Charcoal Hand Drawing: Proportion and Knuckle Shading

Original tasks 1, 2 / complete keys

Task 1

A hand box is 9 cm wide and 15 cm tall. The wrist line is 3 cm from the bottom, and the knuckle line is 9 cm from the bottom. Find the x-height. If the index finger extends 1.2 times the x-height above the knuckle line, what is its hypothetical length, and does it fit inside the box?

Answer: X-height = 9 minus 3 = 6 cm. Index finger length = 1.2 times 6 = 7.2 cm. Knuckle line plus finger length = 9 plus 7.2 = 16.2 cm, which exceeds the 15 cm box, so the 1.2-times length does not fit. The maximum length that fits is 15 minus 9 = 6 cm, which is 1.0 times the x-height.

Reason: Subtract wrist line from knuckle line for x-height. Multiply by 1.2 for finger length. Add knuckle line and finger length and compare to box height.

Check: Re-measure in centimeters: 9 minus 3 equals 6; 1.2 times 6 equals 7.2; 9 plus 7.2 equals 16.2, greater than 15. The adjusted 6 cm finger gives 9 plus 6 equals 15 cm.

Task 2

You make a five-patch charcoal tonal strip. Patch 1 is lightest and patch 5 is darkest. You place patch 2 on knuckle ridges, patch 3 in dips, patch 4 on side planes, and patch 5 under knuckles. Describe one change that would increase contrast between ridges and dips, and one change that would reduce muddiness.

Answer: To increase contrast, move ridges to patch 1 and dips to patch 4. To reduce muddiness, remove patch 5 from broad areas and keep it only as a small under-knuckle accent, and clean the blending tool.

Reason: Contrast increases when the tone difference between ridges and dips is larger. Muddiness decreases when the darkest tone is limited and blending tools are clean.

Check: Squint at the drawing: ridges should read clearly lighter than dips. Check that patch 5 appears only in small under-knuckle areas.

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Original tasks 3, 4 / complete keys

Task 3

A hand box is 11 cm wide and 17 cm tall. The wrist line is 2 cm from the bottom. For this example, choose the knuckle line at two-thirds of the box height from the bottom. Find the knuckle-line height and the x-height. If the middle finger is 1.3 times the x-height above the knuckle line, does it fit?

Answer: Two-thirds of 17 cm is about 11.33 cm, so the knuckle line is about 11.33 cm from the bottom. X-height = 11.33 minus 2 = 9.33 cm. Middle finger = 1.3 times 9.33 = about 12.13 cm. Knuckle line plus finger = 11.33 plus 12.13 = about 23.46 cm, which exceeds 17 cm, so it does not fit. The maximum finger length that fits is 17 minus 11.33 = about 5.67 cm.

Reason: Multiply box height by two-thirds for the knuckle line. Subtract wrist line for x-height. Multiply by 1.3 for finger length. Add knuckle line and finger length and compare to box height.

Check: Use consistent centimeters: 17 times two-thirds is about 11.33; 11.33 minus 2 is 9.33; 1.3 times 9.33 is about 12.13; 11.33 plus 12.13 is about 23.46, greater than 17. The maximum fitting finger is 17 minus 11.33, about 5.67 cm.

Task 4

You draw a hand with a thumb-side palm width of 4 cm and a finger-side palm width of 5 cm at the palm base. The x-height is 6 cm. State whether the thumb side is narrower or wider, and describe one proportional check you would make before adding knuckle shading.

Answer: The thumb side is narrower by 1 cm. Before shading, check that the palm height from wrist line to knuckle line equals the x-height of 6 cm, and that the finger lengths above the knuckle line are consistent with the x-height.

Reason: Compare the two widths directly: 4 cm is less than 5 cm. Proportional checks use the x-height and palm height to catch errors before tone is added.

Check: Re-measure both widths in centimeters and subtract: 5 minus 4 equals 1 cm. Re-measure the palm height and confirm it matches the marked x-height of 6 cm.

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Source rubric / reflection

- [ ] Proportion guide is present and measured in consistent units.
- [ ] X-height from baseline to knuckle line is marked and used to compare finger lengths.
- [ ] Palm-to-finger ratio and thumb-side width are checked against the guide and the reference.
- [ ] Knuckle shading uses at least three distinct tones from the tonal strip.
- [ ] Knuckle ridges read lighter than dips when squinting.
- [ ] Darkest accents are limited to under-knuckle shadows and side planes.
- [ ] Some edges remain crisp; blending does not flatten the form.
- [ ] Valid alternative hand positions and letter styles are accepted if proportions and tonal logic are consistent.

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