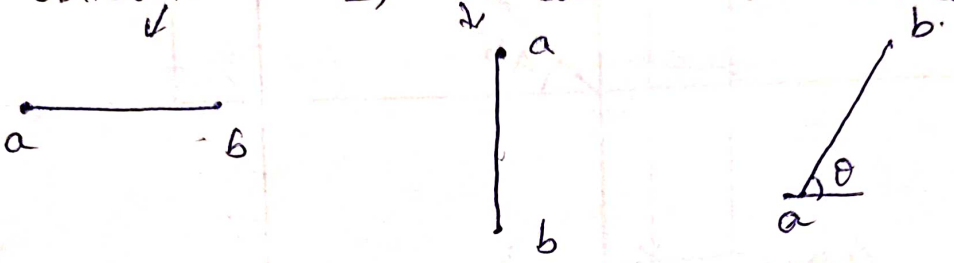
8/12/2018

PROJECTION OF STRAIGHT LINES

→ The shortest distance between two points is a straight line.

→ Straight lines can be divided into 3 ways

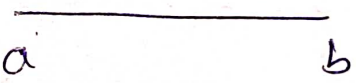
1) Horizontal 2) Vertical 3) Inclined.



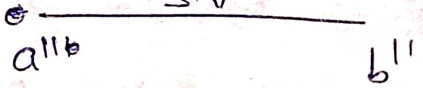
→ a'b', is the front view of line. ab is the topview of line. a''b'' is the sideview of the line

(i) F.V

(ii) T.V

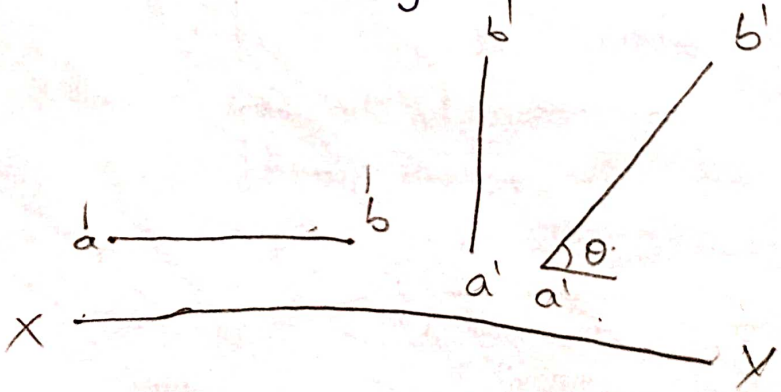


(iii) S.V

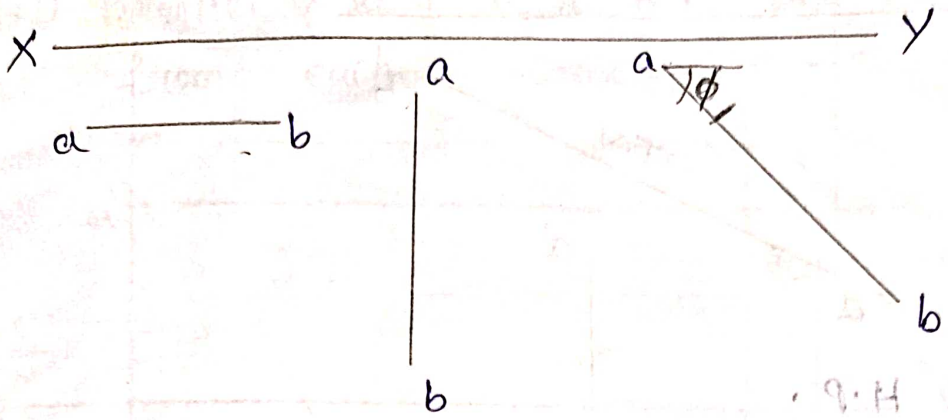


→ Since the first angle projection method is used in the following problems.

→ Relation with H.P is satisfied in the front view is above xy line.



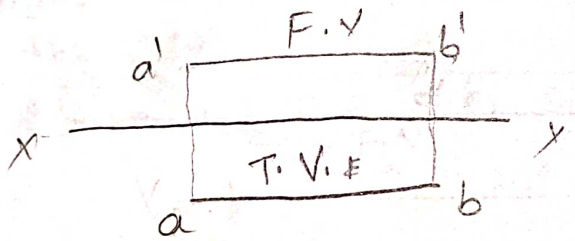
→ Relation with V.P is satisfied in the top view in the xy line.



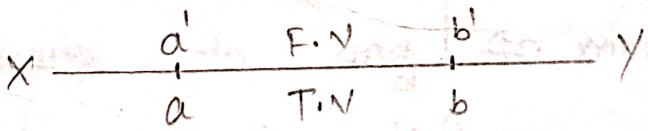
→ True length is the actual length of the line.

Positions and Possibilities:-

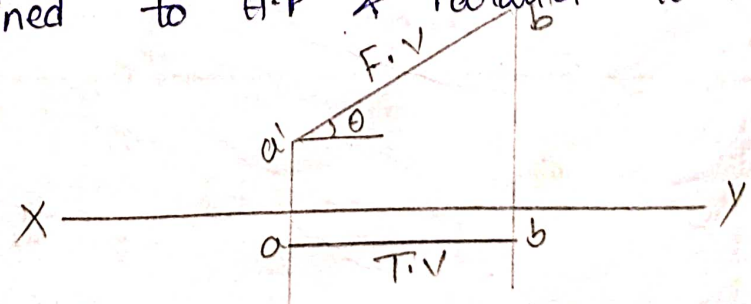
① Parallel to both H.P and V.P.



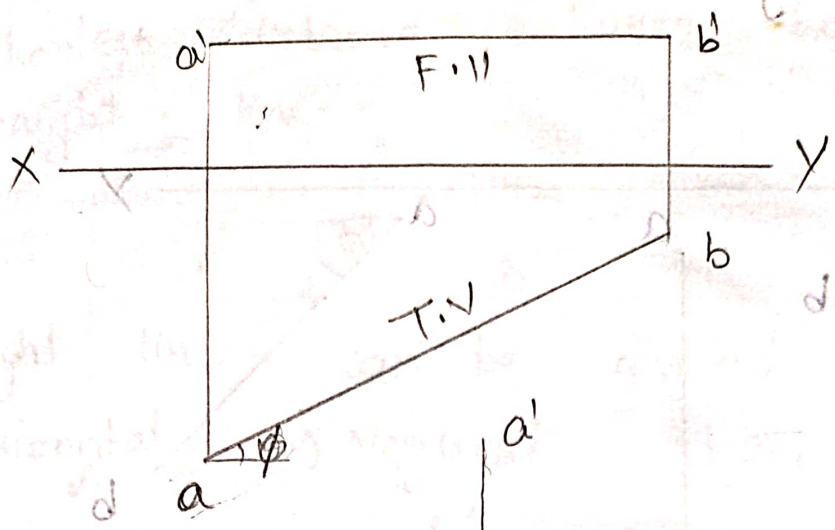
② In both H.P and V.P



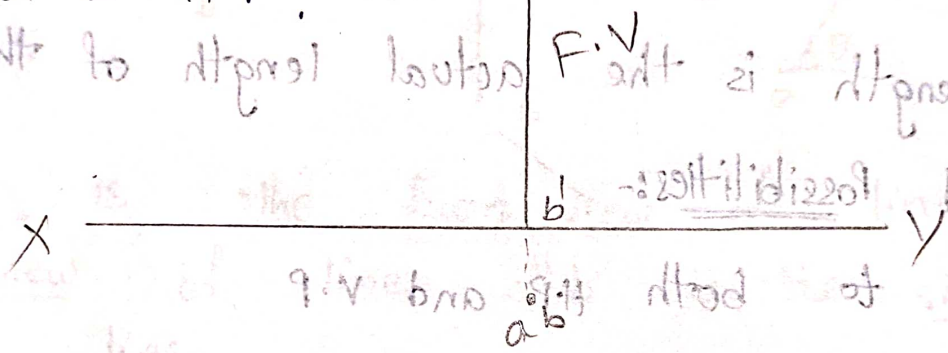
③ Inclined to H.P & Parallel to V.P



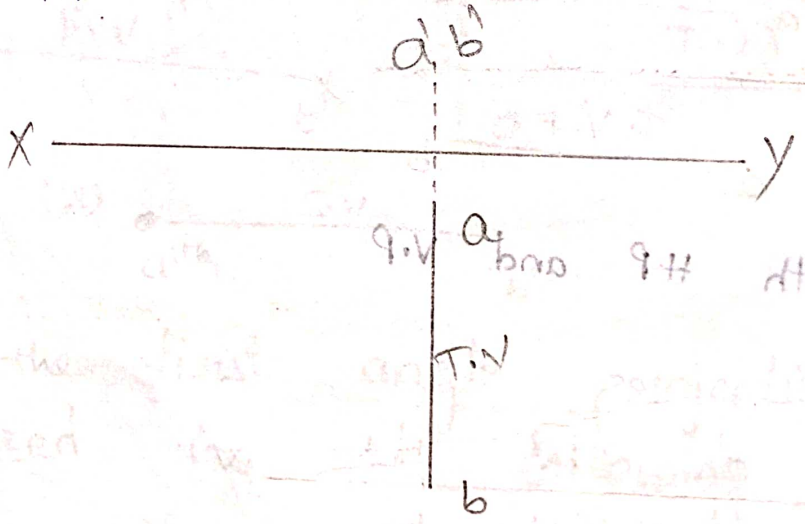
④ Inclined to V.P and Parallel to H.P.



⑤ ⊥ar to H.P:



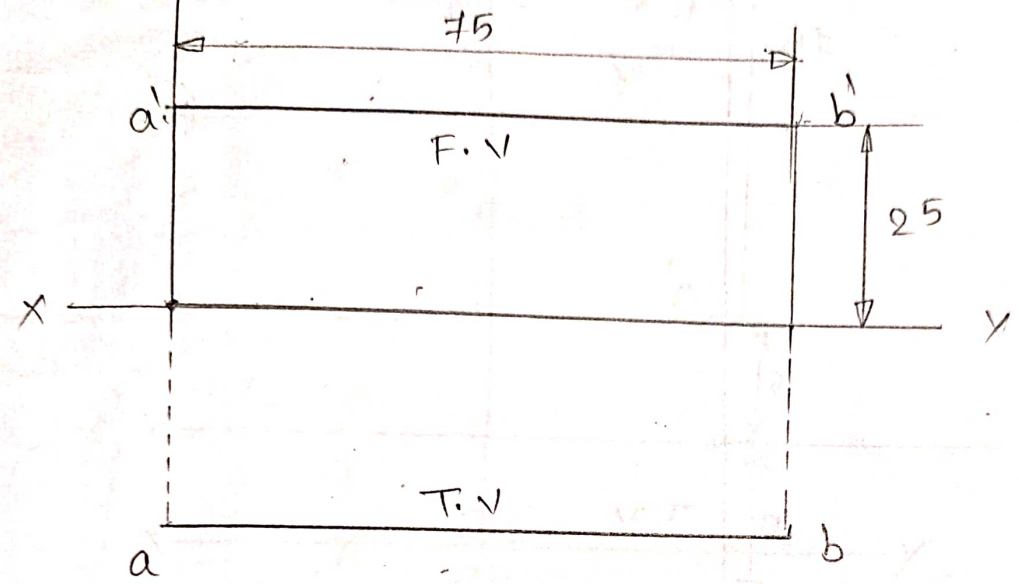
⑥ ⊥ar to V.P



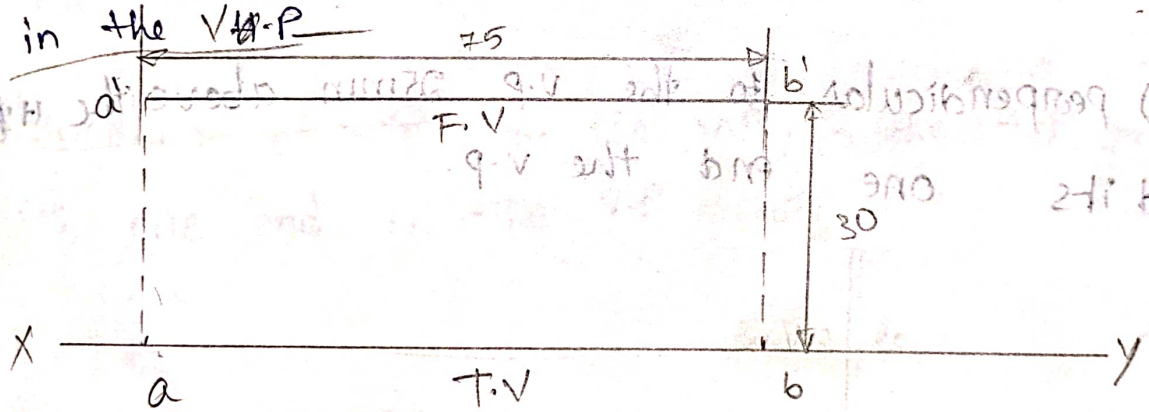
Problems:

1) Draw the projections of a 75 mm long straight line in the following positions.

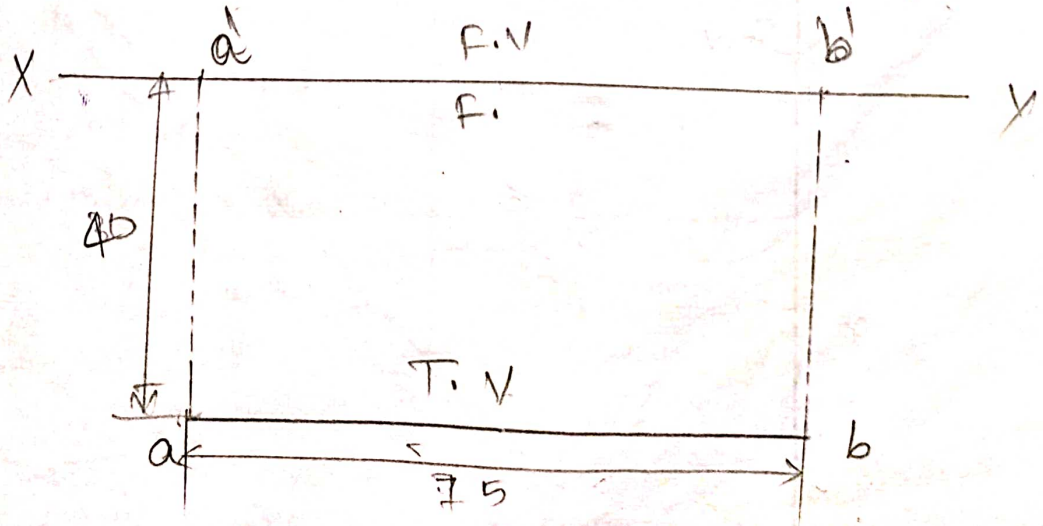
a) i) Parallel to both H.P and V.P and 25 mm from each.



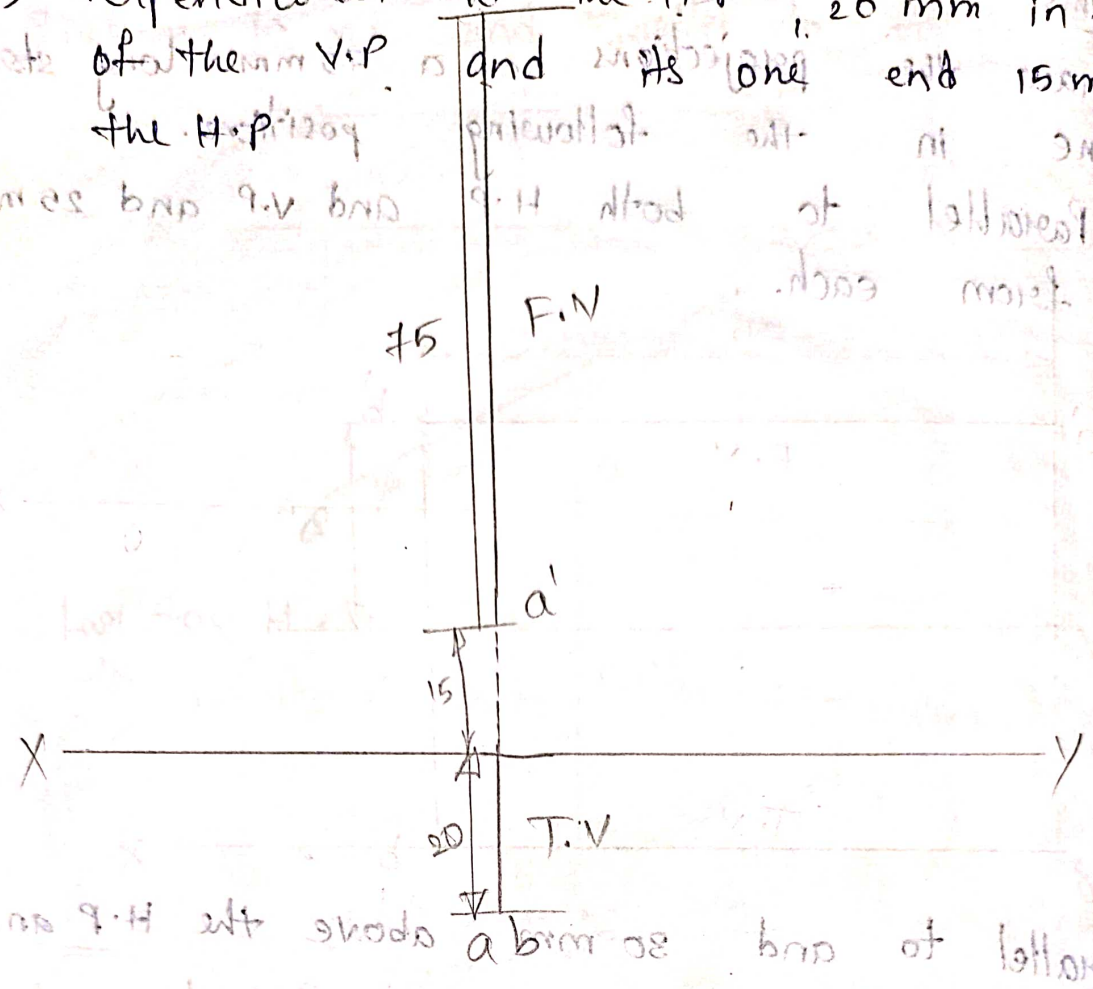
ii) Parallel to and 30 mm above the H.P and in the V.P



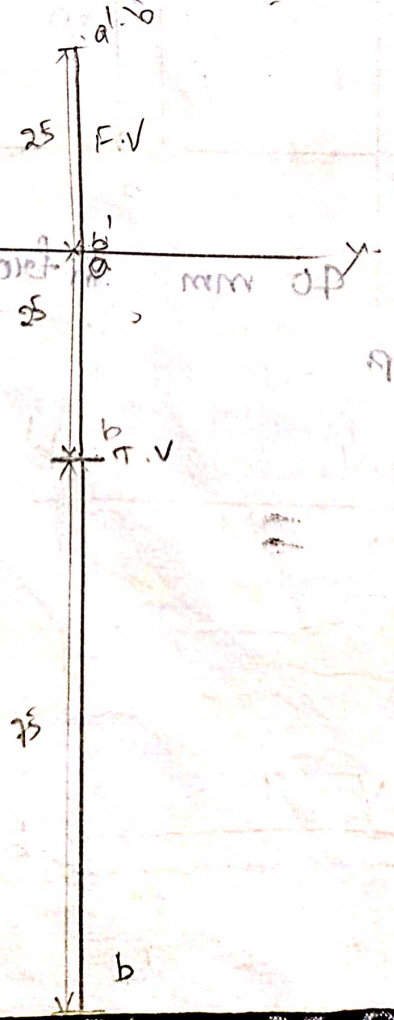
iii) Parallel to and 40 mm in front of V.P and in the H.P



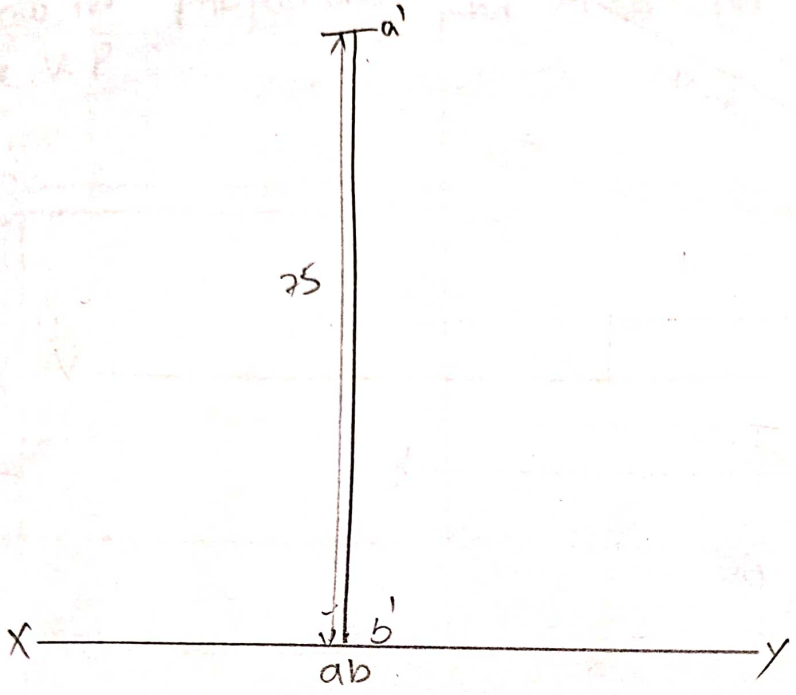
b)i) Perpendicular to the H.P and its one end 20 mm in front of the V.P and 15 mm above the H.P



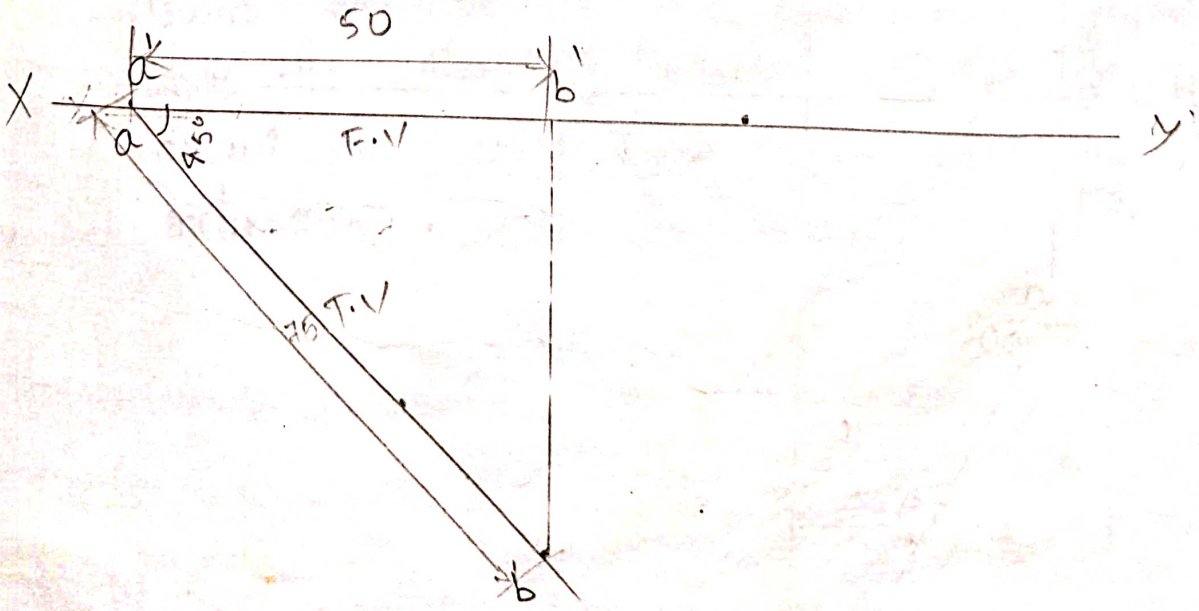
b)ii) perpendicular to the V.P 25mm above the H.P and its one end the V.P.



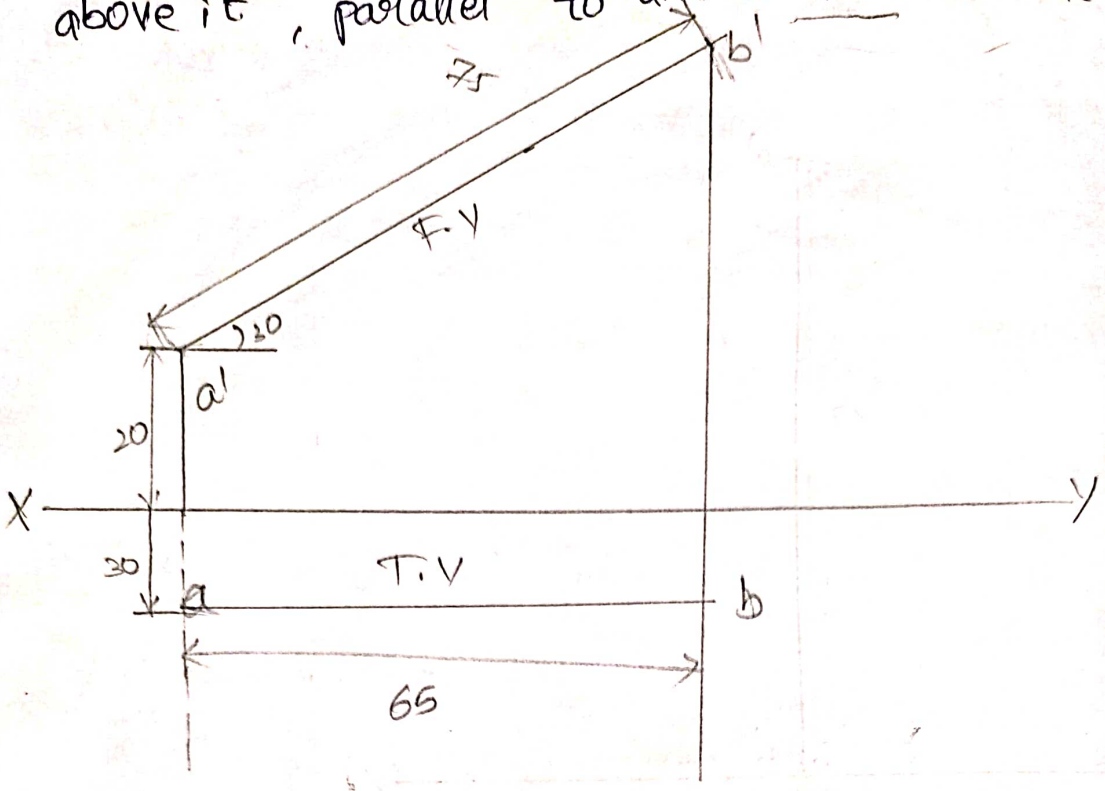
(iii) ⊥ to the H.P in the V.P and its one end in the V.P



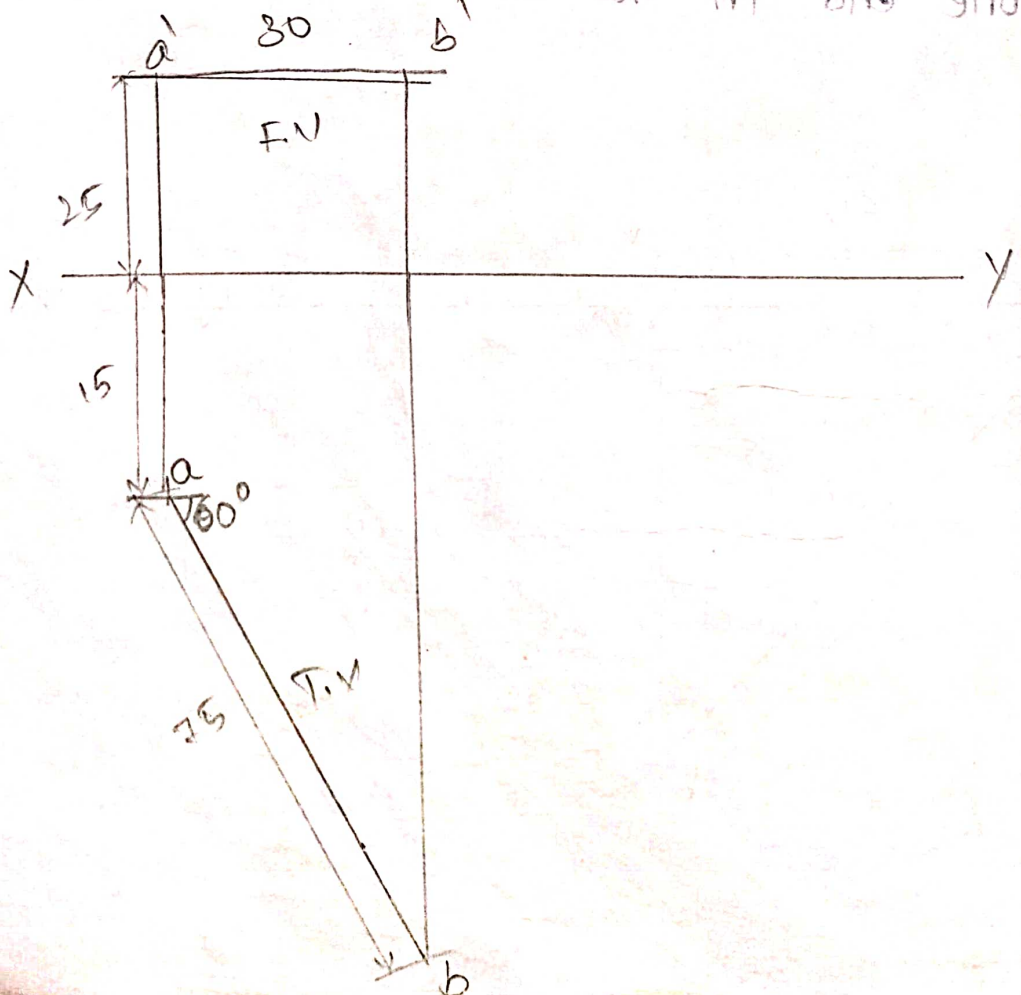
(ii) Inclined at 45° to the V.P, in the H.P and its one end in the V.P



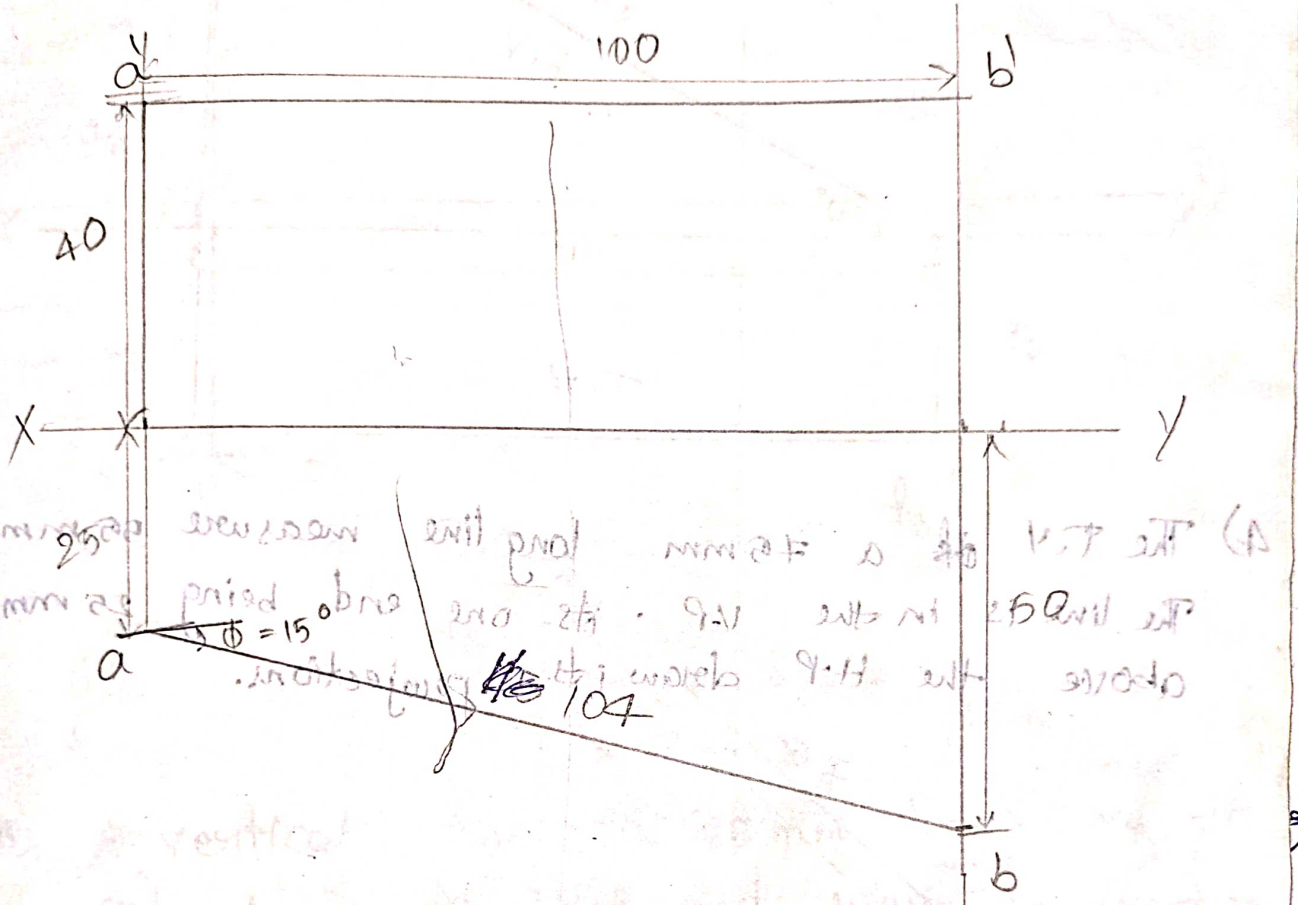
c) ii) Inclined at 30° to the H.P and its one end 20 above it, parallel to and 30 mm in front of V.P



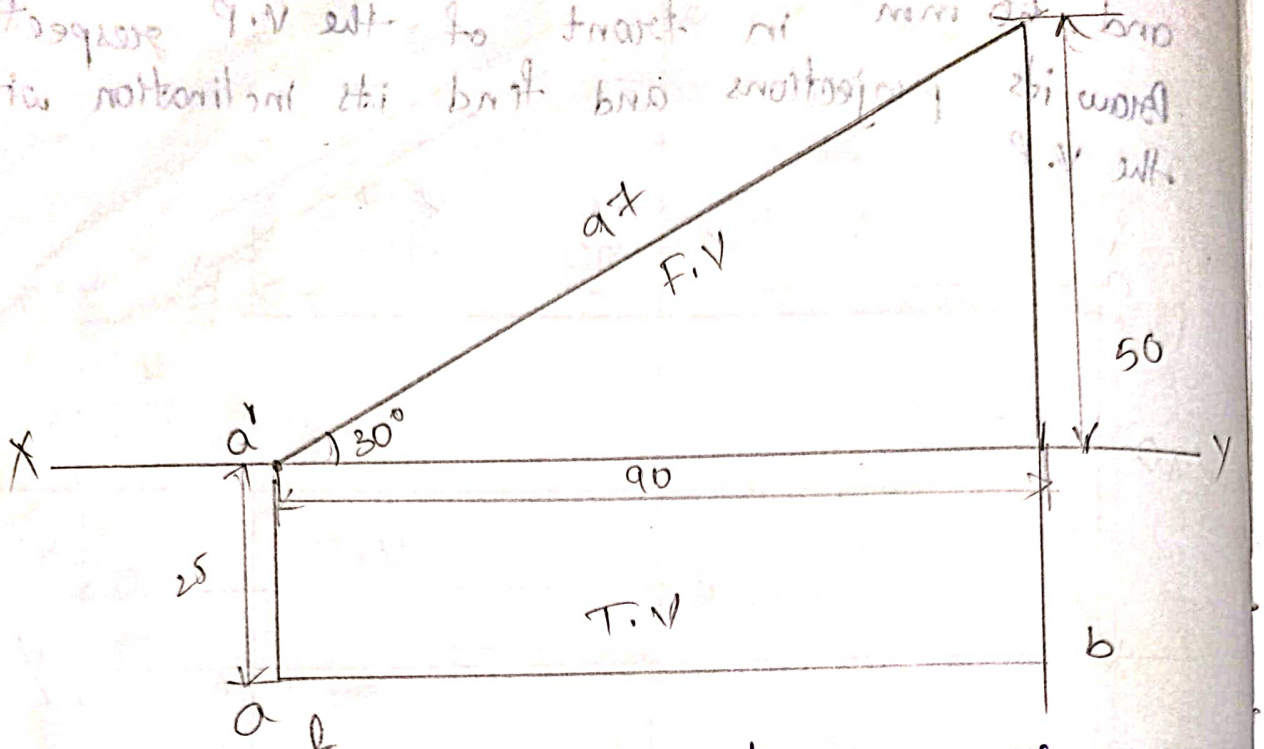
c) iii) Inclined at 60° to the V.P and its one end 15 mm infront of it; parallel to and 25 mm above the H.P.



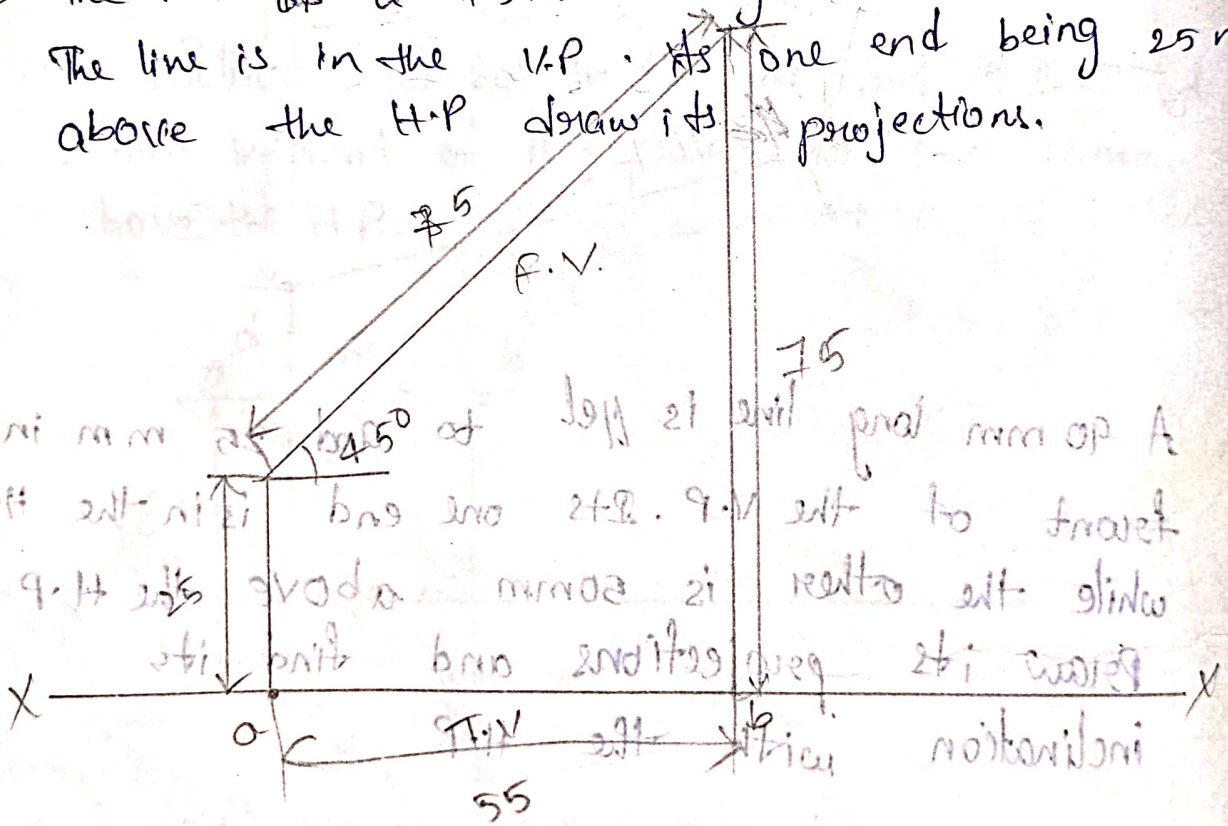
2) A 100m long line is ∥el to and 40 mm above the H.P. Its two ends are 25 mm and 50 mm in front of the V.P respectively. Draw its projections and find its inclination with the V.P



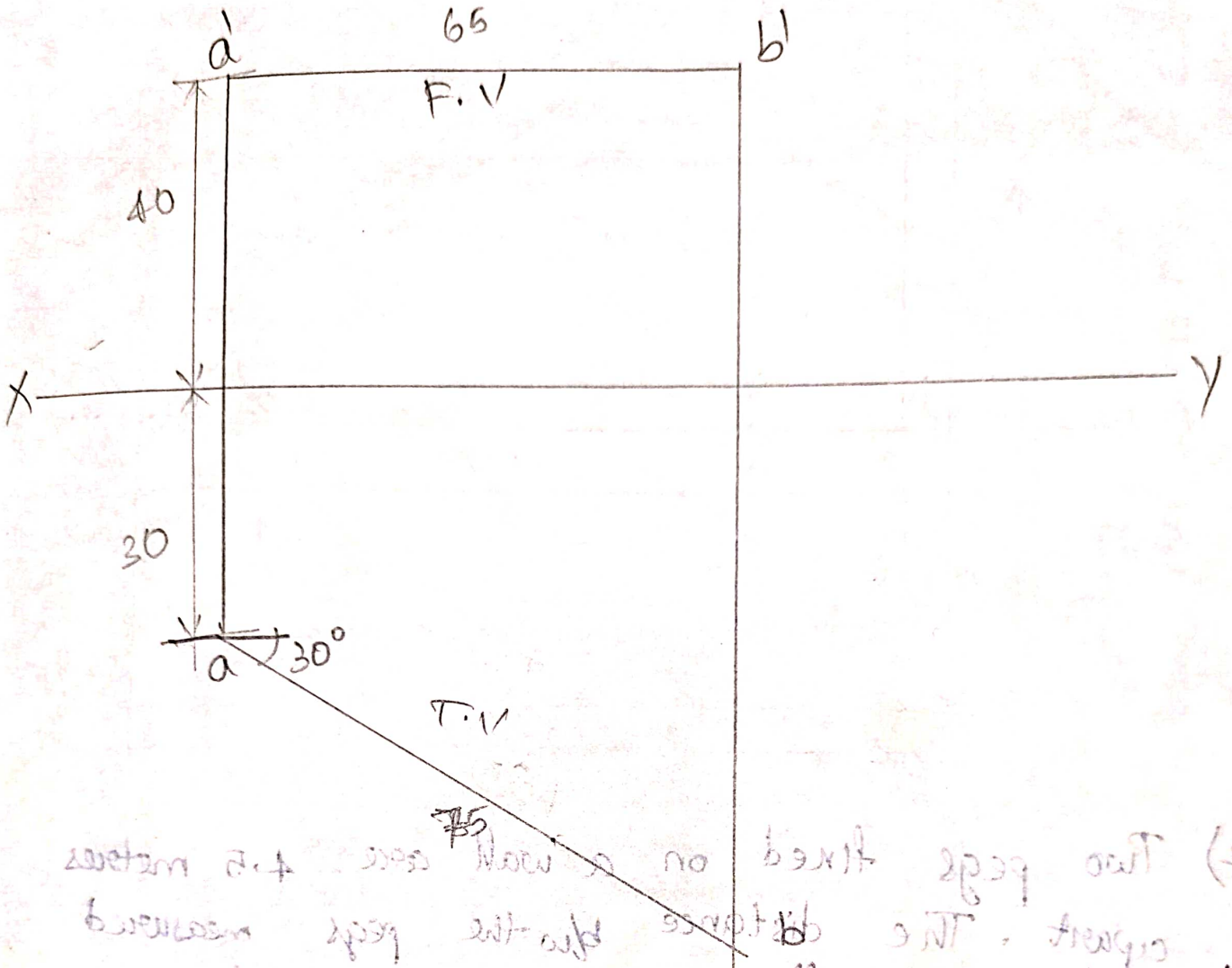
3) A 90 mm long line is ∥el to and 25 mm in front of the V.P. Its one end is in the H.P while the other is 50mm above the H.P. Draw its projections and find its inclination with the H.P



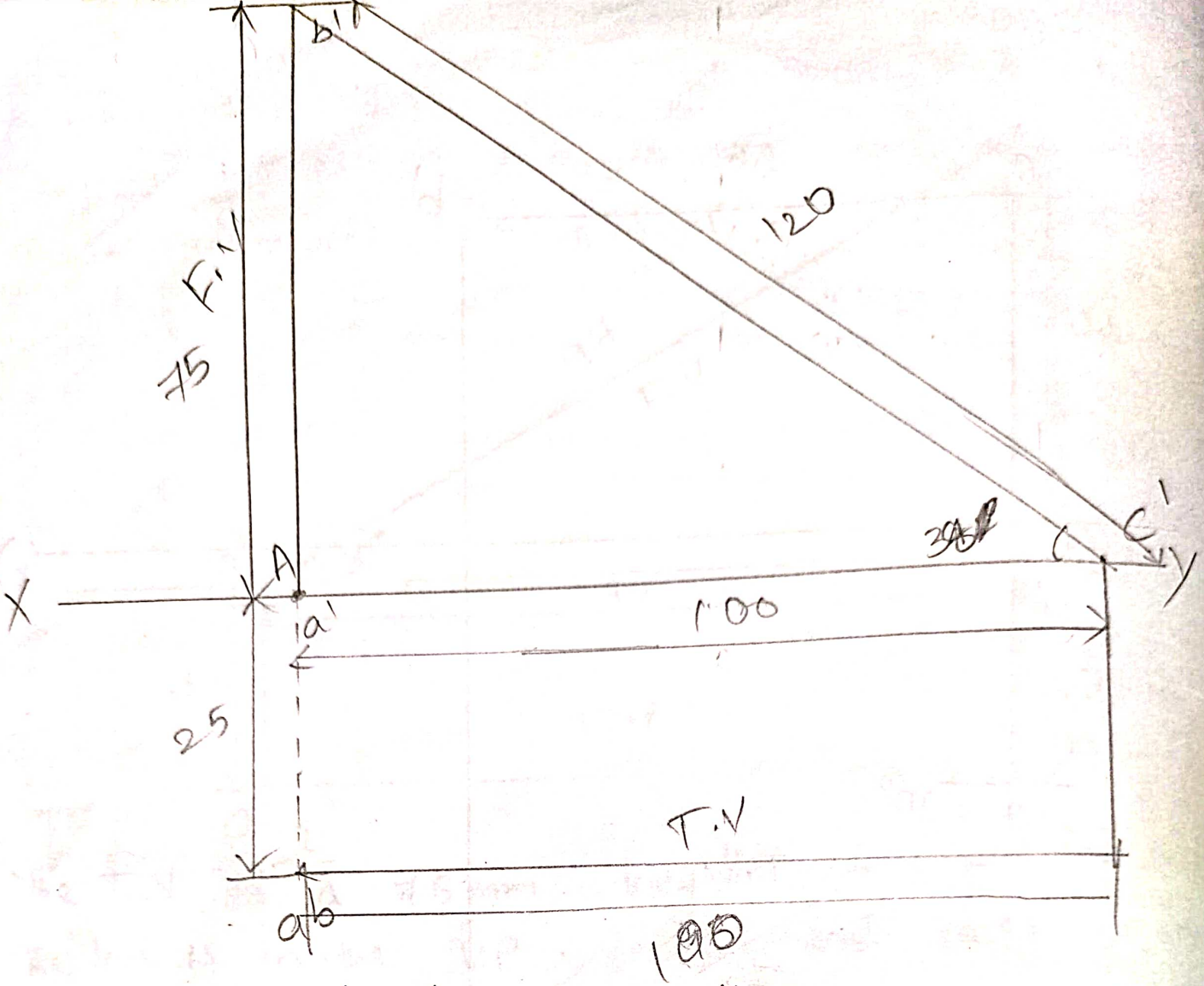
4) The T.V of a 75 mm long line measure 55 mm The line is in the V.P. its one end being 25 mm above the H.P draw its projections.



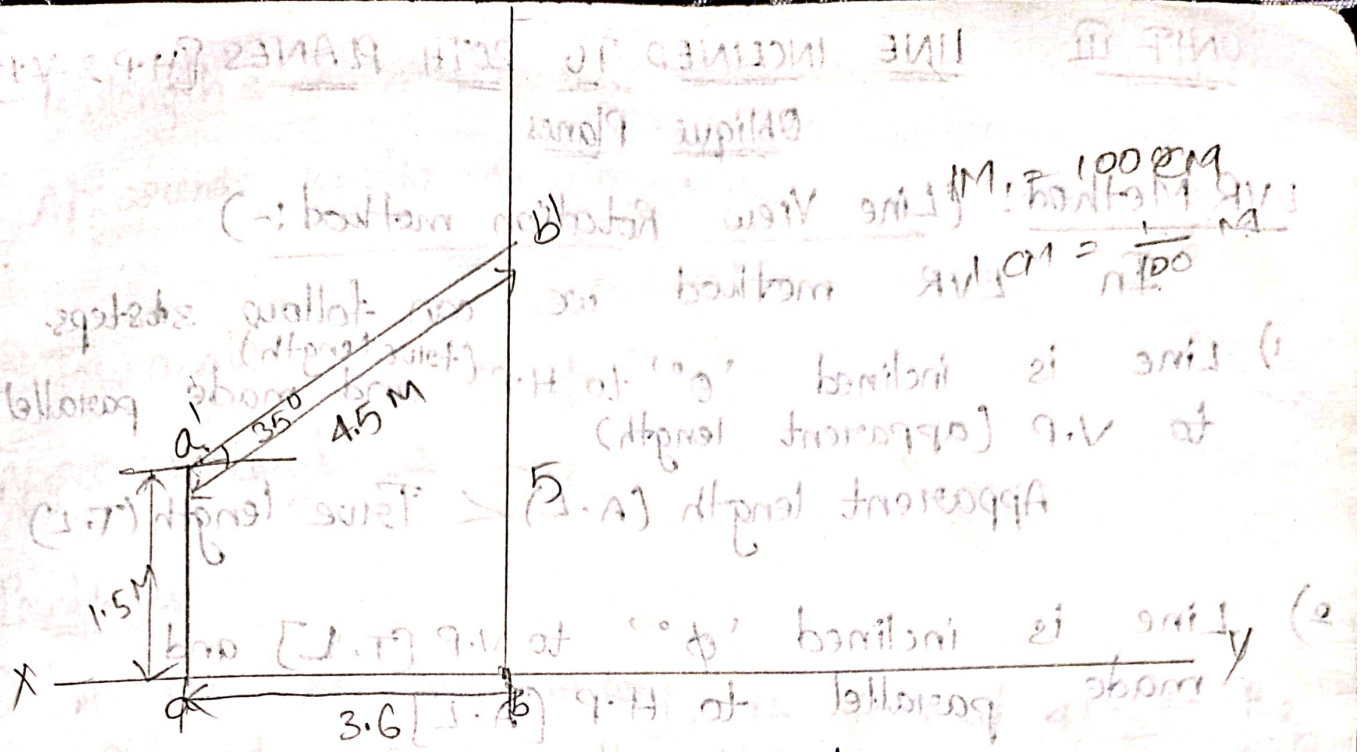
5) The front view of a line, inclined at 30° to the V.P is 65 mm long. Draw the projections of the line when it is parallel to and 40 mm above the H.P its one end being 30 mm in front of V.P



6) A vertical line AB, 75 mm long has its end A in the H.P and 25mm in front of V.P. A line AC 100 mm long is in the H.P and ⊥el to the V.P. Draw the projections of the line joining B & C. and determine its inclination with H.P.



7) Two pegs fixed on a wall are 4.5 metres apart. The distance b/w the pegs measured ⊥ly to the floor is 3.6 metres if one peg is 1.5 metres above the floor, find the height of the second peg and the inclination of the line joining the two pegs with the floor.



8) A 70 mm long line is ∥el to and 50 mm above the H.P and infront of V.P. Its two ends are 20 mm and 40mm infront of V.P