Lesson 75 SHAPE & SPACE

Angles — what is an angle?

CURRICULUM ALIGNMENT

SHA.SHP.4b investigate and construct angles in the context of shape; and solve angle-related problems.

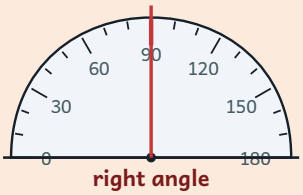
INTERACTIVES Angle Tool · challenge, display, explore

WHAT THIS LESSON TEACHES

An **angle** is the amount of turn between two lines that meet at a point. We measure angles in **degrees (°)**. A full turn is 360°.

→ **Right angle** = 90° (a quarter turn — like the corner of this page).

→ **Straight angle** = 180° (half turn). **Acute** < 90°, **obtuse** between 90° and 180°.



right angle

LESSON ARC

Open with a clean quarter-turn at the front so pupils see an angle as an amount of turn. Bring up the angle-tool interactive and walk the four types in order — right, acute, obtuse, straight — pointing at the vertex each time. Pupils sketch one of each in their copy with a square mark on the right angle. Take the class outside to the yard for the Quarter-Turn Compass Game, then return for the Class Challenge bank at the board.

TEACHING MOVES

1. **Getting Started.** Make the quarter-turn yourself, slowly, and freeze. Ask 'how much did I turn?' before any hands go up — give five seconds of silence. Then point at the 3:00 clock and re-voice: 'my body turn and the clock hands are the same quarter turn.'
2. **Watch and Notice.** Point at the vertex on the IWB every time the ray moves — pupils need to know where to look. Spend an extra beat on obtuse (around 130°); say 'past a right angle but not yet straight' and ask pupils to point to a right angle in the room before moving on.
3. **Try It Together.** Drag the ray slowly and have the class name the angle at each stop (30°, 60°, 90°, 120°, 160°, 180°). When a pupil takes the board, give a type-target ('set it somewhere obtuse, bigger than 100°') not an exact number. After every obtuse, drag straight through to 180° to reset the contrast.
4. **Sketch the Angles in Your Copy.** Walk the rows checking the small square marker on the right angle and the relative sizes — acute clearly narrower than obtuse. No marking; just glance and nudge.
5. **Quarter-Turn Compass Game.** Run the calls about 30 seconds each and reset to north between every turn — otherwise pupils start adding turns together. Name the angle aloud the moment they land ('that was a right angle, 90 degrees'). On the walk back, point out the first one yourself (a window corner) and let pupils find the rest.
6. **Class Challenge.** Before each target, ask the class to predict the type and roughly where the ray will land, then the pupil at the board drags and checks. Keep it brisk — if Check fails, next pupil has the next try. Slow down only on the obtuse targets (120°, 150°), where pupils tend to undershoot toward 90°. Direct fast finishers to the extension bank on a device while you circulate.
7. **What Did We Notice?.** Listen for pupils saying length doesn't change the angle. Re-voice with the postage-stamp-vs-school-building comparison. If a pupil insists length matters, open the paper-strip angle maker to a right angle and hold it next to the door frame — same angle, very different arm lengths.

COMMON MISCONCEPTIONS

⚠ Pupils call a 160° angle 'straight' because it looks close to a flat line.

After they name it, drag the ray on through to a clean 180° and back to 160°. 'Watch the difference — at 180° the two rays make one straight line; at 160° there is still a bend.' Have the class name it again.

⚠ Pupils think a right angle drawn with long rays is a 'bigger' angle than one drawn with short rays — they're judging angle by arm length.

Open the paper-strip angle maker to a right angle and hold it beside the corner of the door frame. Same angle, very different arm lengths. Ask: 'are these two different angles, or the same angle?'

⚠ In the Compass Game, pupils add each turn onto the previous one and end up facing all sorts of directions by the third call.

Stop the game. Reset everyone to face north. Re-state the rule: 'every angle starts from north — turn, name it, then come back to north before the next call.' Run one slow demonstration turn yourself.

DIFFERENTIATION

EMERGING

- Hand these pupils the paper-strip angle maker for the whole lesson. They open it to match each angle on the IWB before naming — physical kinaesthetic mirror of the digital interactive.
- In the copybook sketch, let them trace the corner of their maths book for the right angle, then build the others from there.

DEVELOPING

- After the copybook sketch, ask them to add a fifth sketch — a reflex angle (more than 180°) — and label it as a name we'll meet later. Lets them notice the gap.
- In the Class Challenge, ask them to estimate the degree value of each obtuse target before the pupil at the board drags.

PROFICIENT

- Direct fast finishers to the extension bank on their device while you circulate the room.
- Pose on the copybook page: can you find an angle in this room that is exactly a right angle, and prove it to a partner using only the corner of your book? No protractor allowed.

Cross-curricular: Tie to PE — in the next yard session, call out compass turns (quarter turn right, half turn left) during a warm-up and have pupils name the angle they just made.

ANSWER KEY

W1: 135° is obtuse

W2: 45° is acute

Q1: 126° is obtuse

Q2: 47° is acute

Q3: 84° is acute

Q4: 85° is acute

EXTENSION SHEET · STRETCH ANSWERS

S1: 307° is reflex

S2: 158° is obtuse

S3: 47° is acute