

Symmetry: lines and rotational

CURRICULUM ALIGNMENT

SHA.TRN.4a perform and devise a range of steps involving transformations.

INTERACTIVES [Symmetry Tool · challenge, display, explore](#) [Rotational Symmetry · explore](#)

WHAT THIS LESSON TEACHES

A line of symmetry is a fold-line where two halves of a shape match exactly when folded. Rotational symmetry means a shape looks the same after a turn; its order is how many times it matches in one full turn.

- A square has 4 lines of symmetry and rotational order 4.
- A regular hexagon has 6 lines of symmetry and rotational order 6.

MODEL THIS ON THE BOARD

SQUARE TILE SYMMETRY

- 1 A builder cuts a square tile. Fold-lines through the middles of opposite sides give 2 lines.
- 2 Fold-lines along the two diagonals give 2 more lines.
- 3 Total lines of symmetry: 4.
- 4 Turning the tile, it matches every quarter-turn, so 4 times in one full turn. Order is 4.

ANSWER KEY

Scaffold: visual check on the page

Q1: 4

Q2: 4

Q3: 3

Q4: 6

Q5: 6

- a) Always : A square folds exactly along two midlines and two diagonals.
- b) Always : It matches itself 3 times in one full turn.
- c) Never : It has only 2 lines of symmetry, through the midpoints of opposite sides.
- d) Never : Such a shape usually has rotational order 1 and does not match after a half-turn.

EXTENSION SHEET · STRETCH ANSWERS

S1: 0 lines

S2: 0 lines

S3: 10 lines

S4: 8 lines

S5: 6 lines