

## Projection of Straight Line

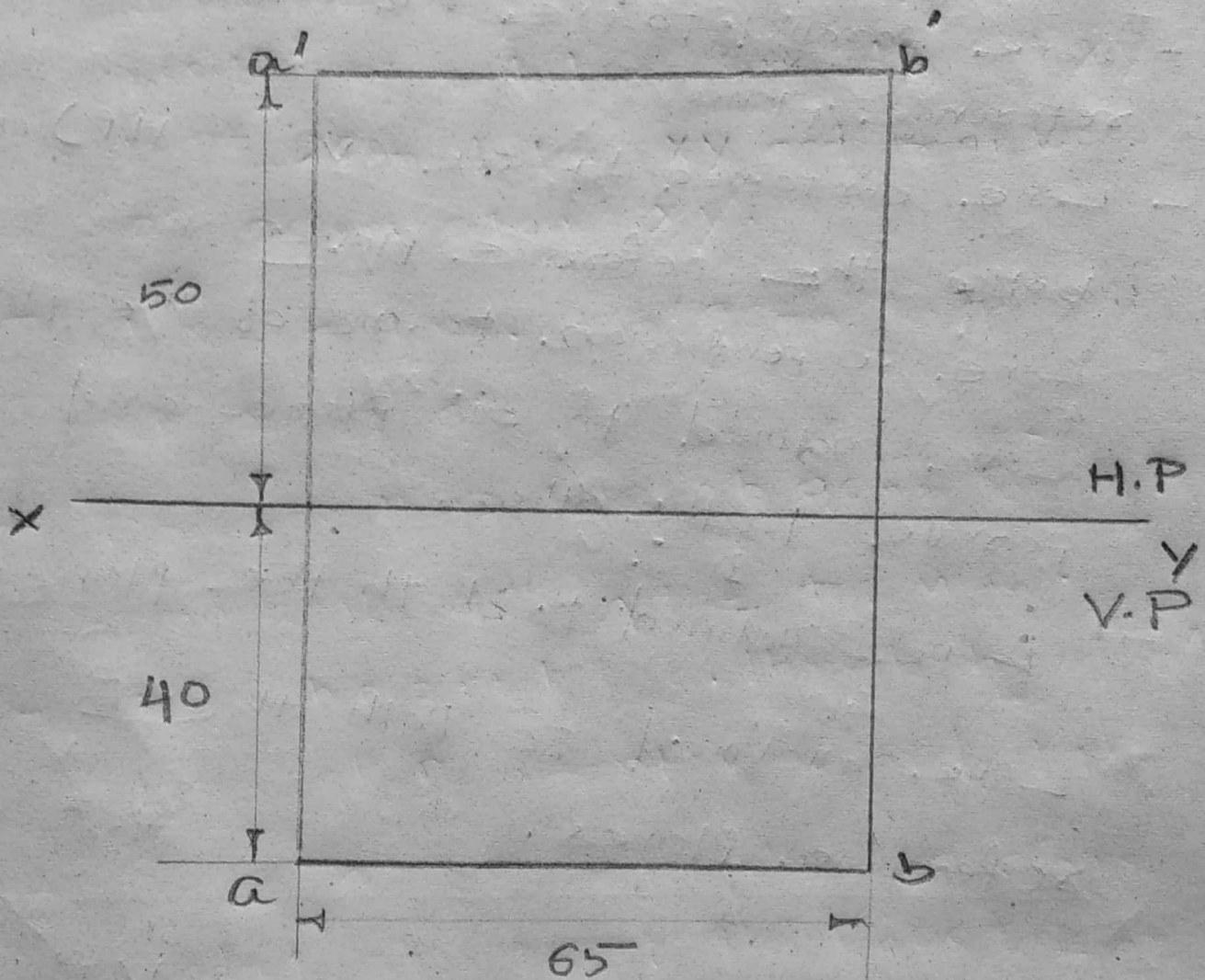
A straight line may be defined as the shortest distance between any two points.

### Position of a straight line:-

- Line parallel to one or both the reference planes.
- Line contained by one (VP or HP) or both the reference planes.
- Line perpendicular to one of the planes.
- Line inclined to one plane and parallel to the other.
- Line inclined to both the planes.
- Line inclined to both the reference planes.



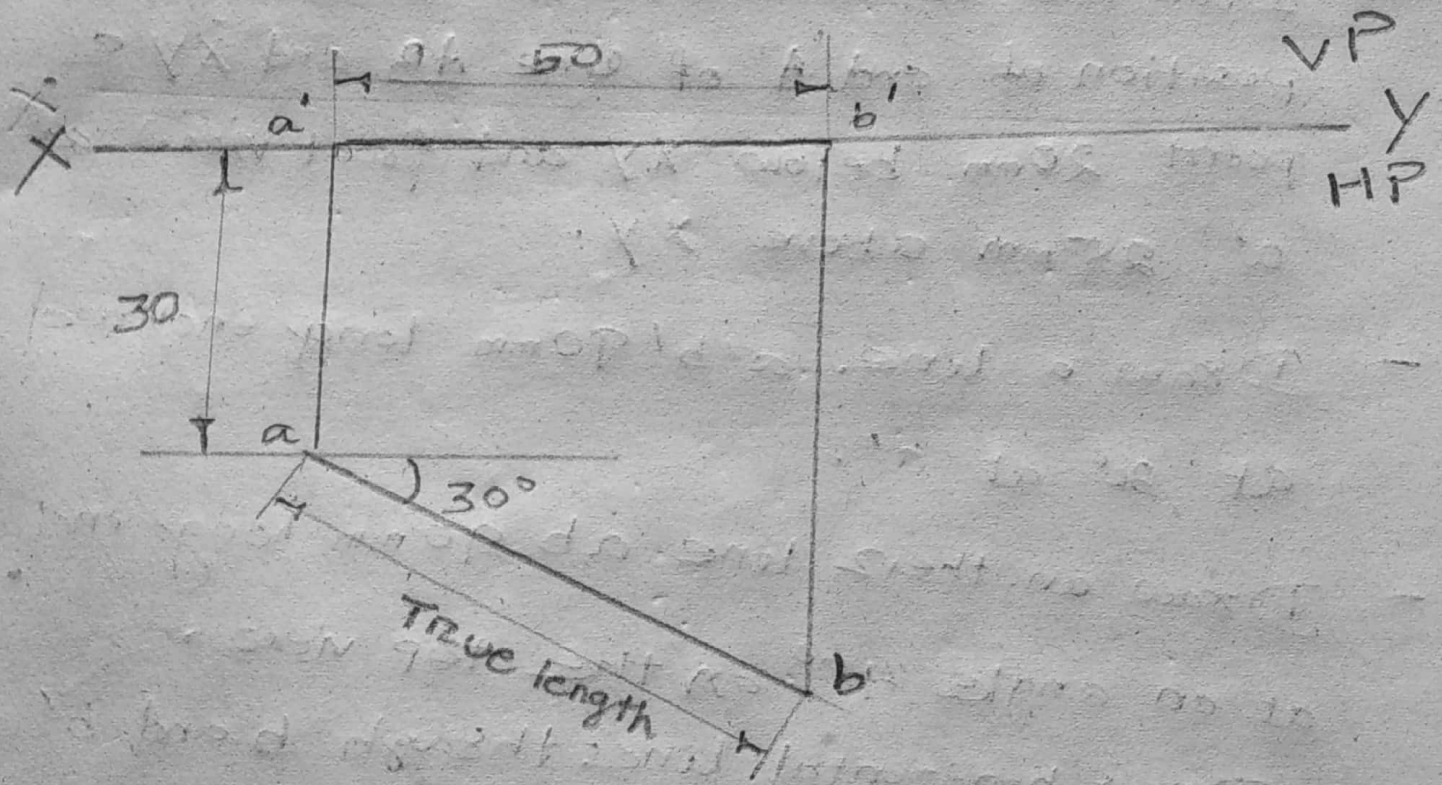
Q2- Draw the projections of line AB of 65 mm long as parallel to both H.P and V.P.  
The line is 50 mm above H.P and 40 mm in front of V.P.



- As the line is above H.P and in front of V.P, it is in 1st quadrant.
- Draw the reference line XY.
- Draw the projections of the end point A of the line AB, i.e.  $a'$  at 50 mm above reference line XY and  $a$  at 40 mm below XY.
- Through  $a'$  and  $a$  draw lines  $a'b'$  and  $ab$   $\perp$  to XY of 65 mm.
- Join the point  $b'$  &  $b$  by a projector.
- $a'b'$  &  $ab$  are the front view & Top view of the line AB respectively.



Q/ Draw the projection of a line AB is 50 mm long. The line is in HP. and makes an angle of  $30^\circ$  with V.P. The end A of the AB is 30 mm in front of VP. Measure actual length or true length of the line in HP.



- Line AB is in HP. Its front view  $a'b'$  is 50 mm which is contained on XY.
- From XY at a distance 30 mm mark the point  $a'$  make an angle  $30^\circ$  and extend the line. Draw the projector from  $b'$  to intersect at  $b'$ .  $ab$  is the top view which is the true length of line AB. Measure  $ab$ .



Q 9mm A line AB 90mm long has one of its end 25mm above HP and 20mm in front of VP. The line is inclined at  $30^\circ$  to HP and  $45^\circ$  to VP. Draw the projections of the line.

soln

- Draw the reference line XY and fix the position of end 'A' of line AB and XY as a point 20mm below XY and front view as 'a' 25mm above XY.
- Draw a line  $a'b'$  90mm long inclined at  $30^\circ$  at  $a'$ .
- Draw another line  $ab$  90mm long inclined at an angle  $45^\circ$  in the top view.
- Draw horizontal lines through  $b$  and  $b'$  as locus of B in front view and top view.
- With 'a' as centre draw a curve with radius  $ab_2$  to cut the locus line in top view at  $b_1$ .  
Join 'a' with  $b_1$  for projection of line AB in top view.
- Now with  $a'$  as centre and radius  $a'b'_2$  draw a curve to cut locus line in front view at  $b'_1$ . Now join  $a'$  with  $b'_1$ .



- This is projection of line AB in front view.
- Draw a vertical line from  $b_1$  and see if it meets at  $b_1$  or not to check the accuracy of the projection.

