Scaled Drawing of a Child: Head-Count Proportion Guide

Original tasks 1, 2, 3 / complete keys

Task 1

Draw a child figure at a stated height of 12 cm using a four-head-unit guide. Calculate the head height and state where the shoulders and waist fall.

Answer: Head height = 12 cm ÷ 4 = 3 cm. Shoulders at 3 cm from the top; waist at 6 cm from the top (second head-unit boundary).

Reason: Divide total height by number of head units to get head height. Shoulders are at the bottom of the first unit; waist is at the second unit boundary.

Check: Measure the drawn head height; multiply by 4. The result should be 12 cm. Check that shoulders are 3 cm from the top and waist is 6 cm from the top.

Task 2

A child figure is drawn at 18 cm total height with a head height of 3.6 cm. How many head units does the guide use? Show the arithmetic.

Answer: 18 cm ÷ 3.6 cm = 5 head units.

Reason: Number of head units equals total height divided by head height.

Check: Multiply head height by the number of units: 3.6 cm × 5 = 18 cm, matching the total height.

Task 3

You want to draw a child at 15 cm using a five-head-unit guide. The grid has squares of 1.5 cm. How many grid squares tall is the figure, and how many squares per head unit?

Answer: Total squares = 15 cm ÷ 1.5 cm = 10 squares. Squares per head unit = 10 ÷ 5 = 2 squares.

Reason: Divide total height by grid square size to get total squares. Divide total squares by number of head units to get squares per unit.

Check: Multiply squares per head unit by number of units: 2 × 5 = 10 squares. Multiply by square size: 10 × 1.5 cm = 15 cm.

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Original tasks 4 / complete keys

Task 4

A drawing measures 14 cm total height but was intended to be 15 cm with five head units. What head height should have been used, and what is the actual head height if the drawing used 2.8 cm per head unit?

Answer: Intended head height = 15 cm ÷ 5 = 3 cm. Actual head height = 2.8 cm (given). The drawing is short by 1 cm because 2.8 cm × 5 = 14 cm.

Reason: Calculate intended head height by dividing intended total by units. Compare actual head height multiplied by units to intended total.

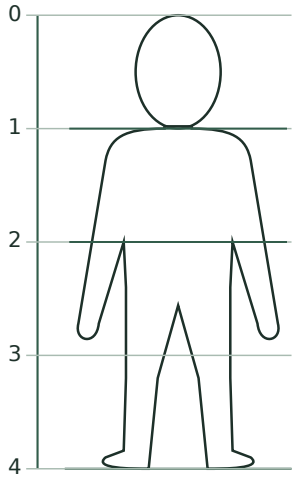
Check: Multiply actual head height by 5: 2.8 cm × 5 = 14 cm, matching the measured total. Intended: 3 cm × 5 = 15 cm.

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Task 1 / answer measured construction

Task 1 / Four-head-unit child figure at 12 cm

Measured construction guide. Only labelled dimensions are fixed; use the original task for all other instructions.



height: 12 cm

head height: 3 cm

shoulder from top: 3 cm

waist from top: 6 cm

Printed physical lengths = source-labelled lengths x 1/2.

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Original rubric / reflection

- [ ] The stated height is marked correctly using the scale bar.
- [ ] The head height is calculated as stated height divided by the number of head units.
- [ ] The figure is divided into equal head units that match the calculated head height.
- [ ] Landmarks (shoulders, waist, knees) align with head-unit boundaries.
- [ ] The total drawn height matches the stated height within a small tolerance.
- [ ] The head-unit boundaries are evenly spaced and consistent with the calculated head height.

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