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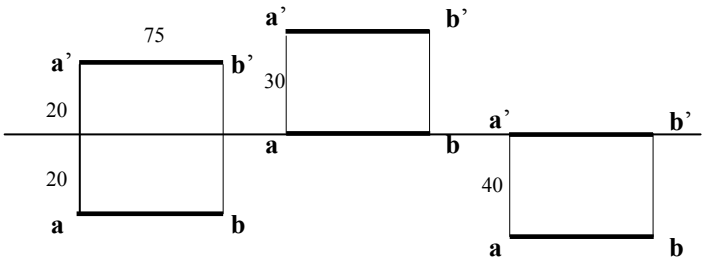
1) Draw the projections of a 75 mm long line in the following positions.

(a) (i) Parallel to both HP and VP and 25 mm away from each.
(ii) Parallel to HP, 30 mm above it &in VP.
(iii) Parallel to & 40 in front of VP and in HP.

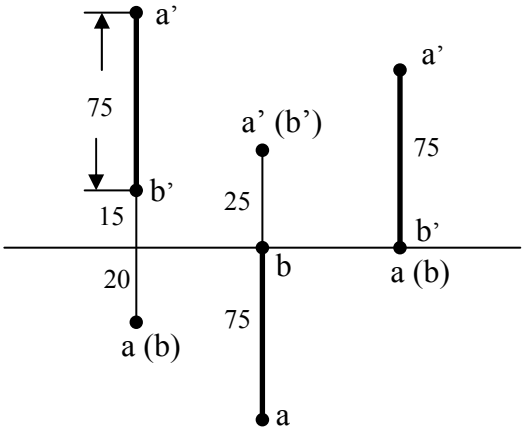
Ans) As per rule, just draw lines parallel to x-y above and below at given distances from HP and VP.



b) (i) ⊥ to HP, 20 In front of VP, one end 15 above HP.
(ii) ⊥ to VP; 25 above HP, one end in VP.
(iii) ⊥ to HP; in the VP; one end in HP.

Ans) As per rule, just draw line ⊥ to x-y.

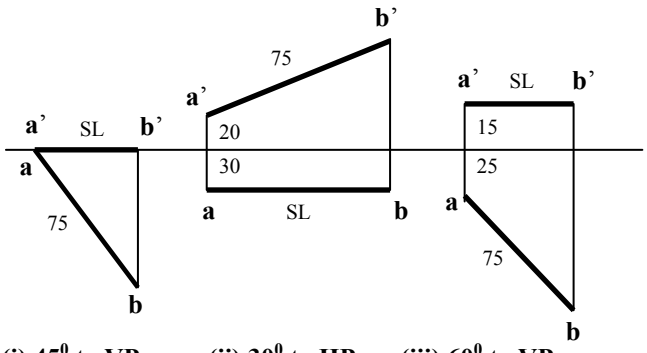
⊥ to HP means FV is ⊥**Line** & **TV is point.**
⊥ to VP means TV is ⊥ **Line** & **FV is point**.
These will be at the given distances from HP and VP.



(c) (i) Inclined at 45^0 to VP, in the HP and one end in VP.
(ii) Inclined at 30^0 to HP, one end 20 above HP; parallel and 30 in front of VP.
(iii) Inclined at 60^0 to VP, one end 25 in front of VP; parallel and 15 above HP.

Ans) As per our simple rules,

Angle to HP ⟹ TL in FV; SL in TV
Angle to VP ⟹ TL in TV ;SL in FV



(i) 45^0 to VP **(ii) 30^0 to HP** **(iii) 60^0 to VP**

2) A 100 mm long line is parallel and 40 mm above HP. Its 2 ends are 25 and 50 in front of VP. Draw the projections of the line and find its inclination with the VP.

Ans) Long line means TL and since the 2 ends are at different distances from VP, hence inclined to VP.

Angle to VP ⟹ TL (**100**) in TV;
SL in FV

In FV, it is less than 100.
Steps:
1) Mark **a'** at 40 above x-y.
2) Mark **a 25** below x-y & at 50 below, draw line parallel to x-y, for LTV.
3) With rad = TL(100), from a, cut arc on 50 line to get TL (ab).
4) From b, project up to get FV a'b'.

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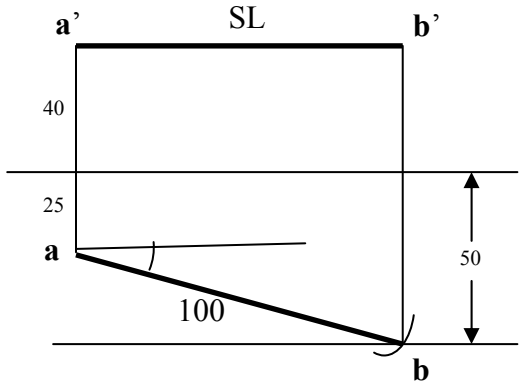
2) contd….

The following figure is the solution.

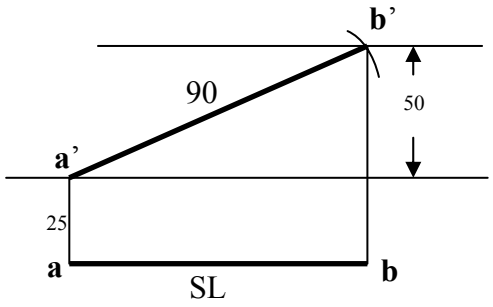


3) A 90 mm long line parallel to VP and 25 in front of it. Its two ends are in the HP and 50 above HP. Draw its projections.

Ans) Since the two ends are in HP, hence angle is in HP and hence TL in HP and SL in VP.

Angle to HP ⟹ TL (**90**) in FV;
SL in TV;

Steps: 1) Mark **a 25** below xy & **a'** on xy .
2) At **50** above x-y, draw line ‖ to xy(LFV)
3) With **a'** as centre, radius = 90(TL), cut arc on LFV to get **FV a'b'**. Project it to get TV ab.

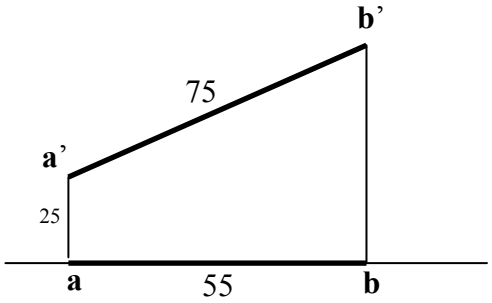


4) **The Top view of a 75 mm long line measures 55 mm. The line is in the VP and one end is 25 above the HP. Draw its projections**.

Ans) Given: TL=75; SL = 55(in Top View).

SL in TV ⟹ **TL in FV**(Angle in HP).

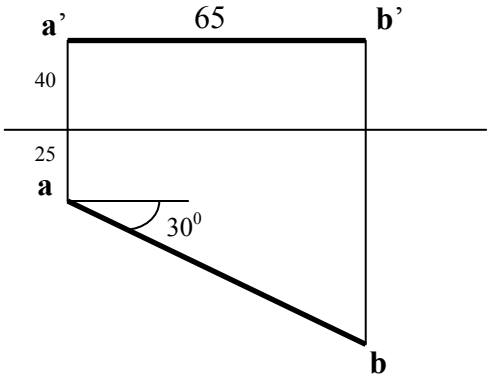
Steps: 1) On x-y, mark **TV 55** (ab = 55).
2) Mark **a' 25** above **a**.
3) Project from b and with **rad = 75**, cut arc from **a'** to get **TL 75**(**FV=75; TV=55**);



5) The front view of a line, inclined at 30^0 to VP is 65 mm long. The line is parallel to and 40 mm above HP. Its one end is 30 in front of VP. Draw its projections.

Ans) Since the FV is 65 and angle to VP, hence TL is in TV and SL is in FV.

SL in FV ⟹ **TL in TV** (Angle to **VP**)



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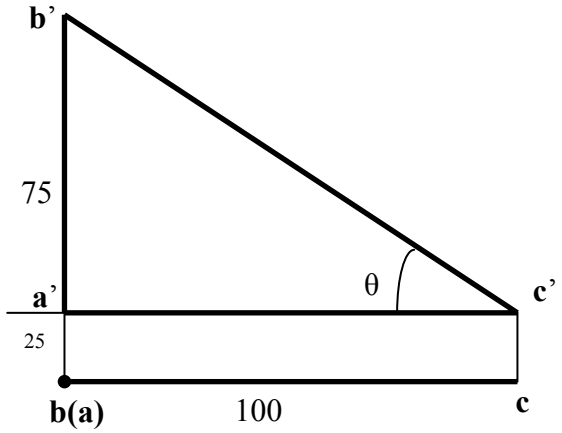
6) A vertical line AB 75 long has its end A in the HP and 25 in front of VP. A line AC 100 mm long, is in HP and parallel to VP. Draw the projections of the line joining B&C and Find the angle made by BC with HP.

Ans)

AB is Vertical (⊥ to HP)
BC is ‖ to VP (also to HP).

Just draw their projections and join b'c' & bc to get the projections and the angle θ.



Steps:

(i) On xy line, draw ab = 36 mm (3.6 cm).

(ii) Above x-y, mark a' 15 mm (1.5 cm).

(iii) Since projections always lie on same line, project b of TV.

(iv) From a', cut an arc of **45** on projector of **b** to get **b'**.

(v) Join **a'b'** to get the front view.

(vi) Find the angle made by **a'b' with** horizontal and the **height H** of the second peg from the ground (xy line)

7) 2 pegs on a wall are 4.5 m apart. Distance between them parallel to floor are 3.6 m. If one peg is 1.5 above the floor, find the height of the second and its inclination with floor.

Ans) SL is 3.6 and TL is 4.5. Hence TL is in FV and angle in HP.

Scale: 1:100