

Area by counting square units

CURRICULUM ALIGNMENT

MEA.MSR.3a

compare, estimate and measure length, weight, capacity, area and volume using appropriate instruments and record and communicate appropriately.

INTERACTIVES Pattern Blocks · display, explore

WHAT THIS LESSON TEACHES

Area is the amount of flat space a shape covers, measured by counting the equal squares that fit inside it.

→ A book cover that fits 6 square tiles inside it has an area of 6 squares.

→ Lightly shading each square as it is counted keeps an L-shape's count accurate.

MODEL THIS ON THE BOARD

COUNTING SQUARES ON A BUILDING MAT

- 1 Look at the small square mat covered in equal tiles.
- 2 Shade the first tile and say the running count **1**.
- 3 Shade the next tile and count **2**.
- 4 Shade two more tiles to reach a running count of **4**.
- 5 The mat's area is **4** square units because 4 equal squares fit inside.

LESSON ARC

Open with two shapes on the same square grid and hold out for 'count the squares' rather than 'it looks bigger'. Model covering a rectangle then an L-shape with identical square tiles, counting aloud row by row. Pupils take turns tiling three shapes on the interactive, then draw any 7-square shape in their squared copy. Class Challenge moves to real tiles at desks: build 4, build 8, then an L-shape, saying each area aloud.

TEACHING MOVES

1. **Getting Started.** Take three hands-up answers only. Hold for a pupil who says count the squares rather than it just looks bigger — that is the idea the lesson builds on. Revoice it so the whole class hears the method before any tiling starts.
2. **Watch and Notice.** Point at each tile in the rectangle and count aloud with the class: one, two, three... six square units. On the L-shape, run your finger along one row at a time and slow down at the bend. Ask what would go wrong if two of the tiles were bigger than the rest — hold the class on the same-size rule.
3. **Try It Together.** Run three shapes one at a time on the grid: 4 tiles, then 8, then an L-shape. Reset between each. A pupil taps a tile into every cell while you revoice the running count and turn-and-name someone for the next number. On the L-shape, ask the class to predict the area before the last tile lands.
4. **Draw a 7-Square Shape in Your Copy.** Walk the room glancing for shapes that follow the grid lines with whole squares shaded, not part-shaded. If a shape does not land on 7, ask the pupil to recount rather than telling them the number.
5. **Class Challenge.** Keep the pass-on rhythm brisk: build 4, build 8, then an L-shape counted row by row, each area said aloud when finished. Circulate for gaps inside shapes and tiles not edge-to-edge. The

same-count hunt (two different shapes, same tile count) is for finishers only — slower tilers finish the three core shapes first.

6. **What Did We Notice?** Listen for a pupil naming that bigger tiles cover more space, so the count stops being a fair measure. Revoice: so a square unit has to be one fixed size, or the number stops meaning anything. Steer away from 'how long the shape is' back to space covered.

COMMON MISCONCEPTIONS

⚠ On an L-shape pupils double-count the corner cell or skip a cell at the bend, so 6 tiles become 7 or 5. Stop and run a finger along one row at a time on the interactive. Have the class recount in unison, pausing at the bend: 'one tile per cell — that corner already has its tile'.

⚠ Pupils mix bigger and smaller tiles in one shape and still call out a single total. Hold up two mismatched tiles side by side. Ask what the number would mean if some tiles covered more space than others — rebuild with identical tiles only.

⚠ Pupils count the squares around the edge (perimeter) and call that the area. Point inside the outline: 'area is the space the shape covers, not the fence around it.' Cover every interior cell with a tile so the filled space is visible.

DIFFERENTIATION

EMERGING

- Stay with the straight 4-tile and 8-tile shapes; leave the L-shape for teacher-supported turns at the board.
- Pre-outline the shape on squared paper so the pupil only shades and counts the cells already marked.

DEVELOPING

- After the three core builds, ask for two different shapes that both take exactly 8 tiles and say how they know the areas match.
- On the L-shape, predict the area before the last tile lands, then check against the running count.

PROFICIENT

- Once two same-count shapes are built, find a third different outline with the same tile count and explain why the areas match.
- In the copybook, draw a shape of 7 squares that is not a rectangle and prove the count by shading each cell once.

➤ **Cross-curricular:** Link to PE — mark two yard zones on the same paving grid and count equal slabs to settle which zone covers more space.

ANSWER KEY

Scaffold: visual check on the page

Q1: 2 square units

Q2: 3 square units

Q3: 5 square units

a) **Always** : This is exactly how we measure area in square units.

b) **Always** : When squares are equal, more squares always means greater area.

c) **Never** : All squares must be the same size or the count would not be fair.

d) **Always** : Counting works for any shape, including L-shapes.

EXTENSION SHEET · STRETCH ANSWERS

S1: 9 square units

S2: Áine's, by 1 square (8 and 7)

S3: The tiles are not all the same size, so 8 is not a fair count. Area must be counted in equal squares.

S4: Any shape of exactly 10 whole squares that is not a rectangle, such as an L-shape

S5: 8 square units