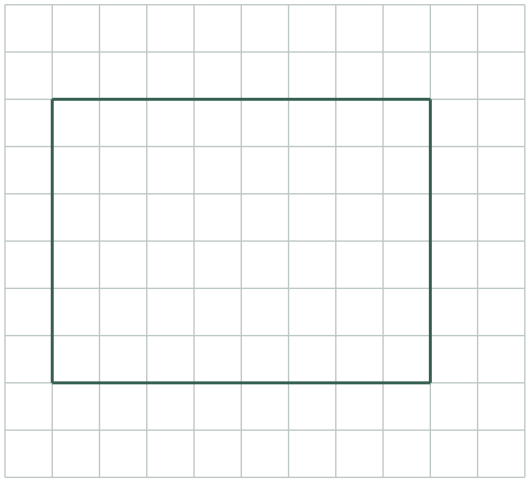
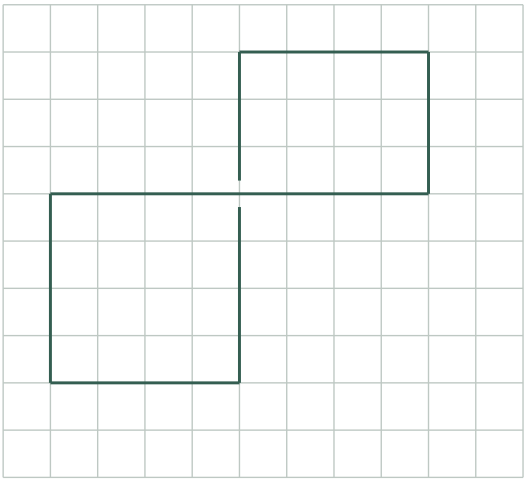
Draw Knots on Graph Paper

Original prompt

Task 1: Draw a simple closed loop on grid paper with no self-crossing, then add one crossing by looping the strand over itself once. Show the over-under clearly.



Simple loop



Loop with one crossing

Answer

First show a simple closed loop with no crossing. Then show a second closed loop with one crossover. Keep one strand unbroken and draw a short centered gap in the other strand.

Reasoning

Adding one crossing to a simple loop isolates the core skill: deciding which strand is on top and breaking only the lower one.

Check

Confirm the loop is closed and the single crossing shows exactly one unbroken strand and one gapped strand.

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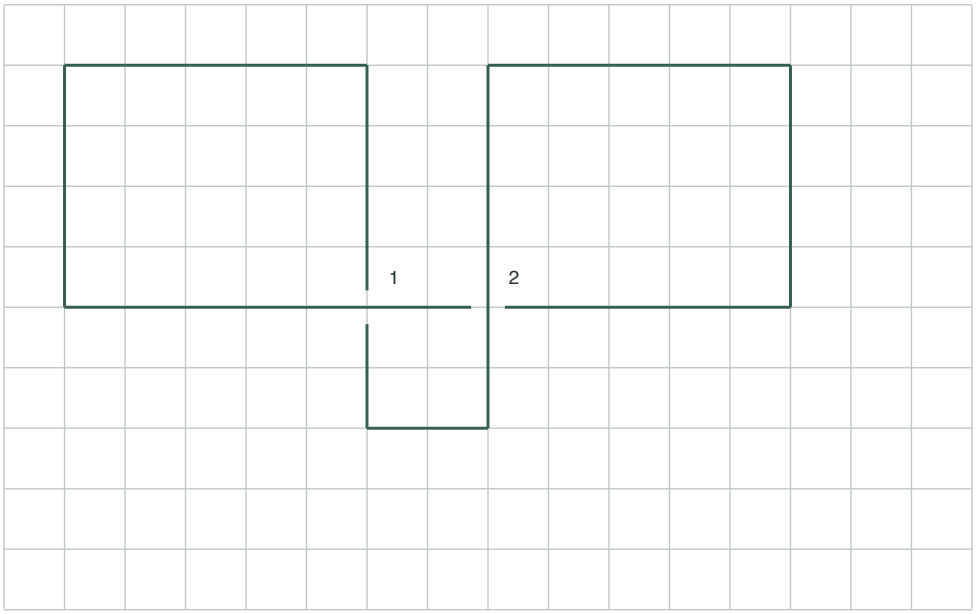
Task 2: Draw a figure-eight loop on grid paper with two crossings. Alternate the over-under so the strand goes over at the first crossing and under at the second.



Across run: over at 1, under at 2

Answer

Use a figure-eight-shaped grid route with two crossings through its waist. Along the left-to-right run, leave the first crossing unbroken and the second gapped. Each crossing has one upper strand, and the route still closes.

Reasoning

Two crossings test whether you can track the same strand and alternate its over-under role consistently.

Check

Follow the same run left to right. It passes over at the first crossing and under at the second. Follow the rest of the route to confirm it closes, including the implied underpasses.

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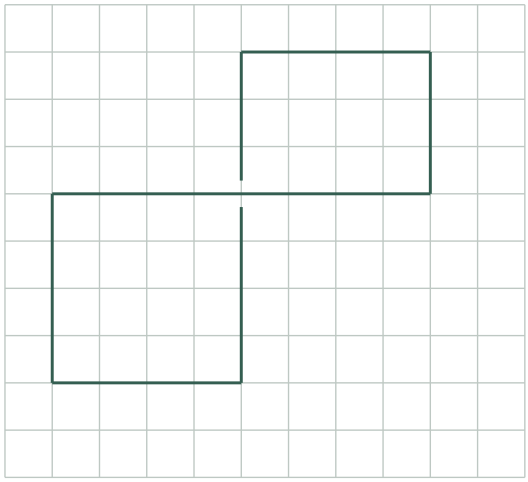
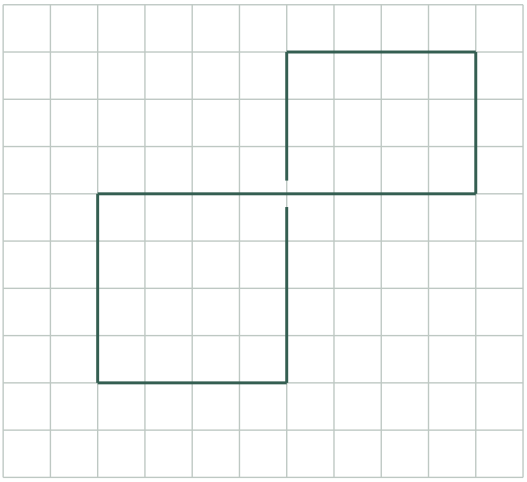
Task 3: Draw a loop with one twist on grid paper, then redraw the same loop shifted one grid square to the right. Keep the over-under pattern identical in both.



Start at column 1



Shifted one square right

Answer

Two versions of the same single-twist loop, one shifted one grid square right. Both show the same strand unbroken at the crossing and the same strand gapped. Both loops close.

Reasoning

Move every point one grid square right so that the turn positions, segment lengths and over-under choice all stay the same.

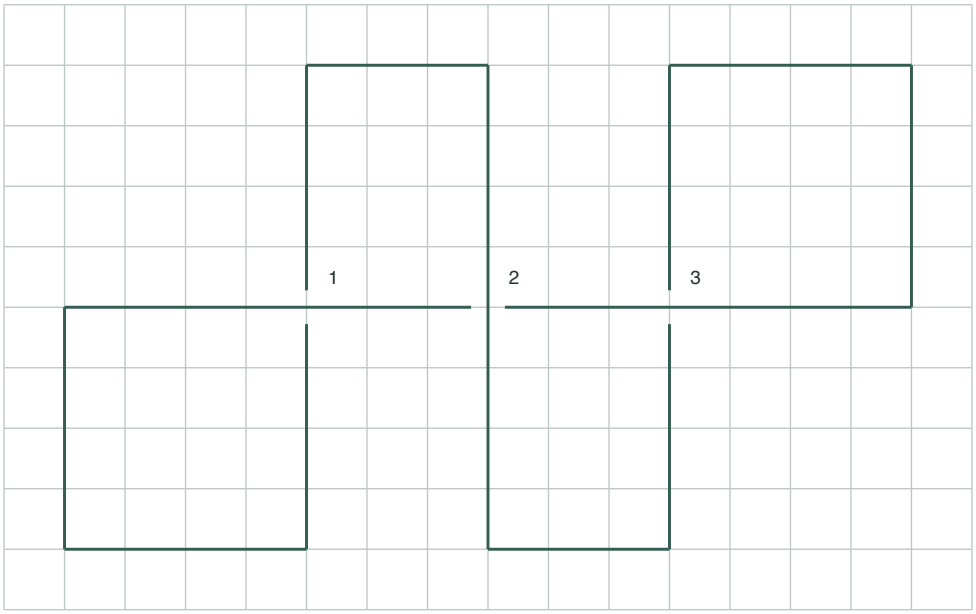
Check

Compare the two drawings: the crossing pattern should match, and each loop should close on its own.

Draw Knots on Graph Paper

Original prompt

Task 4: Draw a closed loop on grid paper with three crossings. At each crossing, mark which strand is on top, then check that no crossing has two unbroken strands or two gapped strands.



Top strands: 1 across, 2 upright, 3 across

Answer

Show a closed grid loop with three crossings. Mark which run is on top at each crossing. Exactly one stroke is unbroken and one has a centered gap at every crossing.

Reasoning

Three crossings require consistent over-under decisions across the whole loop, which is the main checking skill for knot diagrams.

Check

At every crossing, confirm exactly one strand is unbroken and one is gapped; then trace the loop to confirm it closes.