Draw an Arm Skeleton Bone by Bone: A Guided Construction Lesson

Original tasks 1, 2, 3 / complete keys

Task 1

On a grid where 1 square = 1 unit, the shoulder is at (1, 9), the elbow at (1, 3), and the wrist at (6, 3). State the upper-arm and forearm lengths and the ratio.

Answer: Upper arm = 6 units; forearm = 5 units; ratio 6:5.

Reason: Subtract the y-coordinates for the upper arm: 9 - 3 = 6. Subtract the x-coordinates for the forearm: 6 - 1 = 5. The ratio is 6 to 5.

Check: Re-measure both distances with the same grid unit and confirm the ratio matches 6:5.

Task 2

A draft has an upper arm of 8 units and a forearm of 4 units. The learner wants the forearm to follow the lesson's 6:5 practice ratio. What forearm length should they use, and by how much must they change the draft?

Answer: Forearm should be about 6.7 units, so lengthen it by about 2.7 units.

Reason: Set up 8 / forearm = 6 / 5. Cross-multiply: 6 x forearm = 40, so forearm = 40 / 6, which is about 6.7. The change is 6.7 - 4 = 2.7 units.

Check: Divide the new upper arm by the new forearm: 8 / 6.7 is about 1.2, matching 6 / 5 = 1.2.

Task 3

Describe where to place the ulna and radius in a forearm drawn from an elbow gap to a wrist gap, and state one visible difference between their ends.

Answer: Place the ulna on the little-finger side and the radius on the thumb side. The ulna is wider at the elbow end; the radius is wider at the wrist end.

Reason: The two forearm bones run side by side between the elbow and wrist gaps. Their opposite widening is the main cue that distinguishes them in a drawing.

Check: Confirm the two bones are separate along the forearm and that each has its wider end at the correct joint.

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Original tasks 4 / complete keys

Task 4

A hand drawing shows a wrist cluster, five palm bones, and finger segments, but the thumb group points in the same direction as the other fingers. State the correction and one check.

Answer: Angle the thumb group outward from the other fingers and keep a joint gap at its base. Check that the thumb-side palm bone sits lower and angles away from the little-finger side.

Reason: The thumb is drawn as a separate group with fewer segments and an outward angle. If it parallels the other fingers, the hand reads as a block rather than a grouped structure.

Check: Trace from the wrist cluster to the thumb tip and confirm the path leaves the palm-bone row at a different angle from the other fingers.

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Source rubric / reflection

- [ ] All four bone groups are present: humerus, radius, ulna, and hand bones.
- [ ] Joint gaps separate every bone group and remain consistent in size.
- [ ] The humerus is drawn as one long bone with two distinct ends.
- [ ] The radius and ulna are drawn as two separate forearm bones with opposite widening.
- [ ] The hand is grouped into wrist cluster, palm bones, and finger segments.
- [ ] Proportions are checked with a stated unit or grid count and remain consistent.
- [ ] Valid alternative styles are accepted if the bone order, joint gaps, and proportion checks are clear.

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