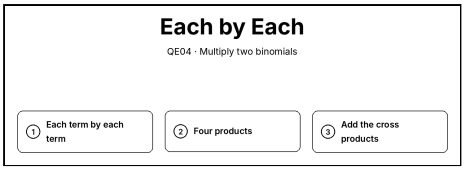
Each by Each: teacher script

QE04-V1 · QE04 Multiply two binomials · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 93 seconds as a video.

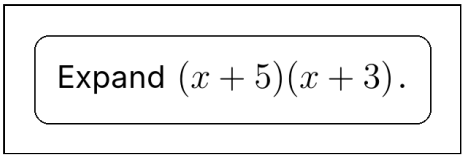
01



Say. Multiplying two brackets. Multiply each term in the first bracket by each term in the second. That gives four products. Then add the two cross products, with their signs.

Draw. Write the title “Each by Each” and the steps: 1. Each term by each term; 2. Four products; 3. Add the cross products.

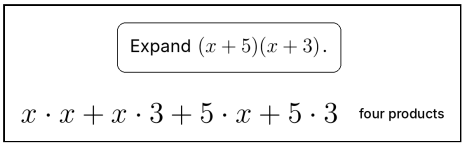
02



Say. Expand x plus 5, times x plus 3.

Draw. Clear the board. Write “Expand (x + 5)(x + 3).” in a box at the top.

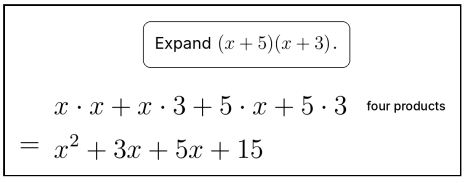
03



Say. x times x, x times 3, 5 times x, and 5 times 3: four products.

Draw. Write x · x + x · 3 + 5 · x + 5 · 3 on the next line. Beside it, write “four products”.

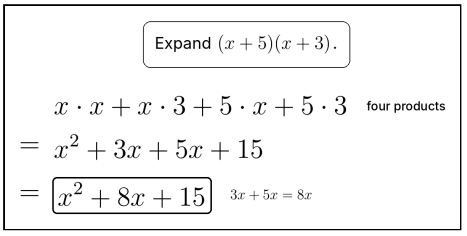
04



Say. That is x squared, plus 3 x, plus 5 x, plus 15.

Draw. Write = x² + 3x + 5x + 15 on the next line.

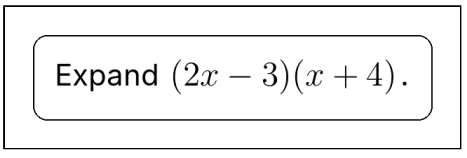
05



Say. Add the like terms in the middle: x squared, plus 8 x, plus 15.

Draw. Write = x² + 8x + 15 and box it on the next line. Beside it, write “3x + 5x = 8x”.

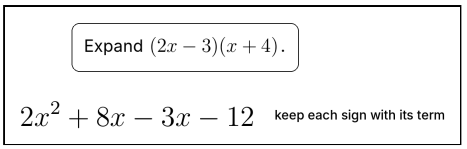
06



Say. Expand 2 x minus 3, times x plus 4.

Draw. Clear the board. Write “Expand (2x − 3)(x + 4).” in a box at the top.

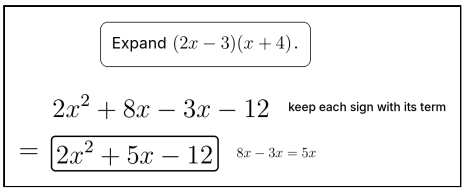
07



Say. 2 x times x is 2 x squared. 2 x times 4 is 8 x. Negative 3 times x is negative 3 x, and negative 3 times 4 is negative 12: keep each sign with its term.

Draw. Write 2x² + 8x − 3x − 12 on the next line. Beside it, write “keep each sign with its term”.

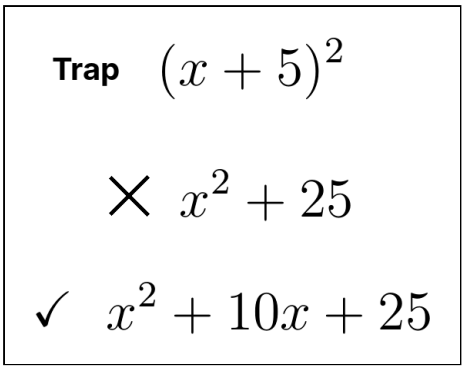
08



Say. 8 x minus 3 x is 5 x. So the answer is 2 x squared, plus 5 x, minus 12.

Draw. Write = 2x² + 5x − 12 and box it on the next line. Beside it, write “8x − 3x = 5x”.

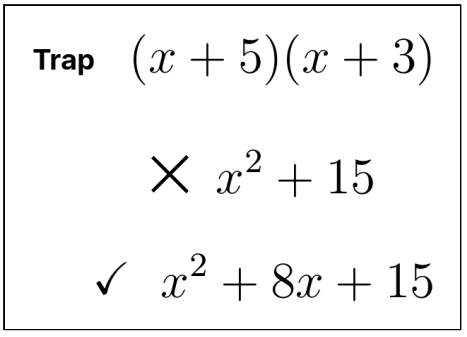
09



Say. Watch for the trap: x plus 5, squared, is not x squared plus 25. It is x plus 5 times x plus 5, so there are two cross products, 5 x and 5 x: x squared, plus 10 x, plus 25.

Draw. Clear the board. Write “Trap” and (x + 5)². Below, write x² + 25 and cross it out ×. Then write x² + 10x + 25 with a tick ✓.

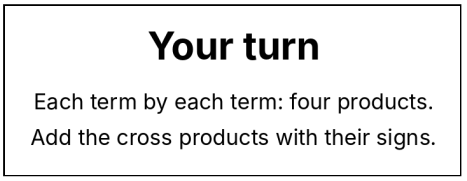
10



Say. Another trap: multiplying only the firsts and the lasts gives x squared plus 15. But there are four products, not two: x squared, plus 8 x, plus 15.

Draw. Clear the board. Write “Trap” and (x + 5)(x + 3). Below, write x² + 15 and cross it out ×. Then write x² + 8x + 15 with a tick ✓.

11



Say. Now it is your turn. Each term by each term: four products. Then add the cross products, with their signs.

Draw. Point to today’s activity: Each term by each term: four products. Add the cross products with their signs.