

Subtraction strategies – counting on, take away, decomposition

CURRICULUM ALIGNMENT

NUM.OPS.4

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

INTERACTIVES

Number Line Jumps · display, explore

Fact Race · challenge

MODEL THIS ON THE BOARD

748 – 326 (COLUMN SUBTRACTION)

$$\begin{array}{r} 748 \\ - 326 \\ \hline 422 \end{array}$$

- 1 Subtract the units: $8 - 6 = 2$.
- 2 Subtract the tens: $4 - 2 = 2$.
- 3 Subtract the hundreds: $7 - 3 = 4$. Answer: **422**.

DISCUSSION STARTER

REFLECT

Did you prefer counting on or take-away? Why?

LESSON ARC

Open with $73 - 28$ and a hands-up vote: count up or take away? Walk the same subtraction two ways on the empty-number-line interactive, then stretch to $305 - 178$ to introduce decomposition. Pupils take turns at the board choosing strategies for fresh subtractions, then work three sums three ways in their copies, labelling each strategy. Class Challenge runs the bonds fact-race; Student Activity Book is the seated practice.

TEACHING MOVES

1. **Getting Started.** Five seconds of quiet think-time before any hands go up, then take exactly three hands – don't accept open call-outs. Resist explaining; the disagreement is the hook. Say out loud 'there is no wrong answer here' so the count-up pupils don't sit down feeling caught out.
2. **Watch and Notice.** Fire each jump arc and let it land before the next one. After the $73 - 28$ counting-on snapshot, ask 'why did we jump to 30 first?' – the friendly stop is the point. When the take-away snapshot of the same sum lands on 45, pause and ask the class to name what changed (start number, direction). For $305 - 178$, get pupils to call out the chunks 100, 70, 8 before you fire each back-jump.
3. **Try It Together.** Ask the class which strategy they'd use and take a quick answer every turn. Force the board pupil to name their strategy out loud before they touch the screen – if they reach for the jumps first, pause them and ask 'which strategy?' For $84 - 27$, deliberately let two pupils show both routes side by side and say out loud you want to compare them.
4. **Work it three ways in your copy.** Walk the rows glancing at the strategy labels, not the answers – the label is what you're checking for. If a pupil writes an answer with no label, point at the empty space and walk on without saying anything. If most are done early, ask the room 'which one felt easiest? which felt hardest?' and let two or three pupils answer.

5. **Class Challenge.** Brisk — sixty seconds per round, no overrun. Between rounds ask one question only: 'which strategy fits these best?' If a pupil gets a fact wrong, don't give the answer — ask the class which strategy might have helped. Direct fast finishers to the extension bank on their device while you run the board.
6. **What Did We Notice?.** Display-only, nobody types. Listen for pupils naming the gap in $65 - 39$ (only six apart) versus the size of $412 - 246$. Revoice the headline rule out loud: 'the numbers in the problem tell us which strategy is friendliest, not the question itself.'

COMMON MISCONCEPTIONS

⚠ Pupils pick take-away for everything — they treat it as the 'real' subtraction and the other two as tricks. So they back-jump 246 from 412 in one impossible leap and lose track.

When you see this on $412 - 246$ at the board, ask 'how big would your back-jump need to be?' and let the silence land. Then rebuild it as three back-jumps of 200, 40, 6 on the number-line interactive so they see the same answer arrive in chunks.

⚠ Pupils counting on from 28 to 73 add the wrong total — they jump +2, +40, +3 correctly but write 73 as the answer (where they landed) instead of 45 (the length jumped).

Stop and re-voice: 'we wanted the gap, not the destination.' On the interactive, label each forward jump with its size and box the running total separately from the landing point. Have the pupil say 'two plus forty plus three is forty-five' out loud before writing.

⚠ On the copybook three-ways task, pupils write the answer but skip the strategy label — they treat the label as decoration.

Don't accept the work without it. As you walk the row, point silently at the missing label and move on; pupils will fill it in. In the maths-talk wrap, name out loud that the label is the thinking and the answer is just the by-product.

DIFFERENTIATION

EMERGING

- Stay with two-digit subtractions only in the copybook ($73 - 28$ and $90 - 47$); skip $305 - 178$ or work it together at the teacher table on the number-line interactive.
- Pre-fill the friendly-stop number on the IWB when modelling counting-on (so the +2 jump to 30 is already drawn) — pupils only have to find the rest of the jumps.

DEVELOPING

- After the copybook, give them $90 - 47$ a second time using a different strategy than the one they chose first — and ask which felt cleaner and why.
- Pose $500 - 237$: predict the three decomposition chunks before drawing anything.

PROFICIENT

- Direct fast finishers to the extension bank on their device while you circulate.
- Pose: find a subtraction where all three strategies feel equally clean, and one where only one strategy works without getting messy. Be ready to explain to a partner why.

➤ **Cross-curricular:** Tie to PE — pupils note the start and end of a stopwatch lap in seconds and choose a strategy to find the lap time mentally.

ANSWER KEY

- a) $73 - 28 = \mathbf{45}$ (the jumps total $2 + 40 + 3 = 45$). **Q1:** 321
- b) $81 - 47 = \mathbf{34}$. **Q2:** 264
- c) $102 - 87 = \mathbf{15}$ — counting-on works well here: +3 **Q3:** 5142
to 90, +12 to 102. **Q4:** 5644

EXTENSION SHEET · STRETCH ANSWERS

- S1:** 1499 **S2:** 264

