

Triangles of every kind

CURRICULUM ALIGNMENT

SHA.SHP.2

examine, categorise and model 3-D and 2-D shapes.

SHA.TRN.2

understand that shapes and line segments can be reflected, rotated and translated.

INTERACTIVES

Drag Sort · challenge, display, explore

WHAT THIS LESSON TEACHES

A triangle is any closed shape with exactly three straight sides and three corners. Turning it, making it tall or wide, or standing it on its head does not change that it is a triangle.

- A tall skinny triangle, a wide triangle and an upside-down triangle are all triangles.
- A shape with a bendy side fails the test, even if it has three corners.

MODEL THIS ON THE BOARD

PUPPET AND THE UPSIDE-DOWN SHAPE

- 1 The puppet points at a shape standing on its head and says it is not a triangle.
- 2 Count the sides: the shape has exactly **three** straight sides.
- 3 Count the corners: it has exactly **three** corners and is closed.
- 4 No side is bendy, so the shape **passes** the three-straight-sides test.
- 5 Tell the puppet it is still a triangle because turning does not change its name.

LESSON ARC

Open with the class puppet insisting the upside-down triangle is not a triangle any more. Do not settle the dispute yet. Run the three-straight-sides test on the drag-sort interactive, revealing one shape at a time while the class calls passes or fails. Pupils take turns sorting at the board, then draw three different triangles in their maths copy. Class Challenge banks trickier cards including upside-down and bendy-side fakes. Close by spotting a triangle in the room.

TEACHING MOVES

1. **Getting Started.** Read the puppet's huff once, then give five seconds of quiet think-time before any hands. Take two or three answers only — do not settle the question. Point at the upside-down triangle and say you will test it next.
2. **Watch and Notice.** Reveal one card at a time on the drag-sort interactive. Pause before each drop and take a whole-class call of passes or fails. Hold longest on the pointing-down card so the class sees turning does not change the name. Revoice: three straight sides — that is the whole test.
3. **Try It Together.** Rotate four pupils at the board. Everyone else is a caller: passes or fails before each drop. If someone rejects the upside-down card, stop and revoice count the straight sides again. Keep the bendy-side card for a later turn so the straight-sides rule stays sharp.
4. **Draw three triangles in your copy.** Set five quiet minutes. Walk the rows glancing for three straight sides and three corners on every drawing. A wobbly freehand line is fine; do not mark. Prompt any pupil stuck on upside-down: start with a point at the bottom and draw two sides up.

5. **Class Challenge.** Keep the board work brisk. Pupils take turns, check each answer as they go, and the class confirms before the next card. On the second round hold the pointing-down card; on the third pause on the bendy-side fake and say three corners is not enough if one side bends.
6. **What Did We Notice?.** Ask why an upside-down triangle is still a triangle. Listen for three straight sides, not the way it points. Revoice: turning does not change the sides — the test stays the same. If time allows, take two quick room spots (set square, warning-sign poster) and tie each back to the sides test.

COMMON MISCONCEPTIONS

⚠ Pupils say the upside-down card fails because it is standing on its head — they think the name depends on which way it points.

Hold the card on the interactive and count the three straight sides out loud with the class. Revoice: turning does not change the sides, so the name stays the same.

⚠ Pupils pass a shape with three corners but one bendy side — they count corners instead of straight sides.

Trace the bendy edge slowly with your finger on the board. Ask: is every side straight? Fail the card and revoice the full test: exactly three straight sides.

⚠ Pupils reject a tall skinny triangle because it does not look like the wide triangle they first saw.

Park the tall and the wide cards side by side. Count three straight sides on both. Celebrate that both pass — tall, wide or tiny still counts.

DIFFERENTIATION

EMERGING

- Stay with clear upright triangles on early board turns; teacher counts the sides aloud with the pupil before they drag.
- In the copy moment, ask for two triangles only — one tall, one wide — and leave upside-down for a supported second try.

DEVELOPING

- After their copy drawings, ask them to tick each of their three shapes against the sides test and whisper why it passes.
- On a later board turn, give them the bendy-side fake first and ask them to tell the class the fail reason before they drop.

PROFICIENT

- Once their three copy triangles are done, challenge them to draw a shape that nearly fools the class — three corners but one side not straight — and label why it fails.
- During Class Challenge, ask them to justify each pass in a full sentence before the next card: it has three straight sides, so it is a triangle.

✂ **Cross-curricular:** Spot the triangular yield sign on the road home, or a roof gable, and count the three straight sides.

ANSWER KEY

Q1: Yes

Q2: Yes (it fails)

Q3: Yes

Q4: Pass

Q5: No

Q6: No (it stays a triangle)

a) Always : That is the exact rule for every triangle.

b) Always : Turning a shape never changes its name.

c) Never : All three sides must be straight for it to pass.

d) Sometimes : It also needs exactly three straight sides and to be closed.

EXTENSION SHEET · STRETCH ANSWERS

S1: yes

S2: no

S3: no, a triangle has exactly 3 straight sides

S4: 3

Investigation: Every kind of triangle — open-ended; scan pupils' working for valid solution paths rather than a single answer.