Contour Line Chrysanthemum: Petal Steps and Layering

Original tasks 1, 2, 3 / complete keys

Task 1

A page is 180 mm wide and 240 mm tall. You center a bloom with a 90 mm diameter. Calculate the left and right margins and the top and bottom margins.

Answer: Left and right margins are (180 - 90) / 2 = 45 mm each. Top and bottom margins are (240 - 90) / 2 = 75 mm each.

Reason: Subtract the bloom diameter from the page dimension, then divide by two for equal margins on each side.

Check: Add the two side margins to the diameter: 45 + 90 + 45 = 180 mm. Add the two vertical margins: 75 + 90 + 75 = 240 mm.

Task 2

You plan 12 outer petals and 9 middle petals. Each middle petal overlaps exactly two outer petals. How many overlap steps are needed for the middle layer?

Answer: 9 middle petals times 2 overlaps each = 18 overlap steps.

Reason: Multiply the number of middle petals by the number of outer petals each one overlaps.

Check: Divide 18 by 9 to recover 2 overlaps per middle petal, matching the plan.

Task 3

A drawn bloom measures 118 mm at its widest span. The planned diameter was 120 mm and the chosen tolerance is plus or minus 5 mm. Is the span within tolerance? Show the difference.

Answer: Yes. The difference is 120 - 118 = 2 mm, which is less than 5 mm.

Reason: Subtract the measured span from the planned diameter and compare the absolute difference to the tolerance.

Check: Add the difference to the measured span: 118 + 2 = 120 mm, confirming the planned diameter.

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Original tasks 4 / complete keys

Task 4

You draw a front petal edge that crosses a back petal edge. Describe the step in words and state one check that confirms the step is clean.

Answer: Draw the front petal edge until it meets the back petal edge, make a short crossing segment over the back edge at a clear angle, then resume the front petal's direction. A clean step check is that the crossing segment is visible and does not leave a gap or double back.

Reason: A step records which petal is in front by crossing the back edge once and continuing the front edge.

Check: Trace the front petal edge from base to tip; confirm exactly one crossing segment at the overlap and no gap at the back edge.

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Source rubric / reflection

- [ ] Bloom center is marked and the bloom fits within the page margins.
- [ ] Petal layers are planned and drawn from back to front with recorded petal counts.
- [ ] Each petal edge is a continuous contour line with a base and tip.
- [ ] Every overlap between front and back petals shows a clear step.
- [ ] No shading, hatching, or color is used; line convention is consistent.
- [ ] Bloom span is measured and compared to the planned diameter within a stated tolerance.

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