Lesson 49 MEASURES

Area of rectangles and compound shapes

CURRICULUM ALIGNMENT

MEA.MSR.4a determine and calculate units of measurement in fractional and/or decimal form to solve practical problems.

INTERACTIVES Shape Measurer · 2d

WHAT THIS LESSON TEACHES

Area of a rectangle is **length × width**, measured in square units. Split a compound shape into rectangles and add the areas.

→ 8 cm × 3 cm = **24 cm²**.

→ An L-shape = big rectangle − the missing corner.

	× 8
3	24

Total: 24

LESSON ARC

Open with the tiled-floor image and push pupils from counting tiles to counting one row then the rows. On the shape-measurer interactive, walk a 6 × 4 rectangle, then a 5.5 × 3 floor (estimate 5 × 3 first), holding the squared unit firm every time. Pupils take turns covering each part of an L-shape at the board, then sketch the dividing line in their copies. Student Activity Book practice follows the Class Challenge bank.

TEACHING MOVES

1. **Getting Started.** Put the tiled floor up and take two or three hands. When a pupil offers 'count a row and multiply', re-voice it: 'so we count along one row, then count the rows.' Keep it to a minute — that multiply idea seeds the whole lesson.
2. **Watch and Notice.** On the 6 × 4, point to one row of six, then the four rows: 'six in a row, four rows.' On the 5.5 × 3 floor, estimate 5 × 3 = 15 first as a check, and stress the rule doesn't change for decimals. End every answer in cm^2 or m^2 aloud — never plain cm.
3. **Try It Together.** Cover one rectangle of the L at a time on the shape-measurer. Make pupils name length and breadth before anyone multiplies, then add the two parts aloud. When a pupil grabs a side from the wrong rectangle, point straight back at the dividing line.
4. **Sketch the Split in Your Copy.** Pupils sketch each compound shape in copy, draw the splitting line, and label both rectangles. Walk the room glancing at two things only: is the dividing line drawn, and is the total written as m^2 not plain m?
5. **Class Challenge.** Brisk turns at the board through the bank in order: 7 × 4, then the L (15 + 4 = 19), then the T (12 + 6 = 18). Class confirms each before moving on. Give the reverse 36 cm^2 ÷ 9 puzzle its own beat — don't re-teach the earlier ones, just keep the pace and the squared unit.
6. **What Did We Notice?.** Ask why area is squared. Listen for pupils linking it to covering the surface with little squares, then re-voice: 'each square is one centimetre by one centimetre — that's why it's centimetres squared.' Head off any pupil writing plain m for an area.

COMMON MISCONCEPTIONS

⚠ A pupil splits the L-shape correctly but uses a side length from the other rectangle — e.g. multiplies the small rectangle's breadth by the big rectangle's length.

Point back at the dividing line on the shape-measurer and shade one rectangle at a time. 'Only the sides inside this shaded part count.' Have the pupil re-read just that rectangle's two labels before multiplying.

⚠ Pupils write the area as plain cm or m — '24 cm' instead of '24 cm^2' — dropping the squared unit.

Stop on the spot and ask 'are we measuring a length or covering a surface?' Rebuild the link: each tile is 1 cm by 1 cm, so we count centimetre-squares. Make the squared unit non-negotiable on every answer for the rest of the lesson.

⚠ On the reverse puzzle, pupils try to multiply 36 × 9 instead of seeing the missing side as a division.

Slow it right down: 'we know area = length × breadth, so what number times 9 gives 36?' Then make it explicit — 36 ÷ 9 = 4 cm. Let them feel that the known area replaces the answer slot in the multiplication.

DIFFERENTIATION

EMERGING

- Stay on whole-number rectangles on the shape-measurer while the class moves to the 5.5 × 3 decimal floor — these pupils get the squares to count visibly on squared paper.
- Pre-draw the dividing line on their copybook compound shapes so they only label the sides and add, not invent the split.

DEVELOPING

- After the copybook sketch, hand them the same L-shape and ask for the 'big rectangle minus the corner' route — does it land on the same total as split-and-add?
- Swap a side on the T-shape and ask them to predict whether the area goes up or down before they recalculate.

PROFICIENT

- Give the reverse puzzle its own stretch: a rectangle has area 36 cm^2 — list every whole-number pair of sides that works, and explain which one couldn't be a real room.
- Narrate a harder variant at the board — a compound shape that splits three ways — and ask them to talk the class through where the two cuts go.

Cross-curricular: Tie to Geography — pupils sketch the L-shaped or T-shaped floor plan of the classroom, split it into rectangles and work out the floor area in m^2.

ANSWER KEY

W1: 48 cm^2

W2: 100 cm^2

Q1: 119 m^2

Q2: 306 m^2

Q3: 99.21 m^2

Q4: 30.69 m^2

EXTENSION SHEET · STRETCH ANSWERS

S1: 63.89 m^2

S2: 24.09 m^2

S3: 62.4 m^2

S4: 34.71 m^2

S5: 201 m^2

Investigation: Design a classroom — open-ended; scan pupils' working for valid solution paths rather than a single answer.