

Area of rectangles by counting rows and columns

CURRICULUM ALIGNMENT

MEA.MSR.3a

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

NUM.OPS.3

understand and apply flexibly the four operations; and the relationships between operations.

INTERACTIVES **Area Model** · challenge, display, explore

WHAT THIS LESSON TEACHES

Area is how much flat space a rectangle covers. Find it by counting how many equal squares sit in one row, then adding that total once for every row.

→ A 4-by-3 rectangle covers 12 squares, so its area is 12 squares.

→ In a 5-by-2 rectangle there are 5 squares in each row and 2 rows, so $5 + 5 = 10$.

MODEL THIS ON THE BOARD

AREA OF A 3-BY-4 SCHOOL-YARD RECTANGLE

- 1 Look at the rectangle drawn in squares. Count 4 squares along one row.
- 2 Count the rows: there are 3 rows the same size.
- 3 Add the row total for each row: $4 + 4 + 4$.
- 4 The sum is 12, so the area is 12 squares.

DISCUSSION STARTER

REFLECT

Was counting by rows faster than one square at a time? When does each help?

LESSON ARC

Open with a 4-by-3 grid on the IWB and let pupils hunt for a faster count than one-by-one. Walk four rectangles, counting one row and adding it on — four, eight, twelve — so the row-repeat pattern lands before any multiplication. Pupils sketch a 3-by-4 rectangle in their squared copy and write the area in squares. The Class Challenge builds four more at the board, rising to a tricky 6-by-2, with the class predicting each total.

TEACHING MOVES

1. **Getting Started.** Display the 4-by-3 grid and give five seconds of silent think-time before any hands go up. Take three hands-up answers, not call-outs, and listen for 'four and four and four' — hold that pupil's phrasing to reuse in the next step.
2. **Watch and Notice.** On the 2×3 , count one row of three aloud then 'and three more is six' — set the add-it-on rhythm here. Before the 5×2 reveal, pause and ask how many are in one row; on the 4×4 square, ask what's the same about the rows and columns before showing the sixteen.
3. **Try It Together.** Set each rectangle by hand in explore mode before the pupil comes up. The pupil counts one row aloud; the whole class then skip-counts down the rows with them (four, eight, twelve). Between turns, ask the watching pupils to predict the total once the row is counted, then check on screen. The 6×2 is the trap — prompt 'how many in one row, and how many rows?'

4. **Sketch the Rectangle in Your Copy.** Walk the room checking pupils have drawn equal rows and columns for the 3-by-4. Watch that they write the area as a number of squares underneath, not just count silently — no marking, this is whole-class practice.
5. **Class Challenge.** Keep the board work brisk — pupils take turns building and reading each area, and the class confirms before moving on. Ask the room to predict the total before the pupil at the board checks it. The 6×2 again asks them to hold six in a row across just two rows.
6. **What Did We Notice?.** Listen for pupils naming that every row holds the same number of squares, so one row can be trusted and added on. Revoice a strong answer: 'because the rows are all equal, we don't have to count them one at a time.' Head off the idea that it only works for small rectangles.

COMMON MISCONCEPTIONS

⚠ A pupil miscounts the total on the 6×2 because six squares in a row is a lot to hold — they lose their place partway across.

Stop and reset: 'how many in one row, and how many rows?' Have the pupil count just one row of six aloud, then add it on once (six, twelve) against the filled squares on screen rather than recounting every square.

⚠ Pupils count squares silently and give a bare number, without seeing that they added one row on for each row.

Ask them to say the add-on aloud — 'five and five and five' — and match each five to a row on the interactive. Draw the link back to the equal rows before accepting the total.

DIFFERENTIATION

EMERGING

- Stay with the short rectangles (2×3, 3×3) on the IWB while the class tackles the taller ones; the pupil counts one row and adds it on just once or twice.
- In the copybook sketch, have the pupil outline one row in colour first, then repeat that row down the rectangle so the equal-rows structure is visible before writing the total.

DEVELOPING

- After the 4×5, ask which is bigger — a 4×5 or a 5×4 — and why the area comes out the same.
- Set a missing-number version on squared copy: 'a rectangle has 3 in each row and an area of 12 squares — how many rows?'

PROFICIENT

- Pose: 'a rectangle has an area of 24 squares — draw two different rectangles that fit, and say how many are in one row for each.' Let them find more than one answer and justify it in their copy.

✓ **Cross-curricular:** Tie to Visual Arts — pupils design a small mosaic on squared paper and read off its area by counting one row and adding it on.

ANSWER KEY

a) 12

b) 10

c) 12 squares

Q1: 6 squares

Q2: 8 squares

Q3: 9 squares

Q4: 20 squares

Q5: 10 squares

Q6: 12 slabs

Spot: Cian added the rows to the columns instead of counting every square. There are 4 squares in each of 3 rows: $4 + 4 + 4 = 12$, or $4 \times 3 = 12$ squares.