SOMAIYA VIDYAVIHAR UNIVERSITY
K J Somaiya School of Engineering
(formerly K J Somaiya College of Engineering)

Module 2: Projection of Lines

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Course Outcome: 2: Visualize and draw projection of lines and planes

What you will learn ?

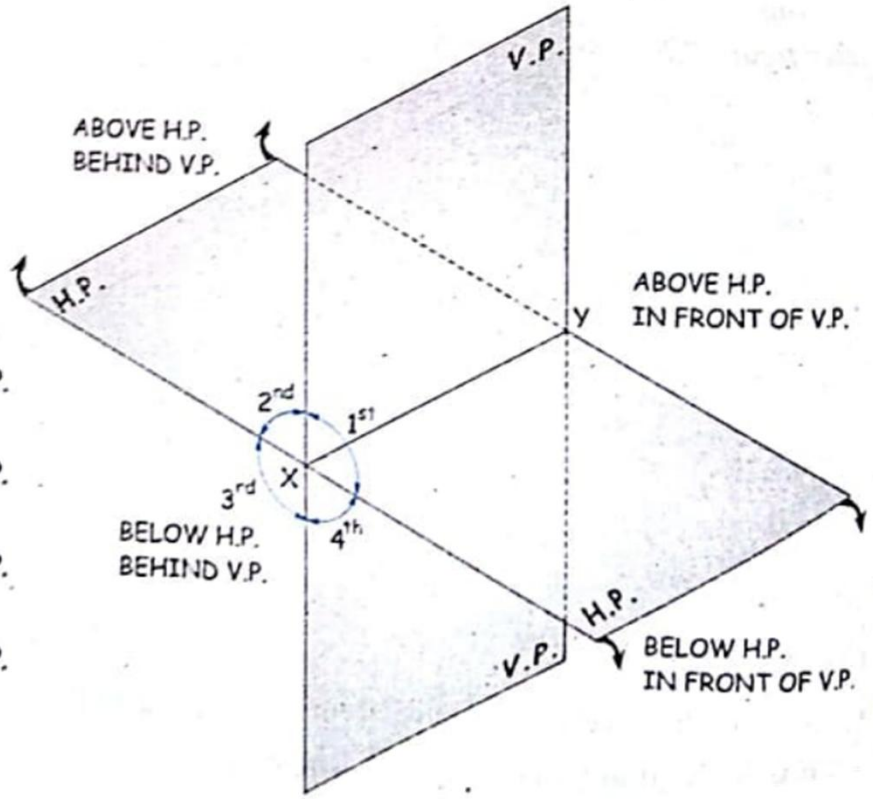
Principal planes

I[st] Quadrant ⇒ A point is ABOVE H.P. and INFRONT OF V.P.

II[nd] Quadrant ⇒ A point is ABOVE H.P. and BEHIND V.P.

III[rd] Quadrant ⇒ A point is BELOW H.P. and BEHIND V.P.

IV[th] Quadrant ⇒ A point is BELOW H.P. and INFRONT OF V.P.



Projection of Lines (Notations)

Description	Notation
Actual line	AB
F.V. of line	$a'b'$
T.V. of line	ab
S.V. of line	$a''b''$
Line assumed parallel to the V.P.	AB_1
Corresponding true length of assumed line AB_1	$a'b_1'$
Corresponding plan length of assumed line AB_1	ab_1
Line assumed parallel to the H.P.	AB_2
Corresponding true length of assumed line AB_2	ab_2
Corresponding elevation length of assumed line AB_2	$a'b_2'$
True Inclination of a line with the H.P.	θ
True Inclination of a line with the V.P.	ϕ
Apparent Inclination of F.V. of a line with the XY line	α
Apparent Inclination of T.V. of a line with the XY line	β

Projection of Lines

- Projection of line with reference to Principal Planes

❑ Line parallel to two principal planes and Perpendicular to 3rd plane

- ➢ Line **parallel to HP and VP** and Perpendicular to Profile plane
- ➢ Line **parallel to VP and P**P and Perpendicular to the HP
- ➢ Line **parallel to HP and PP** and Perpendicular to VP

Projection of Lines

- Projection of line with reference to Principal Planes

❑ Line parallel to one principal planes and inclined to the other

➢ Line **parallel to VP** and **inclined to HP** and PP

Q 1 A line AB having length 50 mm has its point A 10 mm above the H.P. and 20 mm in front of the V.P. The line is parallel to V.P. and inclined at an angle $\theta = 45^0$ to the H.P. Draw the projection of a line.

Projection of Lines

- Projection of line with reference to Principal Planes
- ❑ Line parallel to one principal planes and inclined to the other
  - ➢ Line **parallel to HP** and **inclined to VP** and PP

Q. 2 A line AB having length 50 mm has its point A 10 mm above the H.P. and 20 mm in front of the V.P. The line is parallel to H.P. and inclined at an angle $\phi = 45^0$ to the V.P. Draw the projection of a line.

Projection of Lines

- Projection of line with reference to Principal Planes

❑ Line **inclined to the both the reference planes**

Q. 3 A line AB, 70 mm long is inclined at an angle 30^0 to the H.P. and 45^0 to the V.P. Its end point A is 10 mm above the H.P. and 20 mm in front of the V.P. Draw the projections of line AB. Point B is in first quadrant. (Q.1: Booklet)

Q. 4 A line AB 70 mm long measures 50 mm and 60 mm in front view and top view respectively. Point A is 15 mm above HP and 25 mm in front of VP. Point B is in first quadrant. Draw projections of line AB and find its inclination with HP and VP. (Q. 2: Booklet)

Projection of Lines

- Projection of line with reference to Principal Planes

❑ Line **inclined to the both the reference planes**

Q. 5 The top view and the front view of a line AB measures 70 mm and 58 mm respectively. The line AB is inclined at an angle of 35^0 to the HP. The end A is 15 mm above the HP and 12 mm in front of VP. The other end B is also in the first quadrant. Draw the projections of line AB and find its true length and true inclination with VP. (Q.3: Booklet)

Projection of Lines

- Projection of line with reference to Principal Planes

❑ Line inclined to the both the reference planes (Inclination of line is to be determined)

Q. 6 A line AB 70 mm long is inclined at an angle of 40^0 to the HP and 30^0 to VP. The end A is in VP and 20 mm above HP. Draw the projections of the line if point B is in the 1^{st} quadrant. (Q.4: Booklet)

Q. 7 The distance between the projectors of two ends of a straight line is 40 mm. One end is 15 mm above HP and 10 mm in front of VP. The other end is 40 mm above HP and 40 mm in front of VP. Find the true length and true inclinations of the line. (Q. 5: Booklet)

Projection of Lines

- Line inclined to the both the reference planes (True inclination is to be determined)

Q. 8 A line AB 100 mm long has its front view inclined at an angle of 45^0 to XY. The point A is in the VP and 25 mm above HP. The length of the front view is 60 mm. Draw the top view of the line and measure its length. Also find the inclinations of the line AB to HP and VP. (Q. 6: Booklet)

Q. 9 A straight line PQ 100 mm makes 45^0 to HP 30^0 to VP. The end P is 36 mm above HP and 40 mm in front of VP. Draw the top view and front views of the line. Measure the distance between the projectors of the line. (Q.7: Booklet)

Projection of Lines

- Projection of line with reference to Principal Planes

❑ Line **inclined to the both the reference planes (True inclination is to be determined)**

Q. 10 The plan length of line AB. 75 mm long measures 50 mm. The end A is 50 in front of the V.P. and 15 above the H.P. The end B is 15 in front of the V.P. and above the H.P. Draw the projections of line AB and determine its inclinations with the H.P. and V.P.