

Reflecting a shape across a line

CURRICULUM ALIGNMENT

SHA.TRN.3

model and explain the effects of transformations on shapes and line segments.

SHA.SAL.3a

describe, interpret and record directional instructions and location.

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

WHAT THIS LESSON TEACHES

A reflection flips a whole shape over a line, like a mirror image. The shape ends up facing the opposite way but is exactly the same size.

- A pattern-block triangle pointing right is reflected across a vertical line so the matching triangle points left.
- A flag drawn three squares from the line has its reflection drawn three squares from the line on the other side.

MODEL THIS ON THE BOARD

BUILD AND FLIP A SIMPLE FLAG

- 1 Draw a vertical mirror line down the middle of the squared paper.
- 2 Build a flag shape with its nearest corner 3 squares left of the line.
- 3 For every corner, count the same number of squares on the right side of the line.
- 4 Join the new points so the flag now faces the opposite way, still 3 squares from the line.

DISCUSSION STARTER

REFLECT After a reflection, what stays the same about the shape and what changes?

LESSON ARC

Open with a before-and-after of one shape flipped over a line and hold pupils' own words — 'facing the other way'. On the IWB, walk the triangle, rectangle and arrow reflections, counting squares from the line on both sides, then build to the trickier shape sitting two squares clear of the line. Pupils draw a flag and its reflection on squared paper in their copy. The Class Challenge gives more practice, finishing on the shape that sits away from the line.

TEACHING MOVES

1. **Getting Started.** Show the before-and-after flip as pupils settle and take three hands-up answers, not call-outs. Listen for 'it's facing the other way' and write that phrase up — you'll reuse it in Watch and Notice.
2. **Watch and Notice.** Run each example one at a time, pointing corner-to-matching-corner: 'two squares from the line here, two squares from the line there.' Build the away-from-the-line case slowly, and on the L-shape stress the line goes side to side so the flip is up-and-down — that's where pupils slide instead of flip.
3. **Try It Together.** Set the mirror line, shade a simple shape, and as each square reflects ask the class to count squares from the line on both sides before agreeing. Rotate four pupils at the board; between turns ask the room 'how many squares from the line is this corner?' and revoice a correct answer so the back rows hear a classmate reason.

4. **Draw the Reflection in Your Copy.** Pupils draw an up-and-down line, a flag on one side, then its reflection. Walk the room checking each corner is the same square-count from the line and that the flag now faces the other way — no marking.
5. **Class Challenge.** Keep the board work brisk — pupils take turns, check each answer, class confirms, move on. At each one ask 'did it flip over, or just slide along?' and on the away-from-the-line shape count aloud as a class: 'two squares this side, two squares that side, four squares across.'
6. **What Did We Notice?** Listen for 'size stays the same, the way it faces changes' and revoice a strong answer. If anyone says it just moved along, ask whether it's still facing the same way.

COMMON MISCONCEPTIONS

⚠ Pupils slide the shape along instead of flipping it, so the reflection faces the same way as the original — most common on the L-shape with a side-to-side line.

Replay the L-shape from Watch and Notice and ask 'is it facing the same way, or has it turned over?' Trace the original L in the air, then flip your hand to show the new facing before re-counting corners.

⚠ With a shape sitting a few squares clear of the line, pupils draw the reflection touching the line instead of the matching distance away, so the gap on the new side disappears.

Count aloud as a class: 'two squares this side of the line, so two squares that side — that's four squares across in total.' Point to the gap on the original and ask a pupil to point to the matching gap before the reflection is drawn.

DIFFERENTIATION

EMERGING

- Keep the mirror line touching the shape so there's no gap to count — the corners sit right on the line and pupils only flip the facing.
- On the copybook flag, draw the up-and-down line for them and shade the first matching corner so they continue the pattern rather than start it.

DEVELOPING

- After the copybook flag, give a shape sitting one square clear of the line and ask how far across the reflection lands, and why.
- Swap the mirror line from up-and-down to side-to-side for the same flag and ask what changes about which way it flips.

PROFICIENT

- During the Class Challenge, narrate a harder variant from the front: reflect a shape, then reflect that reflection back across the same line, and ask what they predict before it appears.
- Pose: 'if a corner sits on the mirror line itself, where does its reflection land?' — let them reason it out and explain how they know.

✂ **Cross-curricular:** Tie to the visual-arts strand — pupils fold paper, paint one side and press to make a symmetrical 'mirror' print, naming the fold as the mirror line.

ANSWER KEY

Scaffold: visual check on the page

Q1: triangle 2 squares right of the line (flipped)

a) Always : Reflection is a flip that keeps every length the same.

b) Always : The mirror line reverses the facing direction of the whole shape.

c) Always : Distance to the line is preserved on both sides.

d) Never : Size never changes in a reflection.

EXTENSION SHEET · STRETCH ANSWERS

S1: to the left

S2: down

S3: 3 cm, 4 cm and 5 cm

S4: q

S5: 6 squares