Lesson 14 NUMBER

Addition and subtraction of decimals to thousandths

CURRICULUM ALIGNMENT

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

NUM.PVT.4 investigate how decimals and percentages (and fractions) can be compared, ordered and expressed in related terms.

INTERACTIVES Column Addition · display, explore | Column Subtraction · challenge, display

WHAT THIS LESSON TEACHES

Adding or subtracting decimals works just like whole numbers — **line up the decimal points** so each place meets its match.

→ 4.25 + 1.8 → 4.250 + 1.800 = **6.05**.

→ Fill gaps with zeros: 7 − 2.45 → 7.00 − 2.45 = **4.55**.

MODEL THIS ON THE BOARD

ADD 4.25 + 1.8

$$\begin{array}{r} {\scriptstyle 1} \\ 4.25 \\ +\,1.80 \\ \hline 6.05 \end{array}$$

1. Write 1.8 as **1.80** so both have two decimal places.
2. Line up the decimal points and add from the right.
3. 5 + 0 = 5; 2 + 8 = 10 (write 0, carry 1); 4 + 1 + 1 = 6 → **6.05**.

LESSON ARC

Open with 3.4 + 0.275 on the IWB and ask whether the 4 sits above the 5 — let pupils want to right-align, then don't correct yet. Walk four worked examples on the column-grid, each pivoting on filling trailing zeros so every column has a digit. Pupils rewrite three sums in their copy with points lined up. The Class Challenge tackles borrowing through zeros at the board before the Student Activity Book practice.

TEACHING MOVES

1. **Getting Started.** Put 3.4 + 0.275 up and give five seconds of silent think-time before any hands. Take two or three hands-up answers only. You want to hear the wrong idea — 'put the 4 above the 5' — so let it sit, say 'let's see what the columns tell us', and move on without correcting.
2. **Watch and Notice.** On the column-grid, point at the empty hundredths and thousandths in 3.4 and fill them with zeros — this answers the hook directly. On 12.06 + 5.349, pause at the carry and ask 'where does the little 1 go?' to confirm it lands above the tenths. Save 10.0 − 4.085 for last and let the borrow travel through the zeros slowly before revealing the answer.
3. **Try It Together.** Call a pupil to the board for 5.6 + 2.34 and refuse to let them start adding until the points are lined up and 5.6 is filled to 5.60. The class watches and calls out any missing zero. Check the answer's decimal point sits directly under the points above — that's the slip to catch.

4. **Line Them Up in Your Copy.** Pupils rewrite the three calculations in their copy with points aligned and gaps zero-filled before working them. Walk the room glancing for two things only — are the points lined up, are the gaps filled. Nudge crooked columns straight; don't mark individual answers.
5. **Class Challenge.** Keep it brisk — a pupil works each subtraction at the board, the class predicts then checks. Before 15.0 − 6.074, have the whole class predict the answer so the borrow-through-zeros doesn't ambush anyone. For the 'find the missing decimal' one, let the class reason it as 9.5 − 3.275 = 6.225 and then verify.
6. **What Did We Notice?.** Push for the place-value reason — a missing zero means a column has no digit, so the wrong digits get added. Re-voice a strong answer: 'so the zeros keep every column honest.' Use this to head off the right-aligning habit one last time.

COMMON MISCONCEPTIONS

⚠ Pupils right-align the digits like whole numbers, so in 3.4 + 0.275 they line the 4 under the 5 and add tenths to thousandths.

Rebuild it on the column-grid with the decimal points stacked. Show the 4 is a tenth and the 5 is a thousandth — different columns can't be added. Make them fill 3.4 out to 3.400 first, every time, before adding.

⚠ Pupils stall on 10.0 − 4.085 or 15.0 − 6.074 because they have to borrow across two or three zeros and don't know where to start.

Have the class predict the answer before anyone works it. Then narrate the borrow travelling one column at a time across the zeros on the grid — slow it right down so they watch each zero become a 9 or 10.

⚠ Pupils get the digits right but float the answer's decimal point — they pop it anywhere or drop it.

Draw a straight vertical line down through every decimal point on the board, including the answer line. The point in the answer sits directly under the points above it, full stop.

DIFFERENTIATION

EMERGING

- Give the decimal column-grid sheet with the points and place-value headings already marked so pupils only place digits, never line columns up from scratch.
- Stay with two-decimal-place numbers (e.g. 4.7 + 0.26) in their copy while the class works to thousandths, keeping the same fill-with-zeros first move.

DEVELOPING

- After the copybook three, add a chain: 6.08 + 3.5, then subtract 0.265 from the answer — does the lining-up rule still hold each time?
- Pose a missing-digit variant: 4.7 + 0.2□5 = 4.965, what's the hidden digit and how do you know?

PROFICIENT

- Narrate a harder board variant for fast finishers — 20.0 − 8.0375, with the borrow travelling through four zeros — or pull them ahead into the Student Activity Book page while the class checks the Class Challenge.

Cross-curricular: Tie to money in maths-for-life — total two shop prices like €3.40 and €0.27, then check why euro amounts only ever need two decimal places.

ANSWER KEY

Warm-up: a) 3.3 b) 6.8 c) 6.8 d) 7.5

Q1: 51.42

Q2: 109.97

Spot: She lined up the last digits instead of the decimal points. Write 8.40 + 0.75 and line up the points: **9.15**.

EXTENSION SHEET · STRETCH ANSWERS

S1: 41.138

S2: 108.092

S3: 69.222

S4: 94.393

S5: 127.13