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PROJECTIONS OF POINTS (Above the title block Space)

EXERCISES

Draw the projections of the following points taking a common reference line, keeping the distance between any two consecutive points as 20 mm:

- A, 30 mm in front of VP and 30 mm above HP.
- B, in HP and 25 mm in front of VP.
- C, 25 mm above HP and 40 mm behind VP.
- D, in VP and 40 mm above HP.
- E, 30 mm below HP and 50 mm behind VP.
- F, in HP and 40 mm behind VP.
- G, 40 mm below HP and 25 mm in front of VP.
- H, in VP and 40 mm below HP.
- J, in both HP and VP.

PROJECTIONS OF LINES (Above the title block and side of the title block)

EXERCISES

Draw the projections of the following lines, both in third and first quadrants:

a. Line AB, 45 mm long, parallel to HP and VP both, when its distance from HP and VP is 25 mm and 30 mm, respectively.
b. Line CD, 45 mm long, perpendicular to HP and 20 mm away from VP, when one of its extremities, nearer to the HP, is 10 mm away from the HP.
c. Line EF 45 mm long, perpendicular to VP and 20 mm away from HP, when one of its extremities, nearer to the VP, is 10 mm away from the VP.
d. Line LM, 50 mm long, parallel to VP and inclined to HP at 30°, when one of its ends is: (i) 15 mm away from the HP and 20 mm away from the VP; (ii) in the VP and 10 mm away from the HP.
e. A line LM, 50 mm long, parallel to HP and inclined to VP at 40°, when one of its ends is 15 mm away from the VP and 20 mm away from the HP.
f. Line DE, 40 mm long, contained by both the HP and the VP.
g. Line OP when its end O is 10 mm away from HP and 15 mm away from VP and end B is 30 mm away from the HP and 40 mm away from the VP. Its end projectors are 40 mm apart.
h. Line PQ contained by a profile plane when its end P is 10 mm away from HP and 25 mm away from VP. End Q is 45 mm away from the HP and 40 mm away from the VP.

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SHEET PROBLEMS TO BE DONE ON THE WORKING SPACE

1. A line EF has its end E 15 mm from VP and 20 mm from HP, end F 40 mm from the VP and 40 mm from the HP. Distance between its end projectors is 45 mm. Draw the projections of the line using trapezoid method, determine its TL, θ, ϕ, HT and VT.

2 A line, EF is contained by a profile plane. Its end E is 45 mm in front of VP and 10 mm above HP and end F is 10 mm in front of the VP and 50 mm above the HP. Draw its projections and determine, its TL, θ, ϕ, HT and VT.

3. A line AB, inclined at 30° to HP, has its end A 20 mm and end B 55 mm in front of VP. The length of elevation is 60 mm. Its HT is 20 mm in front of the VP. Draw its projections and determine its TL, ϕ and VT.

4. A line CD, inclined at 30° to VP, has its end C 20 mm and end D 55 mm above HP. The length of its plan is 60 mm. Its VT is 10 mm above the HP. Draw its projections and determine its TL, θ and HT.

5. A line LM, 80 mm long, is inclined at 45° to VP and 30° to HP. Its mid-point Q is 35 mm below the HP and 25 mm behind the VP. Draw the projections of the line. Also determine its HT and VT.

6. A wireless aerial tower 22 m high, is tied by two guy ropes, having angles of depression 30° and 40°. Other ends of the ropes are tied to two towers of height 5.5 m and 2 m respectively, and 15 m apart. Draw the front and top views of guy ropes and determine their true lengths.

7. Two apples on an apple tree, near the wall of a house courtyard are respectively 1.5 m and 2.5 m above the ground level and 1.5 m and 2 m away from and on opposite sides of the courtyard wall. The wall is 0.25 m thick, measured in a direction perpendicular to itself. The distance between the apples measured along the ground and parallel to the wall is 3.5 m. Determine the true distance between the apples.

8. A pipeline, from a point P, running due North East has a downward gradient of 1 in 4. Another point Q is 10 m away from and due East of P and in level with it. Determine TL and slope of a pipeline QR, from Q running due 20° East of North and meeting the pipe line from P at R.