Orthographic Multiview Drawing

Answer | Task 1 of 4 | LETTER

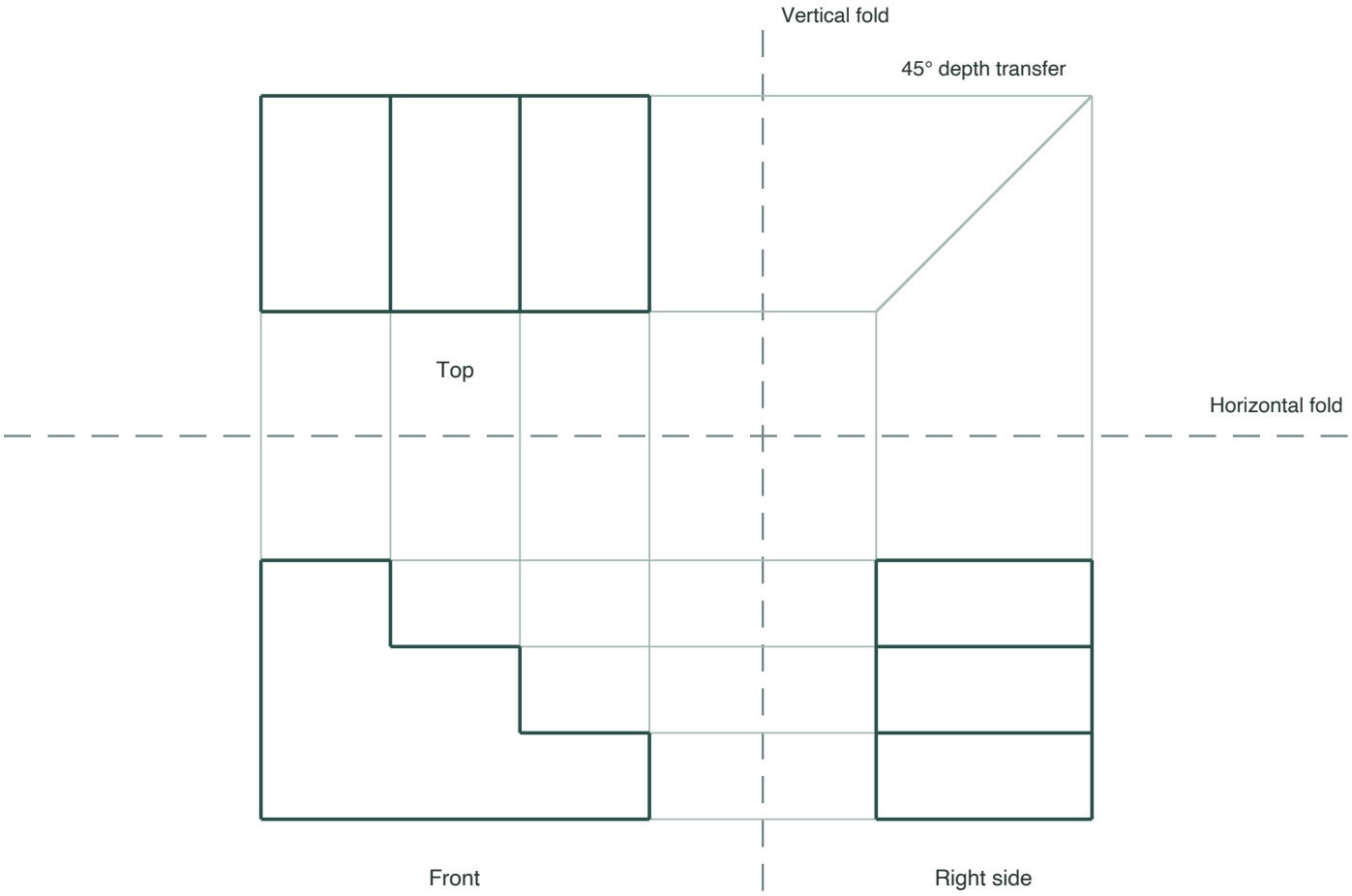
Original prompt

Task 1: Given a front view of a stepped block (two steps), construct the top and side views by the fold-line method.

Given solid

Chosen block: 9 wide and uniformly 5 deep. From left to right, its three equally wide bands are 6, 4 and 2 units high.

On this sheet, top is above front and the right view sits to its right.



Answer

Given front: width 9, maximum height 6, with x=0–3 at height 6, x=3–6 at height 4, and x=6–9 at height 2; every section extends through depth 5. Top: a 9-by-5 rectangle with divisions at x=3 and x=6. Right side: a 5-by-6 rectangle with visible ledges at z=2 and z=4.

Reasoning

The stated full-depth profile fixes the footprint as a 9-by-5 rectangle. Its two changes in front height make divisions in the top view at x=3 and x=6. From the right, the successively taller portions behind the nearest low portion produce ledges at z=2 and z=4.

Check

Check the front spans and heights against the given dimensions; confirm the top is 9 by 5 with both divisions, and the right-side view is 5 by 6 with ledges at z=2 and z=4. Check that the depth transfer uses the miter and that hidden edges, if any, are dashed.

Orthographic Multiview Drawing

Answer | Task 2 of 4 | LETTER

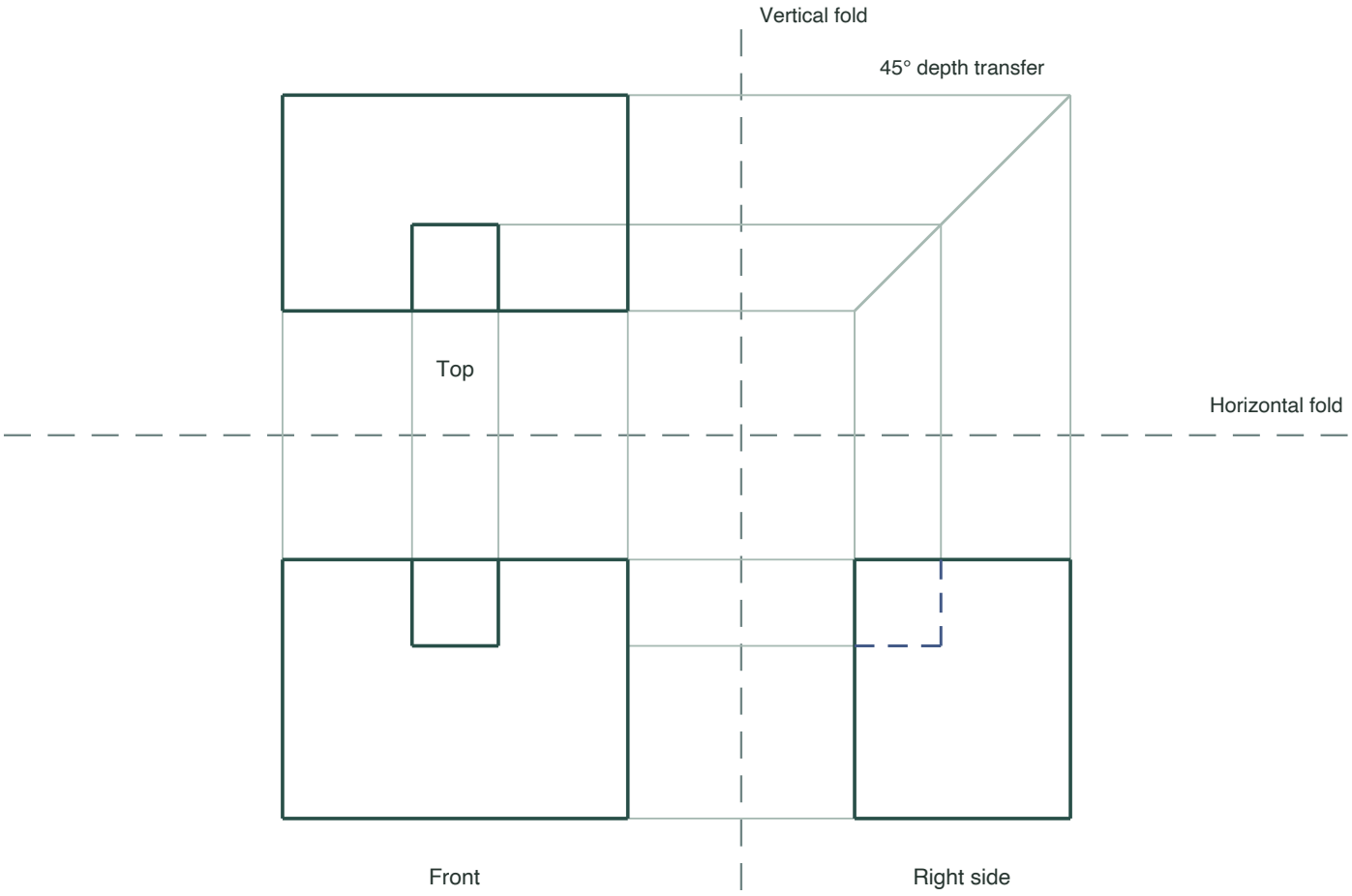
Original prompt

Task 2: Given a front view of a block with a rectangular notch cut from its top edge, construct top and side views.

Given solid

Start with a block 8 wide, 5 deep and 6 high. Cut a top-front notch from x = 3 to 5, with a depth of 2 and a floor 4 units above the base. The right wall remains intact.

On this sheet, top is above front and the right view sits to its right.



Answer

Given block: width 8, depth 5, height 6. The front recess spans x=3–5 and z=4–6 and extends from y=0 to y=2, leaving a floor at z=4. The top view is a full 8-by-5 rectangle with a continuous straight front outline across x=3–5. Show the recess only as an interior U: two side edges from the front to y=2 and a rear edge at y=2. The right-side outer outline remains a 5-by-6 rectangle because the x=5–8 wall is intact; screened recess edges are hidden and dashed, never a visible side recess.

Reasoning

The front view locates the recess across x and vertically in z, while the two-unit cut depth fixes its reach along y. The top keeps its full rectangular boundary, including the continuous front edge, and shows the recess as an interior U ending at y=2. The intact wall to the right of x=5 screens it from the right-side view.

Check

Confirm the recess is 2 units wide, 2 units deep, and extends from z=4 to z=6. Check the full 8-by-5 top perimeter remains rectangular, including its straight front edge across x=3–5. The interior U runs from y=0 to y=2 and closes at y=2. The right-side outer outline stays rectangular; screened edges are dashed.

Orthographic Multiview Drawing

Answer | Task 3 of 4 | LETTER

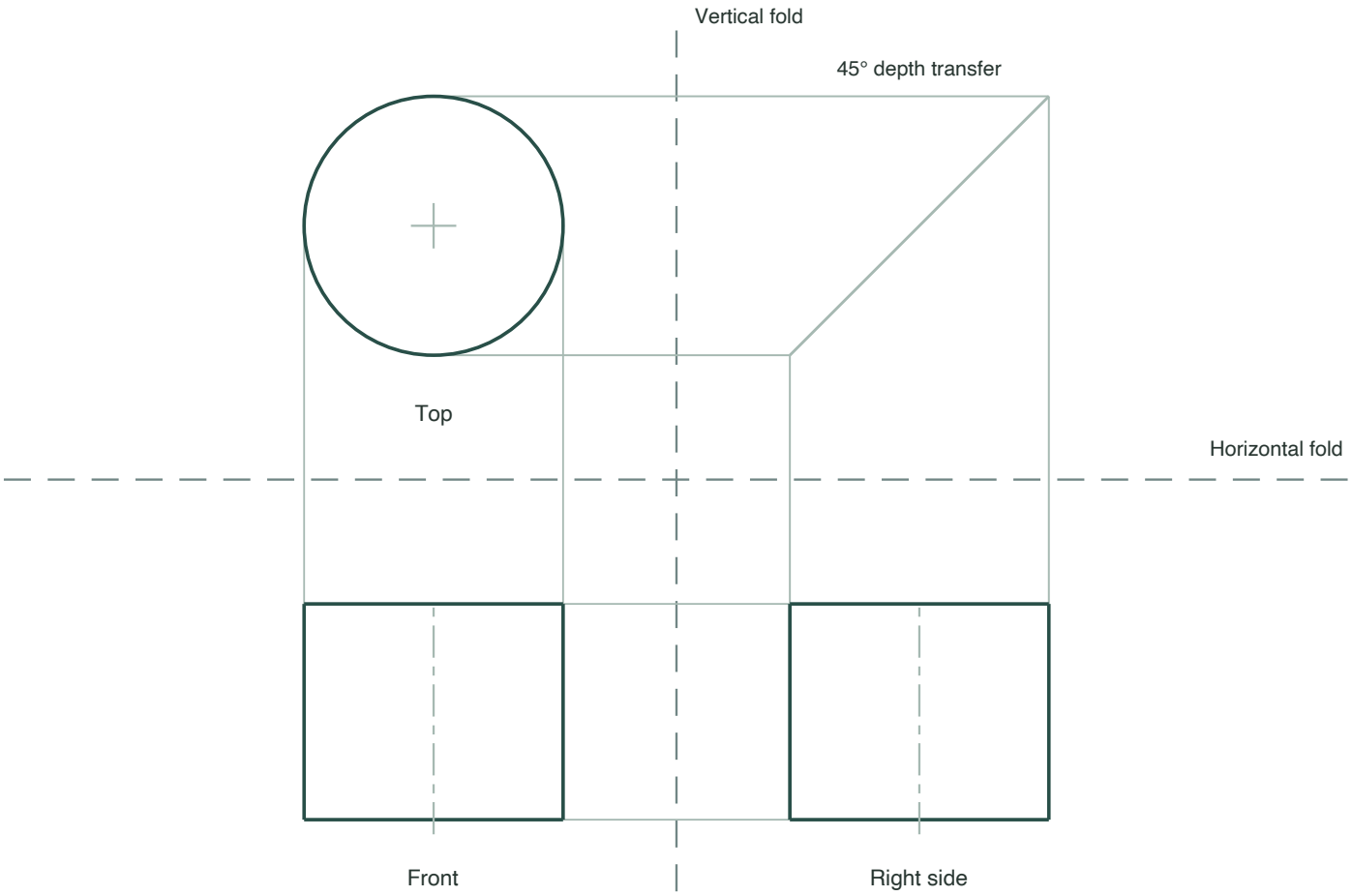
Original prompt

Task 3: Given the front elevation of an upright cylinder with diameter 6 units and height 5 units, construct the top and right-side views using the fold-line method.

Given solid

The cylinder is upright, with a diameter of 6 and a height of 5. Align its top and right views to its given front view.

On this sheet, top is above front and the right view sits to its right.



Answer

The given front elevation is a 6-by-5 rectangle with a vertical centerline. Top: a circle of diameter 6 centered on the projected axis, with center marks. Right-side elevation: a 6-by-5 rectangle with a vertical centerline. Keep all three views at the same scale and align them with the fold lines.

Reasoning

An upright cylinder has a circular horizontal cross-section and a vertical axis. Its front and right-side elevations are straight-sided rectangles whose width equals the diameter and whose height equals the cylinder height; its top view is the diameter-6 circle.

Check

Check that the top circle is centered over the front rectangle, its diameter equals the front width of 6, both elevations are 5 units high, the right-side rectangle is 6 units wide, and the centerlines align.

Orthographic Multiview Drawing

Answer | Task 4 of 4 | LETTER

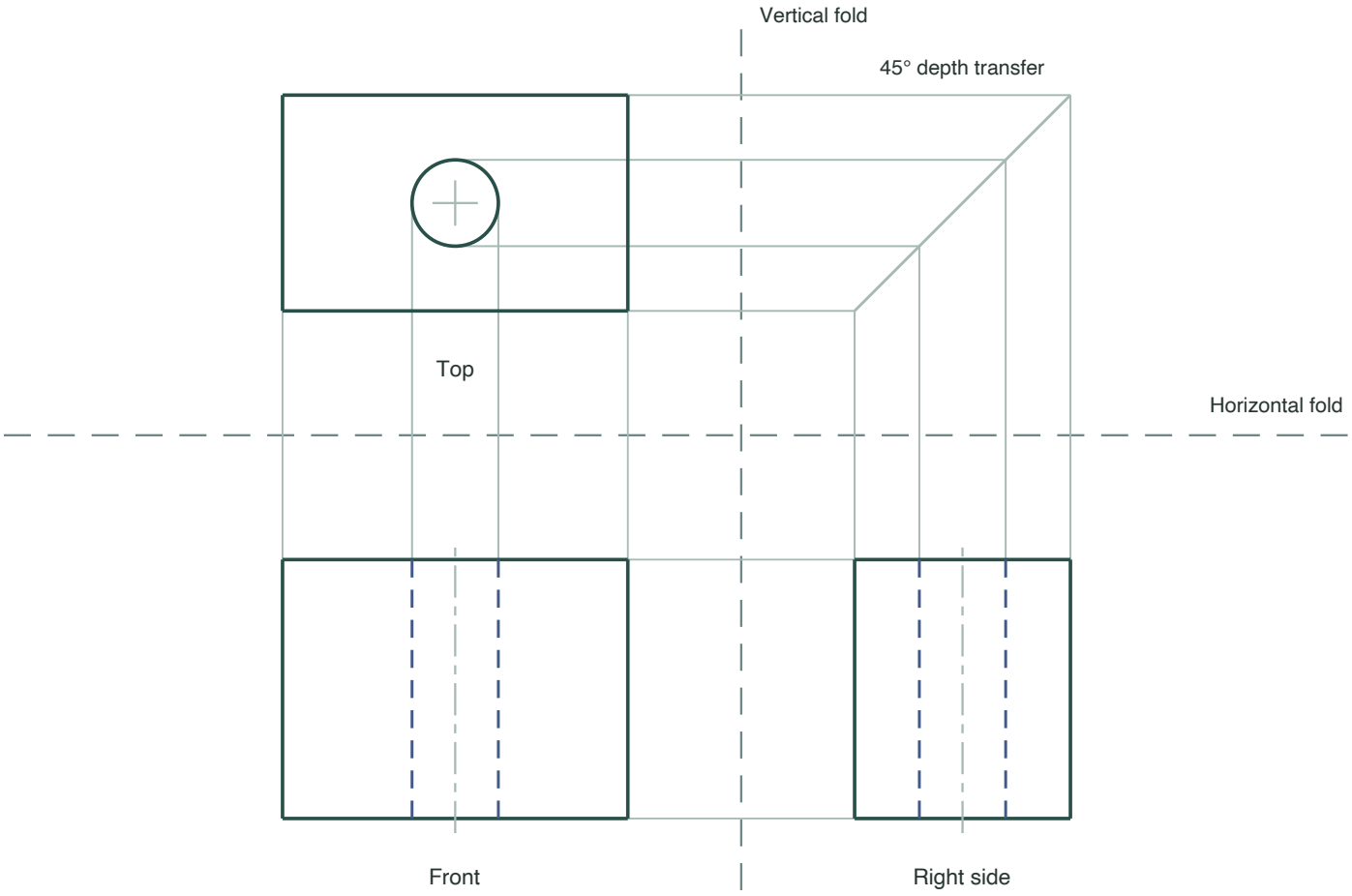
Original prompt

Task 4: Given a front view of a block with a hole through it, construct top and side views.

Given solid

The block is 8 wide, 5 deep and 6 high. The vertical through-bore has radius 1, centered 4 units from the left and 2.5 back from the front.

On this sheet, top is above front and the right view sits to its right.



Answer

Given block: width 8, depth 5, height 6. A vertical through-bore of radius 1 passes through the full height, centered at x=4 and y=2.5. Top: a solid circle of radius 1 centered at (4, 2.5). Front: a pair of hidden vertical tangent lines at x=3 and x=5. Right side: a 5-by-6 rectangle with hidden vertical tangent lines at y=1.5 and y=3.5.

Reasoning

The top view looks down the bore axis and shows its circular opening. The front and right-side views look across the vertical bore, so they show the projected tangent pair as hidden lines. The center coordinates and radius determine the exact locations in all three views.

Check

Check the top circle center at x=4, depth=2.5 and radius 1. Confirm its diameter is 2, the front hidden lines are at x=3 and x=5, and the right-side hidden lines are at depths 1.5 and 3.5. Keep the outer front and side dimensions 8-by-6 and 5-by-6.