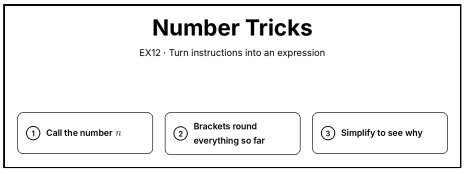
Number Tricks: teacher script

EX12-V1 · EX12 Turn instructions into an expression · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 72 seconds as a video.

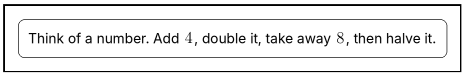
01



Say. Number tricks. Call the number you think of n. When a step acts on everything so far, put brackets round it. Then simplify to see why the trick works.

Draw. Write the title “Number Tricks” and the steps: 1. Call the number n; 2. Brackets round everything so far; 3. Simplify to see why.

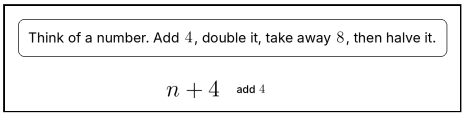
02



Say. Think of a number. Add four, double it, take away eight, then halve it.

Draw. Clear the board. Write “Think of a number. Add 4, double it, take away 8, then halve it.” in a box at the top.

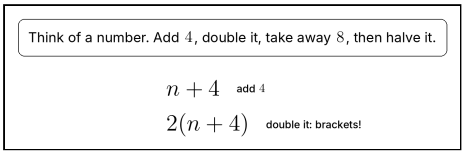
03



Say. Call the number n. Add four: n + 4.

Draw. Write n + 4 on the next line. Beside it, write “add 4”.

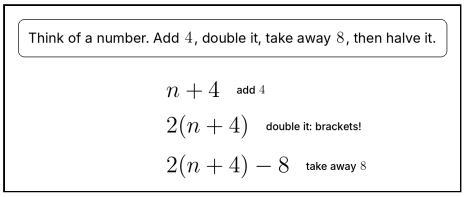
04



Say. Double it. The doubling acts on everything so far, so it needs brackets.

Draw. Write 2(n + 4) on the next line. Beside it, write “double it: brackets!”.

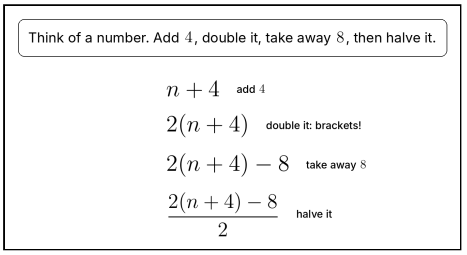
05



Say. Take away eight.

Draw. Write 2(n + 4) − 8 on the next line. Beside it, write “take away 8”.

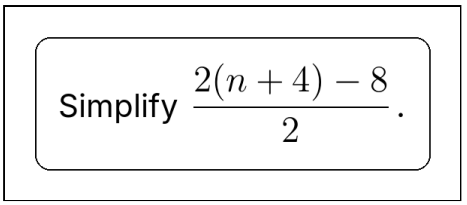
06



Say. Halve it: the halving acts on the whole thing.

Draw. Write (2(n + 4) − 8)/2 on the next line. Beside it, write “halve it”.

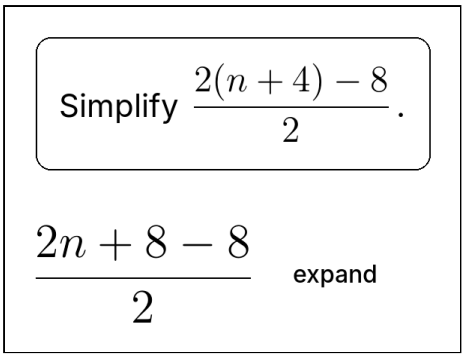
07



Say. Now simplify it.

Draw. Clear the board. Write “Simplify (2(n + 4) − 8)/2.” in a box at the top.

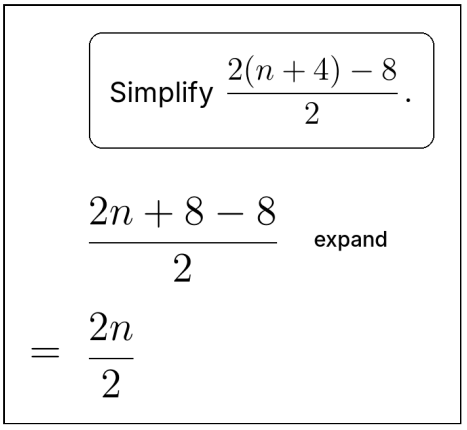
08



Say. Expand the bracket: two n plus eight, minus eight.

Draw. Write (2n + 8 − 8)/2 on the next line. Beside it, write “expand”.

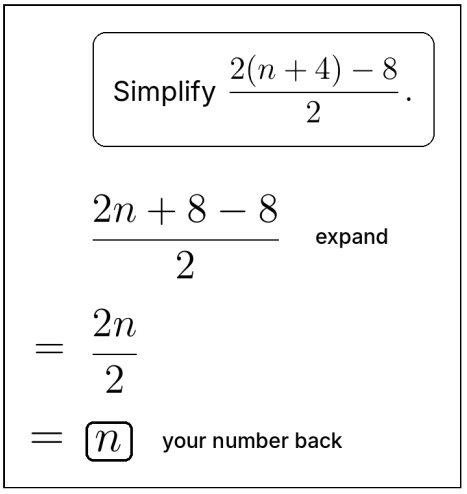
09



Say. The eights cancel, leaving two n over two.

Draw. Write = 2n/2 on the next line.

10



Say. That is n: you always get your number back, whatever it was.

Draw. Write = n and box it on the next line. Beside it, write “your number back”.

11

Trap add 4, then double

$\times\ n + 4 \cdot 2$

$\checkmark\ \ 2(n + 4)$

Say. Watch for the trap: leaving out the brackets. n + 4 · 2 doubles only the four. It is two times the bracket n + 4.

Draw. Clear the board. Write “Trap” and add 4, then double. Below, write n + 4 · 2 and cross it out ×. Then write 2(n + 4) with a tick ✓.

12

Trap $\dfrac{2x + 48}{4}$

$\times\ 2x + 12$

$\checkmark\ \dfrac{x}{2} + 12$

Say. And divide every term. Two x plus forty-eight, all over four, is not 2x + 12. Divide the two x too: x over two, plus twelve.

Draw. Clear the board. Write “Trap” and (2x + 48)/4. Below, write 2x + 12 and cross it out ×. Then write x/2 + 12 with a tick ✓.

13

Your turn

Write each step with brackets,
then simplify: it works for every number

Say. Now it is your turn. Write each step with brackets, then simplify: that shows it works for every number, not just the ones you tried.

Draw. Point to today’s activity: Write each step with brackets, then simplify: it works for every number