Isometric Camera Drawing: Body, Lens, and Button Placement

Original tasks 1, 2 / complete keys

Task 1

Draw an isometric camera body 5 units wide, 3 units tall, and 2 units deep using a unit of 8 mm. Add a lens centered on the front face with diameter 2 units and projection 1 unit.

Answer: Front face is 40 mm by 24 mm; depth is 16 mm along Y. Lens center is at 2.5 units from the left and 1.5 units from the bottom, so the square guide is 16 mm by 16 mm. The lens projects 8 mm along Y.

Reason: Multiply each dimension by the unit length. Center the lens by halving the width and height of the front face. Project the lens along the Y axis by the stated depth.

Check: Measure the front face and depth with a ruler. Confirm the lens guide is centered and that its projection matches 8 mm. Check that all edges follow the 30-degree directions.

Task 2

Place two buttons on the top face of a camera body that is 6 units wide and 2 units deep. Button A is 1 unit from the left and 1 unit from the front. Button B is 4 units from the left and 1 unit from the front. Use a button diameter of 0.6 units and a unit of 10 mm.

Answer: Button A center is at (1,1) on the top face; Button B center is at (4,1). Each button guide square is 6 mm by 6 mm. The buttons are 3 units apart along X, so their centers are 30 mm apart.

Reason: Top-face coordinates use X for left-to-right and Y for front-to-back. Convert the diameter to 6 mm and draw a square guide at each coordinate pair.

Check: Measure the distance between button centers along the X direction; it should be 30 mm. Confirm each guide square is 6 mm and that both buttons sit 10 mm from the front edge.

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Original tasks 3, 4 / complete keys

Task 3

A camera body is 4 units wide, 3 units tall, and 1.5 units deep. The lens diameter is 2 units and its projection is 1 unit. Using a unit of 12 mm, state the front face dimensions, the lens guide size, and the lens projection in millimetres.

Answer: Front face is 48 mm by 36 mm; depth is 18 mm. Lens guide is 24 mm by 24 mm; lens projection is 12 mm.

Reason: Multiply width, height, depth, diameter, and projection by 12 mm. The lens guide is a square whose side equals the diameter.

Check: Recompute each product: 4 times 12, 3 times 12, 1.5 times 12, 2 times 12, and 1 times 12. Compare with the stated answers.

Task 4

Draw a camera body 6 units wide, 4 units tall, and 2 units deep. Add a lens of diameter 3 units centered on the front face with projection 1.5 units. Place a shutter button on the top face 1 unit from the left and 1 unit from the front, diameter 0.8 units. Use a unit of 10 mm and list all millimetre dimensions.

Answer: Body: 60 mm wide, 40 mm tall, 20 mm deep. Lens: 30 mm diameter, 15 mm projection, centered at 30 mm from the left and 20 mm from the bottom of the front face. Shutter button: 8 mm diameter, centered 10 mm from the left and 10 mm from the front edge on the top face.

Reason: Convert every unit dimension by 10 mm. Center the lens by halving the front face width and height. Place the button using top-face coordinates.

Check: Measure the body, lens guide, and button guide with a ruler. Confirm the lens center is at the midpoint of the front face and the button center is 10 mm from both specified edges.

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Source rubric / reflection

- [ ] All vertical edges are parallel and all X and Y edges follow the 30-degree isometric directions.
- [ ] The body is a closed box with consistent units and visible faces correctly ordered.
- [ ] The lens is an ellipse inside a square guide, centered on the front face, with parallel near and far ellipses.
- [ ] Buttons are placed by grid coordinates, do not overlap edges unintentionally, and use consistent scale.
- [ ] Construction lines are light and final outlines are clear; valid alternative button layouts are accepted if coordinates are stated.

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