Isometric Product Plate: Form, Fillets, and Detail Callouts

Original tasks 1, 2, 3 / complete keys

Task 1

A rectangular product is 50 mm wide, 30 mm deep, and 40 mm high. Draw its isometric axis box and state the three axis lengths you would mark.

Answer: Mark 50 mm along the up-right axis, 30 mm along the up-left axis, and 40 mm along the vertical axis.

Reason: In isometric view, width, depth, and height map to the three axes. Keeping one unit and labeling each axis length makes the box checkable.

Check: Verify that each axis length matches the stated dimension and that all receding edges are at 30 degrees.

Task 2

On a top face, a button is 12 mm from the left edge and 8 mm from the front edge. Describe how to project its center in isometric view.

Answer: Measure 12 mm along the top-face axis from the left edge and 8 mm along the other top-face axis from the front edge; the intersection is the button center.

Reason: Two offsets from named edges locate a point on a face. Projecting along the face axes keeps the placement consistent with the isometric frame.

Check: Confirm both offsets use the same unit and that the center lies on the top face, not outside it.

Task 3

A vertical edge receives a 4 mm fillet. Describe the tangent points and the curve you would draw, and write the callout.

Answer: Mark tangent points 4 mm from the corner along each adjacent edge, draw a smooth curve tangent to both edges between the points, and write a leader callout: vertical edge fillet radius 4 mm.

Reason: A fillet replaces a sharp edge with a tangent curve. Tangent points define where the curve meets the flat surfaces, and the callout names the radius and edge.

Check: Check that the curve touches both edges at the marked points without crossing them and that the callout points to the curve.

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Original tasks 4 / complete keys

Task 4

A plate has a 6 mm fillet callout on the top perimeter and a button callout reading 20 mm from left edge, 5 mm from front edge. List two checks before publication.

Answer: Check that the top-perimeter curve is tangent to both adjacent edges and that the button center is 20 mm and 5 mm from the named edges in one unit.

Reason: Callouts must match drawn features. Tangency confirms the fillet, and measured offsets confirm placement.

Check: Trace each leader to its feature and re-measure the offsets against the marked unit on the axes.

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Source rubric / reflection

- [ ] Isometric axes are at 30 degrees and verticals are vertical.
- [ ] Axis box uses one stated unit and matches the given dimensions.
- [ ] Body features are placed by measured offsets from named edges.
- [ ] At least one fillet is drawn as a tangent curve with tangent points.
- [ ] Callouts include radius, placement offsets, and edge treatment.
- [ ] Lettering is legible and note lines are horizontal.
- [ ] Valid alternative curve shapes and lettering styles are accepted if tangency and measurements are consistent.

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