Lesson 73 SHAPE & SPACE

Naming and sorting 2D and 3D shapes

CURRICULUM ALIGNMENT

SHA.SHP.4a construct 3-D and 2-D models or structures given defined measurements and/or specific conditions.

INTERACTIVES 2D Shape Inspector · display, explore | 3D Shape Inspector · display, explore | Drag Sort · challenge

LESSON ARC

Open with a flat triangle and square beside three solids (cereal-box, tin, triangular packet) on the IWB and ask how pupils would group them. Walk the shape inspector through each 2D property one at a time — sides, vertices, then fold-lines — pivoting on the regular hexagon vs irregular trapezium contrast. Pupils predict, then take turns at the board to reveal and check. They sketch a square and cube side by side in copybook before the sorting Class Challenge; Student Activity Book is the paper practice.

TEACHING MOVES

1. **Getting Started.** Take three hands-up answers, not call-outs. Jot the natural sorting ideas pupils offer (sides, flat-vs-solid, round-vs-straight) where you can point back to them in the wrap. If you have a real cereal box, tin and triangular packet, stand them beside the flat shapes — but the on-screen shapes are the canonical opener.
2. **Watch and Notice.** Reveal one property before naming the next so pupils aren't reading ahead. On the trapezium, ask the class to predict its fold-lines before you reveal — most expect more than the one (or none) it has. On the cylinder, point to the curved surface and say 'three surfaces, two edges, no vertices' to head off pupils counting zero faces.
3. **Try It Together.** Whole class predicts the count out loud first; bring a pupil up to reveal and confirm, rotating four or five through. On the 3D inspector, watch for pupils losing track while the cuboid rotates — give them a system: count the top, then the bottom, then the sides.
4. **Sketch a Square and a Cube in Your Copy.** Glance at labels and counts as you walk — this is practice, not marking. Watch for the cube's edges written as 8 instead of 12; prompt those pupils to count the top four, bottom four, and four uprights separately.
5. **Class Challenge.** Keep board work brisk — pupils take turns, check each answer, class confirms before moving on. On the symmetry round, watch the rectangle: expect 'four' when it's two. For the twice-as-many-edges stretch, let pupils reason each solid out and confirm that both the cube and cuboid qualify — two right answers.
6. **What Did We Notice?.** Push past side-count: revoice a pupil with 'so counting sides isn't enough — we look at symmetry and parallel pairs too.' For the 3D half, draw out that a sphere has no flat faces, edges or vertices, and the cylinder's curved surface stretches what 'face' means.

COMMON MISCONCEPTIONS

⚠ Pupils say a rectangle has four lines of symmetry — they assume four sides means four fold-lines.

On the shape inspector, reveal the rectangle's fold-lines slowly: the two that work (across the middle each way) and demonstrate that a diagonal fold leaves overhang. Contrast straight away with the square's four. The square is regular; the rectangle isn't.

⚠ Pupils count a cube's edges as 8 — they conflate edges with the 8 vertices, or count only the visible front edges.

On the rotating 3D inspector, count along the top four edges, then the bottom four, then the four uprights aloud: 4 + 4 + 4 = 12. Have a pupil rotate the cube and re-count the hidden back edges they missed.

⚠ Pupils say a cylinder has zero faces because the curved surface 'isn't flat'.

On screen, point to each surface as you name it: two flat circular ends plus the curved surface — three surfaces, two edges, no vertices by primary convention. Name the curved one explicitly so pupils stop dismissing it.

DIFFERENTIATION

EMERGING

- On the copybook sketch, give these pupils only the square to label fully; let the cube counts come from copying the inspector's revealed numbers rather than counting unaided.
- In the Class Challenge, keep them on the first two access rounds (sort flat shapes by sides, solids by faces) and support the symmetry round at the teacher table.

DEVELOPING

- After the sorting rounds, ask: 'which two four-sided shapes share the most properties, and which single property tells them apart?' Have them justify with the rhombus and square.
- Pose a missing-shape clue: 'I have 6 faces and 12 edges but I'm not a cube — what am I?' (cuboid). Push them to explain why face-count alone doesn't pin it down.

PROFICIENT

- Narrate a harder variant of the edges stretch at the board: 'find a solid where edges and faces are equal, or prove none of ours fit' — let them reason across all five solids and defend the verdict aloud.
- Send fast finishers ahead to the Student Activity Book page and ask them to write a 'guess my shape' clue using exactly three properties for a classmate.

↗ **Cross-curricular:** Tie to art — pupils hunt for parallel sides and lines of symmetry in Celtic knotwork or a stained-glass window photo, then name the 2D shapes hiding inside.

ANSWER KEY

a) Octagon (8 sides).

b) Triangle = 3 sides.

c) Pentagon = 5 sides.

d) Hexagon = 6 sides.

Q1: a cuboid

Q2: a trapezium

Q3: a square-based pyramid

Q4: a regular hexagon

EXTENSION SHEET · STRETCH ANSWERS

S1: an isosceles trapezium

S2: a regular hexagon

S3: a cone

S4: a square-based pyramid

S5: a rectangle