Two-Point Perspective C-Clamp Drawing: Two Viewpoints

Original tasks 1 / complete keys

Task 1

In a two-point perspective setup with a horizon line and left and right vanishing points, draw only the back bar of a C-clamp as a vertical box. The bar is 8 cm tall and 3 cm deep along the receding direction. Its top and bottom edges recede to the right vanishing point. Describe where the left and right vertical edges go and how you check the box.

Answer: Draw a vertical line 8 cm tall for the near left edge. From its top and bottom, draw light lines to the right vanishing point. Choose a depth of 3 cm along those lines and draw the far right vertical edge. The top and bottom edges aim at the right vanishing point; both vertical edges are vertical. Check by extending the top and bottom edges with a straightedge to the right vanishing point.

Reason: The back bar is a box seen at an angle. Its vertical edges stay vertical, and its depth edges recede to one vanishing point. Measuring 3 cm along the receding lines keeps the width consistent.

Check: Use a straightedge to confirm the top and bottom edges pass through the right vanishing point. Measure the two vertical edges; both should be 8 cm tall. Measure the depth along the top and bottom receding lines; both should be 3 cm.

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Original tasks 2 / complete keys

Task 2

Draw a side-angled view of a C-clamp in two-point perspective. The clamp opening faces right. The screw points horizontally into the opening and is 6 cm long on the page. The T-handle crosses the screw at its outer end. Explain how you keep the screw and handle aligned.

Answer: Set the horizon and two vanishing points. Draw the C-frame so the opening faces right, with the spine receding to the left vanishing point. Draw the screw axis as a line from the front jaw into the opening, aiming at the left vanishing point. Build a long box around the axis and add ellipses at both ends. Draw the T-handle bar crossing the screw at the outer end, perpendicular to the screw axis in perspective: since the screw axis aims at the left vanishing point, the handle bar should aim at the right vanishing point (or stay vertical). Check alignment by extending the screw axis to the left vanishing point and the handle bar to the right vanishing point (or confirming it is vertical).

Reason: The screw and handle are perpendicular in the scene. In two-point perspective, a line perpendicular to one receding direction aims at the other vanishing point (or stays vertical), so the screw axis and handle bar should use different vanishing points.

Check: Extend the screw axis with a straightedge; it should pass through the left vanishing point. Extend the handle bar; it should pass through the right vanishing point or be vertical. Measure the screw length along its axis; it should be 6 cm on the page. Confirm the handle crosses at the outer end, not in the middle of the screw.

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Original tasks 3, 4 / complete keys

Task 3

A student draws a C-clamp in two-point perspective but the frame thickness looks uneven: the back bar is 2 cm thick on the page and the front jaw is 4 cm thick. The horizon and vanishing points are correct. Describe two specific changes to fix the drawing and how to check the result.

Answer: First, measure the thickness along the receding lines at the back bar and front jaw. If the back bar is 2 cm and the front jaw is 4 cm, adjust the front jaw's back edge so its thickness is also 2 cm along the same receding direction. Second, redraw the connecting spine so its thickness matches at both ends. Check by measuring the distance between the front and back edges of each block along a receding line; all should be 2 cm in this hypothetical example.

Reason: Frame thickness should stay consistent in perspective. Measuring along receding lines, not across the page, gives a fair comparison.

Check: Use a ruler to measure the thickness of each block along a line aimed at the vanishing point. Compare the measurements; they should match within a small margin. Also check that the adjusted edges still aim at the correct vanishing point.

Task 4

Draw the same C-clamp from two viewpoints: front-angled and side-angled. In the front-angled view the opening faces the viewer; in the side-angled view the opening faces right. List three differences between the two drawings that a checker should look for, and explain how to verify the vanishing-point alignment in each.

Answer: Differences: (1) the opening faces the viewer in the front-angled view but faces right in the side-angled view; (2) the spine appears shorter in the front-angled view and longer in the side-angled view; (3) the screw and handle point more toward the viewer in the front-angled view and more sideways in the side-angled view. To verify alignment, extend every receding edge with a straightedge; in each drawing, all receding edges should pass through the left or right vanishing point, and all vertical edges should be vertical.

Reason: Rotating the clamp changes which faces are visible and how strongly each recedes, but the two-point rules stay the same.

Check: Compare the two drawings side by side. Check the opening direction, spine length, and screw direction. For each drawing, use a straightedge to confirm receding edges hit a vanishing point and vertical edges are vertical. Confirm the horizon line is the same height in both drawings if they share a viewpoint height.

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Source rubric / reflection

- [ ] Horizon line and two vanishing points are clearly marked and used.
- [ ] All receding edges aim at one of the two vanishing points; vertical edges stay vertical.
- [ ] The C-frame is built as connected blocks with a clear opening and consistent thickness.
- [ ] The screw is drawn as a cylinder with elliptical ends and thread lines that follow the perspective direction.
- [ ] The T-handle aligns with the screw axis and sits at the outer end.
- [ ] The independent redraw matches the guided drawing's perspective structure.
- [ ] Handwriting or labels are legible; x-height is measured from baseline to midline, and any style is acceptable.

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