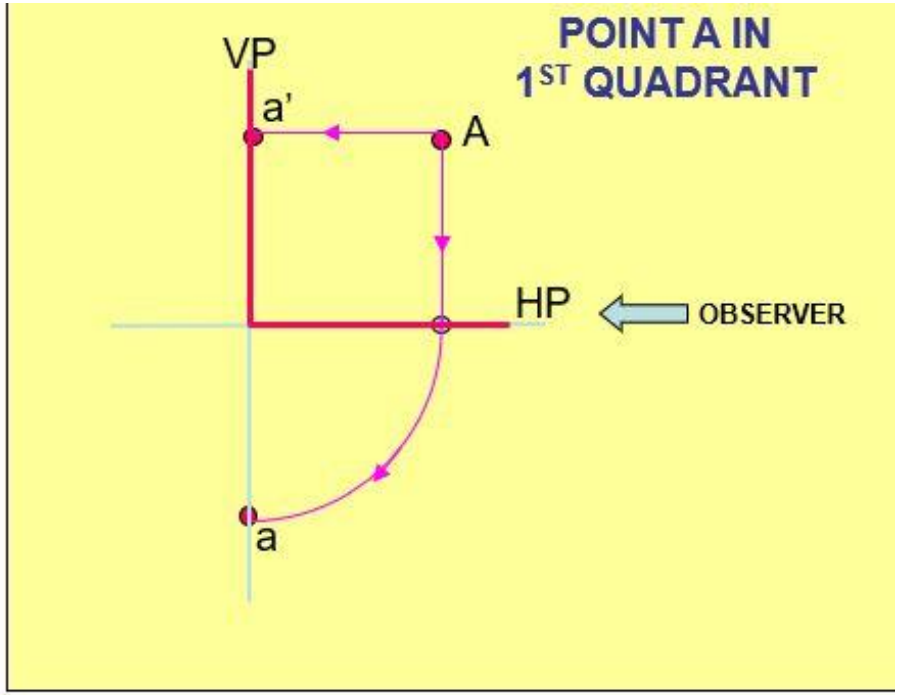
- Following notations should be followed while naming Different views in orthographic projections of any entity.
- The given point is to be identified by capital alphabet A, B, C, ……., X, Y, Z.

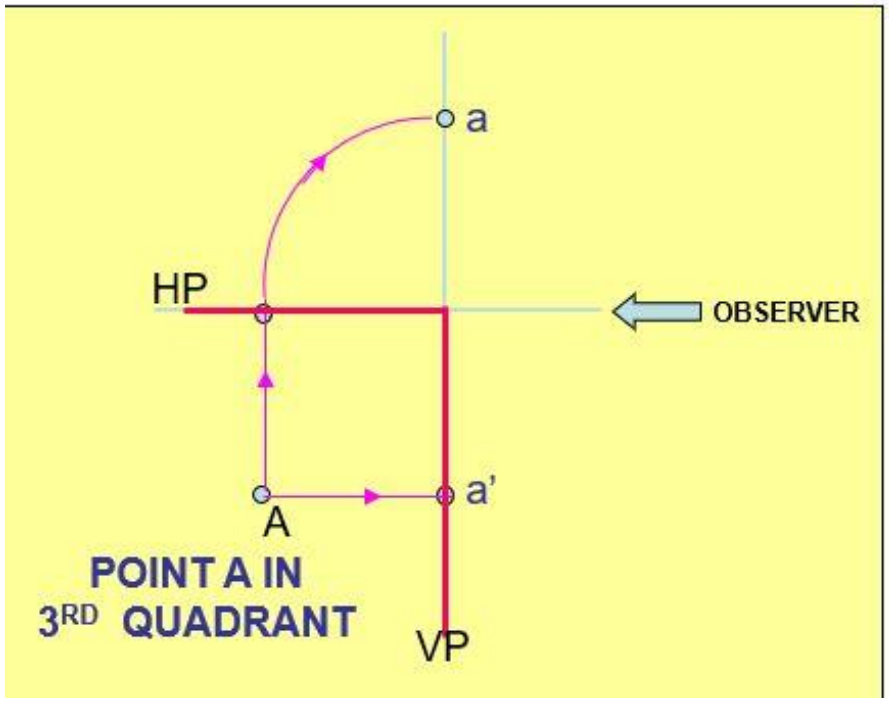
OBJECT	POINT A	LINE AB
Top View	a	ab
Front View	a’	a’ b’
Side View	a”	a” b”

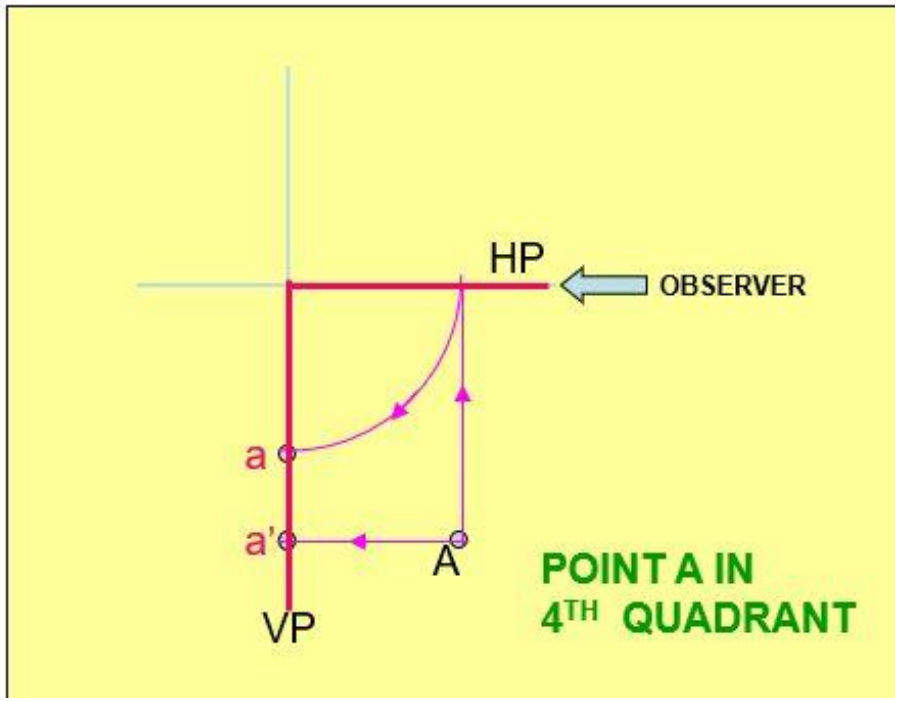
PROJECTION OF POINTS

- Point A is Placed In different quadrants and it's FV & TV are brought in same plane for observer to see clearly.
- FV is visible as its a view on VP. But as TV is a view on HP, it is rotated downward 90^0, In clockwise direction for first angle and rotated upward 90^0, in clockwise direction for third angle.


POINT A IN
2ND QUADRANT
A
VP
a'
a
HP
OBSERVER


VP
POINT A IN
1ST QUADRANT
a'
A
HP
OBSERVER
a


a
HP
OBSERVER
a'
A
POINT A IN
3RD QUADRANT
VP


HP
OBSERVER
a
a'
A
VP
POINT A IN
4TH QUADRANT

BASIC CONCEPTS FOR DRAWING PROJECTION OF POINT

- FV & TV of a point always lie in the same vertical line
- FV of a point 'P' is represented by p'. It shows position of the point with respect to HP.

1. If the point lies above HP, p' (FV) lies above the XY line.
2. If the point lies in the HP, p' (FV) lies on the XY line.
3. If the point lies below the HP, p' (FV) lies below the XY line.

- TV of a point 'P' is represented by p. It shows position of the point with respect to VP.

1. If the point lies in front of VP, p (TV) lies below the XY line.
2. If the point lies in the VP, p (TV) lies on the XY line.
3. If the point lies behind the VP, p (TV) lies above the XY line.

PROJECTION OF POINT

- Various possible position of a point in a space or on the plane:

1. Point is above HP and in front of VP
2. Point is above HP and behind VP
3. Point is below HP and behind VP
4. Point is below HP and in front of VP
5. Point is on HP and in front of VP
6. Point is on HP and behind VP
7. Point is above HP and on VP
8. Point is below HP and on VP
9. Point is on the HP and VP

EXAMPLES

1. A point P is 25 mm above HP and 30 mm in front of VP. Draw its Projection.
2. A point Q is 20 mm below HP and 30 mm behind VP. Draw its Projection.
3. Draw the projections of the following points on the same ground line, keeping the projectors 25 mm apart.
   a) A, in the H.P. and 20 mm behind the V.P.
   b) B, 40 mm above the H.P. and 25 mm in front of the V.P.
   c) C, in the V.P. and 40 mm above the H.P.
   d) D,25 mm below the H.P. and 25 mm behind the V.P.
   e) E, 15 mm above the H.P. and 50 mm behind the V.P.
   f) F, 40 mm below the H.P. and 25 mm in front of the V.P.
   g) G, in both the H.P. and the V.P.

EXAMPLES

4. State the quadrants in which the following points are situated:

   a) A point P; its top view is 40 mm above xy; the front view, 20 mm below the top view.

   b) A point Q, its projections coincide with each other 40 mm below xy.

THANK YOU