Half-Flower Mirror Symmetry: Complete the Right Half

Original tasks 1, 2, 3 / complete keys

Task 1

A left half has four whole petals with tip heights 6.0 cm, 4.0 cm, 2.0 cm, and 1.0 cm above the baseline, and axis-to-tip distances 1.5 cm, 2.5 cm, 3.0 cm, and 1.5 cm. State the four right tip heights and distances, then give one check method.

Answer: Right tip heights: 6.0 cm, 4.0 cm, 2.0 cm, 1.0 cm. Right axis distances: 1.5 cm, 2.5 cm, 3.0 cm, 1.5 cm.

Reason: Mirror symmetry means each right petal matches its left partner in height above the baseline and distance from the axis. The order top to bottom is preserved.

Check: Count four right petals, measure each tip height and axis distance with a ruler, and compare the eight numbers with the left-side list.

Task 2

A left half has five half-petals touching the axis. Their tip heights are 7.0 cm, 5.0 cm, 3.0 cm, 2.0 cm, and 0.5 cm. A student draws five right petals but places the third tip at 3.4 cm instead of 3.0 cm. What is the error and how should it be corrected?

Answer: The third right petal is 0.4 cm too high. Lower its tip to 3.0 cm above the baseline and redraw the curve so the widest point also matches the left partner.

Reason: The height difference is 3.4 cm minus 3.0 cm, which equals 0.4 cm. Mirror symmetry requires matching heights, so the tip must be moved down by 0.4 cm.

Check: Measure the third right tip height again after correction and confirm it reads 3.0 cm; then compare its widest point with the left partner.

Task 3

A left half has three whole petals with axis-to-tip distances 2.0 cm, 4.0 cm, and 2.0 cm. A student draws the right petals at distances 2.0 cm, 4.5 cm, and 2.0 cm. Identify the mismatch and state the corrected distance.

Answer: The middle right petal is 0.5 cm too far from the axis. The corrected distance is 4.0 cm.

Reason: The difference is 4.5 cm minus 4.0 cm, which equals 0.5 cm. The middle petal must match its left partner at 4.0 cm from the axis.

Check: Measure the middle right petal's axis-to-tip distance after correction and confirm it reads 4.0 cm; then check that the first and third right petals still read 2.0 cm.

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Original tasks 4 / complete keys

Task 4

A second-row left half has six whole petals with tip heights 6.0 cm, 5.0 cm, 4.0 cm, 3.0 cm, 2.0 cm, and 1.0 cm. Describe a complete checking routine for the right half using count, height, and spacing, and state what tolerance you would choose if your ruler has 1 mm marks.

Answer: Count six right petals. Measure each right tip height and confirm it matches the left list: 6.0, 5.0, 4.0, 3.0, 2.0, and 1.0 cm. Measure gaps between adjacent right petals and compare with left gaps. With a ruler marked in 1 mm, a reasonable hypothetical tolerance is 1 mm.

Reason: The routine checks the three structural properties in order: count, height, and spacing. A 1 mm tolerance matches the smallest readable division on the stated ruler, but the actual tolerance should be chosen after measuring your own equipment.

Check: Record all six heights and five gaps beside the drawing, then repeat the measurements on a second pass to confirm the numbers are stable.

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Source rubric / reflection

- [ ] Petal count on the right equals petal count on the left.
- [ ] Each right petal's highest point is at the same height above the baseline as its left partner, within the chosen tolerance.
- [ ] Each right petal's axis-to-tip distance matches its left partner, within the chosen tolerance.
- [ ] Gaps between adjacent right petals match the corresponding left gaps, within the chosen tolerance.
- [ ] Outline alternatives are accepted when height, width, and axis distance match; identical stroke shape is not required.
- [ ] Measurements are recorded beside the drawing in consistent units so the check can be repeated.

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