Ph: 9989717732 rama_bhp@yahoo.com

Unit II-Part 1: Projections of Points

Theory Questions

Terms: FV-front view; TV- top view; SV- side view; HP- horizontal plane; VP- vertical plane

1. What is meant by orthographic projections?

Ans: When the projectors (straight lines) drawn from the object are parallel to each other and perpendicular to the plane of projection, it is called as orthographic projection.

2. What are the three reference planes used for projections? Which views are drawn on them?

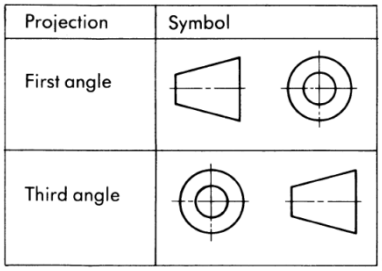
A: The 3 planes of projection are HP, VP and PP (profile plane). FV →VP; TV→HP; SV→PP

3. What is the difference between 1st angle and 3rd angle projections?

A:

	1st angle projection	3rd angle projection
1.	Object is placed in the 1st quadrant	Object is placed in the 3rd quadrant
2.	Object lies in between the observer and the plane of projection	The plane of projection lies in between the observer and the object
3.	The plane of projection is assumed to be transparent	The plane of projection is assumed to be non transparent.
4.	The FV is above xy and TV is below xy.	The FV is below xy and TV is above xy.
5.	The left side view is drawn on the right side of front view.	The left side view is drawn on the left side of front view.
6.	Usually followed in India	Usually followed in USA.

4. Draw the standard notation for 1st angle and 3rd angle projection.



(The above symbol is for frustum of a cone; FV and SV are shown; In 1st angle-Left side view on right of FV; in 3rd angle, Left SV on left of FV)

5. Why 2nd angle and 4th angle projections are not used in drawing?

A: In 2nd angle and 4th angle projections, the object is in 2nd and 4th quadrant, where the FV and TV both coincide in the same plane w.r.t xy. Hence it creates confusions in identifying the FV and TV of objects separately. So they are not used in drawing conventions.

6. What is the standard representation for point in front view, top view and side view?

A: FV-a',b',c',...etc. TV- a,b,c,..etc. SV-a'', b'', c'',...etc.

7. What is meant by plan, elevation and side elevation?

A: Plan→ Top view; Elevation→ Front view; Side elevation→ Side view.

8. The plane which is perpendicular to both reference planes is (c) Profile plane

(a) Perpendicular (b) Oblique (c) Profile plane (d) Parallel.

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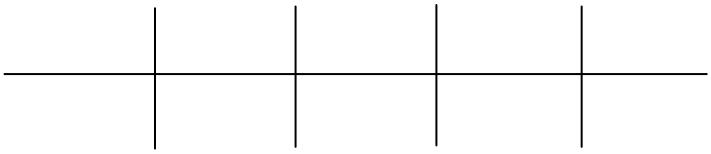
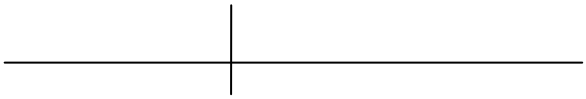
Problems:

9. Draw the projections of the following points on the same ground keeping the distance between their projectors 25 mm:
   A- in HP and 20 mm behind VP; C- In VP and 40 mm above HP; F-40 mm below HP and 25 mm in front of VP; E- 15 mm above HP and 50 mm behind VP.

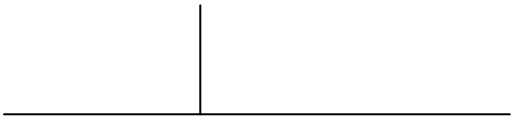


10. Sketch the projections of a point 2 cm below the HP & 4 cm behind the VP.



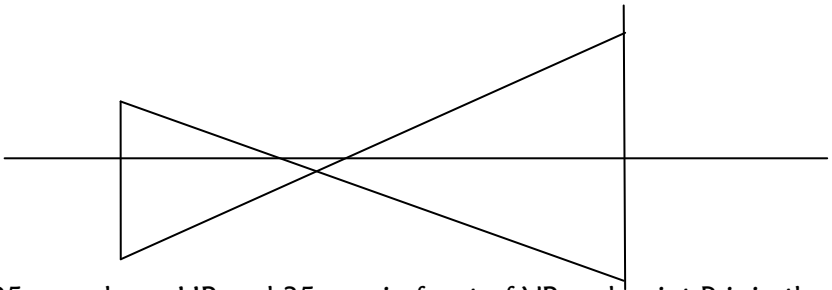
11. A point P is 65 m from both the reference planes. Draw the projections in all possible positions. (hint: P is to be drawn in all 4 quadrants at 65 mm from HP,VP)

12. The top view of a point A is 40 mm above xy & its front view 20 mm below the top view. Describe the location of the point with respect to reference planes.

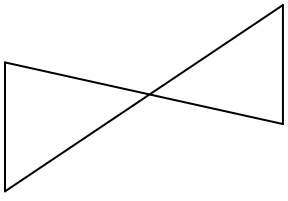


13. The top view of a point A is 50 mm above xy & its front view 30 mm below the top view. Describe the location of the point with respect to the reference planes.

14. Point P is 20 mm above HP and 39 mm in front of VP and point B is 25 mm below HP and 40 mm behind VP. The end projectors of these points are 40 mm apart. Draw the projections of the points. Also draw straight lines joining their (i) FVs (ii) TVs



15. Point A is 25 mm above HP and 35 mm in front of VP and point B is in the HP and 41 mm behind the VP. The distance between their projectors is 52 mm. Draw the projections of the points and straight lines joining their top and front views.



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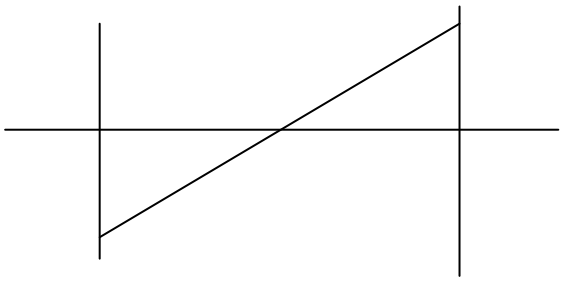
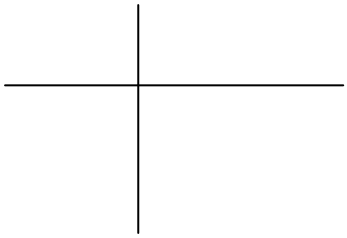
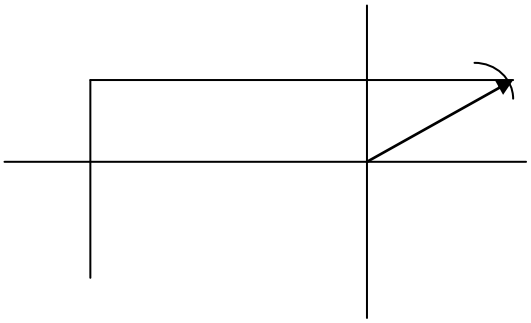
16. Two points A and B are in the HP. The point A is 25 mm in front of the VP while B is behind the VP. The distance between their projectors is 70 mm and the line joining their top views makes an angle of 45^0 with the xy line. Find the distance of the point B from the VP.

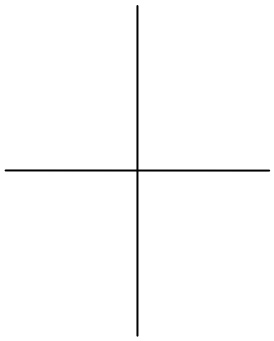


17. A point, A is 28 mm above HP and it is in first quadrant. Its shortest distance from the XY is 50mm. Draw its plan and elevation.





18. A point 30 mm above xy is the plan view of 2 points P & Q. Elevation of P is 45 mm above HP while that of Q is 35 mm below HP. Draw the projections of points and state their positions with respect to the principal planes and state the quadrants in which they lie.



19. A point A is situated in first quadrant. Its shortest distance from the intersection of HP, VP and auxiliary plane is 60 mm and it is equidistant from the principal planes. Draw the projections of the point and determine its distance from the principal planes.