Drawing Poses Upside Down: Using Proportion Landmarks to Rotate Figures

Original tasks 1, 2, 3 / complete keys

Task 1

An upright seated figure has a hip-to-knee distance of 6 cm and a knee angle of 90 degrees. After a 180-degree rotation in place, what is the hip-to-knee distance and knee angle in the inverted drawing?

Answer: The hip-to-knee distance remains 6 cm and the knee angle remains 90 degrees.

Reason: Rotation preserves distances and angles. Only the orientation changes, so the values stay the same.

Check: Measure the inverted drawing with a ruler and protractor; compare to 6 cm and 90 degrees.

Task 2

An upright reaching figure has a shoulder-to-wrist distance of 12 cm. The wrist is above the shoulder. After rotation, is the wrist above or below the shoulder, and what is the shoulder-to-wrist distance?

Answer: The wrist is below the shoulder, and the shoulder-to-wrist distance is still 12 cm.

Reason: A 180-degree rotation reverses vertical order, so a wrist above the shoulder moves below it. Distance is preserved.

Check: Measure the inverted shoulder-to-wrist distance and confirm it is 12 cm; check vertical order visually.

Task 3

A standing figure has head top to chin = 3 cm and knee to ankle = 5 cm. In the upright drawing, the head top is highest. List the vertical order of these four landmarks from top to bottom after a 180-degree rotation in place.

Answer: From top to bottom: ankle, knee, chin, head top.

Reason: The lowest landmarks become highest. The ankle was lowest, then knee, then chin, then head top, so the order reverses.

Check: Mark the four landmarks on the inverted drawing and read their vertical positions from top to bottom.

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Original tasks 4 / complete keys

Task 4

You rotate a figure in place 180 degrees. The upright figure's left shoulder is on the viewer's left. After rotation, is the body's left shoulder still on the body's left side? Explain using the rotation convention.

Answer: Yes. Because the figure rotates in place, the body's left shoulder remains on the body's left side; only its position on the page changes.

Reason: Rotating the figure in place keeps left and right attached to the body. Rotating the page instead would swap viewer left and right.

Check: Label the body's left shoulder before and after rotation and confirm the label stays with the same body side.

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Source rubric / reflection

- [ ] Landmark order is correctly reversed after 180-degree rotation.
- [ ] All measured landmark distances are preserved within 0.5 cm.
- [ ] Joint angles are unchanged from the upright counterpart.
- [ ] Torso midline remains continuous and straight.
- [ ] Left and right body sides remain correctly attached.
- [ ] X-height notes follow the baseline-to-midline convention; letter style may vary.
- [ ] Checklist is completed with yes/no answers and landmark notes.

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