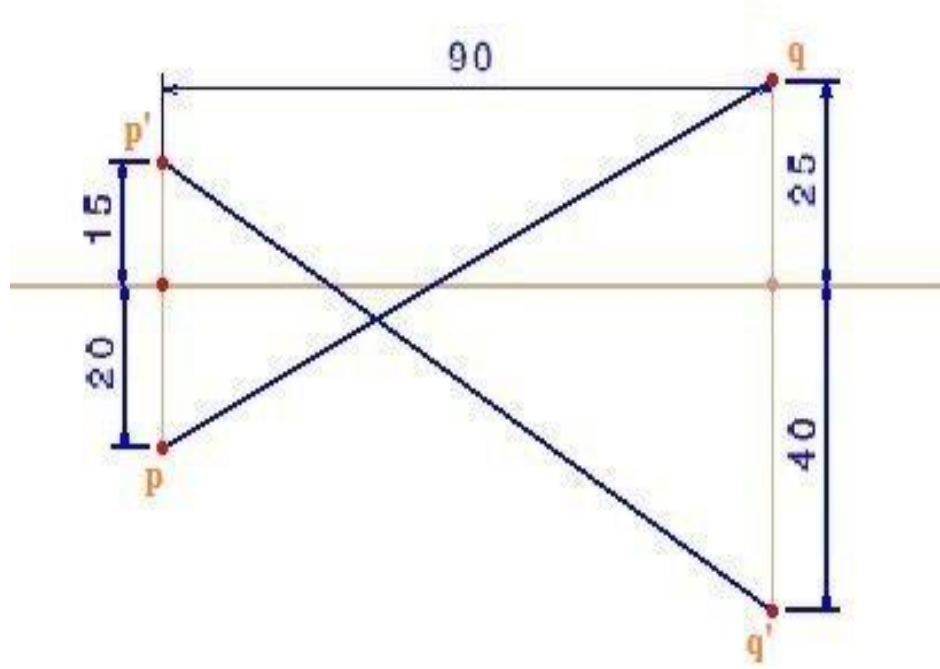
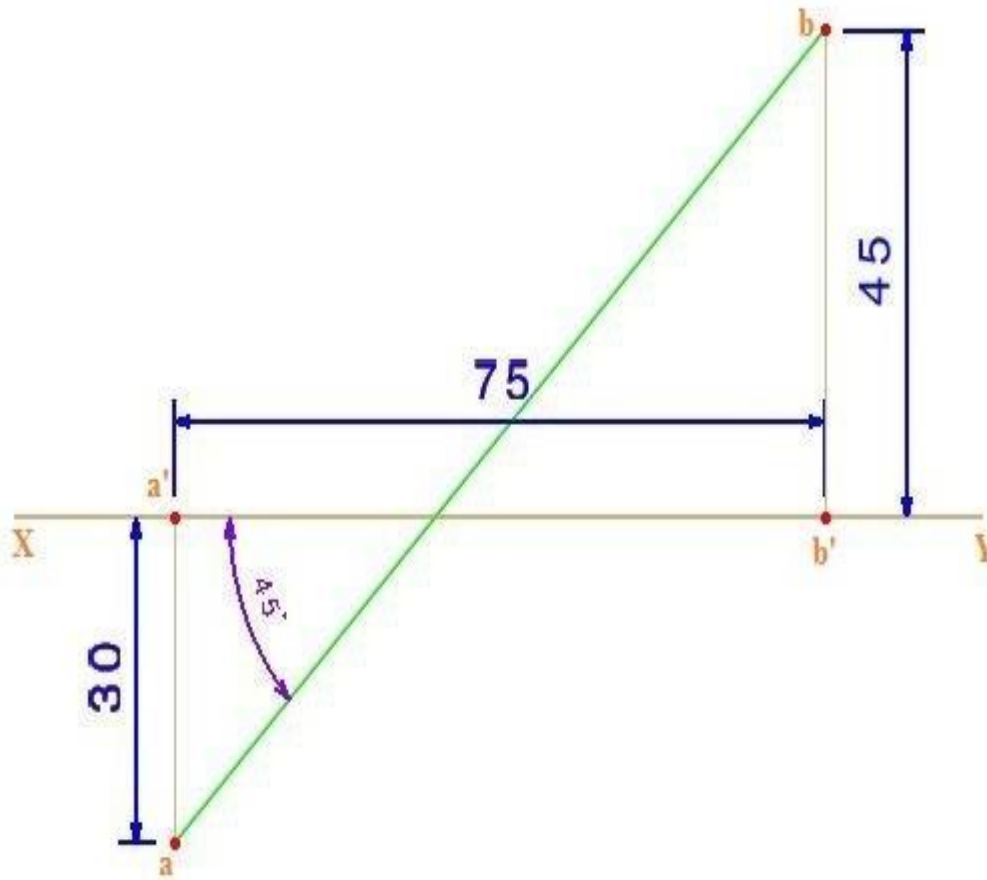


PROJECTION OF POINTS

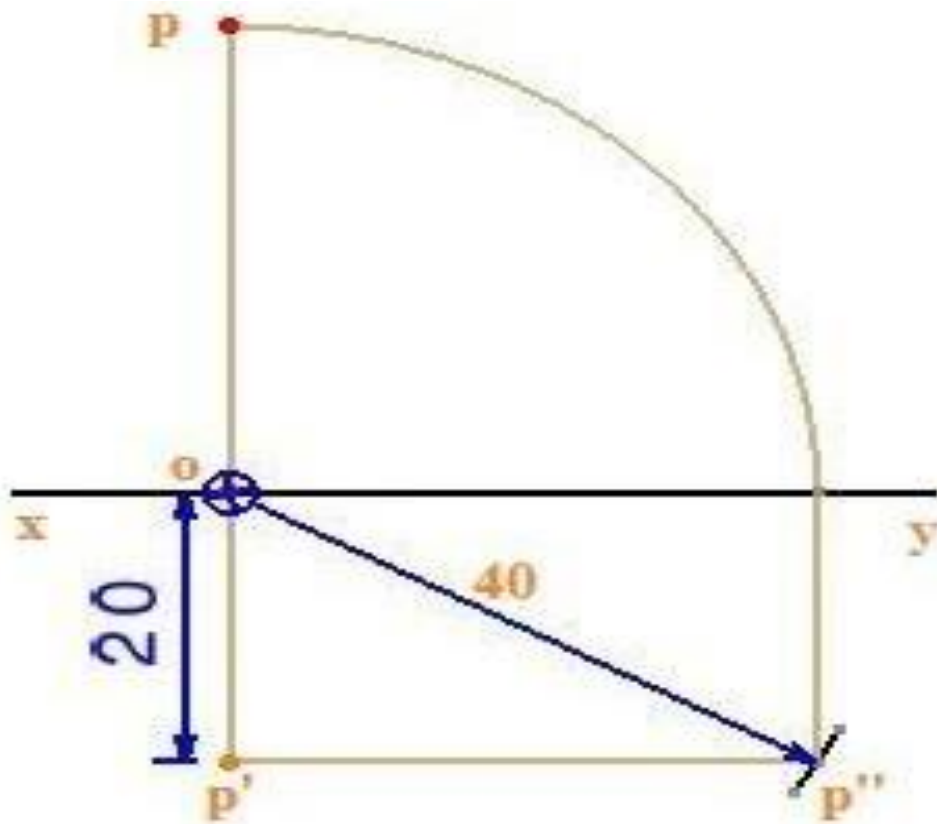
1. A Point P is 15 mm Above H.P and 20 mm in front of the V.P. Another Point Q is 25 mm behind the V.P. and 40 mm below the H.P. Draw the projection of P and Q keeping the distance between their projectors equal to 90 mm. Draw the straight lines joining (a) their top views and (b) their front views.



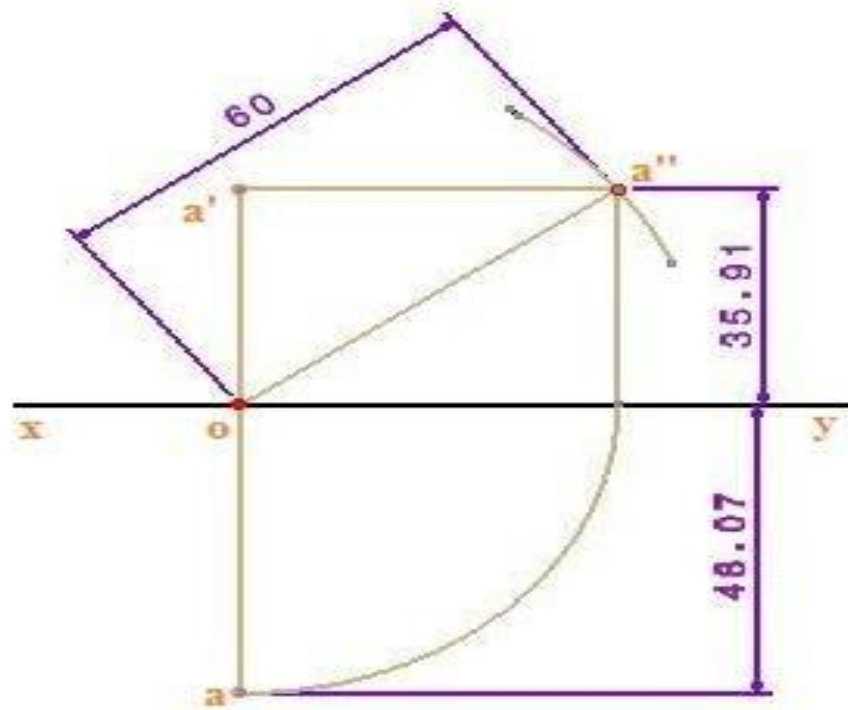
2. The two points A and B are in the H.P. The point A is 30 mm in front of the V.P. The distance between their projectors is 75 mm and the line joining their top views makes an angle of 45° with xy . Find the distance of the point B from the V.P.



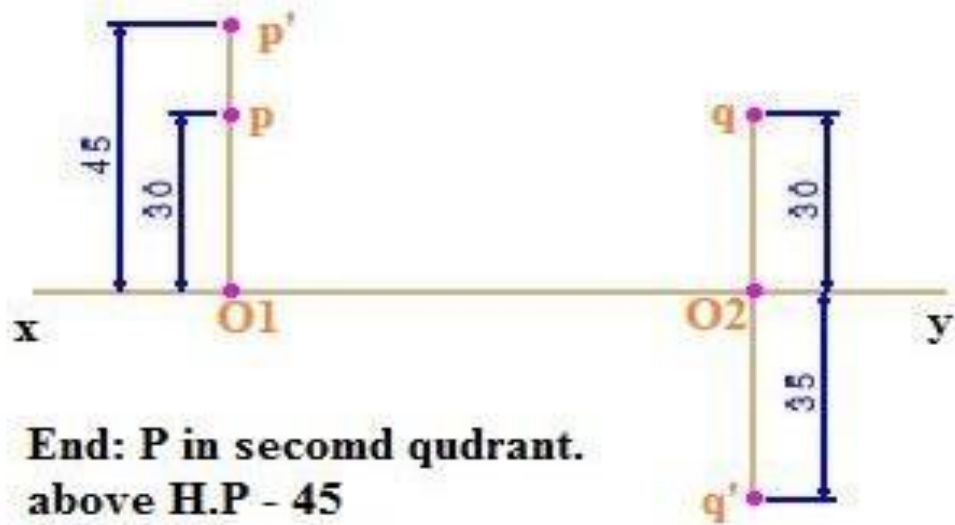
3. A Point P is 20 mm below H.P. and lies in the third quadrant. Its shortest Distance from xy is 40 mm. draw its projections.



4. A point A is situated in the first quadrant. Its shortest distance from the intersection point of H.P., V.P. and auxiliary plane is 60 mm and it is equidistant from the principal planes. Draw the projection of the point and determine its distance from the principal planes.



5. A point 30 mm above xy line is the plan view of two points p and Q. The elevation of P is 45 mm above H.P. while that of the point Q is 35 mm below the H.P. Draw the projections of the points and states their position with reference to the principal planes and the quadrant in which they lie.



End: P in second quadrant.

above H.P - 45

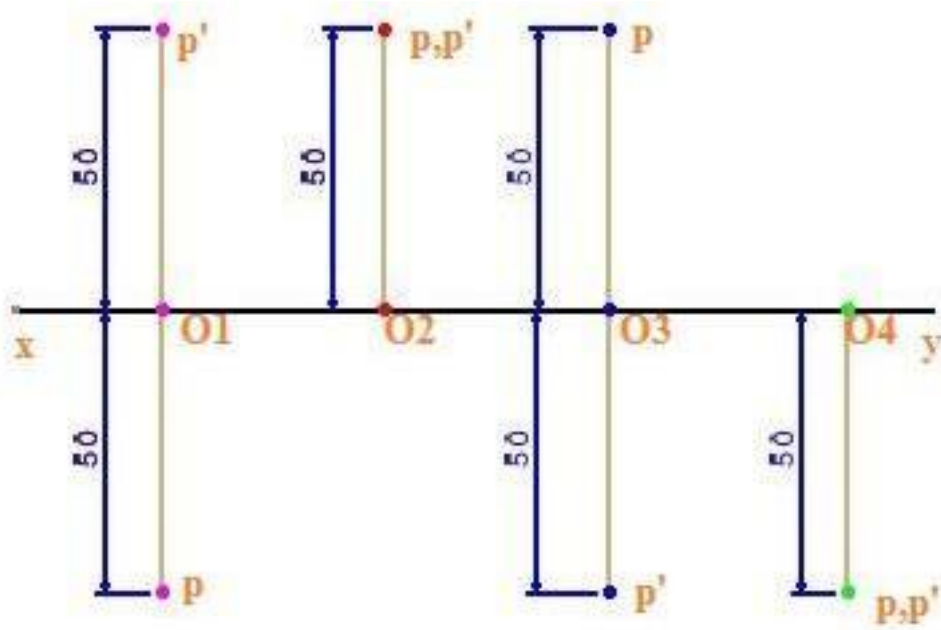
behind V.P - 30

End: Q in third quadrant.

below H.P - 35

behind V.P - 30

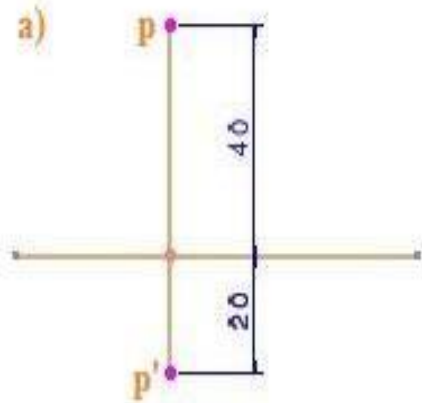
6. A point P is 50 mm from the both the principal planes. Draw its projections in all possible points.



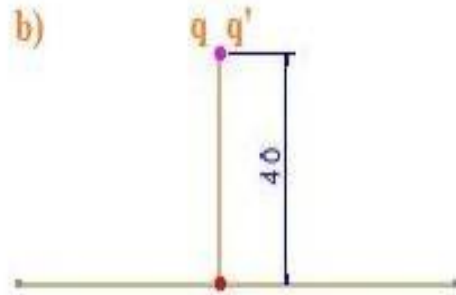
7. State the quadrants in which the following points are situated.

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.



The point P in Third Quadrant:
below H.P: 20 mm
behind V.P: 40 mm



The point Q in second Quadrant
above H.P: 20 mm
behind V.P: 40 mm

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

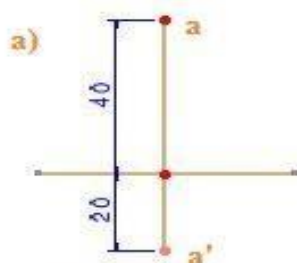
(a) Point A; its top view is 40mm above xy; the front view, 20mm below the top view.

(b) Point B, its projections coincide with each other 50mm below xy.

(c) Point C; its top view 50mm below xy; the front view 30mm above top view.

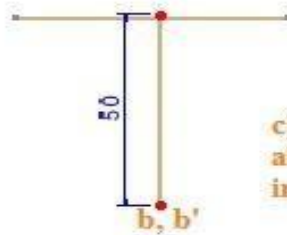
(d) Point D; its top view on xy and front view 40mm below top view.

(e) Point E; its top view 30mm above xy; its front view 50mm below top.

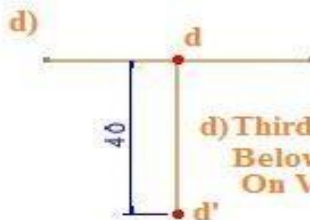
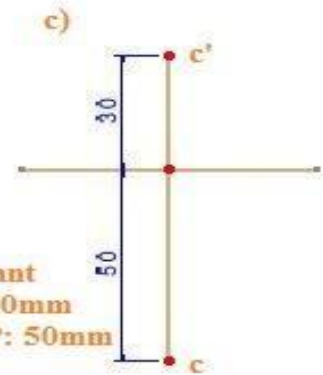


a) Third quadrant:
Behind V.P: 40 mm
below H.P: 20

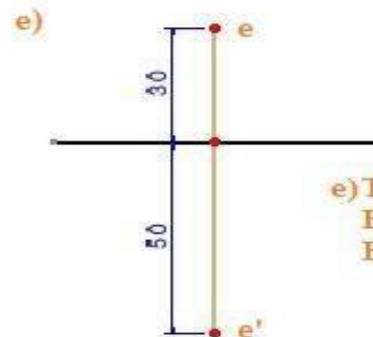
b) Fourth quadrant:
Below H.P: 50 mm
Infront of V.P: 50 mm



c) First quadrant
above H.P: 30mm
infront of V.P: 50mm

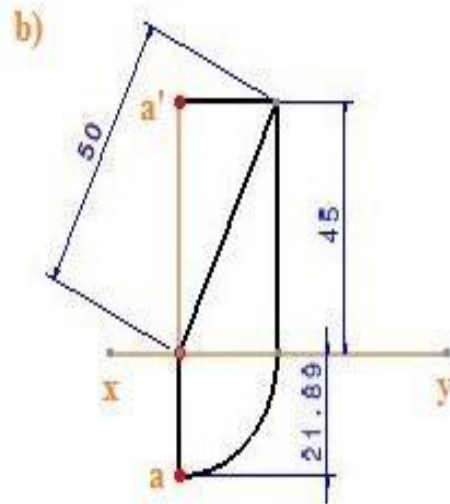
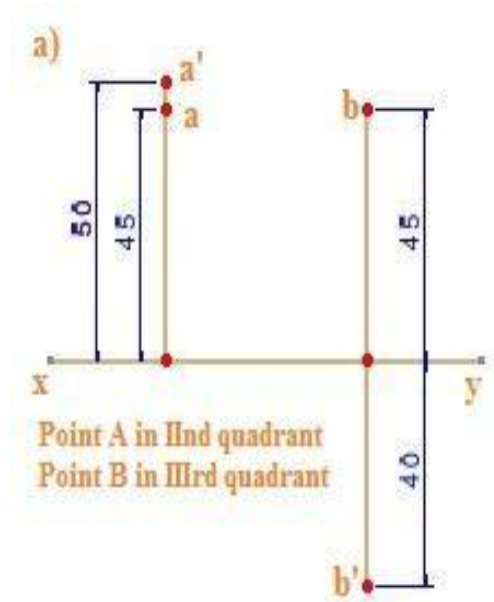


d) Third quadrant:
Below H.P: 40 mm
On V.P



e) Third quadrant:
Below H.P: 30 mm
Behind V.P: 50mm

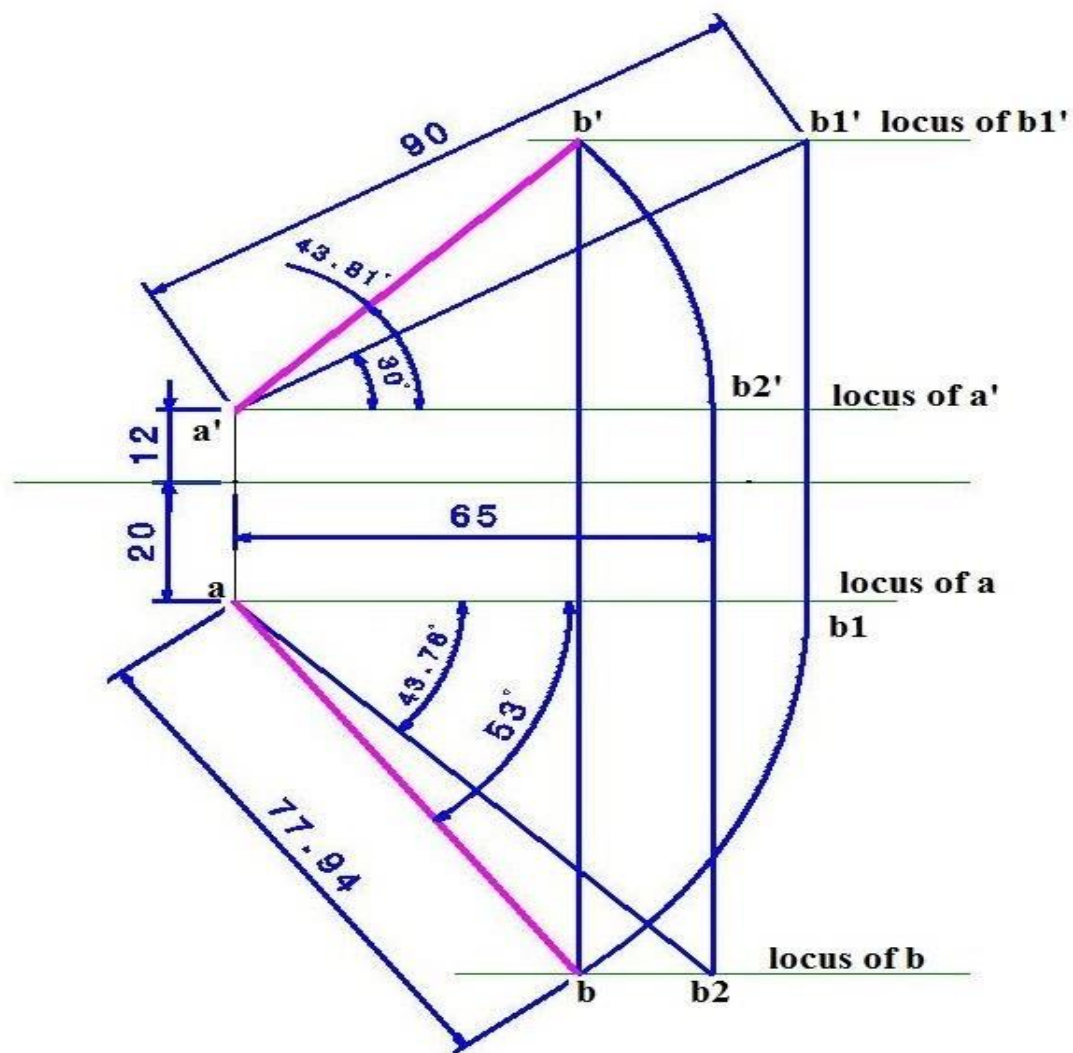
9. A point 45mm above xy line is the top view of two points A and B. The front view of A is 50mm above the H.P. while that of the point B is 40mm below the H.P. Draw the projections of the points and states their position with respect to the principal planes and the quadrant in which they lie.
- b) A point A is 45mm above H.P. and lies in the first quadrant. Its shortest distance from xy is 50mm .Draw its projections.



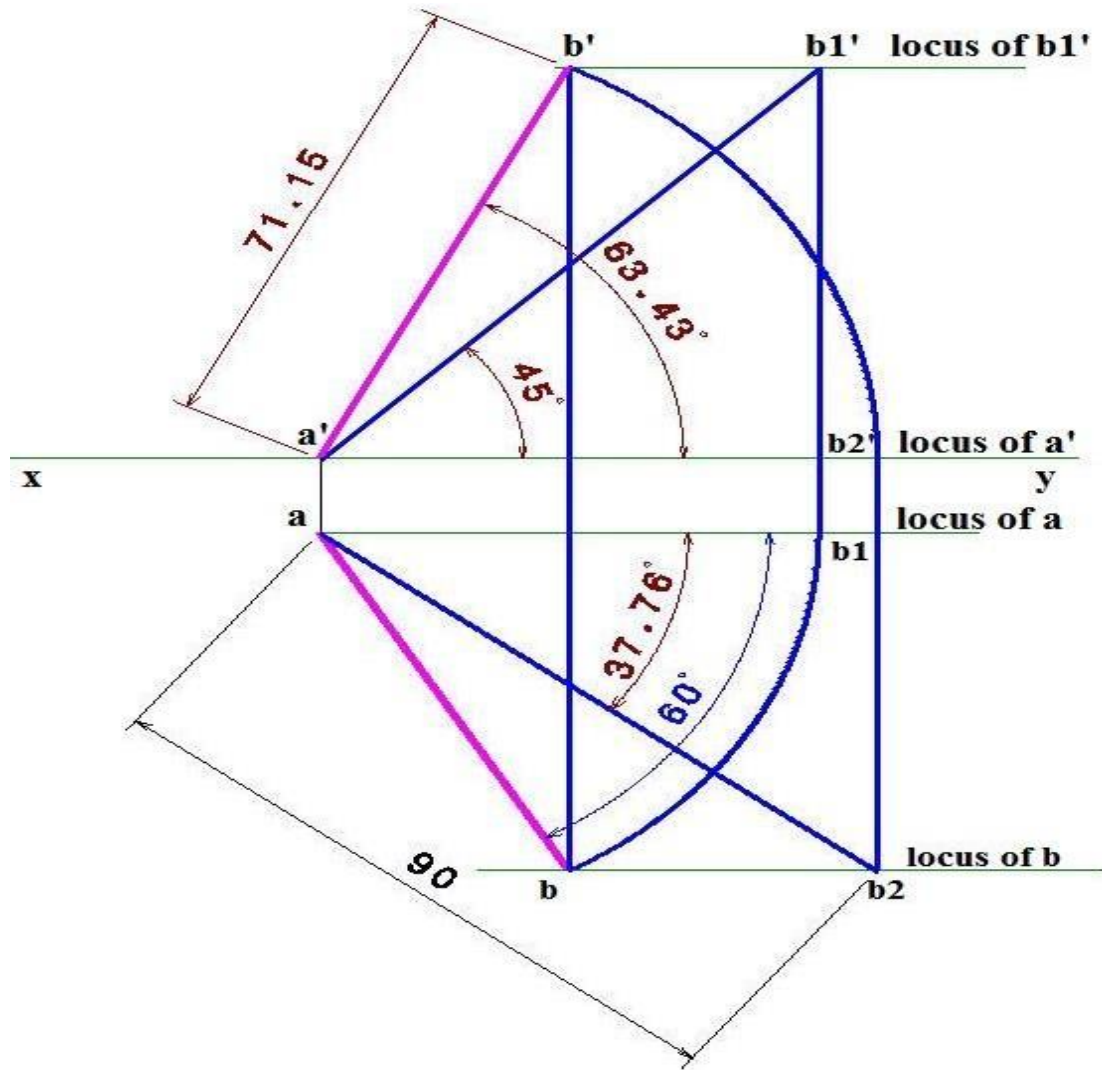
PROJECTION OF STRAIGHT LINES:

-

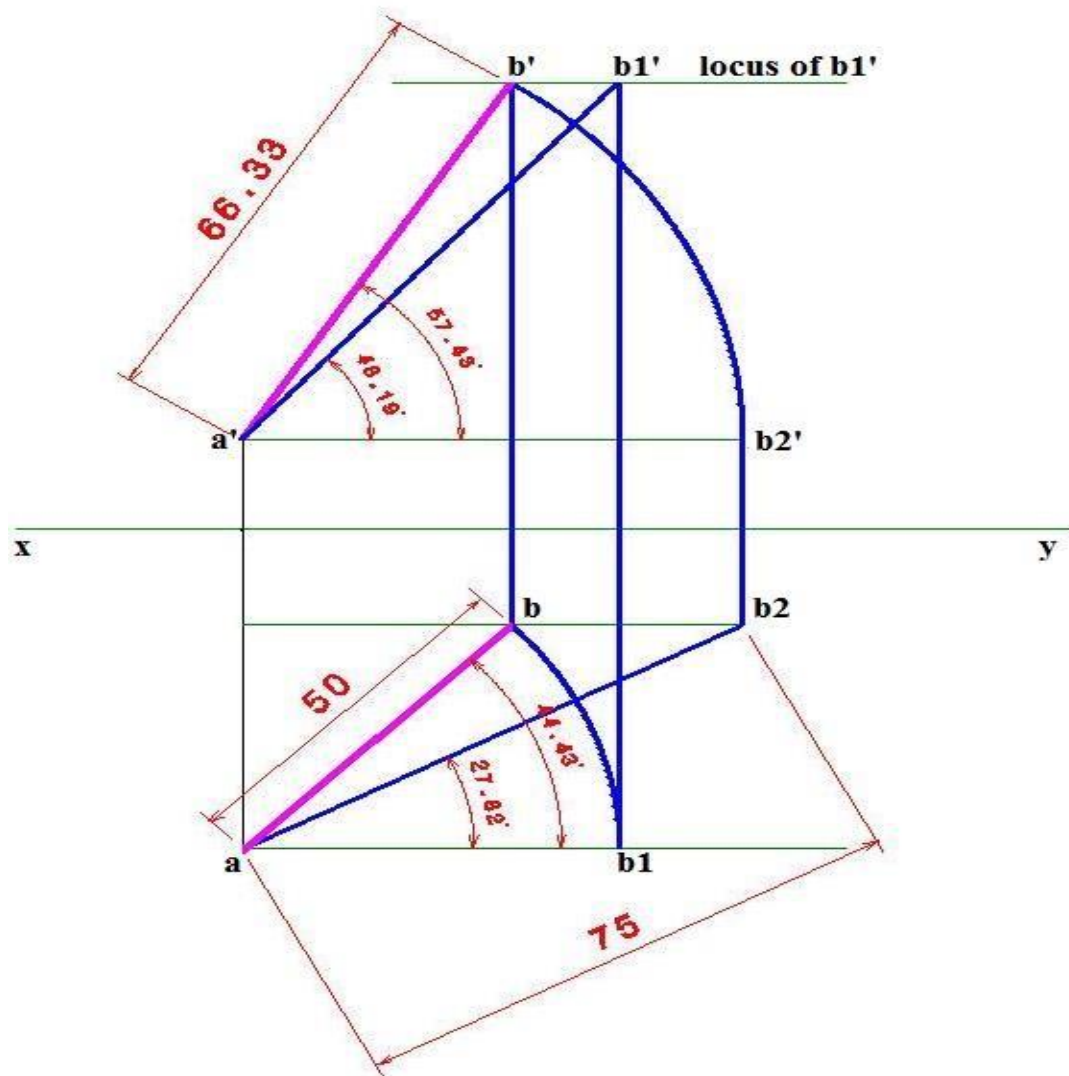
2. A line AB 90 mm long is inclined at 30° to the HP. Its end A is 12 mm above the HP and 20 mm in front of the VP. Its front view measures 65 mm. Draw its projections and find its inclination with the VP.



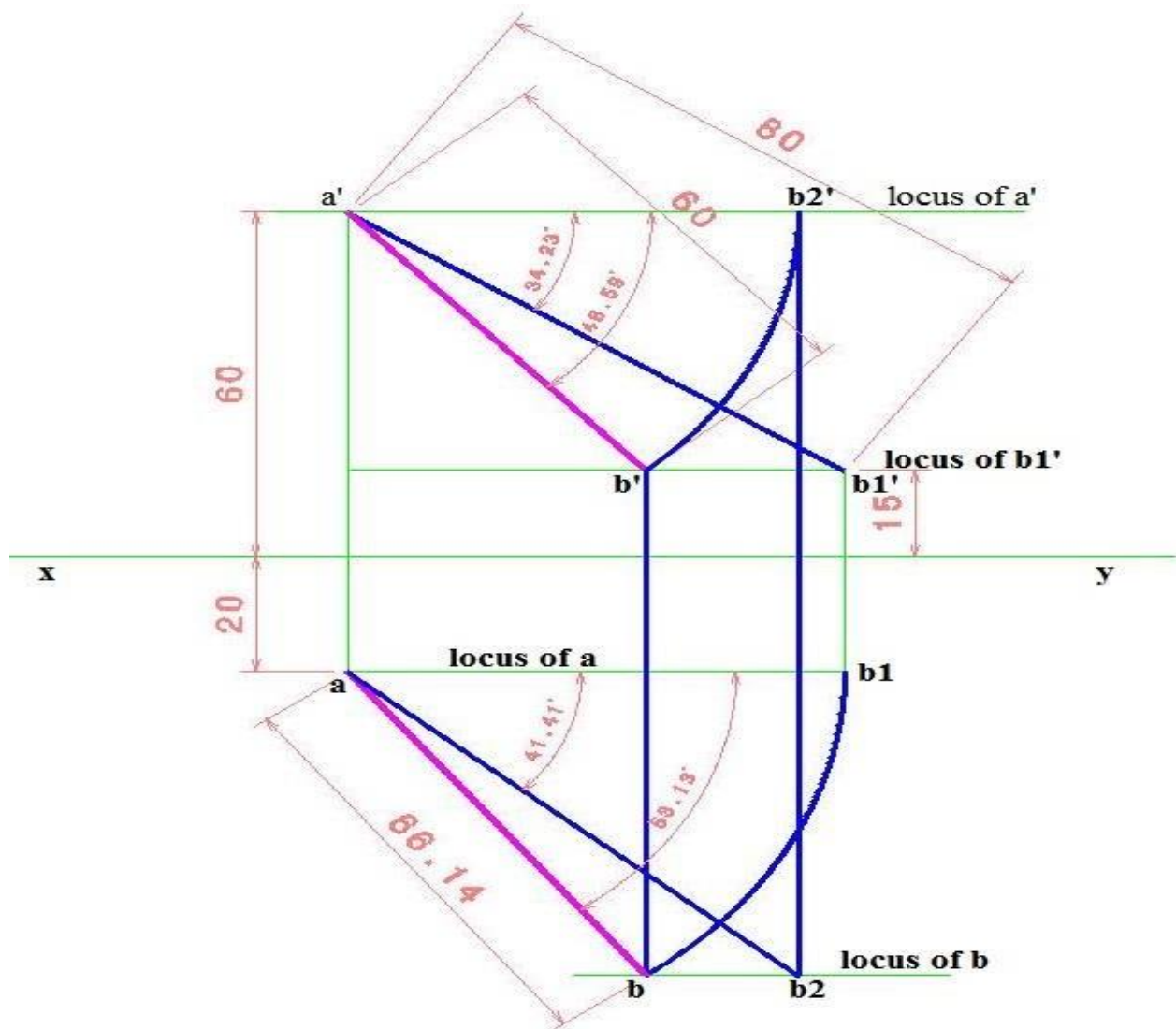
3. A line AB, 90 mm long is inclined at 45° to the H.P. and its top view makes an angle of 60° with the V.P. The end A is in the H.P. and 12 mm in front of the V.P. Draw its front view and find its true inclination with the V.P.



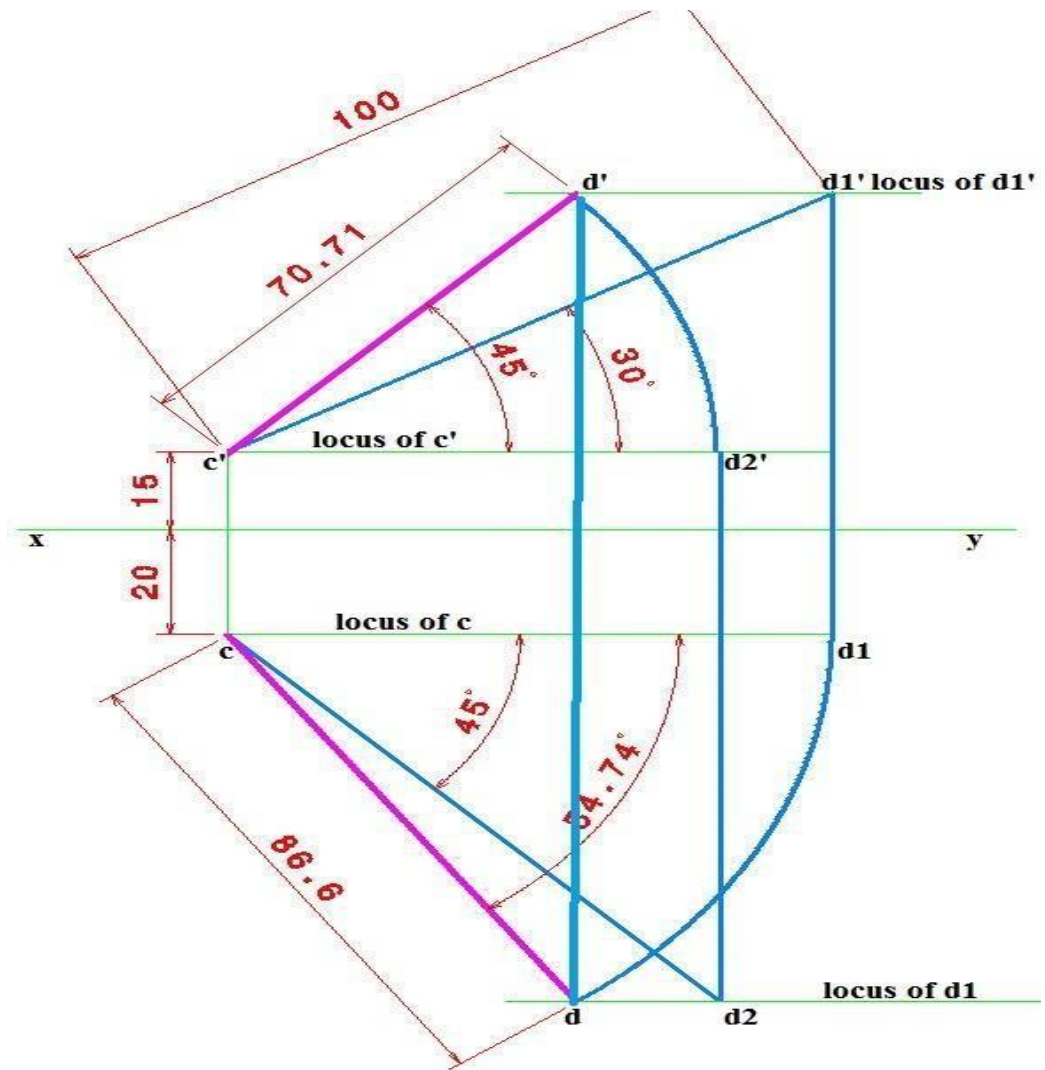
4. A line AB 75 mm long, A is 50 mm in front of V.P. and 15 mm above H.P. B is 15 mm in front of V.P. and is above H.P. Top view of AB is 50 mm long. Draw and measure the front view. Find true inclinations.



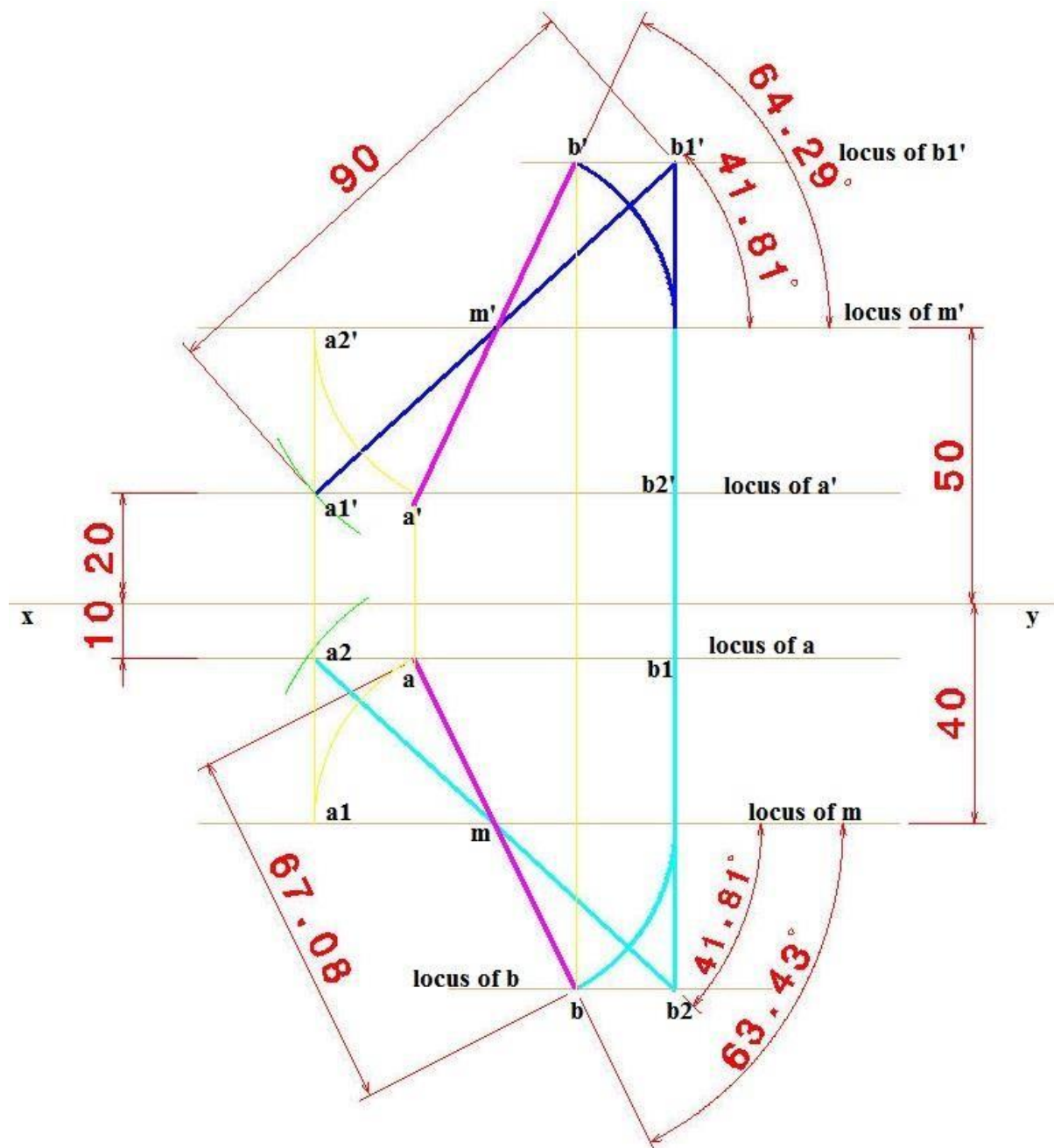
5. A line measuring 80 mm long has one of its ends 60 mm above H.P. and 20 mm in front of V.P. The other end is 15 mm above H.P. and in front of V.P. The front view of the line is 60 mm long. Draw the top view.



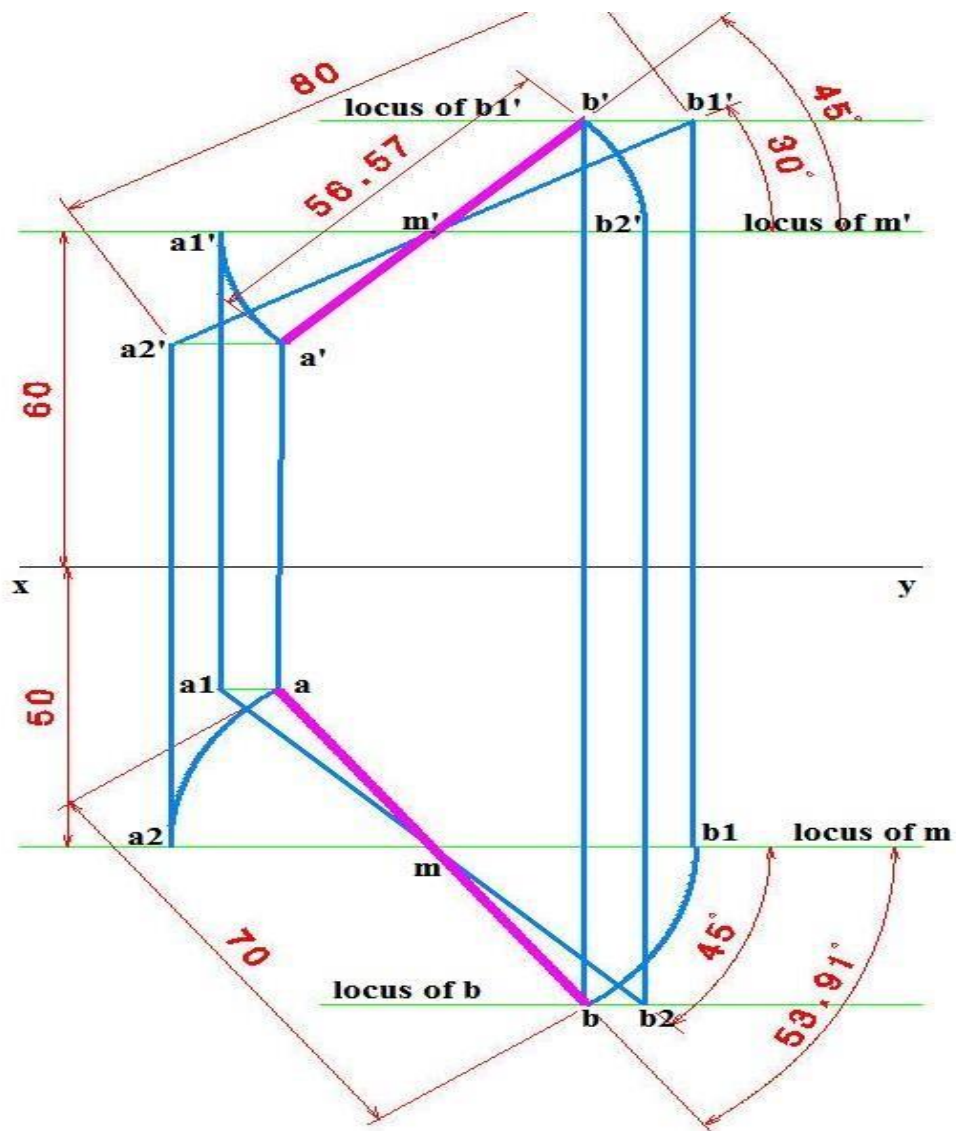
6. A line CD of 100 mm length is inclined at 30° to H.P. and 45° to V.P. The point A is 15 mm above H.P. and 20 mm in front of the V.P. Draw the projections of the line.



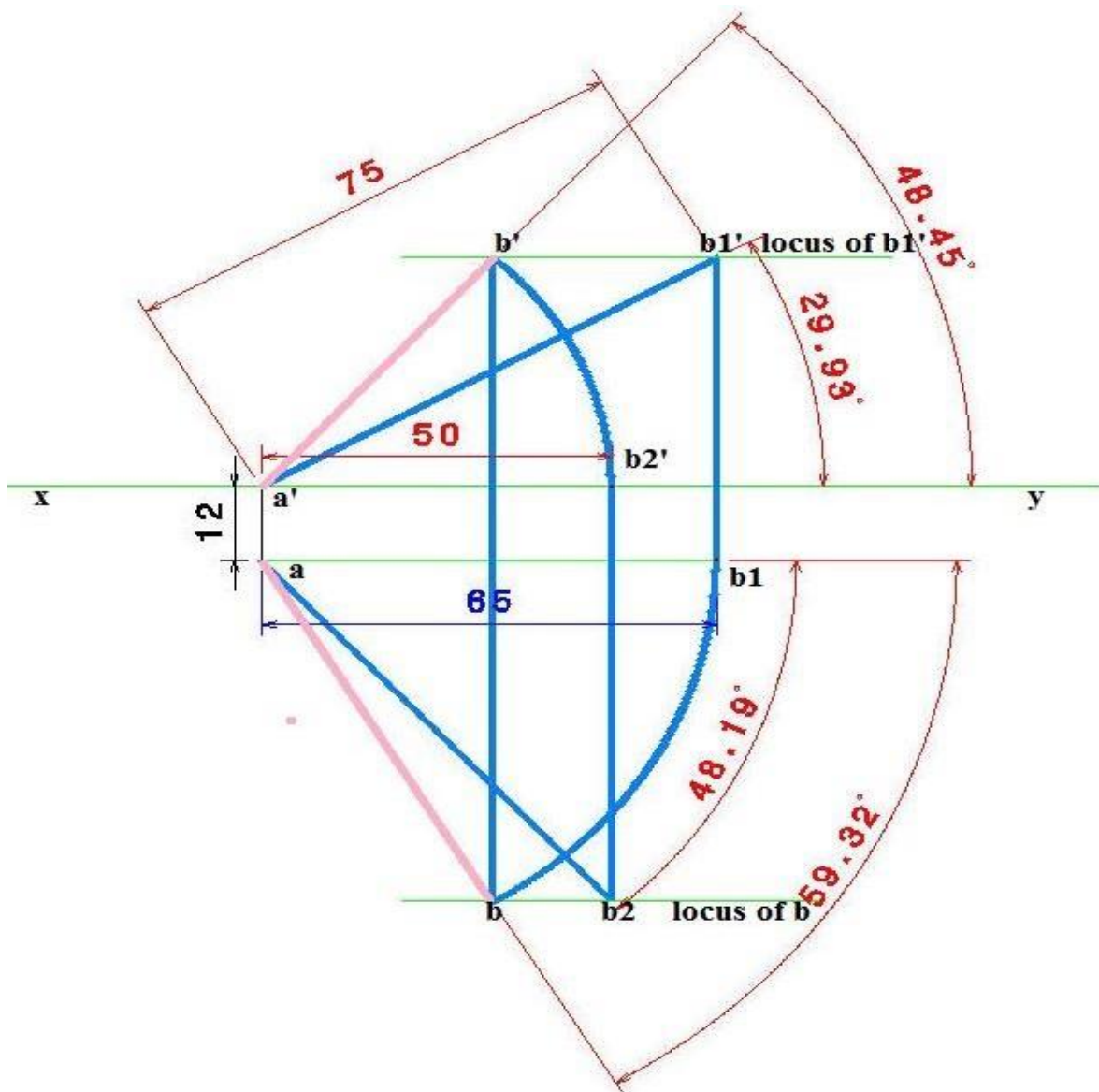
7. Draw the projections of a line AB 90 mm long, its mid point M being 50 mm above H.P. and 40 mm in front of the V.P. The end A is 20 mm above the H.P. and 10 mm in front of the V.P. show the inclinations of the line with the H.P. and the V.P.



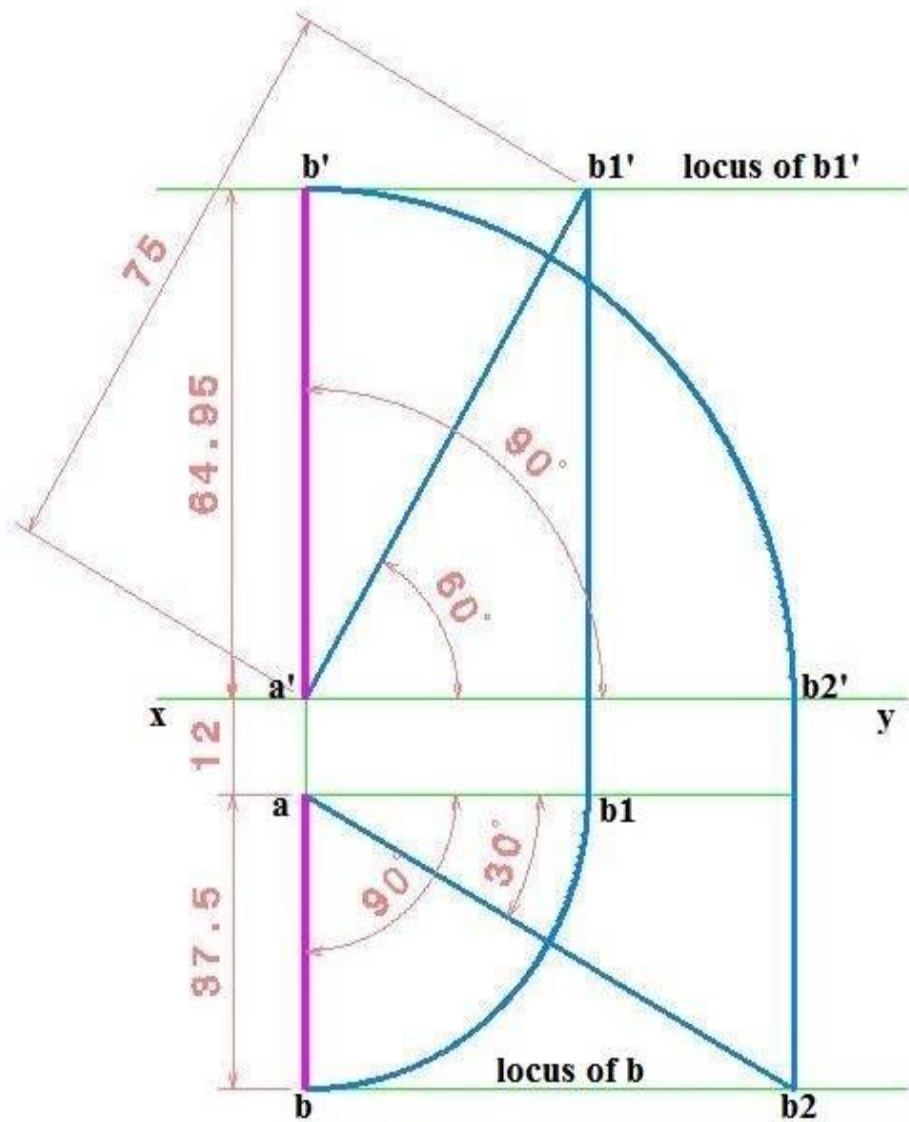
8. The mid point of a straight line AB is 60 mm above the H.P. and 50 mm in front of the V.P. The line measures 80 mm long and inclined at 30° to the H.P. and 45° to the V.P. Draw its projections.



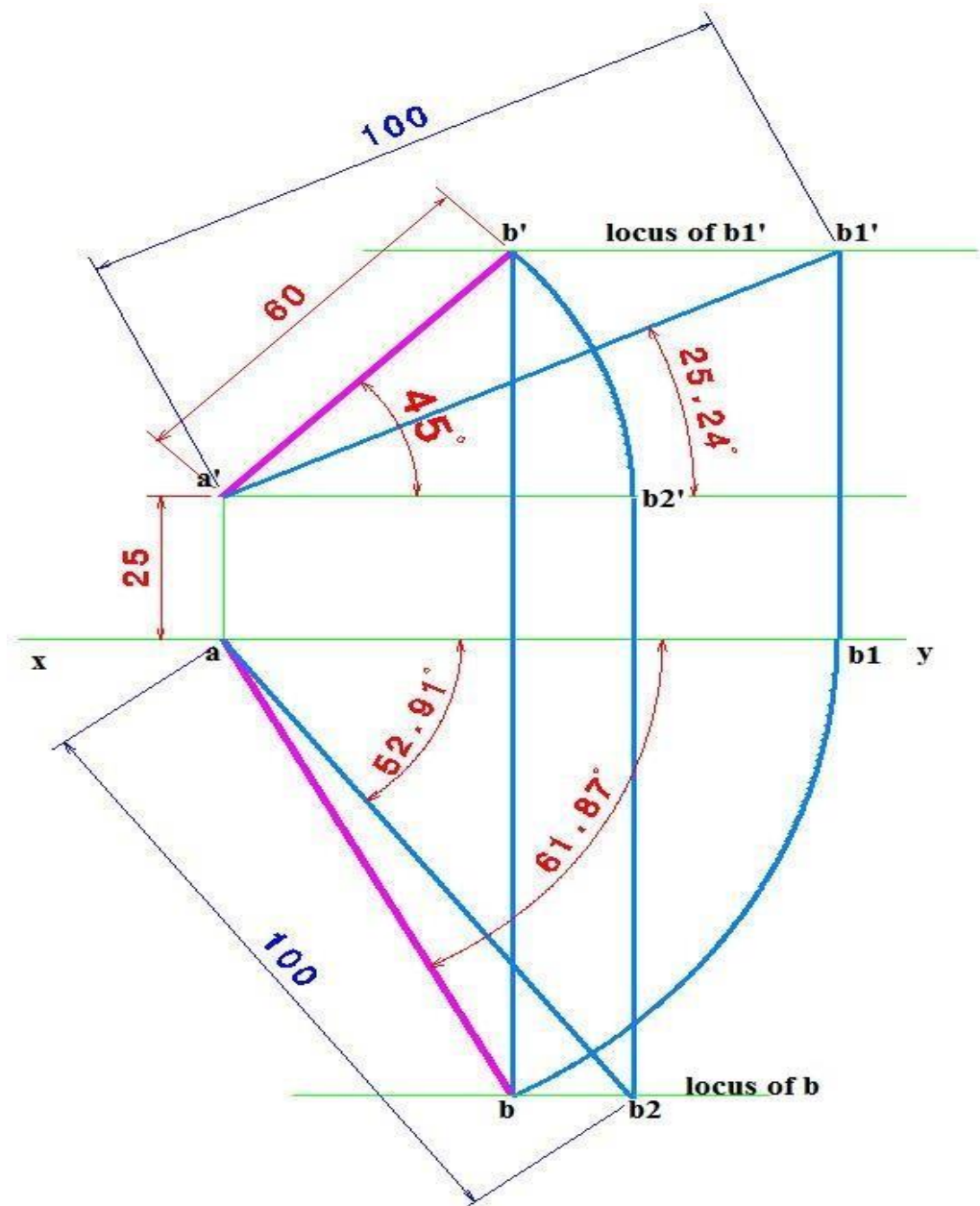
9. The top view of a 75 mm long line AB measure 65 mm while the length of its front view is 50 mm. Its one end A is in the H.P. and 12 mm in front of the V.P. Draw the projections of the of AB and determine its inclinations with the H.P and The V.P.



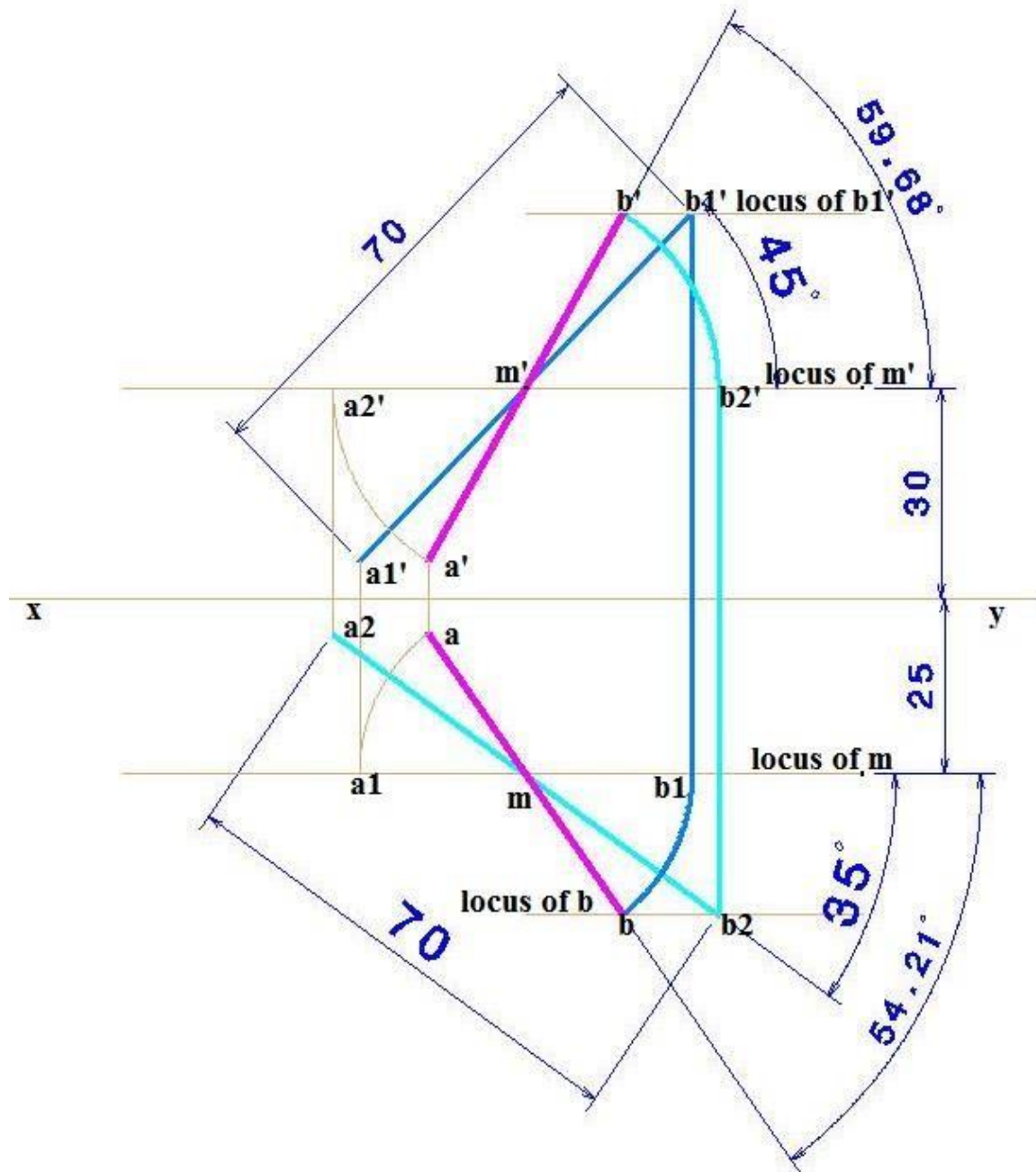
10. A line AB 75 mm long has its end A in the H.P and 12 mm in front of the V.P. the line is inclined at 60° to the H.P and 30° to the V.P. Draw its projections.



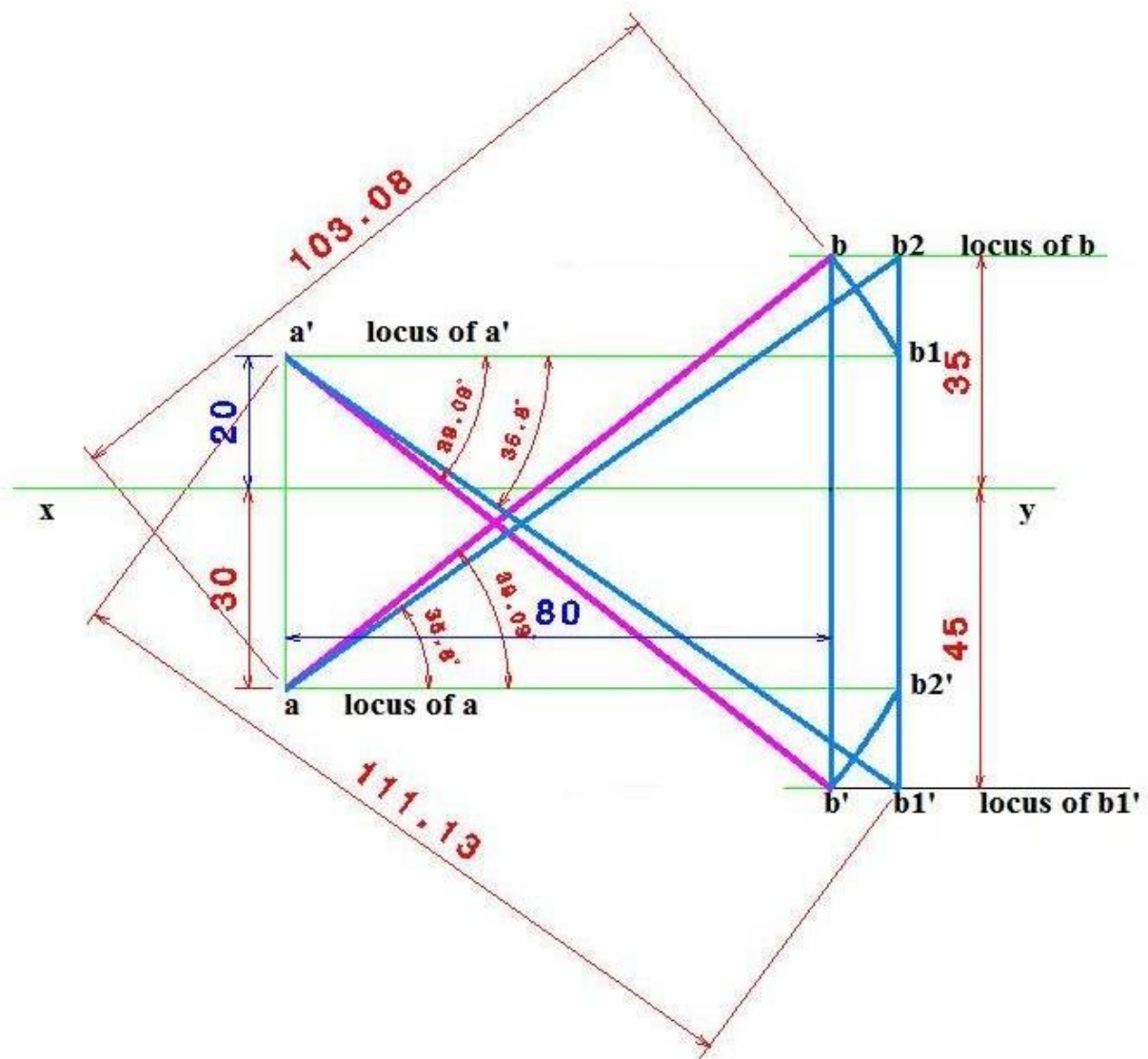
11. A line AB 100 mm long has its front view inclined at an angle of 45° with xy. The point A is in the V.P, 25 mm above H.P. the length of the front view is 60 mm. Draw the top view of the line and measure its length. Also find the inclinations of the line AB to H.P. and V.P.



12. A line AB is 70 mm long. Its mid -point is 30 mm above HP and 25 mm in front of VP.
The line is inclined at an angle of 45° to HP and 35° to VP. Draw its projections.

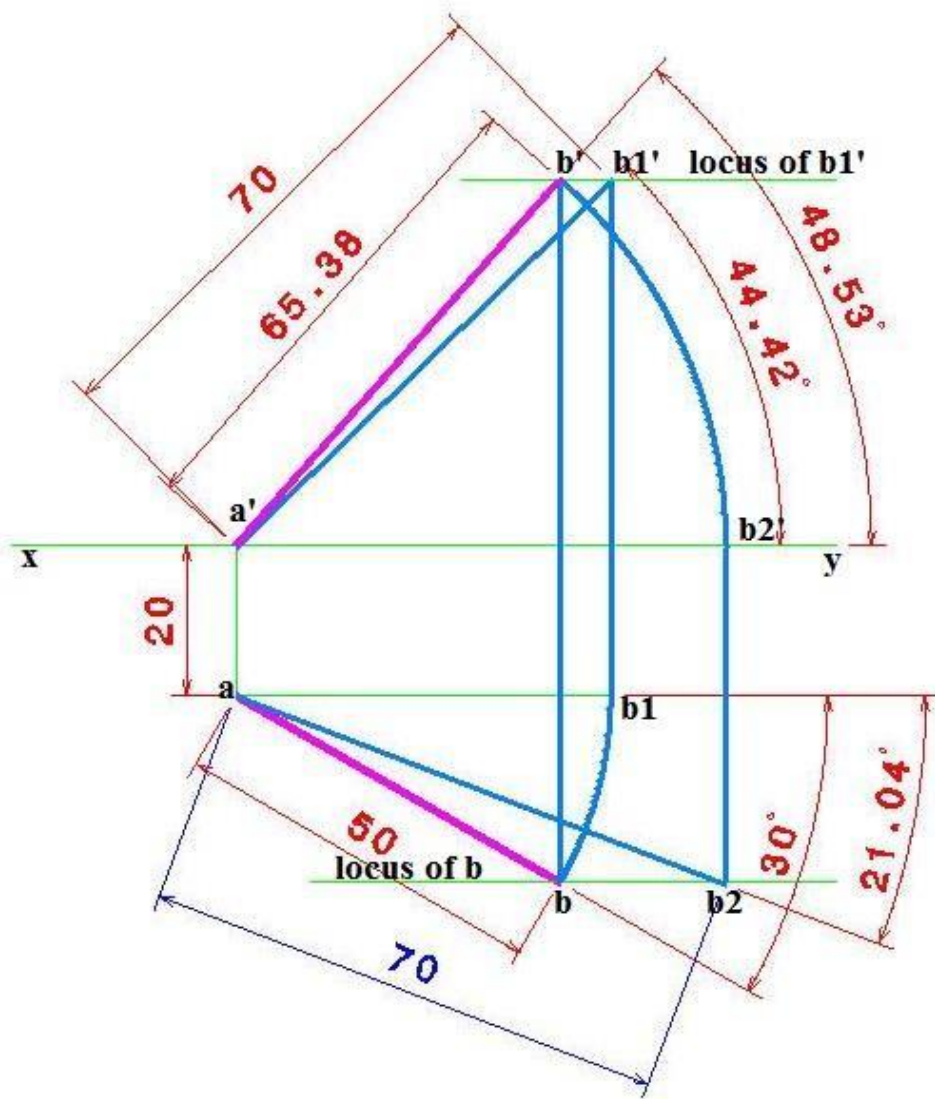


13. A point A is 20mm above HP and 30mm in front of VP. Another point B is 35mm below HP and 45mm behind VP. Draw the projections of these points taking the distance between the end projectors as 80mm. Also find the length of the line joining their plans and elevations.

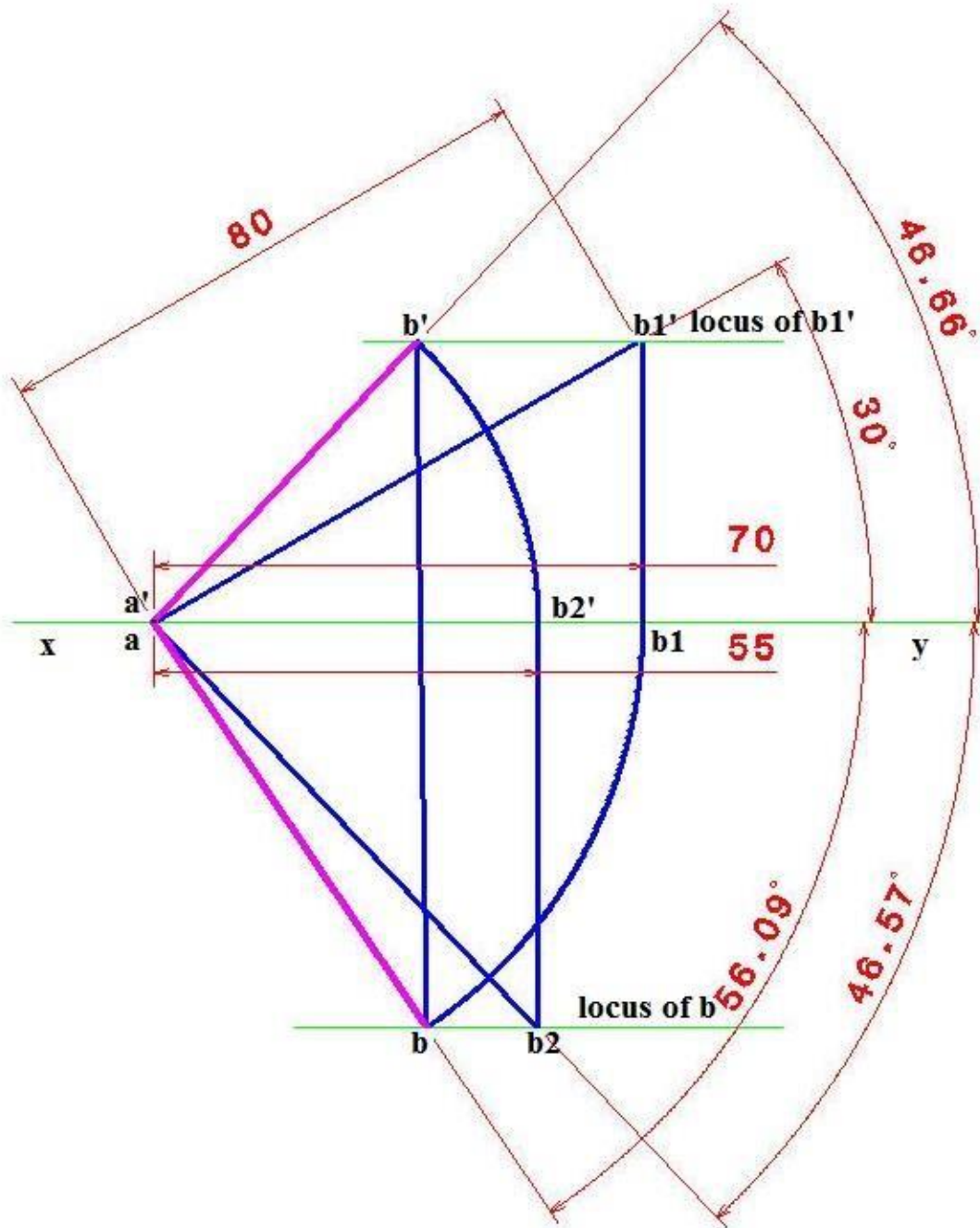


14. The length of the plan of a straight line AB is 50mm and length of the elevation is 70mm.

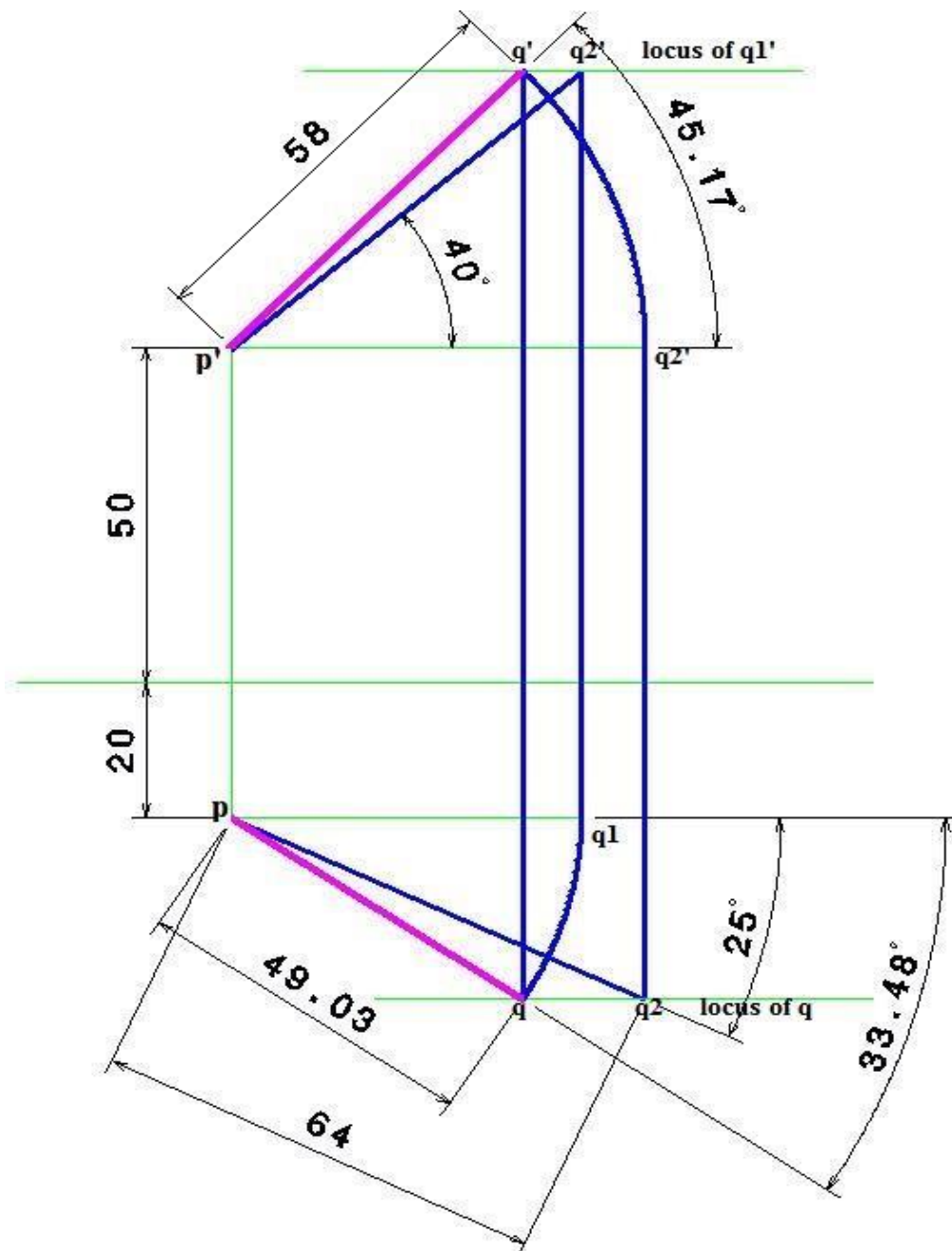
The plan ab is inclined at 30° to XY line. Draw the projections of the line AB, assuming point A to be situated on HP and 20mm in front of VP. Also find the true length and inclinations with HP and VP.



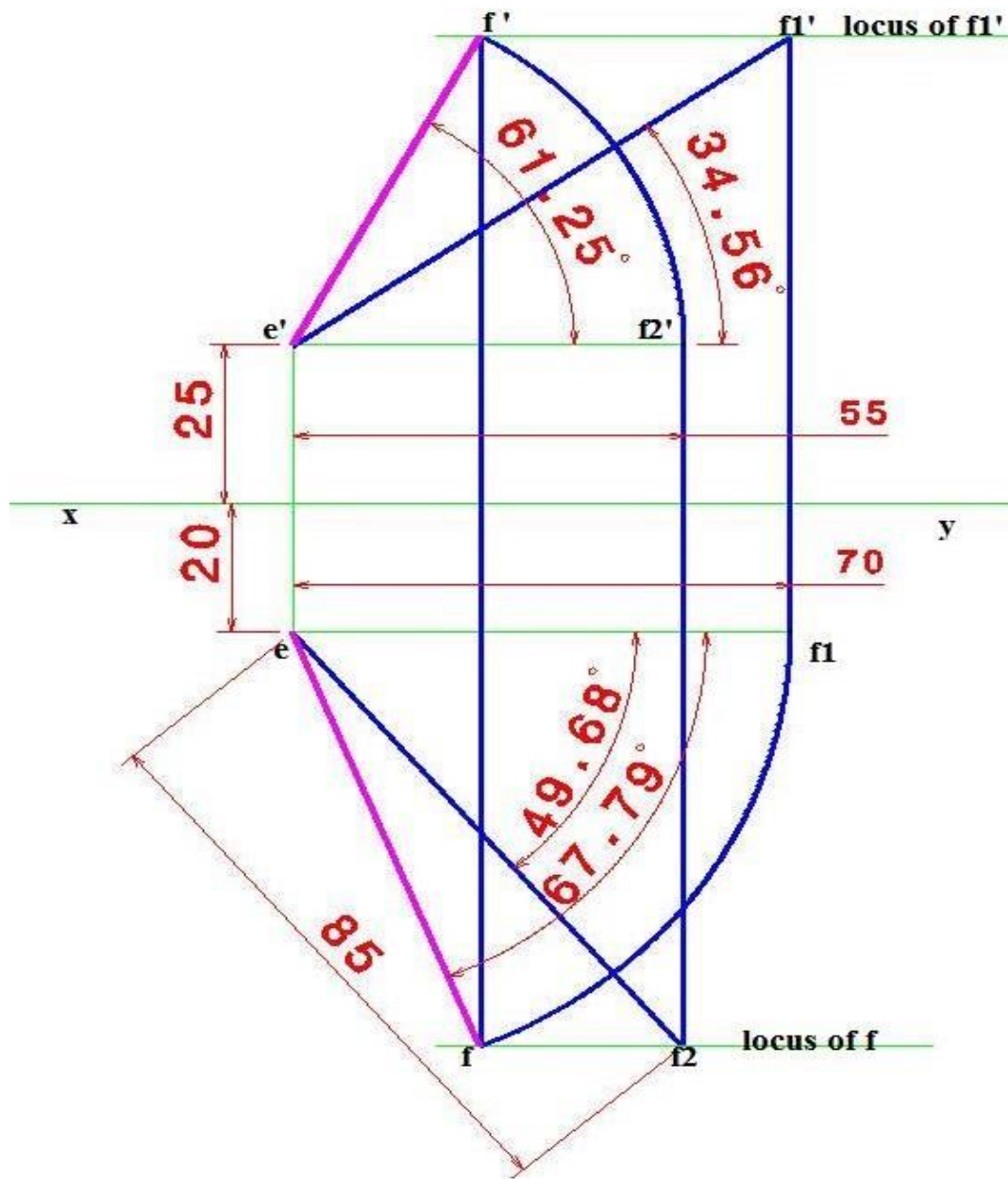
15. The front view of a line AB 80 mm long measures 55 mm while its top view measures 70 mm. End A is in both HP and VP. Draw the projections of the line and find its inclinations with the reference planes.



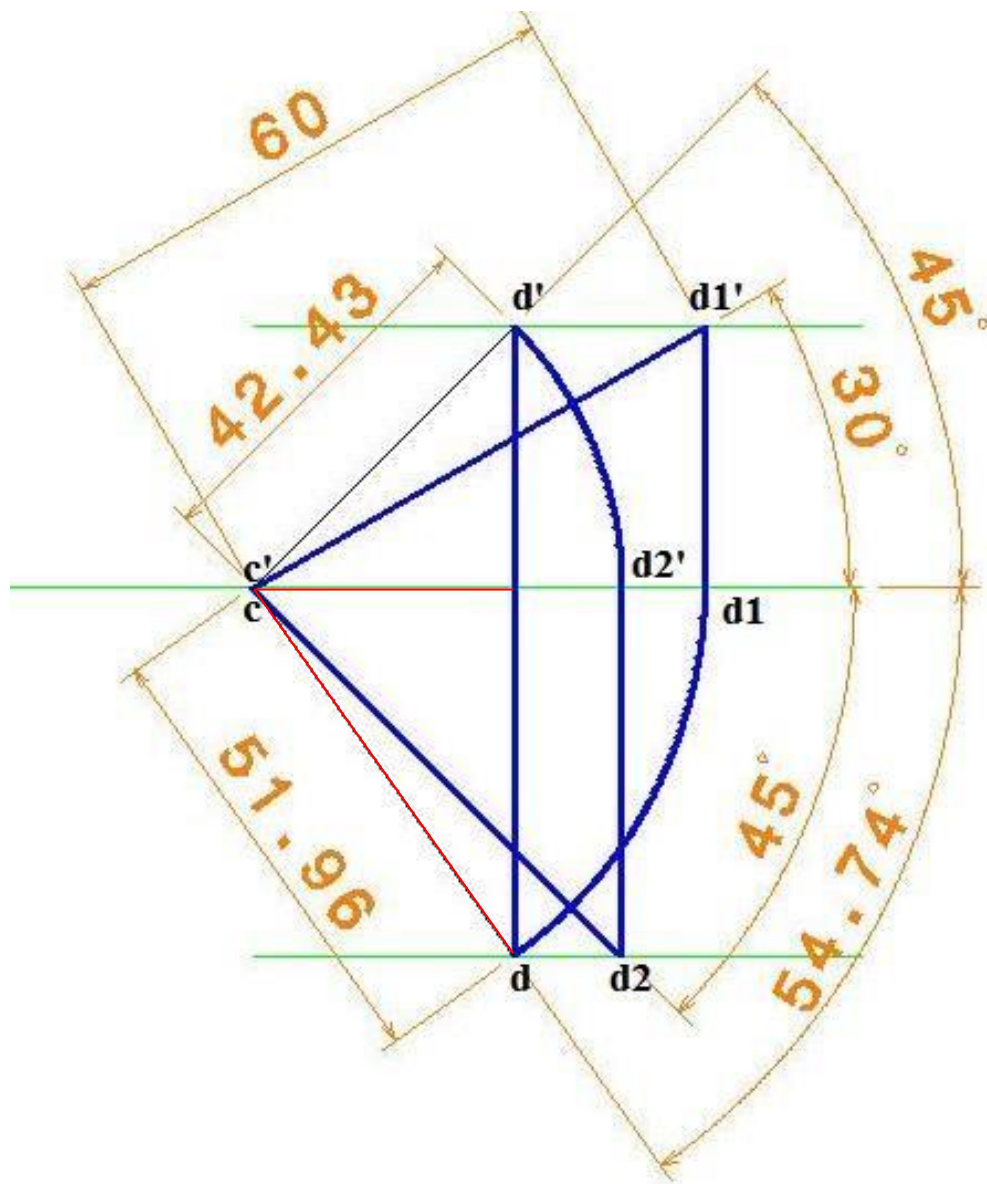
16. A line PQ, 64 mm long has one of its extremities 20 mm in front VP and the other 50 mm above HP. The line is inclined at 40° to HP and 25° to VP. Draw its top and front views



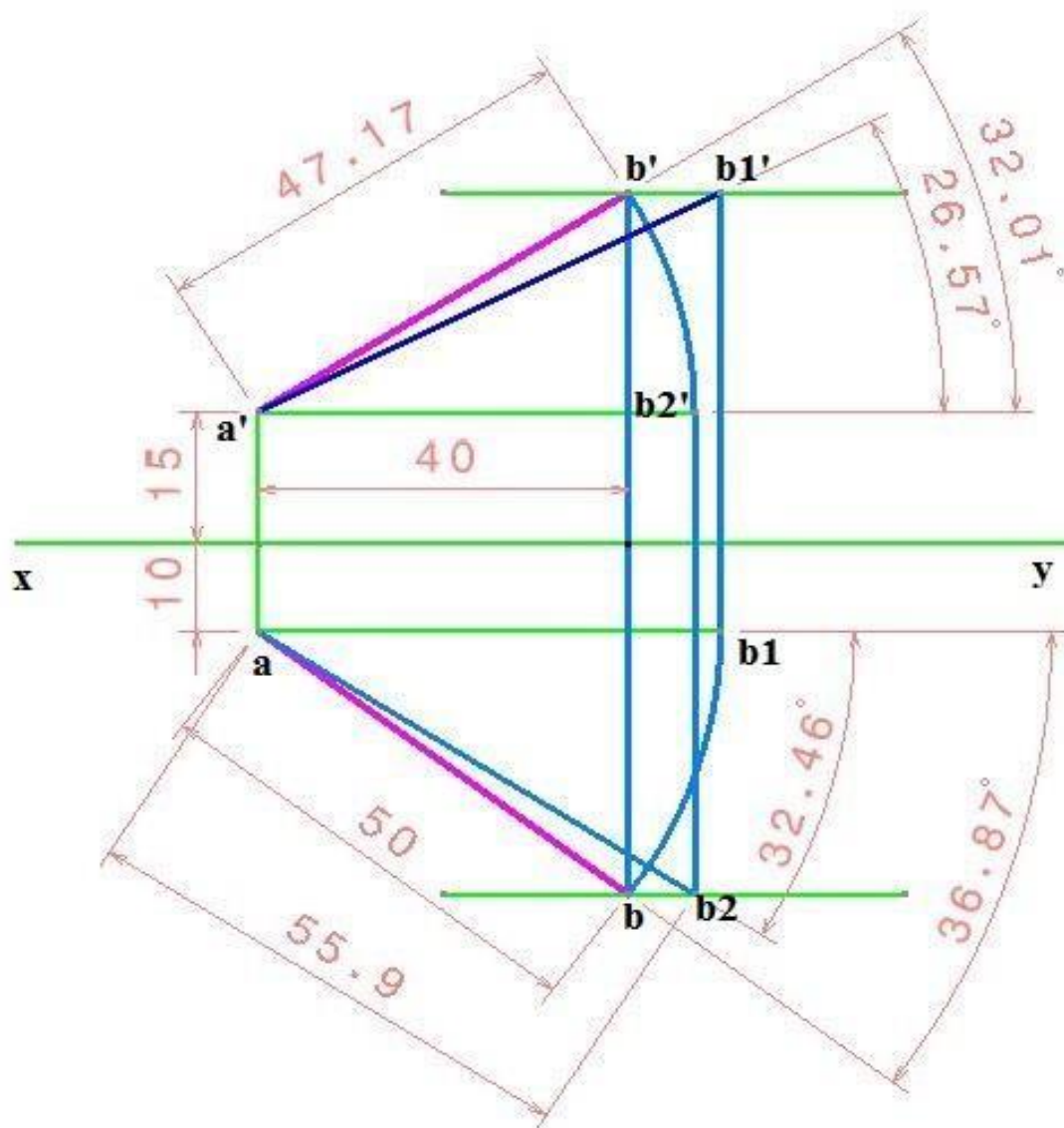
17. A line EF 85 long has its ends 25 mm above HP and 20 mm in front of V.P. The top and front views of the line have lengths of 55 mm and 70 mm respectively. Draw the projections of the line and find its true inclinations with the V.P and H.P



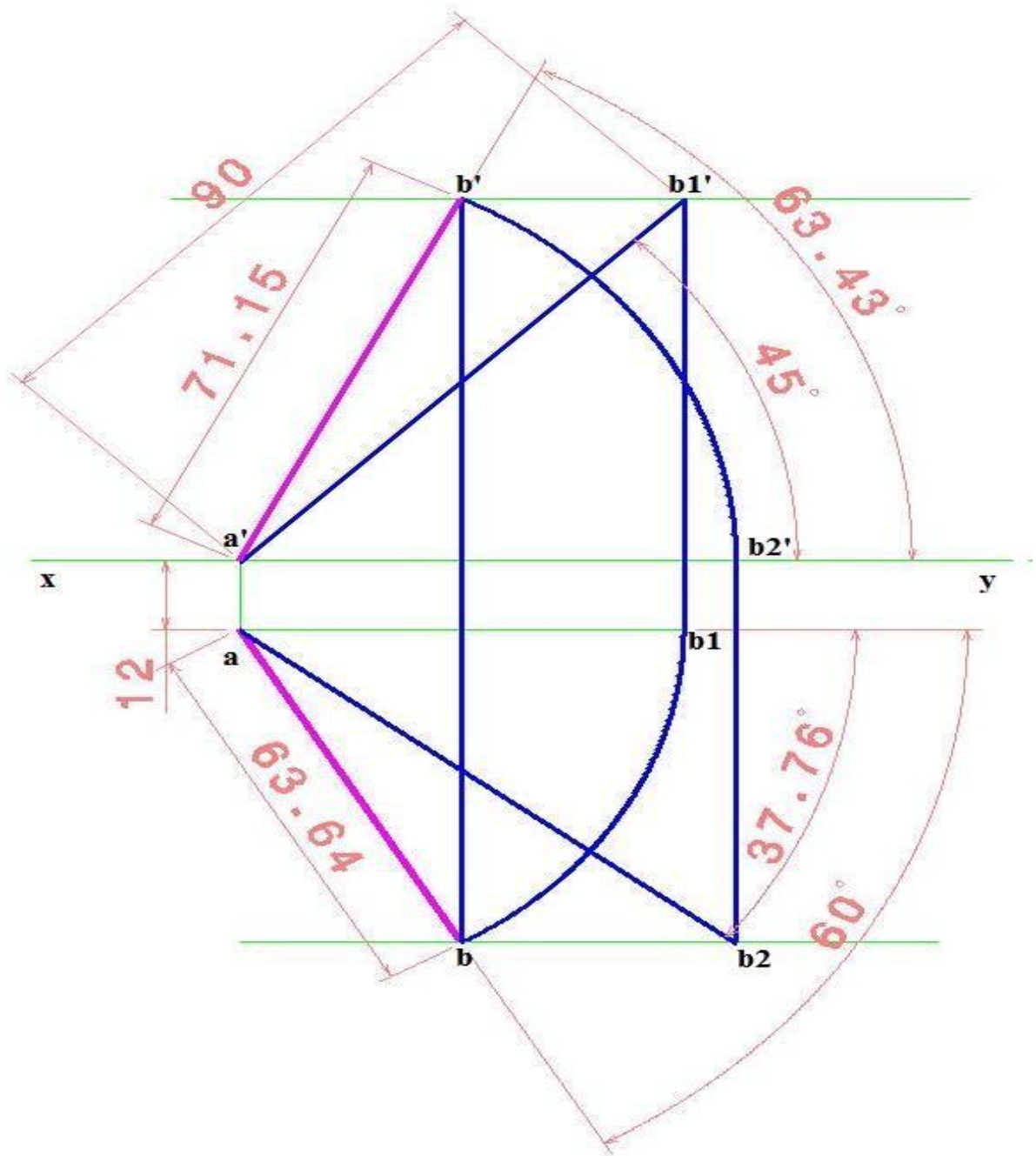
18. A line CD 60mm long has its end 'C' in both H.P and V.P. It is inclined at 30° to H.P and 45° to V.P. Draw the projections



19. The distance between the projectors of two ends of a straight line is 40 mm. The lower end is 15 mm above HP and 10 mm in front of VP. The upper end is 40 mm above HP and 40 mm in front of VP. Find true length and true inclination.

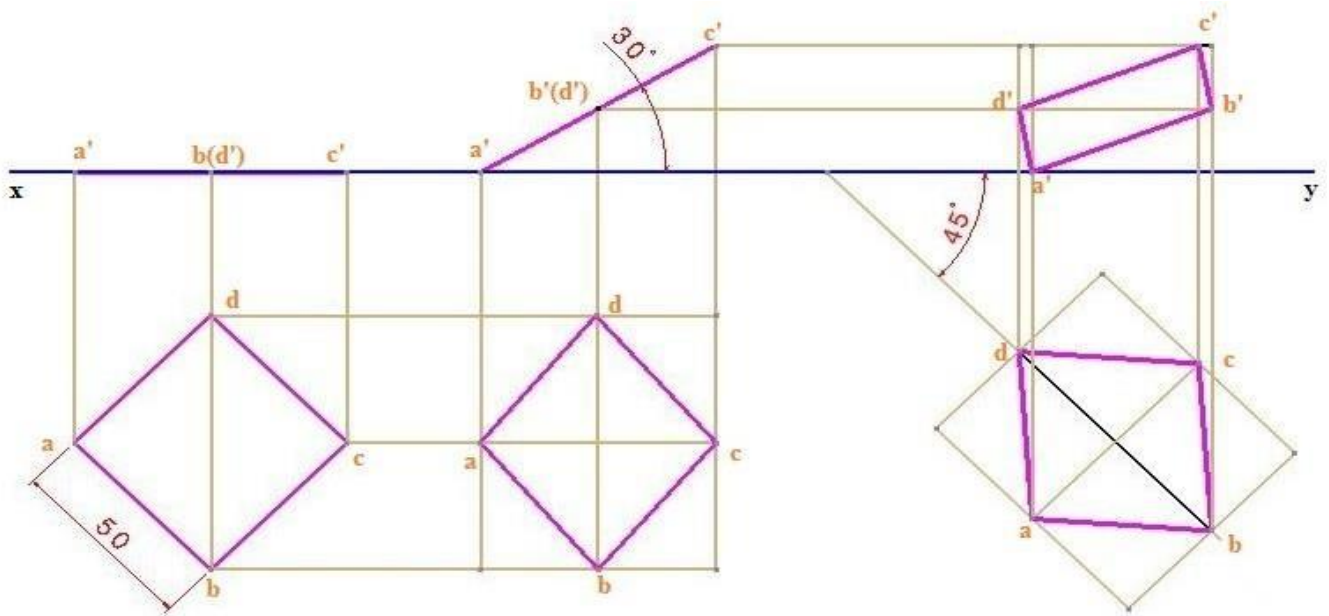


20. A line AB, 90 mm long is inclined at 45° to the HP & its top view makes an angle of 60° to the VP. The end A is in HP and 12 mm in front of VP. Draw its projections & find Φ

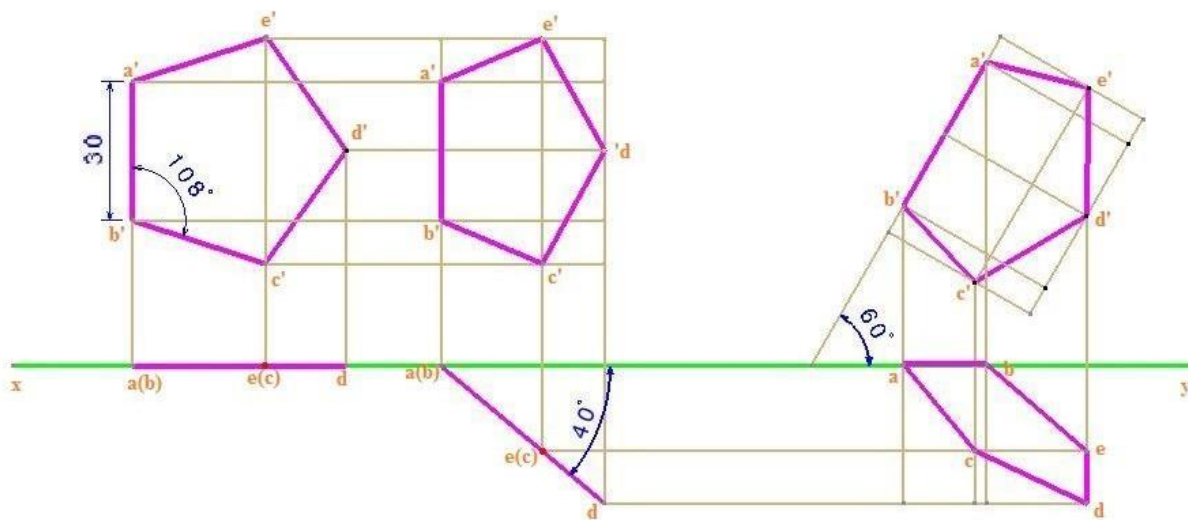


PROJECTION OF PLANES:

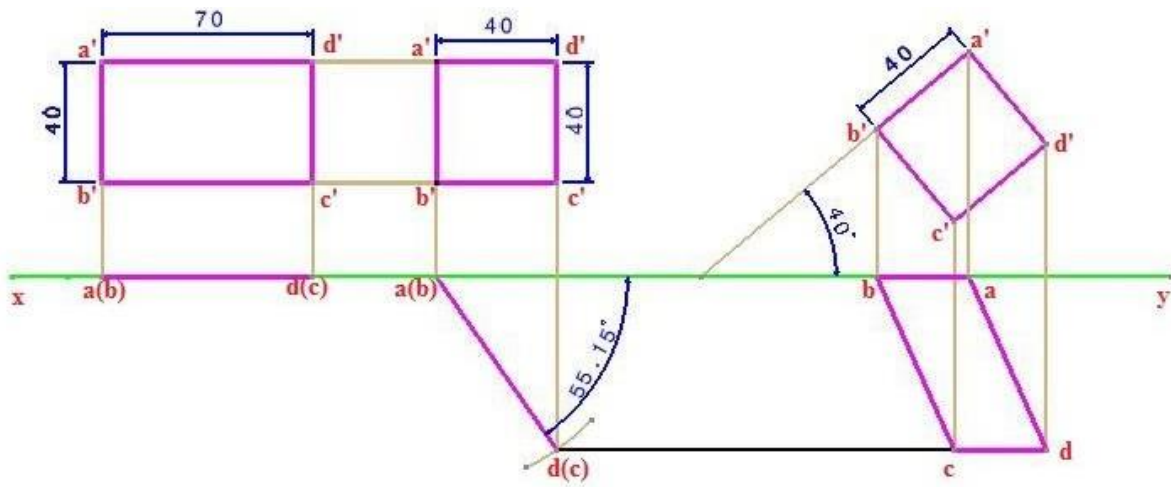
1. A square ABCD of 50 mm side has its corner A in the H.P. its diagonal AC inclined at 30° to the H.P and the diagonal BD inclined at 45° to V.P. and parallel to H.P. Draw its projections



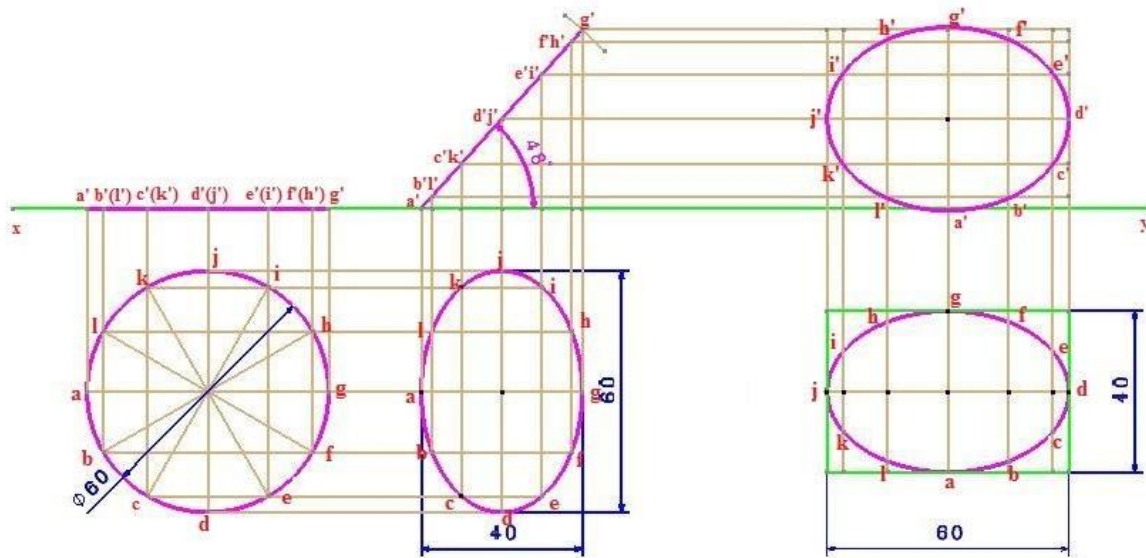
2. A pentagonal plane of 30 mm side has one of its sides in the V.P and inclined at 60° to the H.P. while the surface of the plane makes an angle of 40° to V.P. Draw its projections.



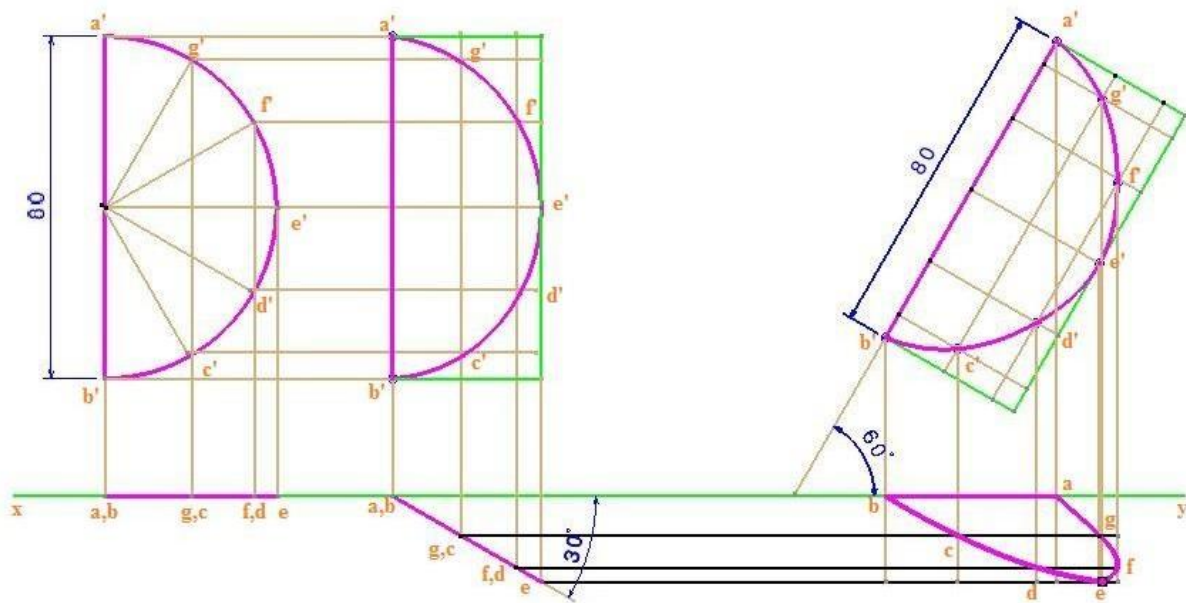
3. A rectangular plate of sides 70X40 mm, has one of its shorter edges in V.P inclined at 40° to H.P. Draw its top view if its front view is a square of side 40 mm.



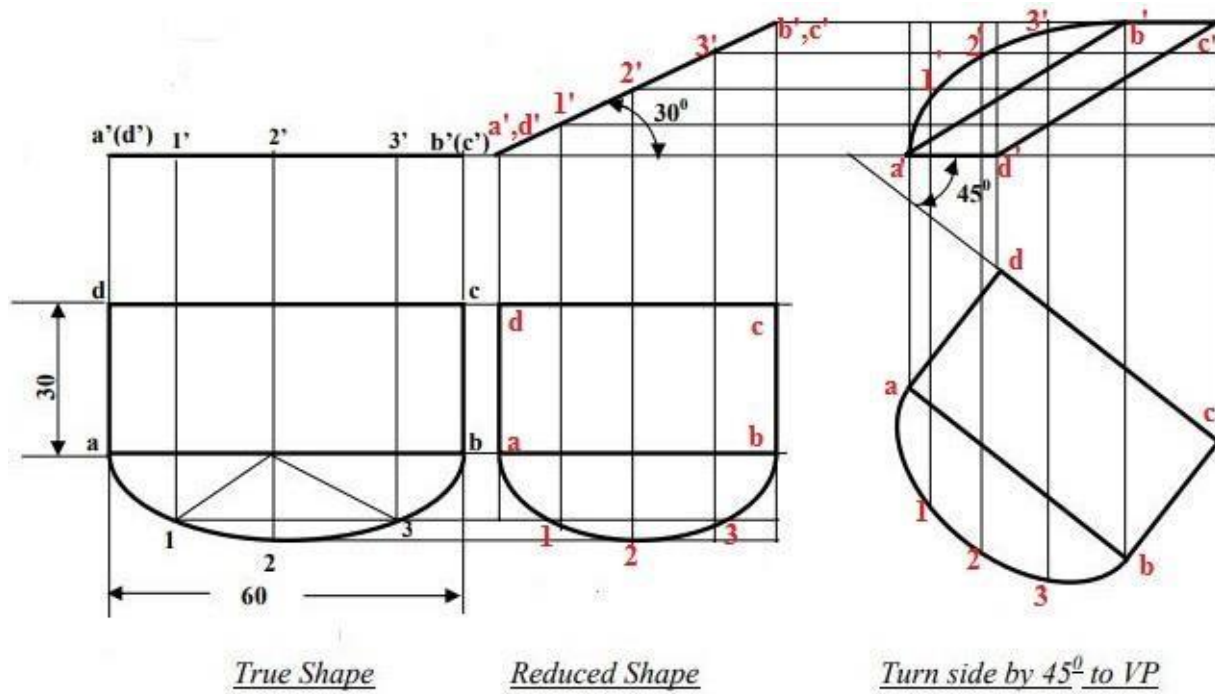
4. The top view of a circular lamina of diameter 60 mm resting on H.P is an ellipse of major axis 60 mm and minor axis 40 mm. Draw its front view when the major axis of the ellipse in the top view is horizontal. Find the angle of inclination of the lamina with H.P.



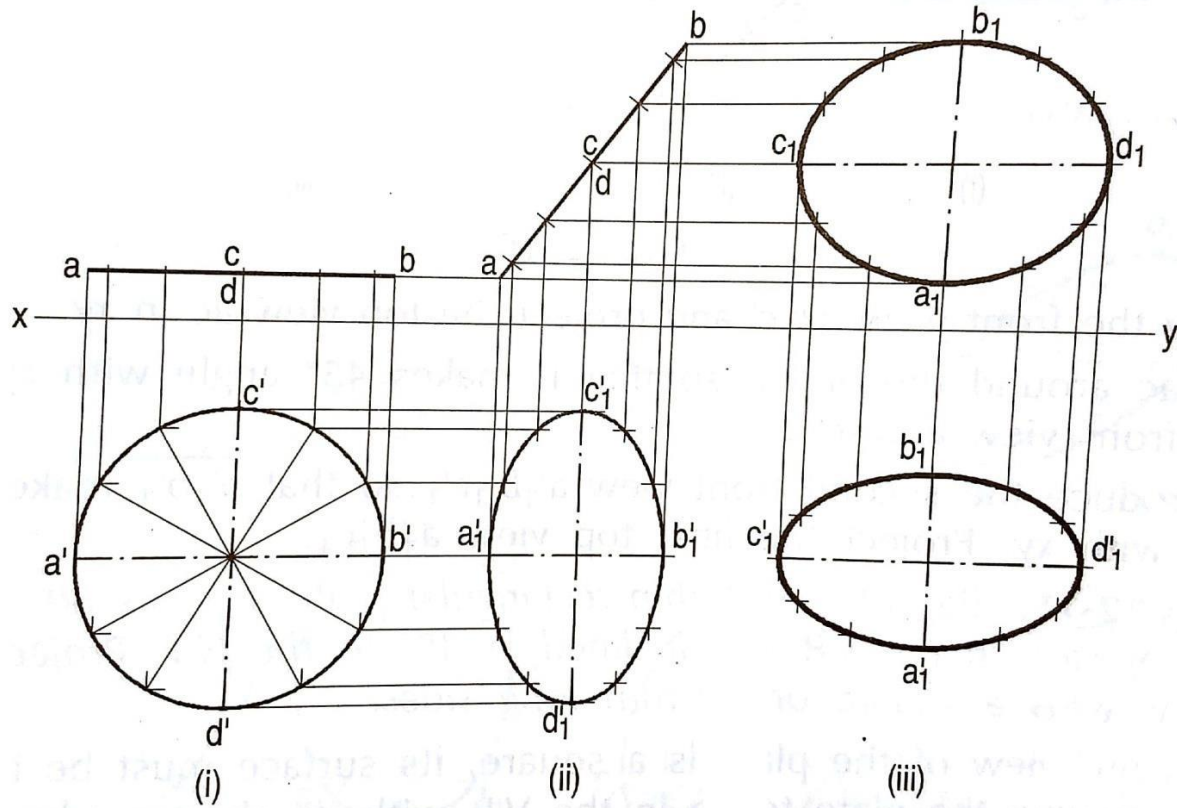
5. A semicircular plate of 80 mm diameter has its straight edge in the V.P. and inclined at 60° to the H.P. the surface of the plate makes an angle of 30° with the V.P. Draw its projections.



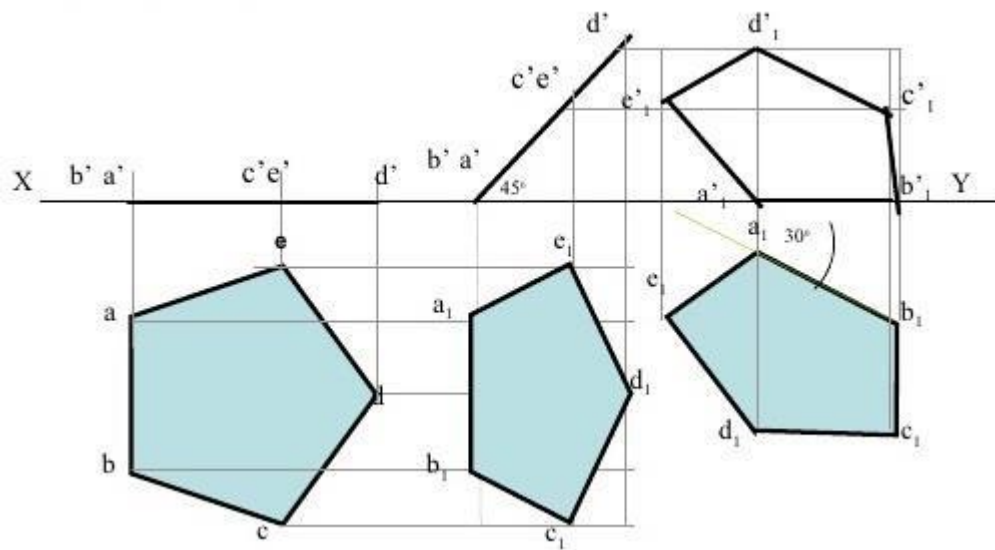
6. A composite plate of negligible thickness is made up of a rectangle 60X40 mm, and a semicircle on its larger side. Draw its projections when the longer side is parallel to H.P and inclined at 45° to the V.P. the surface of the plate making 30° with the H.P.



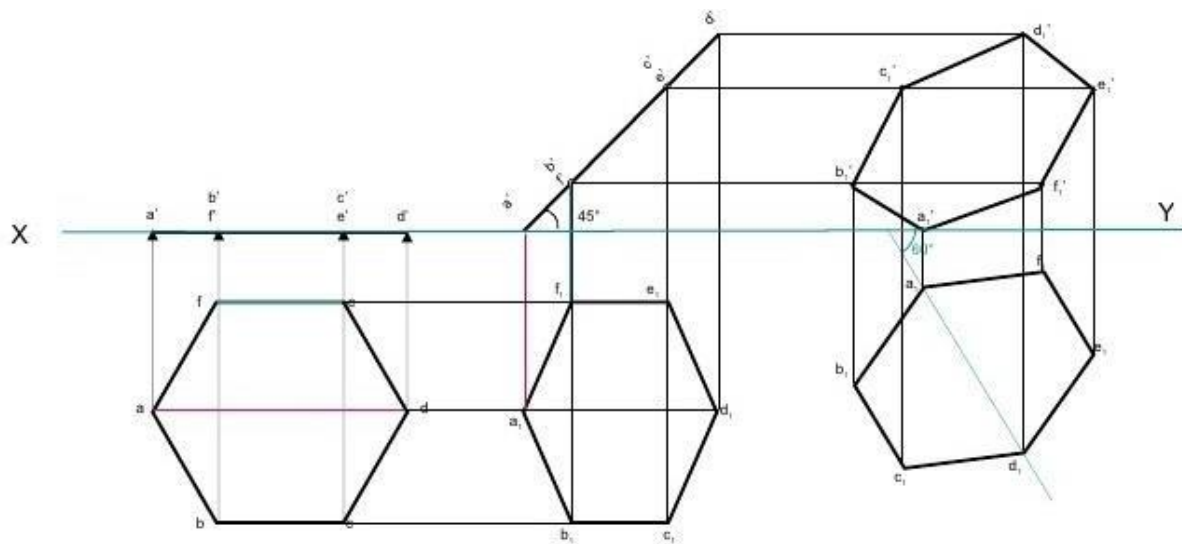
7. A circular plate of negligible thickness and 50 mm diameter appears as an ellipse in the top view having its major axis 50 mm long and minor axis is 30 mm long. Draw its front view when the major axis of the ellipse is horizontal.



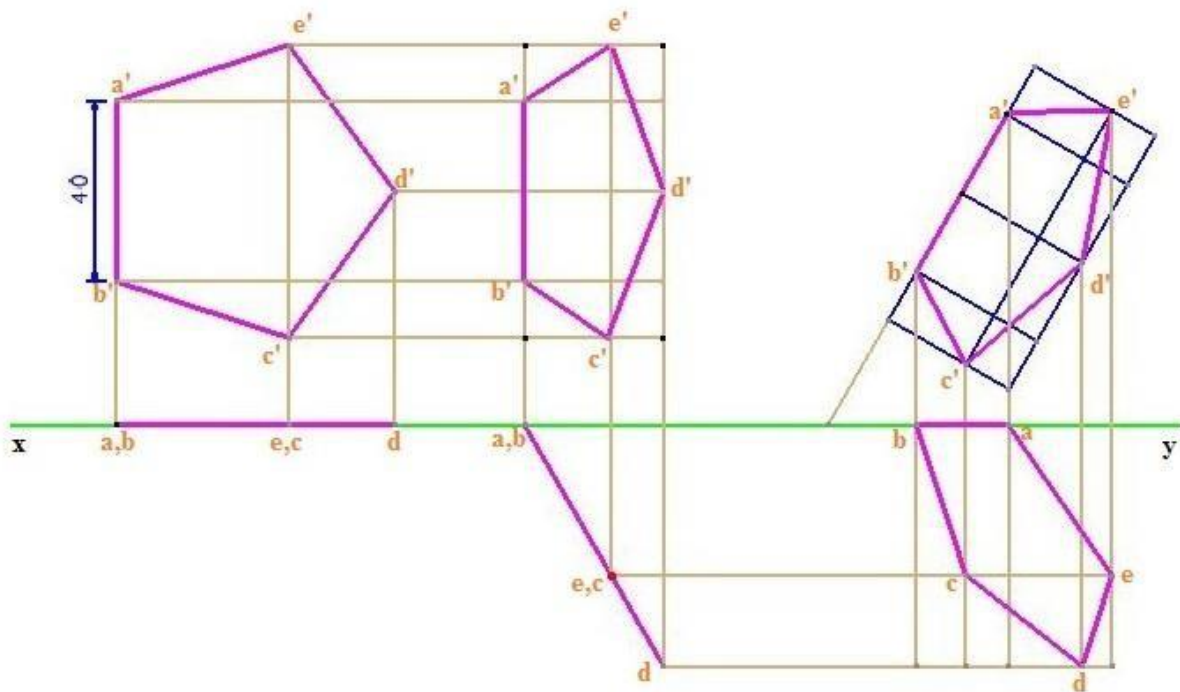
8. A regular pentagon of 30 mm side resting on one of its edges on H.P. which is inclined at 45° to V.P its surface is inclined at 30° to the H.P. Draw the projections.



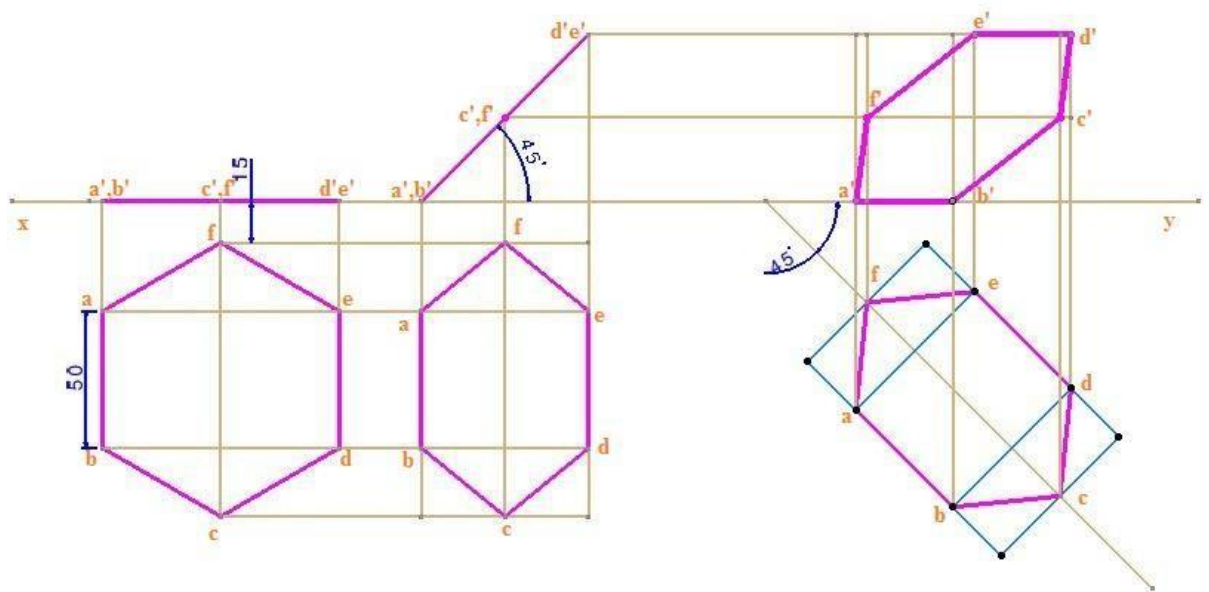
9. A regular hexagon of 40 mm has a corner in the H.P its surface is inclined at 45° to the H.P and the top view of the diagonal through the corner which is in the H.P makes an angle of 60° with the V.P Draw its projections.



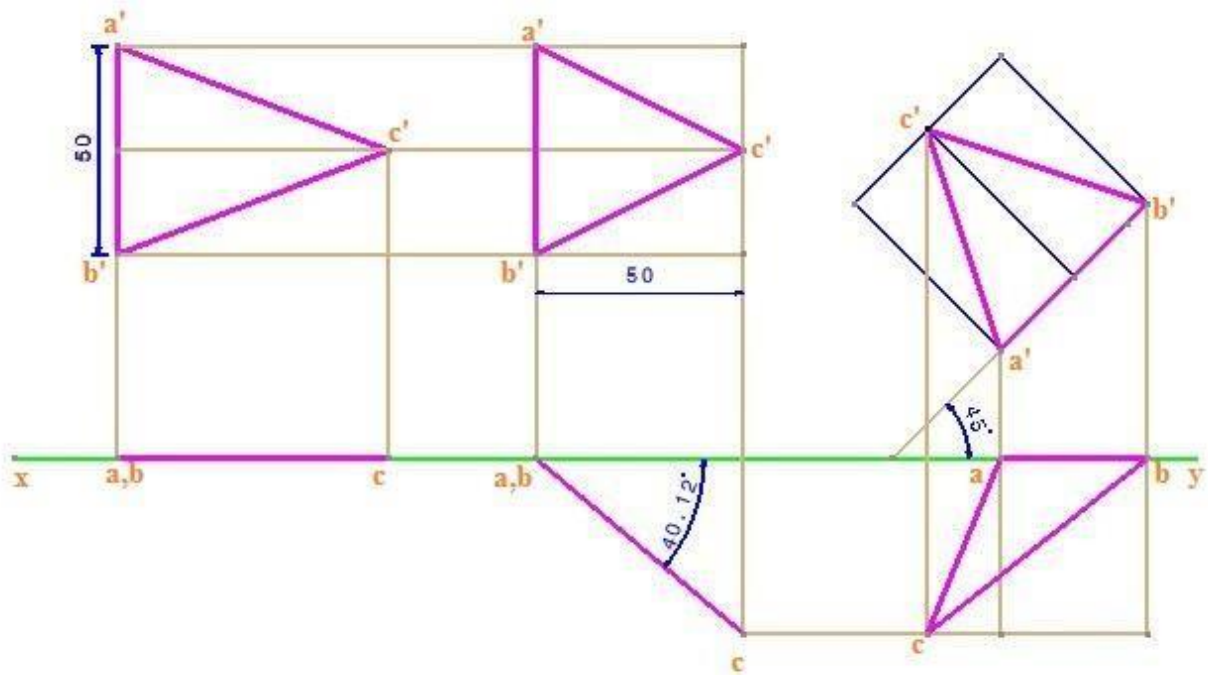
10. Draw the projections of a regular pentagon of side 40 mm, having its surface inclined at 30° to the V.P and the side on which it rests on V.P makes an angle of 60° with H.P.



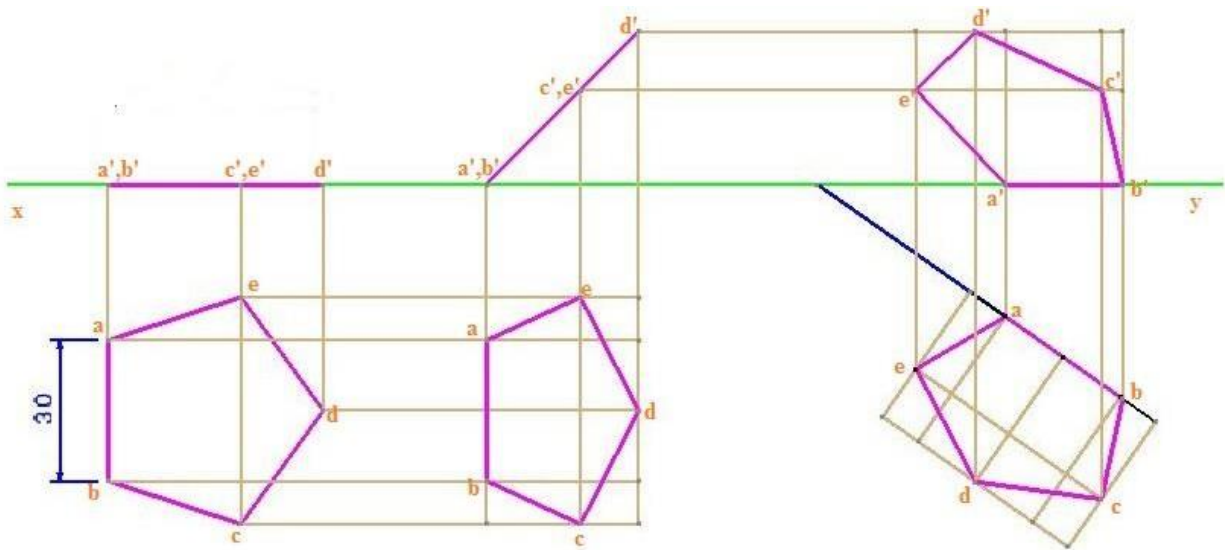
11. A hexagonal lamina with its edge 50 mm has its plane inclined at 45° to H.P. and lying with one of its edges in H.P. The plane of one of its diagonal is inclined at 45° to xy. The corner nearest to V.P. is 15 mm in front of it. Draw its projections



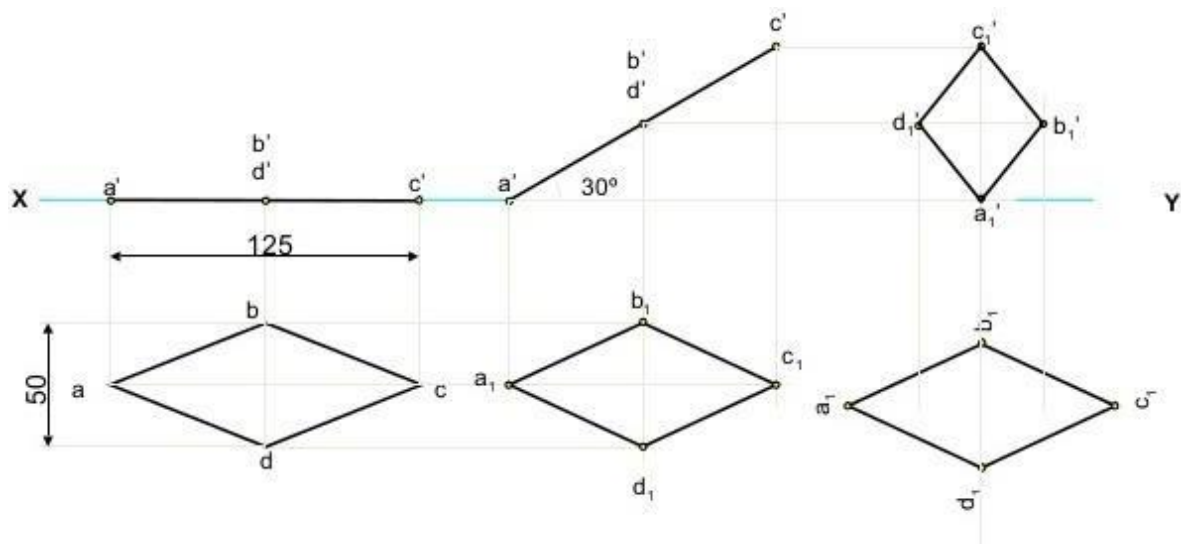
12. A plate having shape of an isosceles triangle has base 50 mm and altitude 70 mm. It is so placed that in front view it is seen an equilateral triangle of 50 mm sides and one side inclined at 45° to xy. Draw its top view.



13. A pentagonal plate of side 30mm is resting on HP on one of its sides with its surface inclined at 45° to HP and the resting side is inclined at 55° to VP. Draw its projections.



14. Draw the projection of a rhombus having diagonals 125mm and 50mm long, the smaller diagonal of which is parallel to both the principal planes, while the other is inclined at 30° to the HP.



15. Draw the projection of circle of 75mm diameter having the end A of the diameter AB is the HP, the end B in the VP and the surface inclined at 30° to the HP and at 60° to the VP.

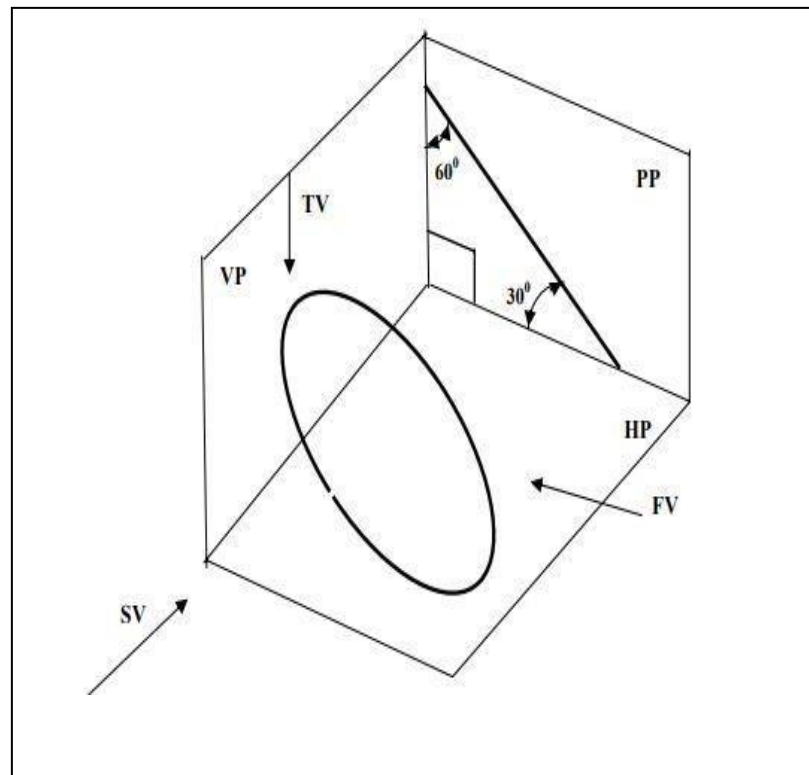
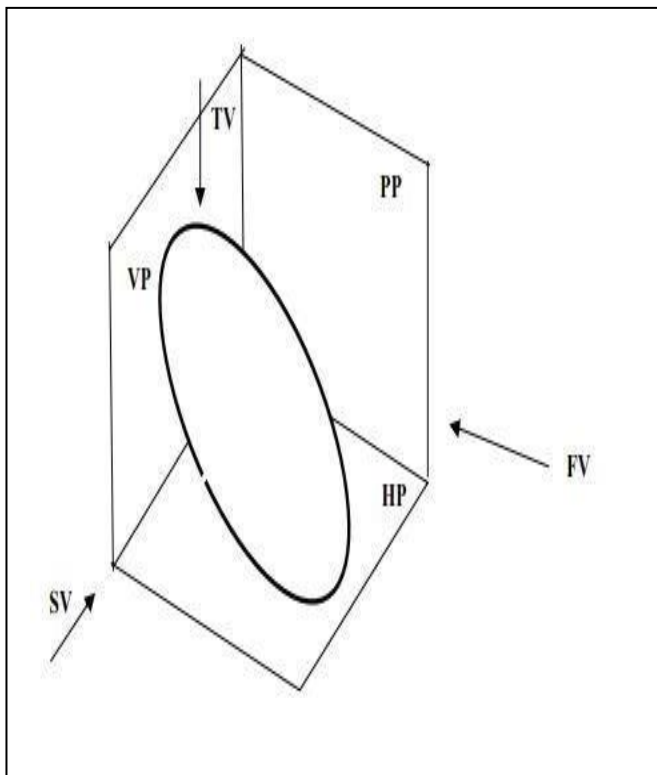
Given Data:

Shape / Circle, 75 mm diameter.

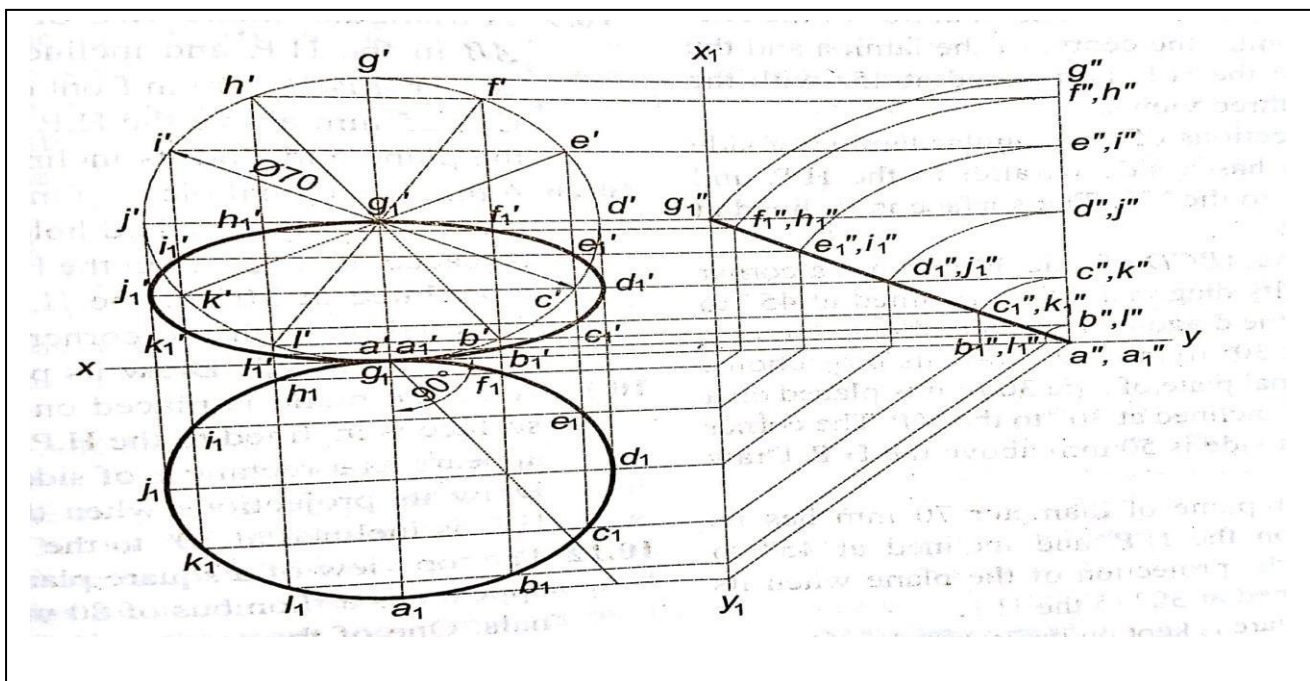
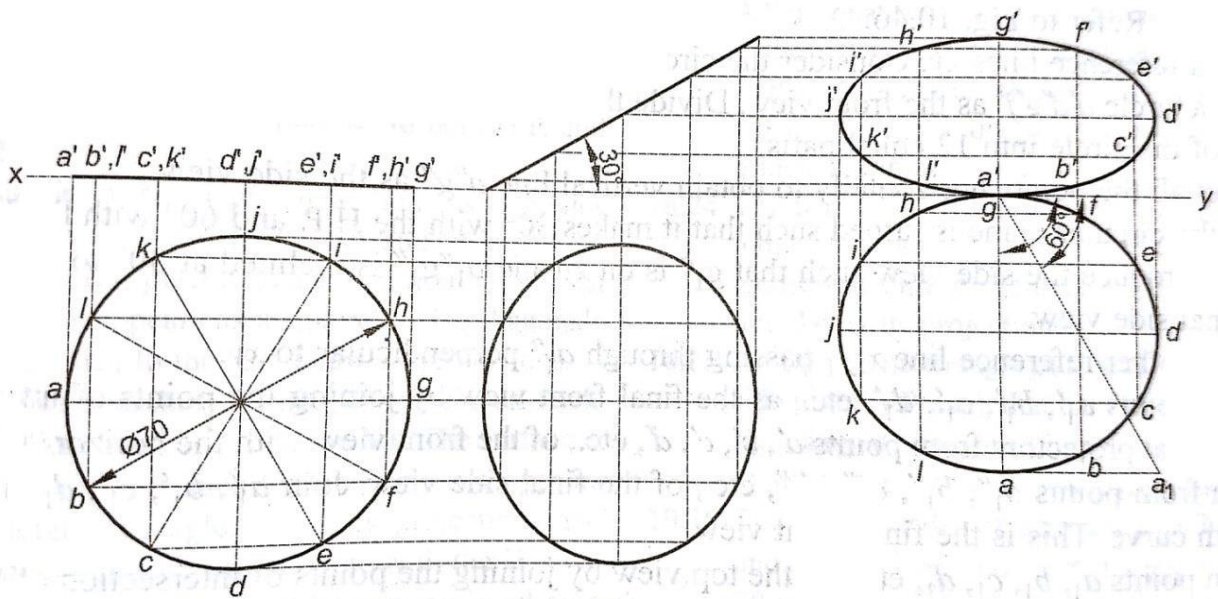
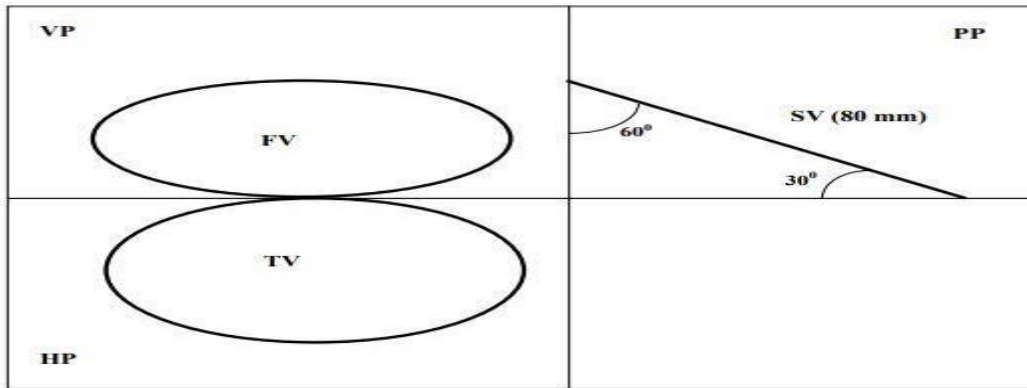
Surface or Plane angle 30° to HP & 60° to V.P

(Shape's surface angle is seen in Side View)

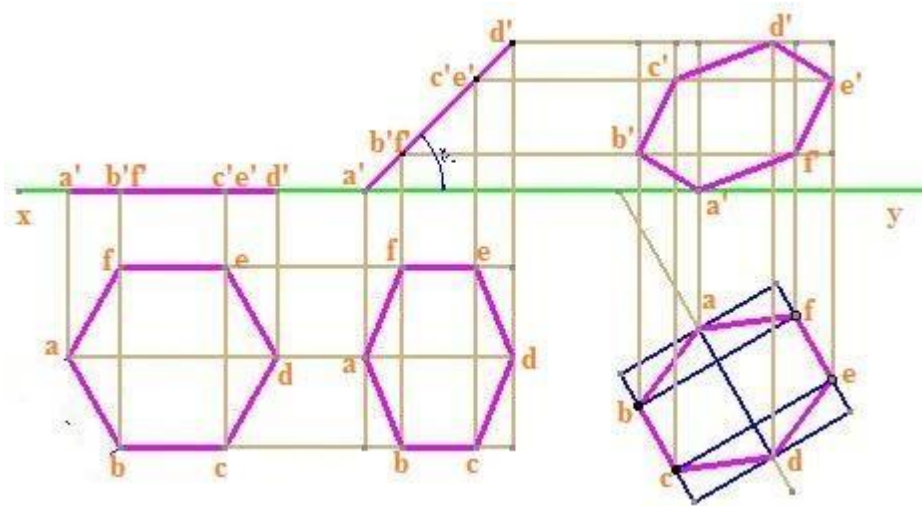
- ✓ In the front view and top view, we see a reduced circle (representing an ellipse).
- ✓ Best Example of this case is a ladder standing on a wall with one end on the wall and other end on the floor. The inclinations of the ladder surface can be seen in the side view, assuming the wall as VP & the floor as HP.
- ✓ Also in this special case of problems, the sum of angles made by the surfaces with HP & VP is always 90° .
- ✓ So, to identify this case of problem in projection of planes, we have to check 2 data:
 - ❖ One end on HP & other end on VP.
 - ❖ Sum of angles made by plane (surface) will be equal to 90° .



The final three views of the plane surface are shown below.

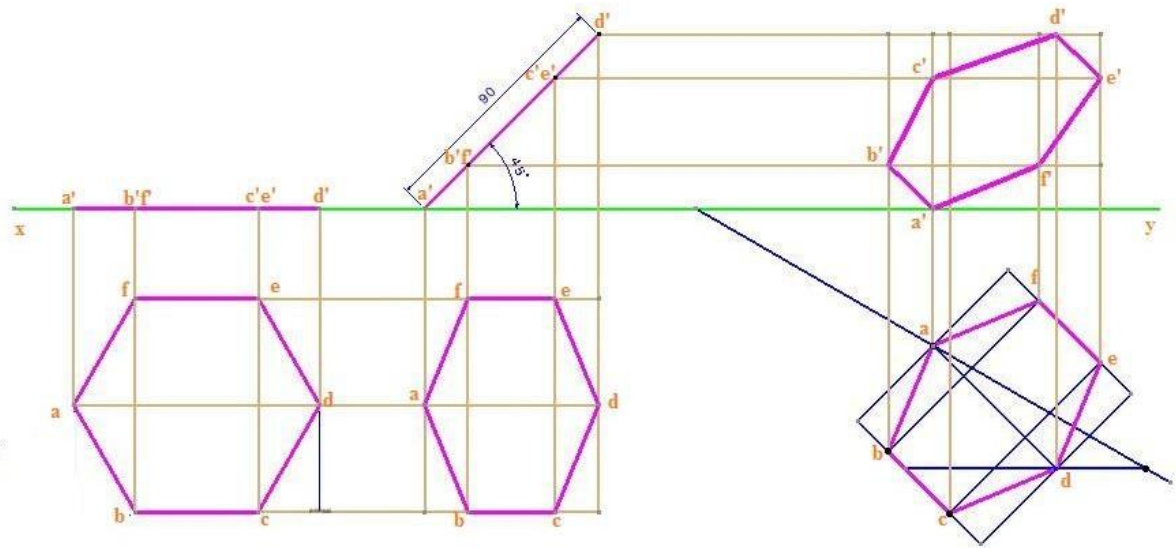


16. A regular hexagonal plane of 45mm side has a corner on HP, with its surface inclined at 45° to HP. Draw its projections when
- a) The top view of the diagonal through the resting corner makes 60° with VP and

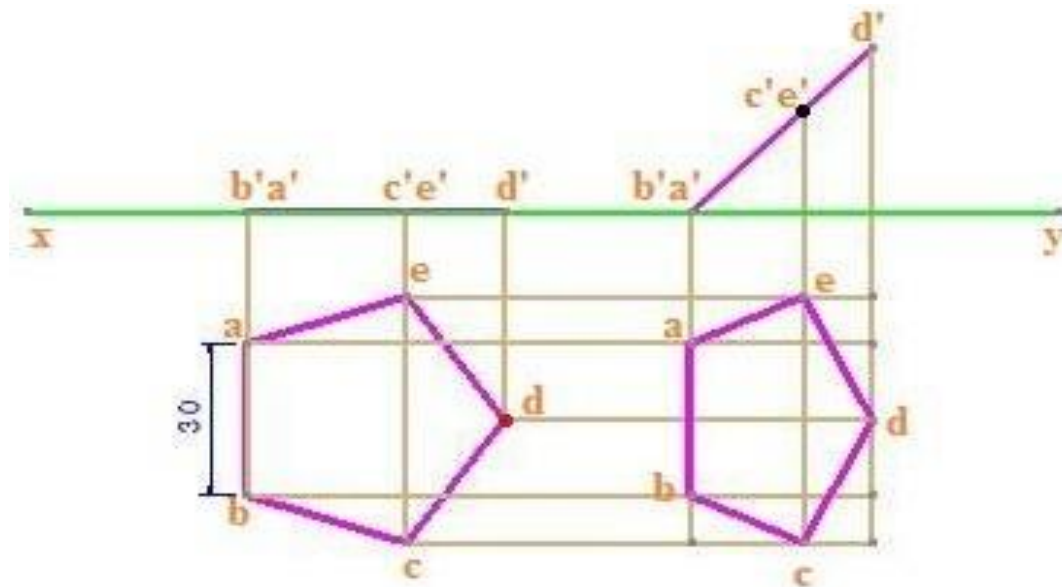


16. A regular hexagonal plane of 45mm side has a corner on HP, with its surface inclined at 45° to HP. Draw its projections when

b) The diagonal itself makes 30° with VP.



17. A regular pentagon of 30mm side has one side on the ground and its plane is inclined at 45° to H.P and perpendicular to V.P. Draw the projections.



18 A square lamina is placed such that one of the corners is touching the VP and the diagonal through this is perpendicular to the VP and measures 60mm. The other diagonal appear to be 40 mm in the view from above. Draw the projections and find the inclination of the plane to the ground.

