Drawing Fingers: Knuckle Landmarks and Proportion Guides

Original tasks 1, 2, 3 / complete keys

Task 1

An artist measures an x-height of 4 mm and uses the hypothetical ratio 1.2 : 1.0 : 0.8. Calculate the three segment lengths and the total finger length.

Answer: Base 4.8 mm, middle 4.0 mm, tip 3.2 mm, total 12.0 mm.

Reason: Multiply each ratio by 4 mm: 1.2 × 4 = 4.8, 1.0 × 4 = 4.0, 0.8 × 4 = 3.2. Add the three lengths: 4.8 + 4.0 + 3.2 = 12.0 mm.

Check: Measure each segment with a ruler and confirm the sum equals 12.0 mm.

Task 2

A finger drawing has knuckle crosses at 0 mm, 7 mm, and 12 mm along a straight line. The artist claims segments of 7 mm, 5 mm, and 5 mm. Identify the error and give the correct tip segment length.

Answer: The crosses at 0 mm, 7 mm, and 12 mm give a base segment of 7 − 0 = 7 mm and a middle segment of 12 − 7 = 5 mm. The claimed tip segment of 5 mm is not supported because no tip cross is marked at 17 mm. The error is that the artist claims three segments but only two are defined by the given crosses; the correct tip segment length would be 5 mm only if the tip cross were at 17 mm.

Reason: Subtract consecutive cross positions: 7 − 0 = 7 mm for the base segment, 12 − 7 = 5 mm for the middle segment. The tip cross must be placed after the middle cross, so the claimed third segment cannot be measured from the given crosses.

Check: Re-measure the distance between each pair of crosses and confirm each subtraction.

Task 3

An artist wants three fingers with the same ratio 1.2 : 1.0 : 0.8 and an x-height unit of 6 mm. Finger A bends 10 degrees at the middle knuckle, finger B bends 20 degrees, and finger C bends 30 degrees. State the segment lengths and explain whether the different bends are valid.

Answer: Each segment is base 7.2 mm, middle 6.0 mm, tip 4.8 mm, total 18.0 mm. The different bends are valid alternatives because knuckle count and segment ratios remain consistent.

Reason: Multiply the ratio by 6 mm: 1.2 × 6 = 7.2, 1.0 × 6 = 6.0, 0.8 × 6 = 4.8. Sum: 7.2 + 6.0 + 4.8 = 18.0 mm. Bend angle is a style choice, not a proportion rule.

Check: Measure each segment on all three fingers and confirm they match 7.2 mm, 6.0 mm, and 4.8 mm within half a unit.

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Original tasks 4 / complete keys

Task 4

A planned blank outline shows knuckle crosses at 0 mm, 5 mm, and 9 mm. An artist traces it but places their own crosses at 0 mm, 6 mm, and 10 mm using a 5 mm x-height unit and ratio 1.2 : 1.0 : 0.8. Compare the two sets of crosses and state whether the artist should adjust.

Answer: The artist's crosses give segments of 6 mm and 4 mm, while the outline gives 5 mm and 4 mm. The base segment differs by 1 mm, which is less than half a unit (2.5 mm), so no adjustment is required, but the artist should note the difference.

Reason: Subtract consecutive positions: artist 6 − 0 = 6 mm and 10 − 6 = 4 mm; outline 5 − 0 = 5 mm and 9 − 5 = 4 mm. The difference is 1 mm, below the half-unit threshold of 2.5 mm.

Check: Measure both sets of crosses with a ruler and compare each segment difference to half the x-height unit.

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Source rubric / reflection

- [ ] Exactly three knuckle crosses per finger, placed in base-to-tip order.
- [ ] Segment lengths match the recorded ratio multiplied by the x-height unit.
- [ ] The three knuckle crosses lie on one smooth curve, not a zigzag.
- [ ] The x-height unit is recorded once and used consistently.
- [ ] Valid alternatives are accepted: different bend angles and tip shapes are allowed if knuckle count and segment ratios remain consistent.

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