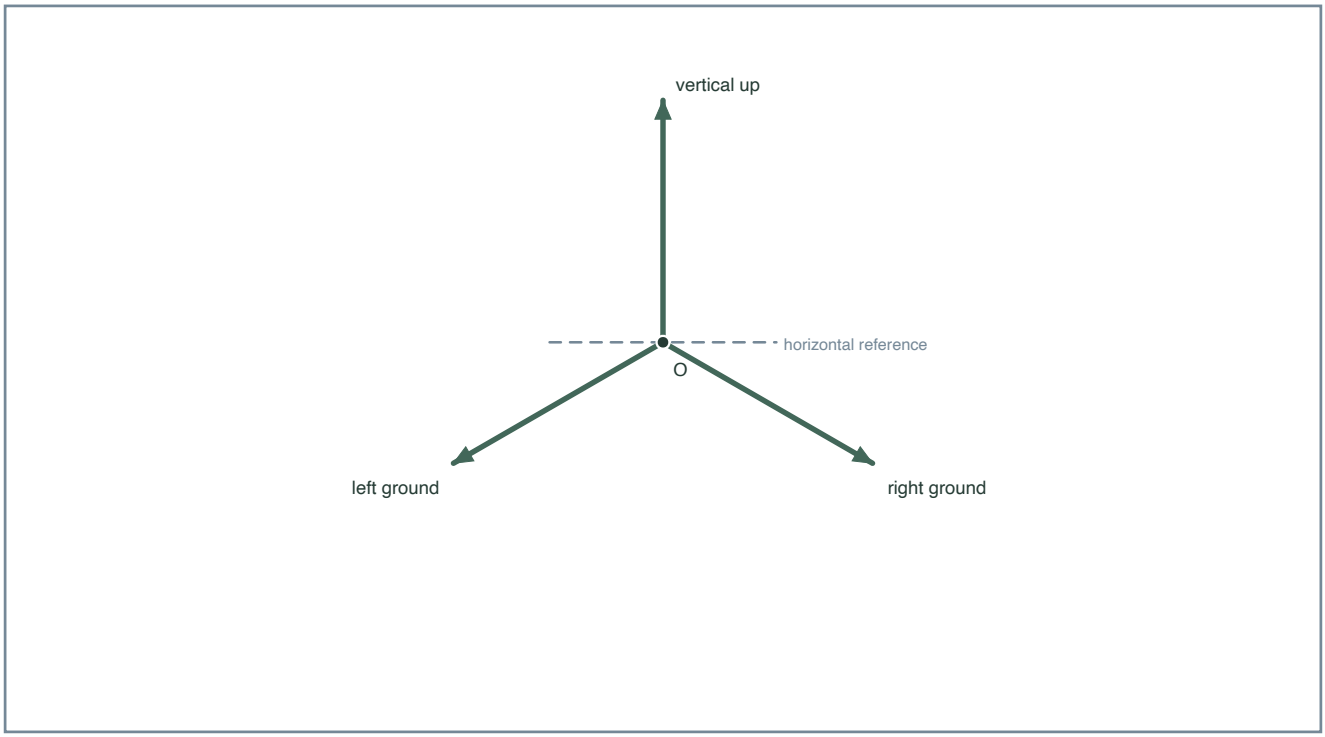
Structural Isometric Drawing

Answer | Task 1 complete answer | A4

Task 1

Task 1 — Axis layout. Draw the origin and the three isometric axes, labelling which is vertical and which two are ground axes.



Answer

From one origin, draw a vertical ray up and two ground rays 30° below horizontal, one down-left and one down-right. Each pair of directed rays is 120° apart. Label the vertical, left ground, and right ground axes.

Reasoning

The three axes are the reference for every member in the frame, so they are drawn first and labelled.

Check

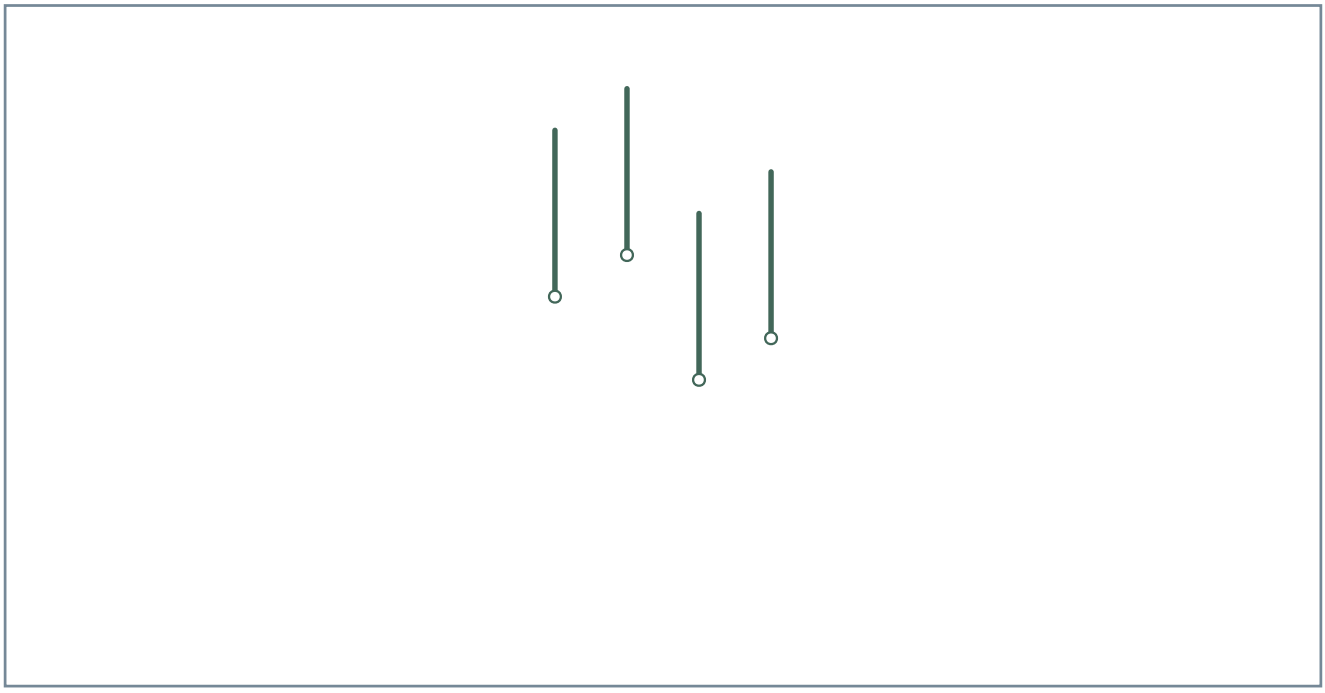
Measure each ground ray as 30° below horizontal. Confirm the vertical ray points up and that each pair of directed rays is separated by 120°.

Structural Isometric Drawing

Answer | Task 2 complete answer | A4

Task 2

Task 2 — Column placement. On your Task 1 axes, mark four column plan positions by stepping along the two ground axes, then raise a vertical line at each.



Answer

Use the corners (0,0), (2,0), (0,1), and (2,1) of a 2×1 plan rectangle, with coordinates counted along the right and left ground rays. Raise one equal-height vertical column at each of the four marks; draw no beams yet.

Reasoning

Plan positions come from the ground axes; column direction comes from the vertical axis.

Check

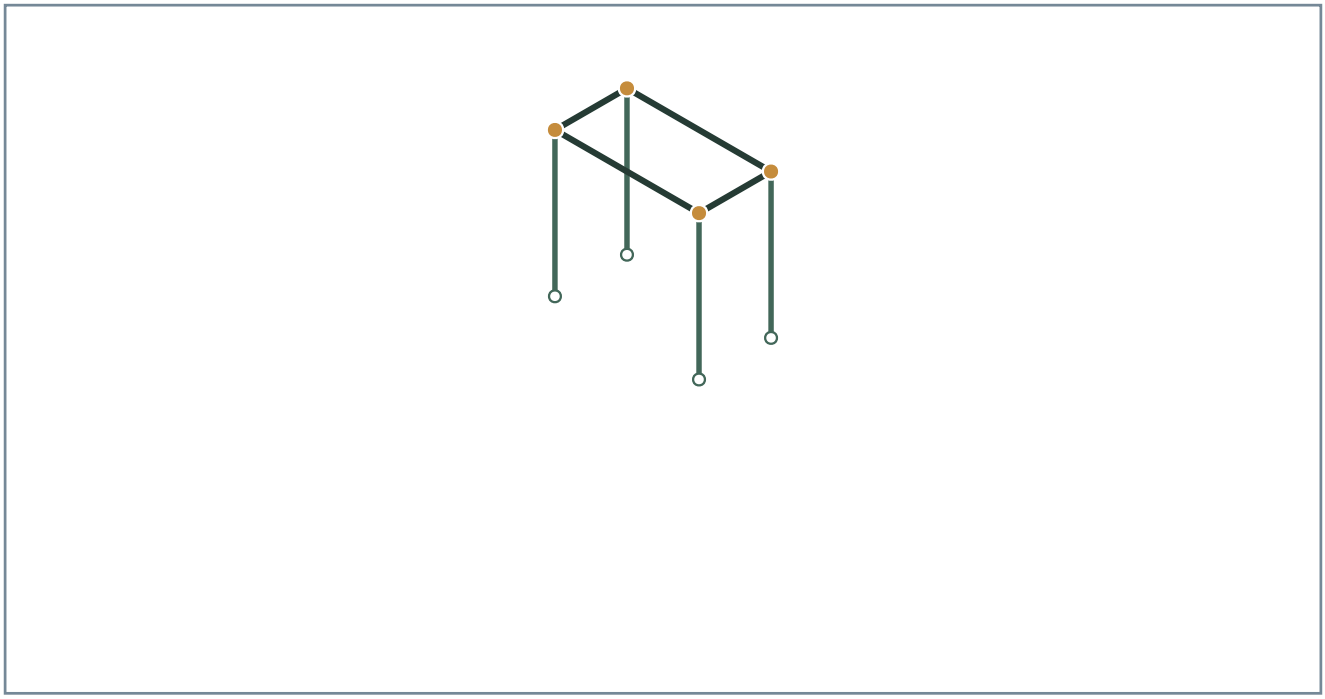
Confirm that the four bases occupy the four distinct corners formed by 0 or 2 steps along the right ray and 0 or 1 step along the left ray, and that all four columns are vertical and equal in height.

Structural Isometric Drawing

Answer I Task 3 complete answer I A4

Task 3

Task 3 — Beam and joint construction. Join the four column tops with beams along the ground-axis directions and mark each joint.



Answer

Connect adjacent column tops with the four perimeter beams of the 2×1 rectangle. Each beam is parallel to one of the two ground axes. Mark the four column-top corners, where beams meet columns, with joint dots.

Reasoning

Beams follow the ground axes; joint dots show which members connect.

Check

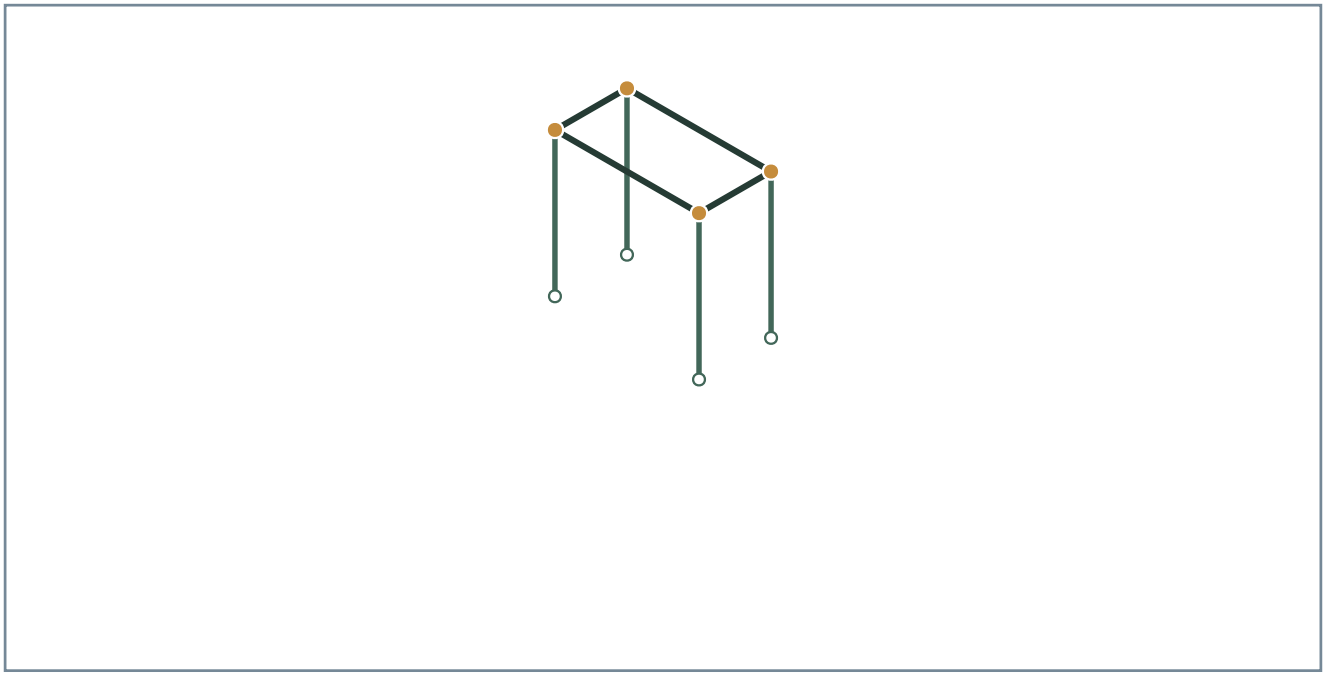
Check each perimeter beam against a ground-axis direction. Confirm there is one bay, four columns, and one joint dot at each column-top corner.

Structural Isometric Drawing

Answer I Task 4 complete answer I A4

Task 4

Task 4 — Visual check. Review your completed plate against the three checks and correct any member that fails.



Answer

A corrected plate in which all verticals are vertical, all beams are parallel to a ground axis, and all joint dots sit at real beam-column meetings.

Reasoning

The three checks catch the common errors: tilted columns, skewed beams, and floating joint marks.

Check

At each dot, confirm it marks a shared column-top and beam endpoint, not just a projected crossing of separate members.