

Rotation: quarter, half and three-quarter turns

CURRICULUM ALIGNMENT

SHA.TRN.3

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

SHA.SAL.3b

compare and classify angles, recognising them as a property of a shape and as a description of a turn.

INTERACTIVES [Rotational Symmetry · explore](#)

WHAT THIS LESSON TEACHES

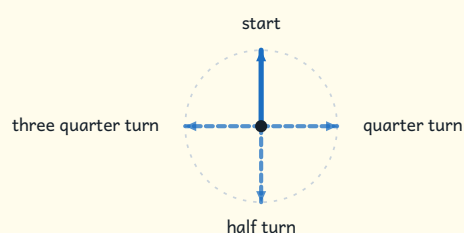
A turn is how far a shape spins around one fixed point. A quarter turn is a little way round, a half turn is halfway round, and a three-quarter turn is most of the way round. Clockwise means the way a clock's hands go.

- An arrow pointing up faces right after a quarter turn clockwise.
- An arrow pointing up faces straight down after a half turn.

MODEL THIS ON THE BOARD

ARROW QUARTER-TURNS

- 1 The arrow starts pointing **up**, fixed at its corner.
- 2 A quarter turn clockwise swings the tip to **right**.
- 3 A half turn continues to **down** (opposite).
- 4 A three-quarter turn lands the tip pointing **left**.



DISCUSSION STARTER

REFLECT Which turn is easiest for you to picture — quarter, half or three-quarter?

LESSON ARC

Turn on the spot yourself first — full, half, quarter — and have pupils name where you end up facing before any labels appear. Move to the rotation interactive: an arrow pivoting clockwise around a corner dot, pausing hard on the half turn. Pupils draw the four arrows in copybook, then pivot cardboard arrow cards on a pencil point through called turns. The full-turn interactive closes the loop — four quarter turns back to start.

TEACHING MOVES

1. **Getting Started.** Stand and turn on the spot — full, then half, then quarter — pausing at each stop. Take three hands-up answers on which way you ended up facing (same, opposite, to the side). Resist naming the turns; that lands next step.
2. **Watch and Notice.** Run the rotation interactive slowly. Pause after the quarter turn and ask 'which way now?' before continuing. Hold on the half turn — this is the moment: the arrow points the exact opposite way. Point out the arrow stays the same size the whole spin, only the direction changes.

3. **Draw the Turns in Your Copy.** Pupils draw an up-arrow, then three more showing quarter, half and three-quarter turns clockwise — four in a row. Walk the room glancing for arrows kept the same length and pointing right/down/left in turn. No marking.
4. **Try It Together.** Every pupil pivots their own cardboard arrow on the pencil point while one demonstrates at the front. Watch for arrows that get slid instead of turned — the pencil must stay put. Re-voice a good answer: 'a quarter turn is the same as a right-angle corner.'
5. **Class Challenge.** Brisk practice — pupils predict the new direction before they turn, then check at the board and the class confirms before moving on. Keep it moving rather than re-explaining each one.
6. **What Did We Notice?.** Ask why a half turn always points a shape the opposite way whatever its start. Listen for 'a half turn is two quarter turns'. Re-voice: 'halfway round the circle is always straight across from where you began.'
7. **A Full Turn Is Four Quarter Turns.** Drive the full-turn interactive on the IWB. Pupils call out the direction after each quarter turn — right, down, left, up — and count the four turns aloud with you. Use it to settle the Class Challenge stretch answer.

COMMON MISCONCEPTIONS

⚠ A pupil says a three-quarter turn clockwise points the same way as a quarter turn — they hear 'three-quarter' and picture just a small turn.

Have them pivot the cardboard arrow all the way through the three-quarter turn one quarter at a time, calling right-down-left. A quarter turn from up lands on right; three-quarters lands on left — different directions. Contrast the two side by side.

⚠ Pupils slide the arrow across the desk instead of spinning it, so the tip ends up pointing the same way it started.

Stop and hold up an arrow yourself with the pencil pinned through the corner. 'The pencil never moves — only the card spins around it.' Have them press the pencil down hard and turn just the card.

DIFFERENTIATION

EMERGING

- Stick to quarter and half turns only while others add three-quarter. Pupils pivot the cardboard arrow with you calling each stop rather than predicting ahead.
- In the copybook row, let them trace round the pencil-pivoted card onto the page rather than draw each arrow freehand.

DEVELOPING

- After the copybook row, ask: what single turn takes the arrow from pointing down back to pointing up? Have them justify with the card.
- Give a two-step chain — quarter turn, then a half turn — and ask which way it faces at the end without stopping in between.

PROFICIENT

- Pose the anticlockwise question: 'if a quarter turn clockwise from up lands on right, where does a quarter turn the other way land?' Let them test it on the card and explain the difference.
- Ask them to narrate the full-turn interactive to the class as though teaching a younger pupil why four quarters equal one whole turn.

✂ **Cross-curricular:** Tie to the clock — the hour hand from 12 to 3 is a quarter turn, 12 to 6 a half turn, matching quarter- and half-hour reading.

ANSWER KEY

Scaffold: visual check on the page

Q1: up

Q2: down

Q3: left

Spot: A half turn is a half-circle (180°), so an arrow that pointed up now points down. Pointing right would be only a quarter turn.

EXTENSION SHEET · STRETCH ANSWERS

S1: east (a full turn = 360°)

S2: west (a three-quarter turn = 270°)

S3: east (a quarter turn = 90°)

S4: north (a half turn = 180°)

S5: north (a quarter turn = 90°)