# Charcoal Hand Drawing: Proportion and Knuckle Shading

Topic reference / ordinary illustration



Ordinary topic reference. Hypothetical dimensions in the four tasks are supplied in their own text; this illustration is not their measured answer.

# Charcoal Hand Drawing: Proportion and Knuckle Shading

Worked example / complete source key

A hand reference fits a box 10 cm wide and 16 cm tall. The wrist line is 2 cm from the bottom, and the knuckle line is 8 cm from the bottom. Find the x-height from baseline to midline, and state a hypothetical middle-finger length above the knuckle line if it is 1.4 times the x-height.

Answer: The x-height is 8 cm minus 2 cm = 6 cm. The hypothetical middle-finger length above the knuckle line is 1.4 times 6 cm = 8.4 cm. Check: 2 cm wrist line + 6 cm x-height = 8 cm knuckle line, and 8 cm + 8.4 cm = 16.4 cm, which exceeds the 16 cm box by 0.4 cm. So the 1.4-times length does not fit; to fit, the maximum finger length is 16 minus 8 = 8 cm, which is about 1.33 times the x-height.

Reason: Subtract the wrist-line height from the knuckle-line height to get the x-height. Multiply by the given ratio for the finger length. Add the knuckle-line height and finger length to check against the box height; if the sum exceeds the box, reduce the finger length.

Check: Re-measure the box height and the wrist and knuckle lines in centimeters. Confirm 8 minus 2 equals 6. Confirm 1.4 times 6 equals 8.4. Confirm 8 plus 8.4 equals 16.4, which is greater than 16, so the adjusted 8 cm finger length gives 8 plus 8 equals 16 cm, matching the box.