TEACHER RESOURCE BOOK · MATHS · 6TH CLASS

Lesson 15 NUMBER

Multiplying multi-digit whole numbers

CURRICULUM ALIGNMENT

NUM.OPS.4 build upon, select and make use of a range of operation strategies.

ALG.PRR.4b represent mathematical structures in multiple ways, including verbal expressions, diagrams and symbolic representations.

INTERACTIVES Area Model · challenge, display, explore

WHAT THIS LESSON TEACHES

Multiply by **each digit in turn** using place value, then add the partial products.

→ 236 × 4 = 800 + 120 + 24 = **944**.

→ Estimate first: 236 × 4 ≈ 240 × 4 = 960.

	× 30	× 8
6	180	48

Total: 180 + 48 =

MODEL THIS ON THE BOARD

MULTIPLY 38 × 6 WITH THE AREA MODEL

	× 30	× 8
6	180	48

Total: 180 + 48 =

1. Split 38 into **30 + 8**.
2. 30 × 6 = 180; 8 × 6 = 48.
3. Add the partial products: 180 + 48 = **228**.

LESSON ARC

Pose 34 × 26 cold and ask how to break it into friendlier pieces. On the area-model interactive, split the rectangle — 34 into 30 and 4 down the side, 26 into 20 and 6 along the top — and name each of the four boxes as a partial product before adding to 884. Build 47 × 38 together with a pupil at the board, then pupils draw the grids for two products in their copy. Student Activity Book practice follows.

TEACHING MOVES

1. **Getting Started.** Put 34 × 26 up and take two or three hands-up answers, not call-outs. You're fishing for 'split each into tens and units' — if nobody offers it, say 'what if we split each one into its tens and units?' and move straight on. Cap it at one minute.
2. **Watch and Notice.** Split the rectangle on the interactive and point to each box as you name it: 30 × 20 = 600, 30 × 6 = 180, 4 × 20 = 80, 4 × 6 = 24, add to 884. On 256 × 23, ask 'which box is largest and why?' — pupils should reason that the two biggest place-value parts make the biggest area.
3. **Try It Together.** A pupil fills one box of 47 × 38 at a time; before each is confirmed ask the class 'what does this box come to?', take two hands-up, then revoice the agreed answer. Head off 40 × 30 = 120 by saying 'four tens times three tens is twelve hundreds'.

4. **Draw the Grid in Your Copy.** Pupils draw the grid for 34 × 26 and 47 × 38, label each box, add, and box the total. Walk the room glancing at the tens × tens box — that's where a zero goes missing. This is practice, not marking.
5. **Class Challenge.** Brisk turns at the board through the four products, class confirming each total before moving on. For 263 × 35 and 318 × 46 count the six boxes aloud before adding — pupils drop one. Keep it moving; don't re-explain the method each time.
6. **What Did We Notice?.** Ask why splitting a number never changes the answer. Revoice a strong reply: 'no matter how we cut the rectangle, the whole area stays the same — that's why the total never changes.' Display-only discussion, no writing.

COMMON MISCONCEPTIONS

⚠ A pupil multiplies 40 × 30 and writes 120 instead of 1,200 — they multiply 4 × 3 and forget the place value of both tens.

Point at the two boxes on the grid and say aloud 'four tens times three tens is twelve hundreds.' Have the pupil count the zeros: one from the 40, one from the 30, so the answer ends in two zeros.

⚠ On a three-digit factor (263 × 35, 318 × 46) pupils fill four boxes and add, forgetting the rectangle now has six.

Before anyone adds, count the boxes aloud as a class — three columns across, two rows down, that's six. A blank box is a missing partial product, so the total will come up short.

⚠ Pupils think splitting the numbers a different way would give a different answer.

In the maths-talk, hold up the same rectangle and show it sliced two ways on the interactive. Both cover the identical area, so both totals match — partitioning never changes the number.

DIFFERENTIATION

EMERGING

- Keep these pupils on two-digit-by-two-digit (four boxes only) while the class moves to three-digit factors — same area model, fewer pieces.
- Pre-draw the empty grid with the place-value parts already labelled down the side and along the top, so pupils only fill and add the boxes.

DEVELOPING

- After the copybook grids, ask pupils to split one factor differently — 47 as 20 + 27 instead of 40 + 7 — and check the total still lands on the same answer.
- Give a missing-box puzzle: show three of the four partial products for 47 × 38 and ask which box is missing and what it must be.

PROFICIENT

- During the Class Challenge, narrate a harder variant aloud — a three-digit-by-three-digit product like 234 × 152 — and ask how many boxes the grid would need and which would be largest before anyone draws it.
- Pull fast finishers ahead into the Student Activity Book page while the class completes the board work.

Cross-curricular: Tie to Geography — pupils find the area of a rectangular field or yard in metres by splitting each side length into tens and units, the same partial-product method.

ANSWER KEY

Warm-up: a) 420 b) 340 c) 196 d) 252

Q1: 2241

Q2: 1757

Q3: 29330

Q4: 30474

EXTENSION SHEET · STRETCH ANSWERS

S1: 23989

S2: 7479

S3: 3475