Construction Lines in Orthographic Projection

Answer | Plate 1 of 4 | LETTER

Original prompt

Plate 1: The front view shows a step (a change in height) on the right side. Build the side view using construction lines.

Given solid

Model: 9 wide and uniformly 5 deep. From left, the first 4 units are 6 high and the last 5 units are 3 high.



Front Right side

Answer

Draw the right-side silhouette as a 5-wide, 6-high rectangle. Project horizontally from the right step at height 3 to locate the solid ledge line across the side view.

Reasoning

The low part is the nearer surface seen from the right, and the higher part behind it is still visible. The front step gives a height, not a notched side silhouette.

Check

The ledge is at height 3 on the same horizontal guide from the front. Check that the overall right-side height remains 6 and depth is 5.

Construction Lines in Orthographic Projection

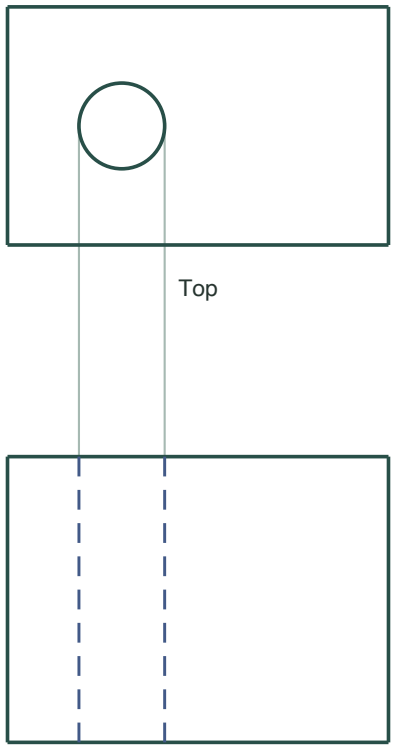
Answer | Plate 2 of 4 | LETTER

Original prompt

Plate 2: The top view shows a hole offset to the left. Build the front view using construction lines.

Given solid

Model: 8 wide, 5 deep, 6 high. A vertical cylindrical bore has radius 0.9. Its axis is 2.4 from the left and 2.5 back from the front.



Answer

Project vertical guides down from the top-view circle's left and right tangents, x = 1.5 and x = 3.3. Draw the solid outline of the front block and two dashed vertical hole edges through its full height, between top and base.

Reasoning

A vertical bore is visible as a circle from above. The front wall covers its two projected sides, so those edges are dashed in front.

Check

The two dashed vertical edges are 1.8 units apart and aligned to the top-view circle's tangents. The bore is still offset left.

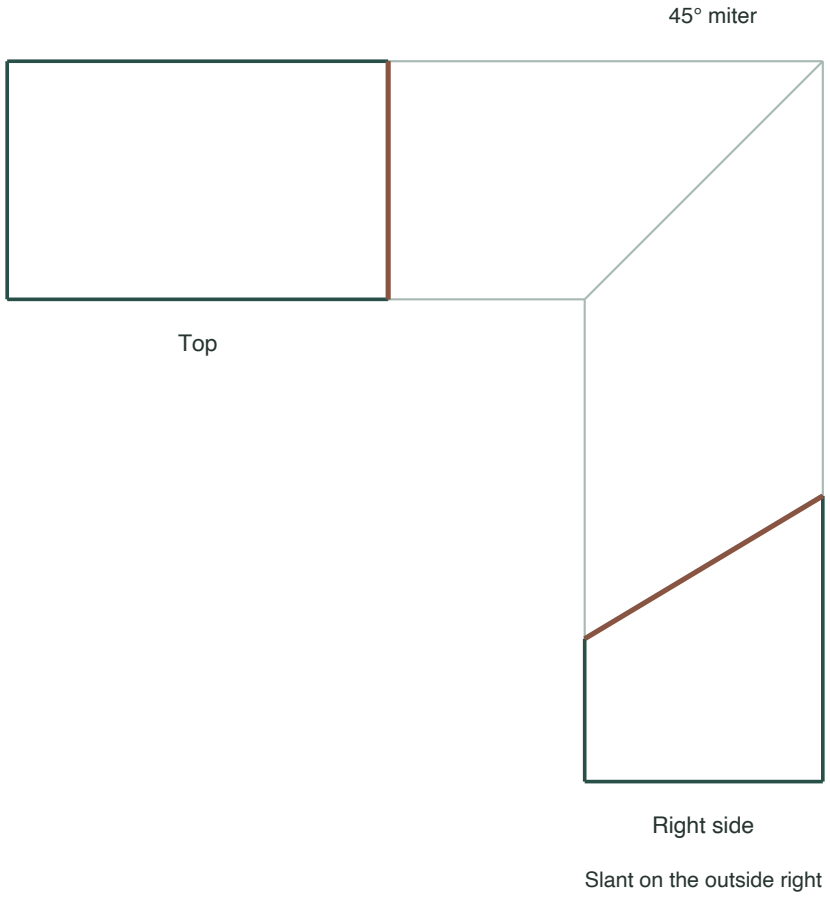
Construction Lines in Orthographic Projection

Original prompt

Plate 3: The side view shows a slanted edge. Build the top view using construction lines.

Given solid

Model: the wedge is 8 units across and 5 deep. The top rises from 3 high at the front to 6 high at the back across the full width. Transfer the marked outside right edge.



Answer

On the given wedge, carry the two ends of the slant vertically from the right-side view to the 45-degree miter and horizontally into plan. The slant is on the outside right; join the front-right plan corner to the back-right corner along the straight depth edge.

Reasoning

The wedge is 8 units wide and 5 deep. Its full-width upper face rises from height 3 at the front to height 6 at the back. Top projection removes the height change, leaving a rectangular footprint with the same 5-unit depth edge.

Check

Compare the two right-side depth stations with the plan's front and back edges. The marked plan edge connects the outside right corners along depth.

Construction Lines in Orthographic Projection

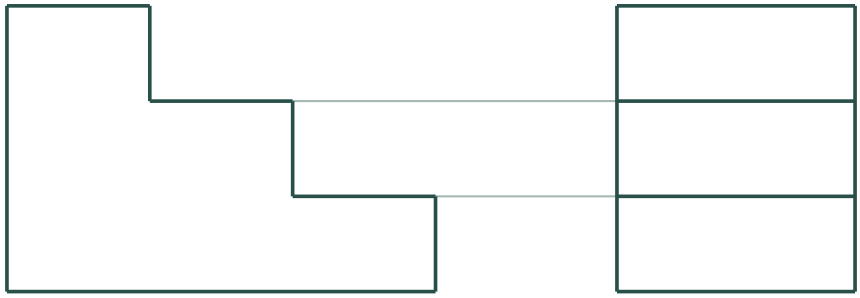
Answer | Plate 4 of 4 | LETTER

Original prompt

Plate 4: The front view shows a block with two features at different heights. Build the side view and check both features align.

Given solid

Model: 9 wide and uniformly 5 deep. The three equally wide bands have heights 6, 4 and 2 units, from left to right.



Front Right side

Answer

Through the two front ledges at heights 2 and 4, draw horizontal guides into the right-side view. Add a solid horizontal line at each height across the 5-wide side outline. The side silhouette is a rectangle 6 high.

Reasoning

This chosen tiered block has three full-depth bands of height 6, 4 and 2 from left to right. Seen from the right, each exposed transition has its own visible height.

Check

Check that the two full-width ledge lines sit at the two projected heights 2 and 4 and neither is swapped with the overall height 6.