Small Trippy Line Motifs: Spiral, Wave, Dot Ring, Contour

Original tasks 1, 2 / complete keys

Task 1

Draw a spiral in a 50 mm square. Use a hypothetical starting radius of 3 mm and increase by 2 mm every quarter turn, for five quarter turns. State the final radius and whether the spiral fits.

Answer: Five quarter turns add 2 mm each, so the final radius is 3 + 2 times 5 = 13 mm. The square's half-width is 25 mm, so the spiral's widest point is 13 mm from the center and fits inside the 50 mm square.

Reason: Each quarter turn adds 2 mm to the radius, and there are five quarter turns, so the radius grows by 10 mm from 3 mm to 13 mm. The square half-width is 25 mm, and 13 mm is less than 25 mm, so the spiral stays inside.

Check: Measure the widest point of the spiral from the center and confirm it is about 13 mm, which is less than 25 mm. Count the quarter turns to confirm five.

Task 2

Draw a warped wave across a 60 mm square using three horizontal guides at 15 mm, 30 mm, and 45 mm from the bottom. Make six peaks with a hypothetical peak height of 8 mm above the middle guide, spaced 10 mm apart peak-to-peak, with the first peak 5 mm from the left edge and the last peak 5 mm from the right edge. Check that the peaks stay inside the square.

Answer: The middle guide is at 30 mm. Peaks rise 8 mm above it to 38 mm, and troughs fall 8 mm below it to 22 mm, so both stay inside the 0 mm to 60 mm height. Place the first peak 5 mm from the left edge and the last peak 5 mm from the right edge; six peaks spaced 10 mm apart peak-to-peak span 5 intervals = 50 mm between the first and last peak, leaving 5 mm at each end, so the wave stays within the 60 mm width.

Reason: 30 mm plus 8 mm equals 38 mm, and 30 mm minus 8 mm equals 22 mm; both are between 0 mm and 60 mm. Six peaks at 10 mm peak-to-peak spacing create 5 intervals, so the wave spans 5 times 10 = 50 mm, which is less than the 60 mm square width.

Check: Measure the highest peak from the bottom edge and confirm it is about 38 mm, under 60 mm. Measure the lowest trough and confirm it is about 22 mm, above 0 mm. Count the peaks and confirm six. Measure the first peak's distance from the left edge and the last peak's distance from the right edge and confirm each is about 5 mm, so the wave stays inside the 60 mm width.

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Original tasks 3, 4 / complete keys

Task 3

Draw a dot ring with 12 dots on a hypothetical 20 mm radius circle inside a 50 mm square. Connect every second dot. State how many connecting lines you draw and whether the ring fits.

Answer: Connecting every second dot on 12 dots produces two separate 6-point star polygons, because stepping by two around 12 dots splits the dots into two groups of six. Each star polygon has 6 lines, so the total is 6 + 6 = 12 connecting lines. The ring fits inside a 50 mm square because the 20 mm radius is less than the 25 mm half-width.

Reason: With 12 dots, stepping by two visits six dots and returns to the start, forming one 6-point star polygon; the remaining six dots form a second 6-point star polygon. That gives 6 + 6 = 12 lines total. The radius 20 mm is less than the 25 mm half-width, so the ring fits.

Check: Count the lines and confirm 12, arranged as two separate 6-point star polygons. Measure the ring diameter, which is 2 times 20 = 40 mm, and confirm it is less than the 50 mm square width.

Task 4

Draw four nested contours inside a 60 mm square, starting with a hypothetical 50 mm outer loop and using an even hypothetical gap of 5 mm between loops. State the approximate width of the innermost loop and whether all loops fit.

Answer: Starting from a 50 mm outer loop, each inward step shrinks the width by 10 mm because the gap is 5 mm on each side. Four loops have three gaps between them, so the width shrinks by 3 times 10 = 30 mm. The innermost width is 50 minus 30 = 20 mm, so all four loops fit inside the 60 mm square.

Reason: Each gap of 5 mm on both sides reduces the loop width by 10 mm. Four nested loops create three gaps, so the total reduction is 3 times 10 = 30 mm. The innermost width is 50 minus 30 = 20 mm, which is positive and inside the 60 mm square.

Check: Measure the innermost loop width and confirm it is about 20 mm. Count the loops and confirm four, and count the gaps between them to confirm three. Confirm the outer loop is about 50 mm and inside the 60 mm square.

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Source rubric / reflection

- [ ] Motif stays inside the drawn boundary.
- [ ] Repetition is countable and regular.
- [ ] Gaps between lines are even enough to check by eye.
- [ ] Line quality is controlled and the pen does not tear the paper.
- [ ] Lettering, if used, is outside the motif and follows the stated x-height convention.

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