

Translation: sliding shapes on squared paper

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 Transformation Playground · display, explore

WHAT THIS LESSON TEACHES

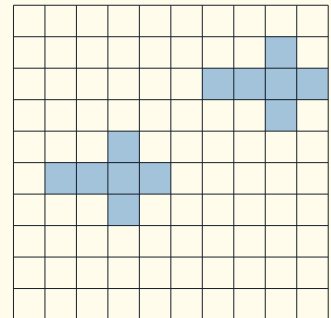
A translation slides a shape to a new place without turning it or flipping it. Every corner moves the same distance across and the same distance up, so the copy is the same size and faces the same way.

- An arrow slid 4 squares right stays the same size and faces the same way.
- If one corner goes 3 right and 2 up, every corner goes 3 right and 2 up.

MODEL THIS ON THE BOARD

SLIDE AN ARROW 5 RIGHT AND 3 UP

- 1 The arrow on the left is made of shaded squares.
- 2 Slide every square of it 5 right and 3 up.
- 3 The new arrow on the right is the same size and still points the same way.



DISCUSSION STARTER

REFLECT How can you tell a slide from a flip or a turn?

LESSON ARC

Open by picturing a shape moved to a new spot on squared paper — draw out that only position changes. On the IWB, run three arrow slides, tracing two corners' journeys with a finger to prove both move the same across-and-up amount. Pupils slide the arrow together on the board through four moves, then draw a 5-right-3-up slide in their copy. Class Challenge chains slides and finds the single equivalent slide.

TEACHING MOVES

1. **Getting Started.** Take three hands-up answers, not open call-outs. Steer to 'nothing changes except where it sits — same size, same direction.' Hold the word 'slide' back until Watch and Notice so pupils reach for it themselves.
2. **Watch and Notice.** On the 3-right-2-up arrow, trace one corner's journey with your finger, then a second corner — same distance both times. Before the last arrow (2 right, 3 up), pause and take a prediction of the across-and-up move; revoice a strong one: 'so every corner goes two across and three up.'

3. **Try It Together.** Call one slide at a time; a pupil drags the arrow. Before the class agrees, ask 'did any corner move a different amount?' — answer must be no. The 3-left-2-down move is the trap: watch for the pupil who turns or flips instead of sliding, and revoice 'a slide never turns it.'
4. **Sketch the slide in your copy.** Walk the room glancing for whether every corner moved five across and three up, and that nobody has turned or flipped the arrow. Not marking — spot the turned arrows and correct on the spot.
5. **Class Challenge.** Keep it brisk — pupils take turns dragging, class confirms each move. Track the running across total and up total on the board so the class sees moves cancelling (3 right then 2 left leaves 1 right). Let a pupil reason out the single equivalent slide before you confirm 1 right, 1 up.
6. **What Did We Notice?.** Listen for pupils naming that a slide keeps the shape the same size and facing the same way, unlike a flip or turn. Revoice: 'so a slide never changes how it looks, only where it sits.'

COMMON MISCONCEPTIONS

⚠ A pupil slides the arrow but quietly rotates or flips it so it points a new way, then still calls it a slide. Freeze the board and compare the two arrows' directions side by side. 'A slide never turns it — it always faces the same way.' Have the pupil undo the turn and re-drag, checking the arrow points identically before and after.

⚠ A pupil moves one corner the right amount but lets the shape stretch or shrink, so corners travel different distances. Trace two corners' journeys with a finger on the IWB: if one goes 3 across and the other goes 4, it isn't a slide. Rebuild with the pattern-block arrow cut-out on squared paper so the shape physically can't change size.

⚠ On the chained challenge, a pupil combines 3 right then 2 left as '5 across' instead of cancelling to 1 right. Keep a running across-tally on the board and step through it aloud: right is one way, left is the other way, so they eat into each other. Land on 1 right overall before touching the up total.

DIFFERENTIATION

EMERGING

- Give these pupils the pattern-block arrow cut-out to physically slide across the squared paper before drawing — feeling it move without turning fixes the idea.
- Stay with right-only and up-only slides in the copybook (5 right, then 3 up as separate steps) before combining across-and-up in one move.

DEVELOPING

- After the copy sketch, ask them to write the across-and-up words for a slide a neighbour couldn't see, precise enough to redraw it exactly.
- Give a two-step chain (2 right 1 up, then 3 right 2 up) and ask for the single equivalent slide before the Class Challenge introduces cancelling.

PROFICIENT

- Pose: a slide takes the arrow 4 right and 2 up. What single slide would bring it back to where it started? Ask them to explain why the reverse works.
- Narrate a harder Class Challenge variant at the board — a three-move chain where across cancels to zero — and ask what the single equivalent slide looks like when nothing moves sideways.

✂ **Cross-curricular:** Tie to Geography map skills — describe moving from one grid square to another on an Ordnance Survey map using across-and-up counts.

ANSWER KEY

Scaffold: visual check on the page

Q1: arrow 4 right (same orientation)

Q2: Arrow 6 left & 7 down (same way)

a) Always : A translation only moves a shape, so its size never changes.

b) Always : Sliding never turns a shape, so its direction stays the same.

c) Sometimes : A slide can go right, but it can also go left, up or down.

d) Never : Flipping is a reflection, not a slide, so a translation never does it.

EXTENSION SHEET · STRETCH ANSWERS

S1: (4, 4)

S2: (6, 1)

S3: (3, 7)

S4: (0, 4)

S5: (2, 0)