How to Draw a Face Using a Vertical Line of Symmetry

Original tasks 1, 2, 3 / complete keys

Task 1

On a 10 cm axis, the left eyebrow is 1.8 cm from the axis and the right eyebrow is 2.2 cm at the same height. What is the difference, and what adjustment makes them even?

Answer: The difference is 0.4 cm. Move the right eyebrow 0.2 cm closer to the axis, or move the left eyebrow 0.2 cm farther from the axis.

Reason: Subtract the smaller distance from the larger: 2.2 minus 1.8 equals 0.4. Half of 0.4 is 0.2, so adjust one mark by 0.2 cm.

Check: Re-measure both distances after adjustment; they should differ by 0 cm or within your chosen tolerance.

Task 2

A face outline is drawn on a 14 cm axis. The left ear is 3.4 cm from the axis and the right ear is 3.4 cm. The left mouth corner is 1.2 cm and the right mouth corner is 1.6 cm. Which pair is even, and which needs work?

Answer: The ears are even. The mouth corners need work: the difference is 0.4 cm, so move the right corner 0.2 cm closer to the axis or the left corner 0.2 cm farther out.

Reason: Equal distances mean the ears are even. For the mouth, 1.6 minus 1.2 equals 0.4, and half is 0.2.

Check: Measure each pair from the axis and subtract; the ear result should be 0 and the mouth result should be 0 after adjustment.

Task 3

You set a tolerance of 0.2 cm. The left eye is 2.0 cm from the axis and the right eye is 2.15 cm. Is the pair within tolerance? Explain.

Answer: Yes. The difference is 0.15 cm, which is less than the 0.2 cm tolerance.

Reason: Subtract 2.0 from 2.15 to get 0.15. Compare 0.15 with the tolerance 0.2.

Check: Re-measure both distances and confirm the difference is 0.15 cm or less.

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Original tasks 4 / complete keys

Task 4

A student measures the left eye 2.3 cm from the outer edge of the head and the right eye 2.3 cm from the outer edge. The head is wider on the left. Will the eyes be evenly placed around the axis? Explain using distances from the axis.

Answer: Not necessarily. Equal distances from the outer edge do not guarantee equal distances from the axis when the head widths differ. Measure from the axis instead.

Reason: The axis is the reference line. If the left side of the head is wider, a 2.3 cm edge measurement on the left may be farther from the axis than a 2.3 cm edge measurement on the right.

Check: Measure each eye from the axis, subtract the smaller distance from the larger, and compare with your tolerance.

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Source rubric / reflection

- [ ] Axis is drawn as a single vertical line through the head outline.
- [ ] Each paired feature is measured horizontally from the axis, not from the outer edge.
- [ ] Paired features are at matching heights within the stated tolerance.
- [ ] Horizontal distances for each pair differ by no more than the stated tolerance.
- [ ] The nose is centered on the axis.
- [ ] Feature shapes may vary; even placement is the main criterion.

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