Draw a Figure Swinging Upside Down: Inverted Pose Construction

Original tasks 1, 2, 3 / complete keys

Task 1

A figure has a 5-unit torso, 4-unit thighs, and 4-unit lower legs. The pivot is 2 units above the hips. How many units from the pivot to the ankles along the hanging line?

Answer: 10 units.

Reason: The hanging line from pivot to ankles includes pivot-to-hips 2, hips-to-knees 4, and knees-to-ankles 4. The torso is part of the pivot-to-hips segment, so it is not added separately. Sum: 2 + 4 + 4 = 10 units.

Check: Draw the balance line and mark pivot, hips, knees, and ankles in order. Measure each segment with the same unit and sum only the segments on the hanging line.

Task 2

A student draws the head above the hips and the chin pointing toward the bottom of the page. Name the error and give one correction using the balance guide.

Answer: The figure reads upright, not inverted. Correction: reserve space below the torso, place the head oval below the hips, and point the chin toward the top of the page; then check the center of mass against the balance line.

Reason: In an inverted swing, the head hangs lowest and the chin points toward the top of the page. Drawing the head above the hips reverses the pose. The balance guide helps confirm the head is below the torso and near the hanging line.

Check: Compare the head position to the hip position and the chin direction to the top of the page. Confirm the head is below the hips and the chin points upward on the page.

Task 3

Using a hypothetical x-height of 3 centimeters, a thigh of 4 centimeters, and a lower leg of 4 centimeters, what is the total of one thigh plus one lower leg plus the x-height?

Answer: 11 centimeters.

Reason: Add the three consistent measurements: 3 + 4 + 4 = 11 centimeters. All values use the same unit, so the sum is checkable arithmetic.

Check: Label each segment on the drawing in centimeters and add them with a calculator or by hand. Confirm every label uses centimeters, not mixed units.

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Original tasks 4 / complete keys

Task 4

A figure's center of mass sits 2 units to the left of the balance line. Describe one adjustment that keeps limb lengths unchanged and improves balance.

Answer: Adjust the hip or shoulder angle so the torso midline shifts toward the balance line, or rotate the shoulder line slightly, without changing the measured limb lengths.

Reason: Balance is improved by changing joint angles, not by stretching limbs. Shifting the torso midline or shoulder line moves the center of mass closer to the pivot line while preserving the proportion checks.

Check: Re-measure limb lengths to confirm they are unchanged, then compare the new center of mass to the balance line. The distance to the line should be smaller than 2 units.

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Source rubric / reflection

- [ ] Balance line and pivot are clearly marked and used to check the pose.
- [ ] Torso midline is curved and the head hangs below the hips.
- [ ] Joint placement uses one consistent unit system and checkable arithmetic.
- [ ] X-height is labeled and used as a construction check, not a universal standard.
- [ ] Inverted reading is reinforced by chin direction and hanging cues.
- [ ] Valid alternative body styles are accepted if the balance and proportion checks pass.

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