Draw a Flowering Tree: Blossom Clusters and Branch Spread

Original tasks 1, 2 / complete keys

Task 1

A drawing has a trunk 12 cm tall and a crown boundary 9 cm wide. State whether the spread is too narrow and give a corrected width using the rule that crown width should exceed trunk height.

Answer: Yes, 9 cm is less than 12 cm, so the spread is too narrow. A corrected width is 14 cm, which exceeds 12 cm.

Reason: The rule compares crown width to trunk height directly. Since 9 is less than 12, the boundary must widen. Any value greater than 12 works; 14 cm is a simple choice.

Check: Compare the two numbers with the same unit: 14 cm > 12 cm, so the corrected width satisfies the rule.

Task 2

A student places 8 clusters in the inner zone, 4 in the middle, and 2 in the outer zone, for 14 clusters total. The intended pattern is that inner has the fewest clusters and outer has the most, with middle between them. State how many clusters to move and to which zones so that inner < middle < outer, keeping all zones nonempty.

Answer: Move 5 clusters from inner to outer and 1 cluster from inner to middle. This gives 2 inner, 5 middle, 7 outer, and 2 + 5 + 7 = 14, so inner < middle < outer holds.

Reason: The current counts (8, 4, 2) put the most clusters in the inner zone, which reverses the intended depth pattern. Removing 6 clusters from inner leaves 2 there. Adding 1 to middle makes 5, and adding 5 to outer makes 7. The order becomes 2 < 5 < 7, and the total stays 14.

Check: Add the final counts: 2 + 5 + 7 = 14, matching the original total. Then compare: 2 < 5 < 7, so inner has the fewest and outer the most.

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Original tasks 3, 4 / complete keys

Task 3

A cluster contains 6 blossoms. Each blossom has 4 petals. State the total petal count and explain how to check it without counting every petal individually.

Answer: Total petals = 6 × 4 = 24. Check by grouping: count petals in two blossoms (8), then multiply by 3 groups to get 24.

Reason: Multiplication gives the total directly. The check uses a smaller group and scaling, which is faster and less error-prone than counting all petals.

Check: Recount one blossom to confirm 4 petals, then multiply by the number of blossoms: 4 × 6 = 24.

Task 4

A branch line runs from the trunk to a tip 15 cm away. A student places clusters at 2 cm, 5 cm, 9 cm, and 14 cm from the trunk. State whether spacing is even and suggest one adjustment using the rule that spacing should increase toward the tip.

Answer: Spacing is 3 cm, 4 cm, and 5 cm, which already increases toward the tip, so it is acceptable. No adjustment is required; if a change is desired, move the 14 cm cluster to 15 cm to place it at the tip.

Reason: The gaps are 3, 4, and 5 cm, which increase toward the tip, matching the rule. The answer notes the rule is satisfied rather than forcing a change.

Check: Subtract consecutive positions: 5−2=3, 9−5=4, 14−9=5. Confirm the sequence 3, 4, 5 increases.

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Source rubric / reflection

- [ ] Branch spread: crown width clearly exceeds trunk height, with visible forks and no ambiguous crossings.
- [ ] Cluster placement: every cluster has an anchor point on or just above a branch line, with no clusters floating in empty space.
- [ ] Cluster balance: inner zone has fewer clusters than outer zone, matching the chosen ratio.
- [ ] Petal consistency: petal length is consistent within each cluster, with rotation and width variation allowed between blossoms and clusters.
- [ ] Readability: trunk, branches, and blossoms remain distinguishable after darkening.

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