

Written addition – multi-digit whole numbers

CURRICULUM ALIGNMENT

NUM.OPS.4

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

INTERACTIVES **Column Addition** · challenge, display, explore

MODEL THIS ON THE BOARD

248 + 176 (COLUMN ADDITION)

$$\begin{array}{r}
 \overset{1}{2} \overset{1}{4} \overset{1}{8} \\
 + 176 \\
 \hline
 424
 \end{array}$$

- 1 Add the units: $8 + 6 = 14$. Write **4**, carry the **1**.
- 2 Add the tens: $1 + 4 + 7 = 12$. Write **2**, carry the **1**.
- 3 Add the hundreds: $1 + 2 + 1 = 4$. Answer: **424**.

LESSON ARC

Open with a provocation — left or right? — and let half the class commit to the wrong end before showing them. Walk three worked sums on the IWB, the third deliberately needing no carries. Pupils mirror the first sum in their copybook, column by column, with the IWB paused. The Class Challenge bank then runs six problems with pupils taking turns at the board, ending on five-digit cascade answers.

TEACHING MOVES

1. **Getting Started.** Hold five seconds of silent think-time before any hands go up — resist the early shouters. Take three answers, mix of 'left' and 'right' if you can, and write both on the board without resolving. Tell the class the lesson will settle the argument.
2. **Watch and Notice.** Before each carry-1 lands, freeze the IWB and ask 'where does this 1 go?' — take one prediction, then reveal. After the answer line, ask the class which columns the carries land in and take a quick answer ('tens, hundreds, thousands!'). On Example 3 ($5,000 + 4,999$), slow right down — pupils will expect a carry that never comes. The answer to land here is 'no carries!'
3. **Try It Together.** Rotate four pupils through the four columns of $6,847 + 3,956$. Before each column is added, take one prediction with hands up, then thumbs-up or thumbs-sideways from the room to agree or change. The cascade hits in the tens — $4 + 5 + 1$ makes 10, which sends another carry into the hundreds. Slow down there and let the class see it live.
4. **Build Alongside in Your Copy.** Pace from the front: 'pencils on the units... write your total... mark your carry above the tens.' Walk the room glancing at the right edge and where pupils have placed the carry-1 — above the next column, not on the answer line. If a quarter of the room is misaligning, stop, redraw column labels on the board, reset together.
5. **Class Challenge.** Brisk: about 90 seconds on problems 1–4, two minutes on 5 and 6 where the cascade and five-digit answer surface. Direct fast finishers to the extension bank on their device while you circulate. If a problem stalls, take the answer, name the regroup that caught them, and move on.
6. **What Did We Notice?.** For the first question, listen for pupils naming place value — ten units make one ten, so the bigger group always lives one column left. Revoice as 'the carry lands where its new home is'.

For the second, fish for rounding: $4,738 + 2,569$ is roughly $5,000 + 2,500$, so anything near 7,500 passes the rough check.

COMMON MISCONCEPTIONS

⚠ Pupils write the carry-1 in the answer line of the same column instead of above the next column to the left — so $8 + 9 = 17$ ends up as '17' written under the units.

Stop the pupil at the board mid-problem. Point at the carry-1 in the wrong place and ask 'where does the carry live?' Redraw the column labels above the sum and physically move the 1 up and one column left.

Revoice: 'the 7 stays here because it is seven units; the 1 moves because it is one ten.'

⚠ Pupils forget to add the carry-1 in the next column — they add $7 + 5$ instead of $7 + 5 + 1$, and the final answer comes out exactly one ten (or one hundred) short.

When you spot it on the Class Challenge, take the wrong answer, then ask the class to do the rounding check: ' $6,847 + 3,956$ — roughly seven thousand plus four thousand, so about eleven thousand. Does our answer look right?' Use rounding as the diagnostic, then rerun the column with the missed carry in red.

⚠ Pupils assume every column needs a carry, so they invent a carry-1 above a column whose total is under ten — the answer comes out one ten too big.

Pull the class back to Example 3 ($5,000 + 4,999$): every column total is nine or under, so no carries land at all. Re-state the rule: 'we only carry when the column total reaches ten — look at the column first, then decide.'

DIFFERENTIATION

EMERGING

- Pre-draw the four column labels (Th, H, T, U) in their copybook before the lesson so the alignment work is just placing digits, not inventing the structure.
- Stay with three-digit sums in the copybook practice (e.g. $738 + 569$) while the rest of the class works the four-digit version — same algorithm, one fewer column to track.

DEVELOPING

- After the Class Challenge, ask: can you write a four-digit sum where exactly two columns regroup and two do not? Try it in your copy.
- Pose a missing-digit version on the board: $4,7_8 + 2,569 = 7,307$ — which digit is missing, and how did you know without redoing the whole sum?

PROFICIENT

- Direct fast finishers to the extension bank on their device while you circulate the room.
- Pose in copybook: add three four-digit numbers in one column-addition (e.g. $2,847 + 3,956 + 1,278$). What changes about the carries when a column total can reach the twenties?

↗ **Cross-curricular:** Tie to Geography — pupils add the populations of two Irish towns from a class atlas (e.g. Tralee + Killarney) and round-check the total.

ANSWER KEY

a)

$4,738 + 2,569 = **7,307**$ (three regroups: U→T, T→H, H→Th).

b) $9,876 + 1,234 = **11,110**$ (cascade regroup all the way into the TTh column).

c) $5,000 + 4,999 = **9,999**$ (no regroup needed).

Q1: 1398

Q2: 1662

Q3: 11914

Q4: 10296

EXTENSION SHEET · STRETCH ANSWERS

S1: 14024

S3: 1043

S2: 819