# Peony Outline Drawing: Layered Petal Construction

Original tasks 1, 2 / complete keys

Task 1

Plan a two-layer peony outline with ten outer petals and five inner petals. State the angular spacing for each layer and the offset between layers.

Answer: Outer layer: 360 divided by 10 equals 36 degrees spacing. Inner layer: 360 divided by 5 equals 72 degrees spacing. Offset inner layer by half of 36 degrees, which is 18 degrees, from the outer layer. This offset prevents alignment with the outer layer only; with two layers there is no further outer layer to consider.

Reason: Even spacing prevents clustering. Offsetting by half the outer spacing avoids direct alignment between the two layers, which would look like spokes. With only two layers, the half-spacing rule is sufficient to prevent all alignment.

Check: Multiply spacing by petal count: 36 times 10 equals 360; 72 times 5 equals 360. Confirm offset is 18 degrees, which is half of 36.

Task 2

A peony outline has a center circle of diameter 3 cm and an outer boundary of diameter 24 cm. You want three equal rings between them. What are the two intermediate circle diameters?

Answer: The radius grows from 1.5 cm to 12 cm, a difference of 10.5 cm. Divide by three: each band is 3.5 cm. Intermediate diameters are 3 cm plus 7 cm equals 10 cm, and 10 cm plus 7 cm equals 17 cm.

Reason: Equal rings mean equal radial bands. Adding twice the band width to the center diameter gives the first intermediate diameter; adding twice more gives the second.

Check: Check bands: 1.5 to 5 cm, 5 to 8.5 cm, 8.5 to 12 cm. Each band is 3.5 cm. Diameters: 3, 10, 17, 24 cm.

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Original tasks 3, 4 / complete keys

Task 3

An outer petal has a base width of 1.5 cm and an outer width of 2.8 cm. Does it meet the proportion check for outer layers? Show the arithmetic.

Answer: No. Twice the base width is 3.0 cm. The outer width is 2.8 cm, which is less than 3.0 cm, so the petal is too narrow for an outer layer under this convention.

Reason: The convention requires outer width at least twice base width in outer layers to keep petals broad and full.

Check: Multiply base width by 2: 1.5 times 2 equals 3.0. Compare 2.8 to 3.0; since 2.8 is smaller, the check fails.

Task 4

You draw a peony outline and measure extreme distances from center to outermost tips: left 9.2 cm, right 8.8 cm, top 9.5 cm, bottom 8.5 cm. The flower width is about 18 cm. Does the silhouette pass the roundness check?

Answer: Yes. The largest distance is 9.5 cm and the smallest is 8.5 cm, a difference of 1.0 cm. One-tenth of the flower width is 1.8 cm. Since 1.0 cm is less than 1.8 cm, the silhouette passes.

Reason: The roundness check allows extreme distances to differ by no more than about one-tenth of the flower width.

Check: Subtract smallest from largest: 9.5 minus 8.5 equals 1.0. Divide flower width by 10: 18 divided by 10 equals 1.8. Compare 1.0 to 1.8.

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Source rubric / reflection

- [ ] Layer order is outer to inner: Layer 1 outermost, Layer 3 innermost.
- [ ] Petal counts per layer match the chosen plan and decrease inward.
- [ ] Same-layer petals do not cross; gaps are small and even.
- [ ] Silhouette is roughly circular; extreme distances from center differ by no more than about one-tenth of flower width.
- [ ] Outer petals are broader than inner petals; outer width at least twice base width in outer layers.
- [ ] Center circle remains blank as the final inner area.
- [ ] Line only: no shading, color, or other flowers.

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