Draw a Repeating Snake-Skin Scale Motif on a Practice Grid

Original tasks 1, 2, 3 / complete keys

Task 1

On a 5 by 5 square grid, row 1 starts at column 1 and row 2 starts at column 2. Using 2 by 2 tiles, list the top-left corners of all complete tiles.

Answer: Row 1: (1,1), (3,1). Row 2: (2,3), (4,3). Total four tiles.

Reason: Each tile uses two columns and two rows. Row 1 starts at column 1, so the next start is column 3; a start at column 5 would need columns 5 and 6, which exceeds the 5-column grid. Row 2 starts at column 2, so the next start is column 4; a start at column 6 would exceed the grid. Thus row 1 has tiles at (1,1) and (3,1), and row 2 has tiles at (2,3) and (4,3). Total: four complete tiles.

Check: Count squares: each tile uses two columns and two rows. A top-left corner at column c needs c+1 to be at most 5, so c can be at most 4; a top-left corner at row r needs r+1 to be at most 5, so r can be at most 4. Confirm each listed corner satisfies both limits and that row starts differ by one square between rows.

Task 2

A learner draws row 1 at columns 1, 3, 5 and row 2 at columns 1, 3, 5. Describe the spacing error and give a corrected row 2 start.

Answer: Row 2 is aligned with row 1 instead of offset. Corrected row 2 should start at column 2, then 4, 6.

Reason: Offset rows shift by one square so tiles sit between tiles above. Starting at column 1 repeats columns and loses the snake-skin stagger.

Check: Compare row starts: row 2 start minus row 1 start should be one square.

Task 3

Using a hypothetical arc depth of one-third of the block height, if the block height is 2 cm, what is the arc depth in cm? Show the arithmetic.

Answer: 2 cm divided by 3 equals about 0.67 cm.

Reason: One-third of the block height is 2/3 cm. This is a hypothetical example; measure your own block and keep units consistent.

Check: Multiply the arc depth by 3 and confirm it returns to 2 cm within rounding.

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Original tasks 4 / complete keys

Task 4

On a 4 by 4 grid, can you place three complete 2 by 2 tiles in one offset row? Explain with counts.

Answer: No. A 4 by 4 grid has four columns; three 2 by 2 tiles in one row would need six columns.

Reason: Each tile uses two columns. Three tiles need 2 times 3 equals 6 columns, which exceeds 4.

Check: Count required columns: number of tiles times two; compare to grid width.

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Source rubric / reflection

- [ ] Tile fits inside a 2 by 2 block with closed outline.
- [ ] Rows are offset by one square and spacing is consistent.
- [ ] Arc depth is similar across tiles, using a stated convention.
- [ ] Grid counting is correct and units are consistent.
- [ ] Valid variations are allowed if the repeat remains clear.

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