Draw a Three-Strand Braid: Alternating Overlap Steps

Original tasks 1, 2, 3 / complete keys

Task 1

Draw three strands and two overlap boxes. Label the first box R and the second box L. Check that the sequence alternates.

Answer: First box: right strand crosses over middle, labeled R. Second box: left strand crosses over the new middle, labeled L. Sequence R, L alternates.

Reason: A three-strand braid alternates right and left crossings. Two boxes should show one of each.

Check: Number the boxes 1 and 2. Confirm box 1 is R and box 2 is L, and that no hidden line remains inside either box.

Task 2

Draw a braid with five overlap boxes. Number them and mark L or R. What sequence should appear?

Answer: A valid alternating sequence is R, L, R, L, R or L, R, L, R, L, depending on which side you start.

Reason: Each crossing must alternate sides. Five boxes therefore alternate five times.

Check: Read the labels in order. No two adjacent labels should be the same.

Task 3

Draw a braid that tapers over the last two overlaps. Describe how the box sizes change and where the tip sits.

Answer: The last two overlap boxes are smaller than the earlier boxes, and the three strands converge to a centered tapered tip below the final box.

Reason: Tapering means gradual narrowing, not a sudden stop. Shrinking the last boxes creates a natural tip.

Check: Compare the width of the last two boxes to the first box. They should be smaller, and the tip should align with the center line.

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Original tasks 4 / complete keys

Task 4

Draw a four-box braid and intentionally make box 3 the same side as box 2. Then correct it and explain the fix.

Answer: The incorrect sequence might be R, L, L, R. Correct it by changing box 3 to R, giving R, L, R, L. The fix is to change box 3 so it alternates with box 2.

Reason: Adjacent boxes must alternate. If box 2 is L, box 3 must be R.

Check: List the labels. Check that no adjacent pair matches. Redraw the corrected box and erase the hidden line.

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Source rubric / reflection

- [ ] Three distinct strands are visible at the top.
- [ ] Overlap boxes alternate left and right.
- [ ] Hidden lines are erased inside each overlap box.
- [ ] The braid tapers gradually to a centered tip.
- [ ] The pattern is consistent and checkable by numbering boxes.

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