

Unit-2. Projections of Straight line. (2nd part).

The shortest distance between two points is called straight line. It has Length but negligible ~~distance~~ thickness.

To draw the Front view, top view and side view of a straight line is called Projections of straight line.

Position of line	Front view or elevation	Top view or Plan.
1. Line parallel to H.P. and V.P.	True Length and parallel to xy	True Length and parallel to xy .
2. Line \perp to HP & parallel to V.P.	True Length and perpendicular to xy	Point True Length and \perp to xy .
3. Line \perp to VP and parallel to H.P.	Point	True Length and Inclined at θ° to $x-y$.
4. Line in HP and Inclined at VP.	Shorter than true length and lies in $x-y$	

Unit-2

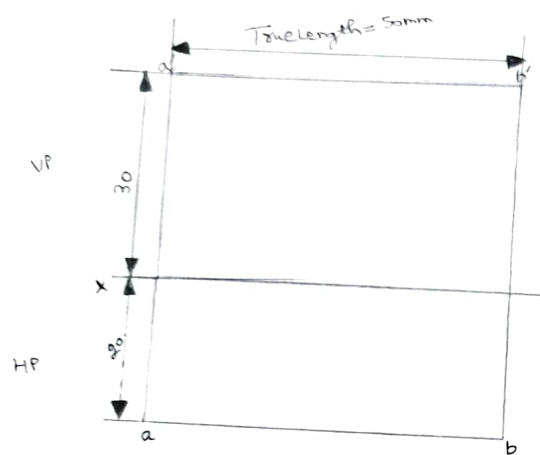
Projections of Lines:-

1. Line parallel to both HP & VP.
2. Line ~~Inclined~~ is \perp to HP & \parallel to VP
3. Line is \perp to VP & \parallel to HP
4. Line is Inclined to HP & \parallel to VP
5. Line is Inclined to VP & \parallel to HP.
6. Line is Inclined to both plane.

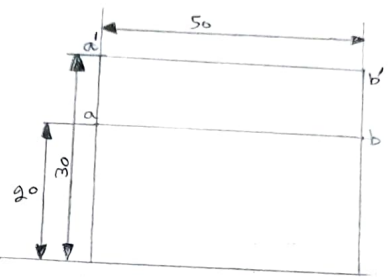
Q-1. A line AB, 50mm long & has its end A 30mm away from HP & 20mm away from VP. The line is parallel to both HP & VP. Draw its projections in all the Four Quadrant.



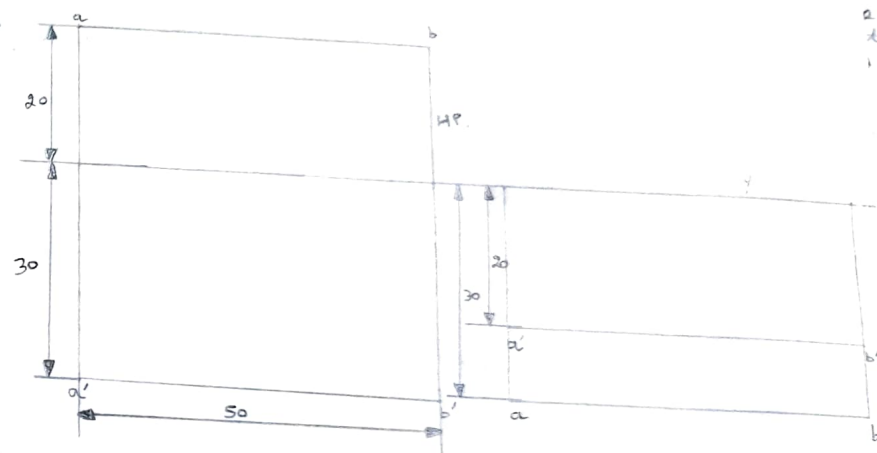
F.V. main line
Top View



1st Quadrant



2nd Quadrant.



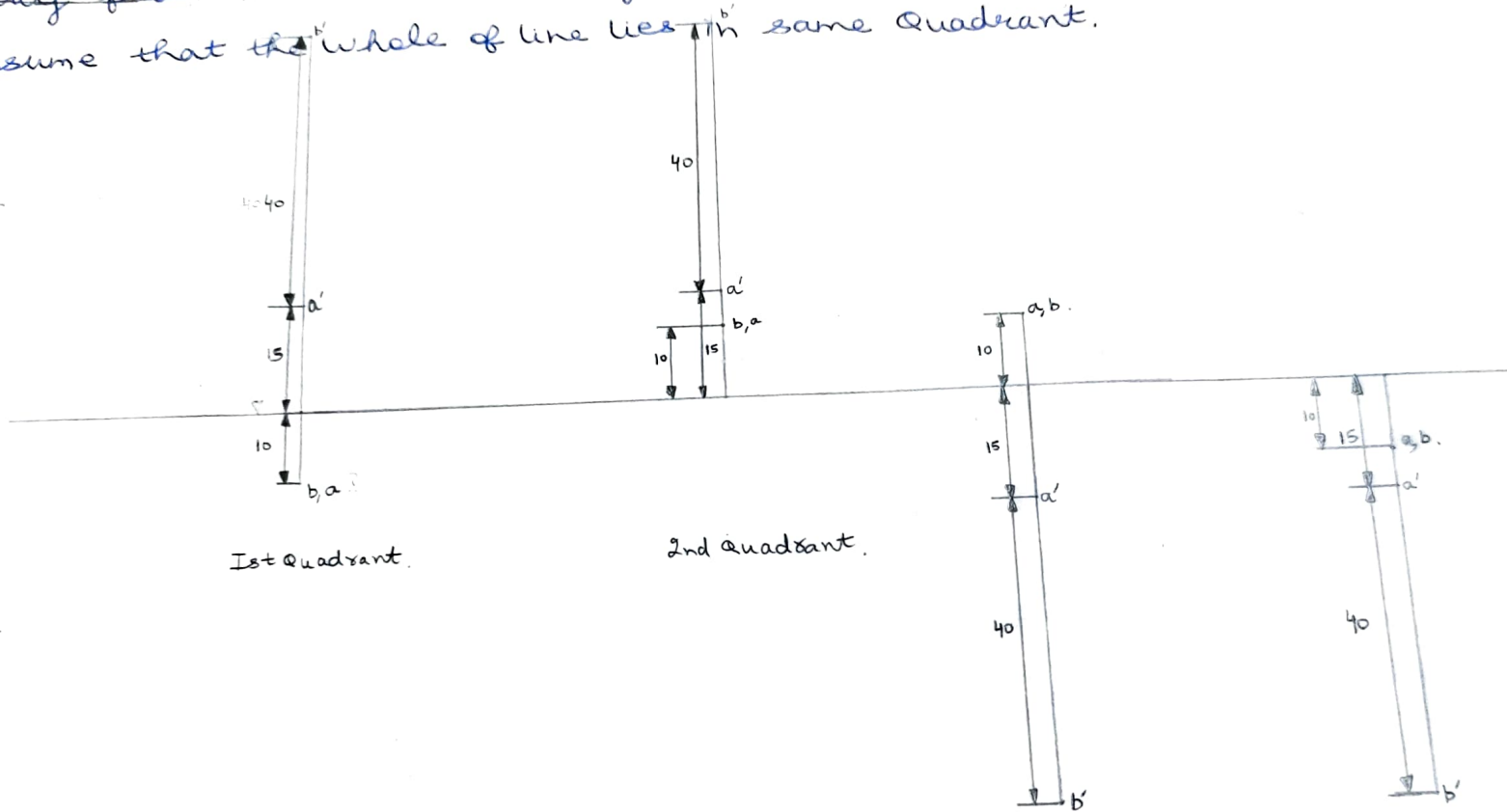
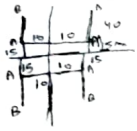
3rd Quadrant.

4th
Quadrant

Case-2,3 Line Perpendicular to one of the Planes:-

Case-2:- Line \perp to HP & Parallel to VP.

Q-2. A line AB 40 mm Long is \perp to HP and its end A is 15 mm away from the HP and 10 mm away from the VP. Draw the projections in all the Four Quadrants. Assume that the whole of line lies in same Quadrant.



1st Quadrant.

2nd Quadrant.

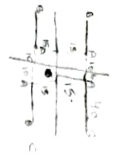
3rd Quadrant.

4th Quadrant.

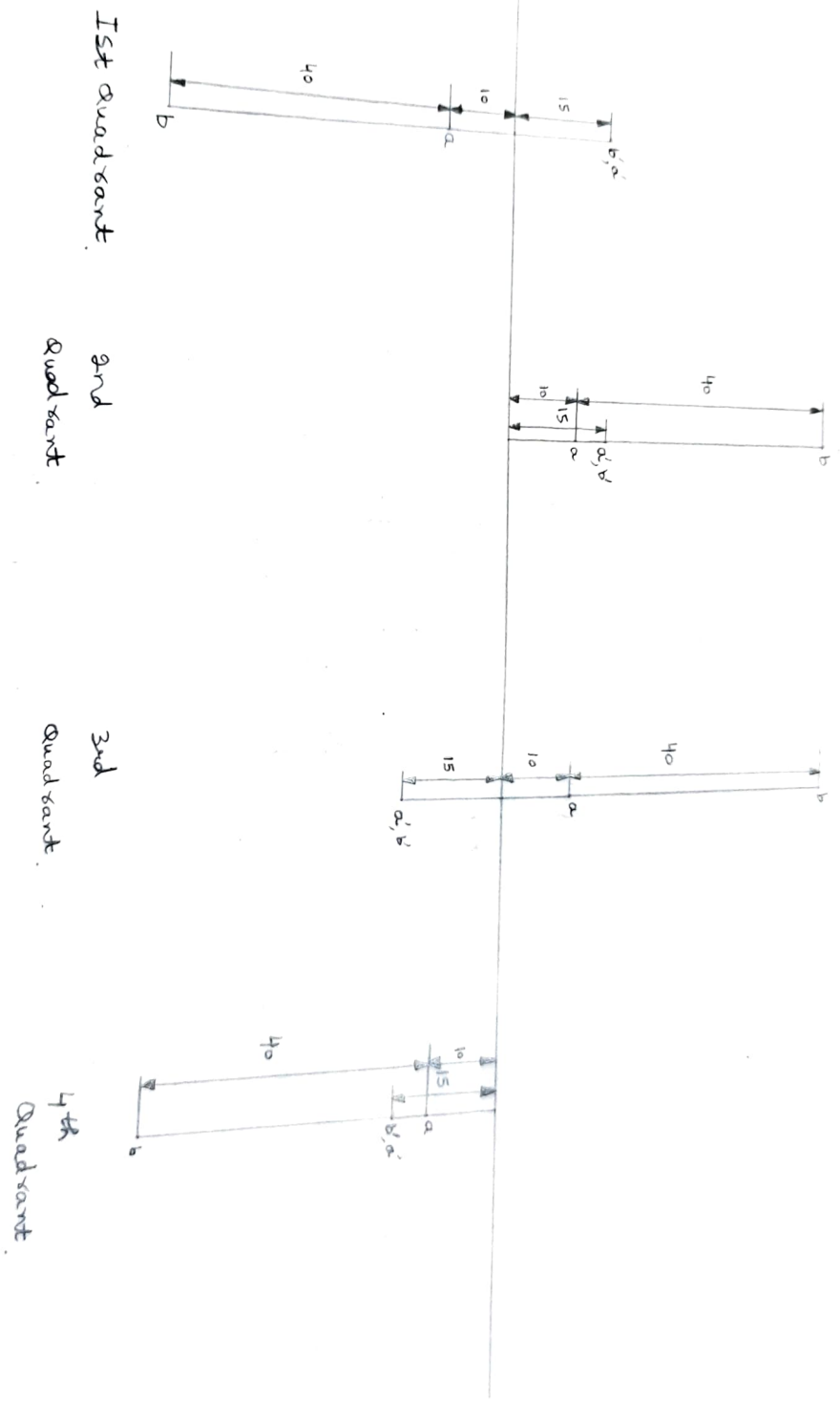
→ ऊपर से
तो फल 'b'
आया फिर 'a'.

Q-4 A line AB 40mm long is perpendicular to VP and its end A is 15mm away from the HP and 10mm away from the VP. Draw its projections in all the four quadrants. Assume that whole of the line lies in same quadrant.

Q-



2 projection
use 3H or 2H
main line
use HB pencil.



Case-4 Line Inclined to HP and parallel to VP.

Q-4 A line AB 50mm long, has its end A is 25mm away from the HP and 15mm away from the VP. The line is Inclined to the HP at 30° and parallel to the VP. Draw its projections in all the four quadrants. Assume that the whole of the line lies in the same quadrant. Also locate its traces.



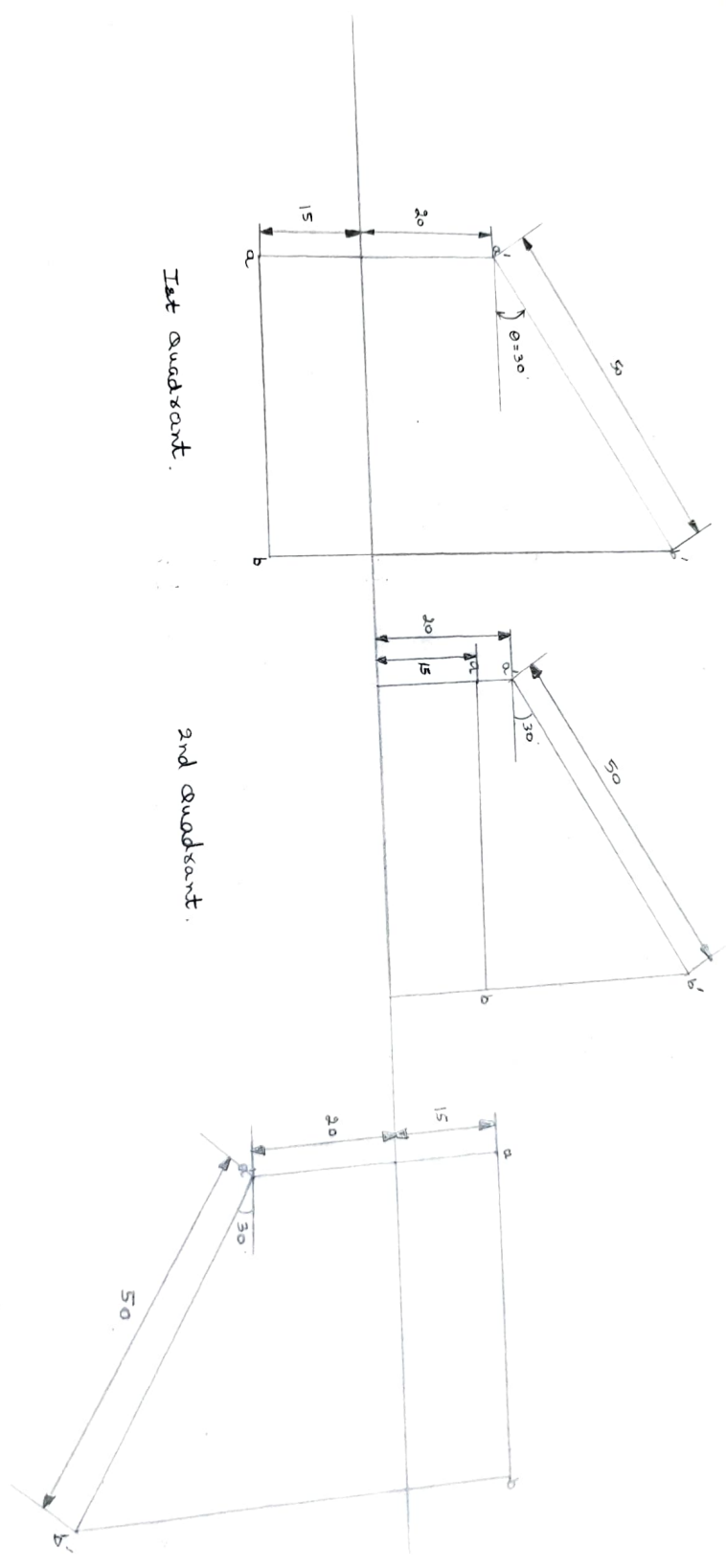
→ Line Inclined to HP at 30° Top View
 straight line not parallel to VP
 3rd angle!

ep-I we draw that part first through which we get exact length.

→ F.V. of line
 True length
 3rd angle!

1st quadrant.

2nd quadrant.

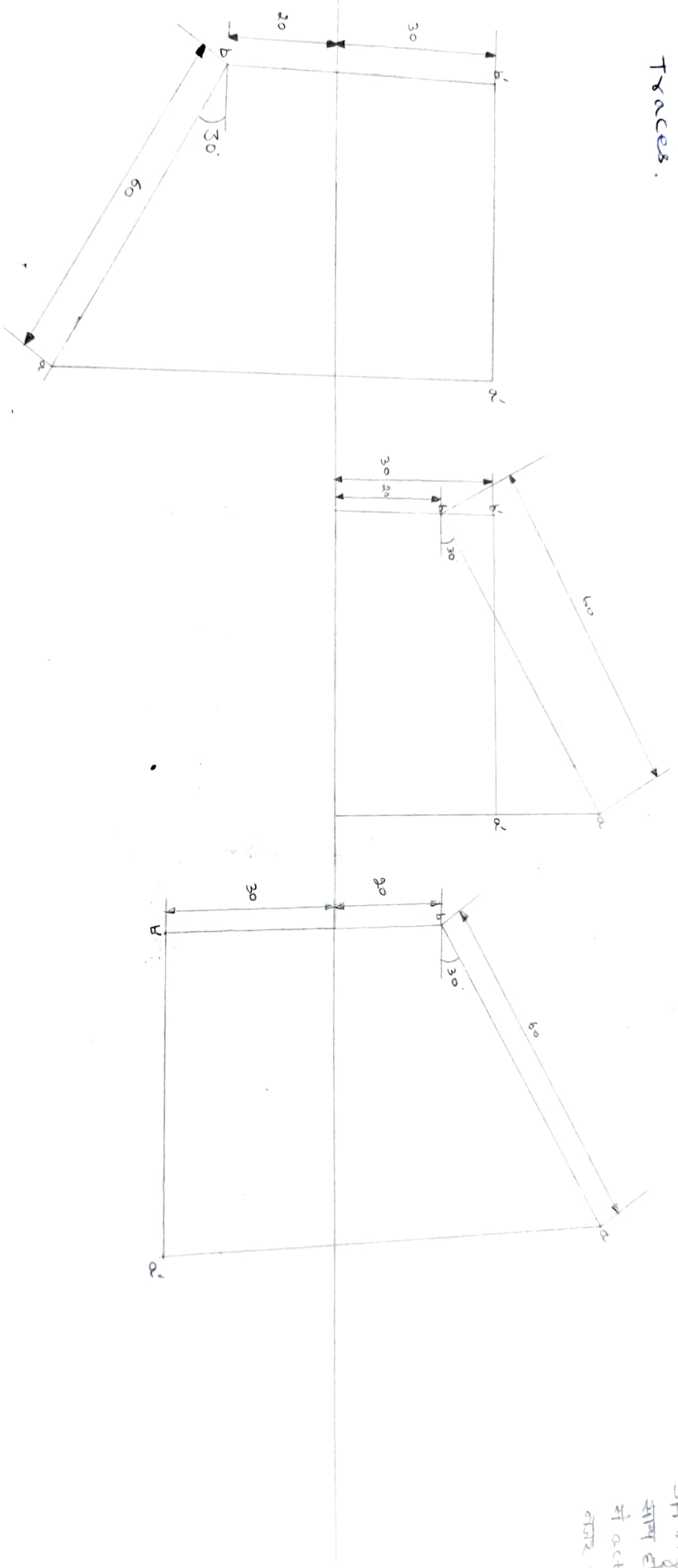


Q. 5

A line AB, 60mm long, has its end B 30mm away from HP and 20mm away from VP.

The line is parallel to HP and is inclined at 30° to VP. Draw its projections in all the four quadrants, when the whole line lies in the same quadrant. Also locate its

Traces.



Find the true length of the line AB.

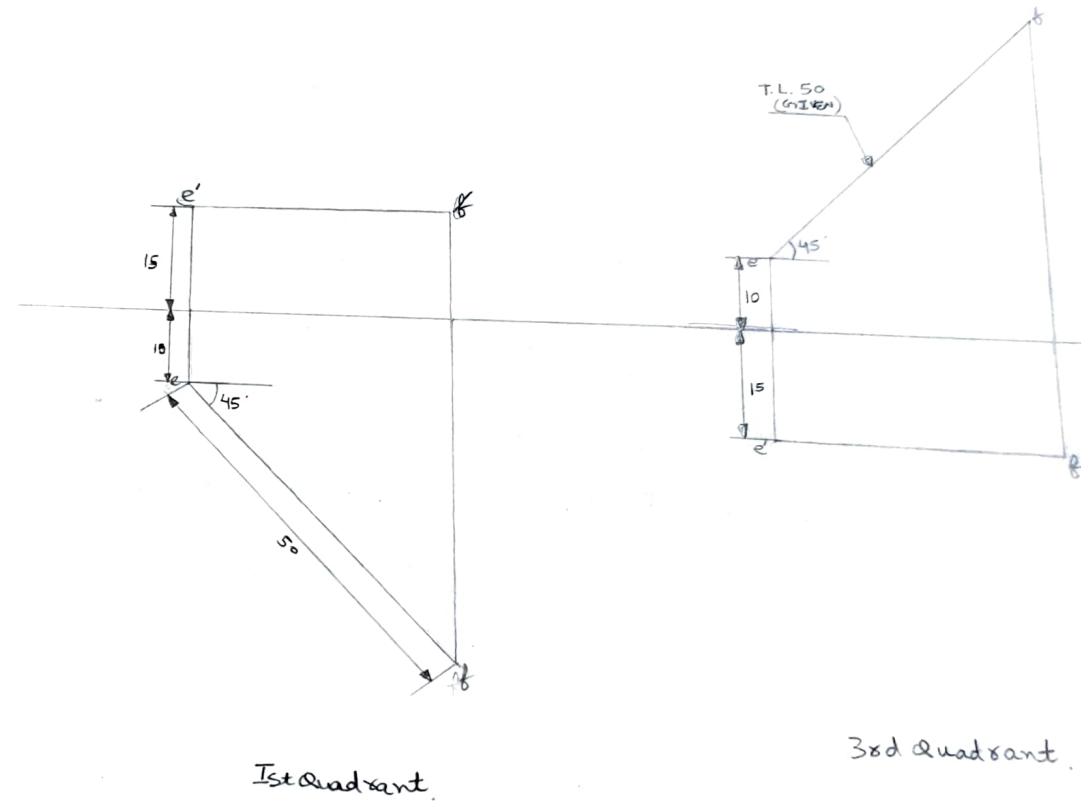
1st Quadrant.

2nd Quadrant.

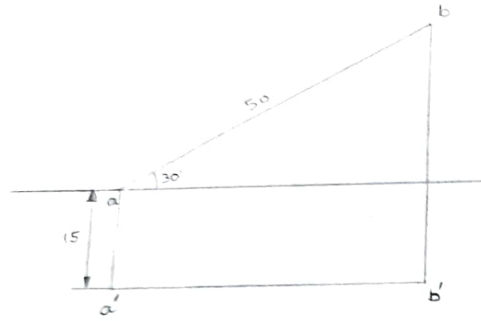
3rd Quadrant.

Q. 5 Line parallel to HP & inclined to VP.

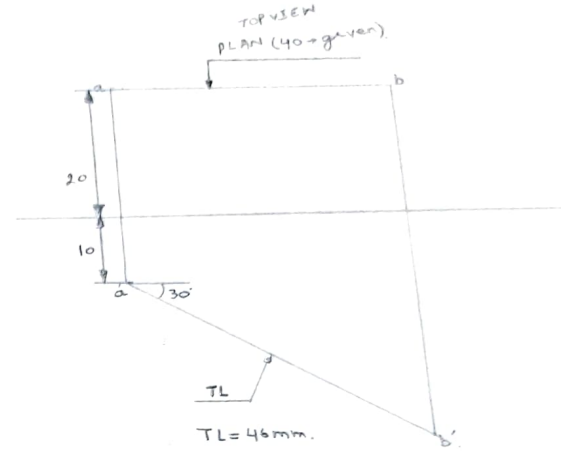
Q-6. A line EF, 50mm Long, parallel to HP and inclined at 45° to VP, has its end E 10mm behind the VP and 15mm below the HP. Assuming the line to be in third Quadrant, draw its projections.



5-7 Line AB, 50mm long, parallel to HP and Inclined to VP at 30° has its end A 15mm below the HP and in the VP. Assuming the line to be in third quadrant. Draw its projections.



a-7. (Third quadrant).



5-8. Plan ab of a line AB, measures 40mm. The line is parallel to VP and inclined to HP at 30° and its end A is 10mm below HP and 20mm behind VP. Draw the projections of the line and determine its True Length. Assume the line to be in third quadrant.

Case-II Line is Inclined to both HP & VP.

Type-I

Q.9. A line AB, has its end A 7mm behind VP and 18mm below HP and the end B 38mm behind the VP and 49mm below the HP. The distance between the end projectors is 37mm. Draw the projections of the Line and Find out its TL, ϕ & Traces.

Step-1. Draw the Projections of pt. A & B.

A \rightarrow Third Quadrant (a, a')

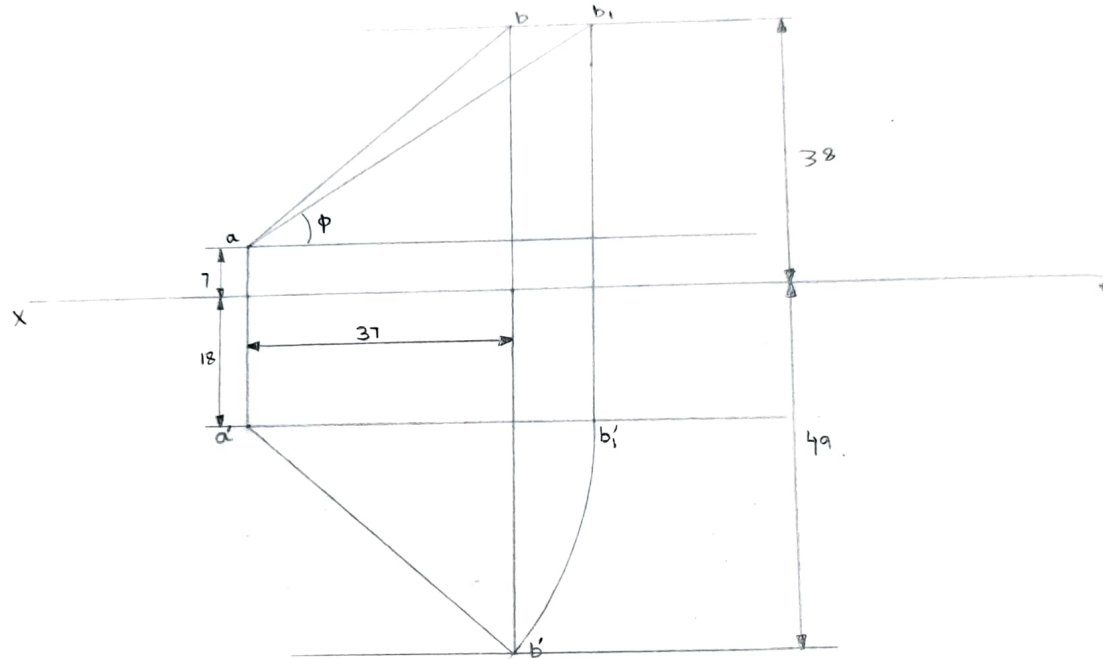
B \rightarrow Third Quadrant (b, b')

Join $ab, a'b'$.

Step-2. Draw Horizontal line at pt. b & b' .

Step-3. Draw Horizontal line from a & a' parallel to X-Y line.

Step-4. Rotate $a'b'$ about a' to position $a'b_1'$ so that it becomes parallel to X-Y line.



Top view at 'phi' position.

F.V $\rightarrow a', b'$ a', b_1'
T.V $\rightarrow a, b$ a, b_1 \leftarrow True Length

$\phi = 32^\circ$