

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)

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

- 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 by posing $4,738 + 2,569$ and asking which end to start from — let the disagreement sit. In Watch and Notice, set it out one under the other and use base-ten blocks to trade ten units for a ten-rod, proving why a carry travels left. The class builds $6,847 + 3,956$ at the board, then sets the first sum in copybook. The Class Challenge runs four sums of growing size; the Student Activity Book continues column addition.

TEACHING MOVES

1. **Getting Started.** Put $4,738 + 2,569$ on the board and take three hands-up answers to 'thousands end or units end?'. Don't resolve it — the units-first rule is the pay-off of the next step, so let the two camps disagree.
2. **Watch and Notice.** On $8 + 9 = 17$, lay 17 unit cubes, trade ten for one ten-rod, and slide that rod into the tens column — the carry-1 is just that trade written down. Between the first two examples, ask one pupil to say where the carry went and why, then revoice it for the room. Save $5,000 + 4,999$ to expose the near-miss: pause on the prediction before checking, because the guess of ten thousand is the slip.
3. **Try It Together.** Work $6,847 + 3,956$ column by column with pupils setting each column at the board. Before each carry lands, ask the class to predict the digit and the carry, and say it aloud every time — '13, write the 3, carry the 1'. Flag the fifth digit growing as it happens (answer 10,803).
4. **Build Alongside in Your Copy.** Pupils set $4,738 + 2,569$ in their copy, units lined up, working each column with the class. Walk the room glancing for crooked alignment — catch a wandering layout early, since poor lining-up is the slip that wrecks the answer, not the arithmetic.
5. **Class Challenge.** Brisk board turns through the four sums — the $347 + 285$ quick win lets everyone in, then give real working time on the cascade ($9,876 + 1,234$) and the near-miss ($5,000 + 4,999$). Let pupils predict whether the near-miss reaches ten thousand before you tap the on-screen Check.

COMMON MISCONCEPTIONS

⚠ On $8 + 9 = 17$ a pupil writes the whole 17 in the units column instead of writing 7 and carrying the 1. Stop and say 'a column holds one digit only'. Lay out 17 unit cubes, trade ten for one ten-rod, and slide the rod into the tens column — the spare ten can't stay where it is, so the carry-1 above the tens is that trade written down.

⚠ On $5,000 + 4,999$ pupils predict the answer is ten thousand — they expect a fifth digit because the numbers look big.

Before checking, ask 'how many carries did we actually count?' Add it column by column with the class: no column reaches ten, so there are zero carries and the answer stays four digits at 9,999. The size of the numbers doesn't decide a new digit — a carry does.

⚠ A pupil drops a carry partway across and ends with a total smaller than one of the numbers added. Use the maths-talk check: 'if your answer is smaller than a number you added, what must have gone wrong?' A sum can't shrink, so a missed regroup is the cause. Re-add from the units, naming each carry aloud.

DIFFERENTIATION

EMERGING

- Stay with three-digit sums like $347 + 285$ in the copybook while the class moves to four digits — same column method, fewer carries to track.
- Pre-rule the copybook page into place-value columns so pupils place digits into ready-made columns rather than judging alignment themselves.

DEVELOPING

- After the copybook sum, ask pupils to add a third number into the same columns (e.g. $4,738 + 2,569 + 100$) and track whether the carries change.
- Pose a missing-digit puzzle: $3,4_8 + 2,5_9 = 6,037$ — work back from the answer to find the hidden digits.

PROFICIENT

- Teacher-narrated stretch at the board: build a sum that grows from four digits to six in one go, and ask pupils to predict how many new columns appear before you add.
- Pull these pupils ahead into the Student Activity Book and ask them to write a rule, in words, for exactly when a brand-new leading digit appears.

↗ **Cross-curricular:** Tie to Geography — add the populations of two Irish towns (e.g. Tralee and Killarney) using the column method and read the combined total aloud.

ANSWER KEY

- a) $4,738 + 2,569 = **7,307**$ (three regroupings: 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
- S2: 819

- S3: 1043