

Reflection: reflecting a shape across a line

CURRICULUM ALIGNMENT

SHA.TRN.3 model and explain the effects of transformations on shapes and line segments.

INTERACTIVES Transformation Playground · display Symmetry Tool · challenge, explore

WHAT THIS LESSON TEACHES

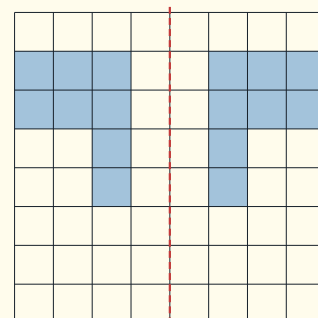
A reflection flips a whole shape across a mirror line so it faces the other way. The shape stays exactly the same size and shape, only turned to face back.

- A triangle pointing right becomes a triangle pointing left after reflecting across a vertical line.
- A corner 3 squares from the line has its reflection 3 squares from the line on the other side.

MODEL THIS ON THE BOARD

REFLECTING A FLAG ACROSS A VERTICAL LINE

- 1 The flag sits to the left of the vertical mirror line.
- 2 Its top corner is 4 squares from the line, so the matching corner is marked 4 squares to the right.
- 3 Its pole is 2 squares from the line, so the matching pole is marked 2 squares to the right.
- 4 Join the new corners; the flag is the same size but now points the opposite way.



DISCUSSION STARTER

REFLECT Does a reflection face the same way as the shape, or the opposite way?

LESSON ARC

Open with the pattern-block triangle beside a standing mirror on the IWB and ask which way the reflection faces — flip or slide. Walk the worked examples pivoting on counting one corner's squares from the mirror line, then matching it on the far side. Pupils draw a flag and its reflection across a vertical line in their copies, counting squares each side. The Class Challenge bank works reflections across vertical, horizontal and an optional diagonal line.

TEACHING MOVES

1. **Getting Started.** Hold five seconds of quiet think-time before any hands, then take two or three answers on which way the reflection faces. Re-voice the key word: 'so the mirror flips it round to face the other side' — push for 'opposite', not 'same'.
2. **Watch and Notice.** On the L-shape, point to one corner and count its squares from the line out loud, then count the same number on the far side — this equal-distance counting is the heart of the lesson, so slow right down here. On the diagonal example, mark the slant line clearly and count one corner's distance along the slant aloud.
3. **Try It Together.** Invite a pupil to tap cells to build a small shape; the interactive auto-mirrors each tap. Before confirming each flip, name one pupil to say how many squares a corner sits from the line and

another to predict where its reflection lands, then have the class check. Watch for pupils expecting a slide — pause and re-voice when the reflection faces the opposite way.

4. **Draw the Reflection in Your Copy.** Walk the room glancing at corner counts and that each flag faces the opposite way. The most common slip to catch is a reflection drawn too close or too far from the line — point to a corner and ask the pupil to count both sides aloud.
5. **Class Challenge.** Keep the board work brisk — pupils take turns, check each answer, class confirms before moving on. Narrate the 'which way does it flip?' question each time, and watch the arrow especially: if it still points the same way it has been slid, not reflected. Run the diagonal stretch only if time allows.
6. **What Did We Notice?.** Listen for pupils naming the flip as the difference, then re-voice: 'when we reflect, the shape turns to face the mirror; when we slide, it keeps looking the same way.' Head off the idea that reflection just changes position.

COMMON MISCONCEPTIONS

⚠ Pupils slide the shape to the other side of the line instead of flipping it — the arrow still points the same way after they've 'reflected' it.

Stand the small mirror upright on the page at the line and look into it: the reflection faces back the opposite way. Ask 'does your arrow face the mirror, or away from it?' and have the pupil redraw so it turns to face the line.

⚠ Pupils draw the reflection the right way round but plant it too close to or too far from the mirror line, so corners don't match.

Pick one corner on the IWB and count its squares from the line aloud, then count the same number on the far side together. Repeat for a second corner — the equal-distance rule has to hold for every corner, not just the nearest one.

DIFFERENTIATION

EMERGING

- Pre-draw the vertical mirror line and the original flag in the copy so pupils only count squares and place the reflection, not invent the whole picture.
- Stay on vertical lines only with a small two- or three-corner shape; let the pupil hold the small mirror on the line to see the flip before drawing it.

DEVELOPING

- After the copy flag, ask pupils to reflect the same flag across a horizontal line as well, then say what changed — the flip direction, not the size.
- Give a shape that touches the mirror line and ask which corners stay put and why.

PROFICIENT

- On the IWB, narrate a harder variant for fast finishers: reflect an L across a diagonal line, counting one corner's distance along the slant aloud, then have them justify why the size never changes under any reflection.

✂ **Cross-curricular:** Tie to Visual Arts — pupils fold paper, paint one half and press to print a symmetrical 'butterfly', naming the fold as the mirror line.

ANSWER KEY

Scaffold: visual check on the page

Q1: 7 squares

Q2: left

Q3: 5 squares

Q4: 2 squares and 6 squares right of the line

Q5: down

Spot: The image must be the same distance from the mirror line as the original. The square is 2 squares away, so its image belongs 2 squares to the right of the line, not 3.

EXTENSION SHEET · STRETCH ANSWERS

S1: reflection

S2: rotation

S3: rotation

S4: rotation

