Isometric Column Drawing: Base, Fluted Shaft, and Capital

Original tasks 1, 2, 3 / complete keys

Task 1

A base plinth is 30 mm wide, 20 mm deep, and 10 mm high on a 10 mm grid. Describe how to mark its isometric outline from the centerline.

Answer: Mark 1.5 units along X each side of centerline for width, 1 unit along Y each side for depth, and raise 1 unit vertically. Connect top edges parallel to X and Y.

Reason: Width uses the X axis, depth uses Y, and height uses Z. Halving the total width and depth centers the plinth on the vertical axis.

Check: Verify each edge is parallel to X, Y, or Z and that the plinth is centered on the Z axis.

Task 2

A shaft has a 20 mm diameter and 50 mm height on a 10 mm grid. Describe the ellipse placement and cylinder sides.

Answer: Draw bottom ellipse with 2-unit diameter at the base top; draw top ellipse 5 units above. Connect extreme left and right points with vertical lines.

Reason: The diameter sets the ellipse size, and the height sets the vertical distance between ellipses. Vertical sides connect the widest points.

Check: Confirm both ellipses share the same major axis direction and the sides are parallel to Z.

Task 3

A capital is 30 mm wide, 30 mm deep, and 15 mm high on a 10 mm grid. Describe its isometric block and alignment with the shaft top.

Answer: Mark 1.5 units along X and Y each side of centerline, raise 1.5 units vertically, and connect top edges. Align the capital bottom with the shaft top ellipse.

Reason: Equal width and depth produce a square plan in isometric. Centering on Z keeps the capital over the shaft.

Check: Check that capital edges follow X, Y, Z and that its center matches the shaft centerline.

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Original tasks 4 / complete keys

Task 4

On a 10 mm grid, a column has base 40 by 30 by 10 mm, shaft 20 mm diameter by 60 mm high, and capital 30 by 30 by 15 mm. List three alignment checks after drawing.

Answer: Check all verticals parallel to Z; check ellipse major axes perpendicular to Z; check base, shaft, and capital centered on the same Z axis.

Reason: These checks catch tilt, incorrect circular sections, and misalignment between parts.

Check: Use a straightedge along Z and compare ellipse orientations against the grid.

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Source rubric / reflection

- [ ] All vertical edges are parallel to the Z axis.
- [ ] Horizontal edges follow the 30-degree X or Y axes.
- [ ] Circular sections are drawn as ellipses with major axis perpendicular to Z.
- [ ] Base, shaft, and capital are centered on the same vertical axis.
- [ ] Flutes are vertical, evenly spaced, and follow the visible curvature.
- [ ] Unit length is consistent across all parts.
- [ ] Valid alternative conventions for flute spacing and ellipse guides are accepted if alignment rules are met.

Reflection: What did you check, what did you change, and what will you try next?