

Adding and subtracting in your head – from two digits to four

Upcoming episode

School teaches you to work right to left, because that is how you write. In your head it is the other way round. A walk-through of the techniques for addition and subtraction – round and correct, fill up to the ten, shift between the numbers, and why you never need to borrow.

MAIN TOPICS

- Why school works right to left, and your head should work left to right
- Four routes to the same sum
- Filling up to the nearest ten
- Shifting between the two numbers
- Larger numbers, one digit group at a time
- Subtraction without borrowing
- Counting up instead of down
- Round numbers and the nines rule
- The shopping basket – round up and correct at the end
- Casting out nines, and what it does not catch

QUESTIONS THIS EPISODE ANSWERS

- Why is it easier to work left to right in your head?
- What is the fastest way to add two two-digit numbers?
- How do you avoid borrowing when you subtract?
- What does it mean to shift between the two numbers?
- How do you subtract from round numbers like 1,000?
- How do you total a shopping basket in your head?
- How can you check whether an answer is right?
- Which errors does casting out nines miss?

KEY POINTS

- School works right to left because that is how you write. In your head, work left to right, where the big digits are.
- $47 + 38$ can be done four ways. The best one is whichever you think of first.
- Rounding and correcting afterwards is the most used technique of them all.
- For subtraction you never need to borrow. Shift both numbers by the same amount until what you are taking away is round.
- $83 - 47$ is the same as $86 - 50$. A difference does not change when both numbers move equally.
- Count up from the smaller number instead of down from the larger – that is how change is worked

out.

- 1,000 - 376 goes digit by digit: nines first, ten at the end.
- A shopping basket is fastest if you round everything up and subtract the roundings at the end.
- Casting out nines catches most arithmetic slips, but never two digits swapping places.

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