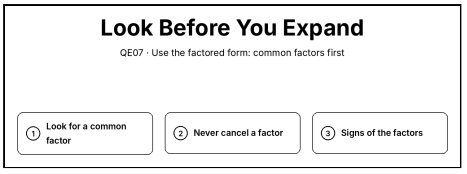
# Look Before You Expand: teacher script

QE07-V1 · QE07 Use the factored form: common factors first · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 96 seconds as a video.

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**01**

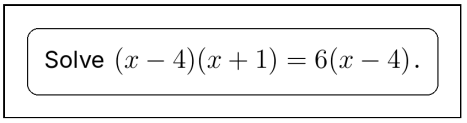



**Say.** Before you expand, look. If both sides share a factor, take it out. Never cancel a factor that could be 0. And a factored form tells you the sign of a product, too.

**Draw.** Write the title “Look Before You Expand” and the steps: 1. Look for a common factor; 2. Never cancel a factor; 3. Signs of the factors.

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**02**

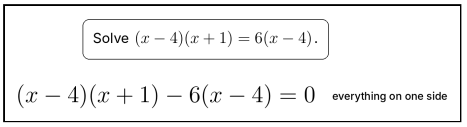



**Say.** Solve x minus 4, times x plus 1, equals 6 times x minus 4.

**Draw.** Clear the board. Write “Solve (x − 4)(x + 1) = 6(x − 4).” in a box at the top.

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**03**

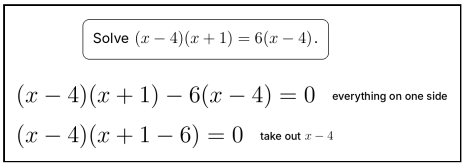



**Say.** Move everything to one side.

**Draw.** Write (x − 4)(x + 1) − 6(x − 4) = 0 on the next line. Beside it, write “everything on one side”.

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**04**

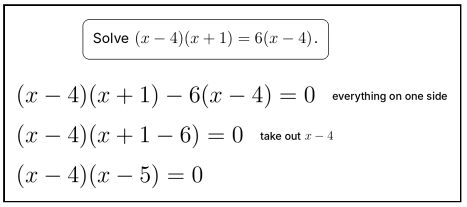



**Say.** Both terms have the factor x minus 4. Take out x minus 4: what is left is x plus 1 minus 6.

**Draw.** Write (x − 4)(x + 1 − 6) = 0 on the next line. Beside it, write “take out x − 4”.

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**05**

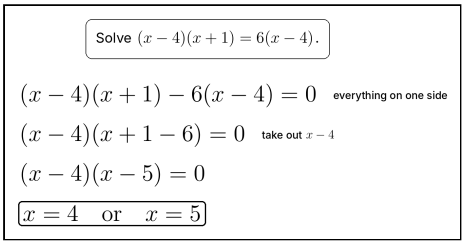



**Say.** That is x minus 4, times x minus 5.

**Draw.** Write (x − 4)(x − 5) = 0 on the next line.

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**06**

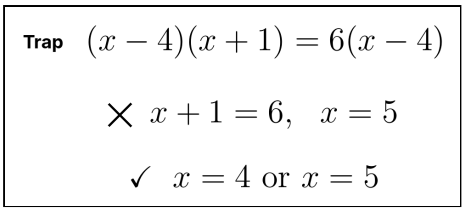



**Say.** So x equals 4 or x equals 5.

**Draw.** Write x = 4 or x = 5 and box it on the next line.

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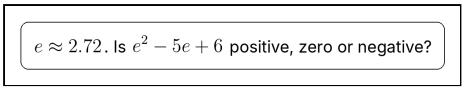
**07**




**Say.** Watch for the trap: if you cancel x minus 4, you get only x equals 5. But x minus 4 is 0 when x is 4, and you cannot divide by 0. So 4 is a root as well.

**Draw.** Clear the board. Write “Trap” and (x − 4)(x + 1) = 6(x − 4). Below, write x + 1 = 6,\ \ x = 5 and cross it out ×. Then write x = 4 or x = 5 with a tick ✓.

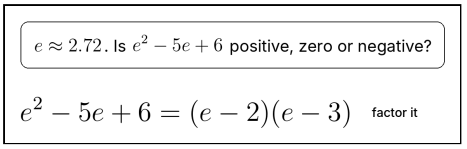
**08**




**Say.** The number e is about 2.72. Is e squared, minus 5 e, plus 6, positive, zero, or negative?

**Draw.** Clear the board. Write “e \approx 2.72. Is e² − 5e + 6 positive, zero or negative?” in a box at the top.

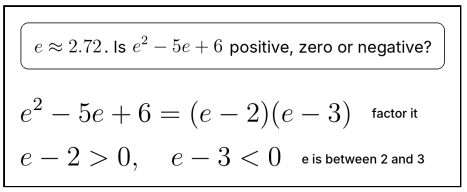
**09**




**Say.** Factor it: e minus 2, times e minus 3.

**Draw.** Write e² − 5e + 6 = (e − 2)(e − 3) on the next line. Beside it, write “factor it”.

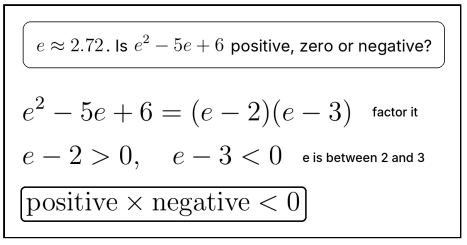
**10**




**Say.** e is between 2 and 3, so e minus 2 is positive, and e minus 3 is negative.

**Draw.** Write e − 2 > 0, e − 3 < 0 on the next line. Beside it, write “e is between 2 and 3”.

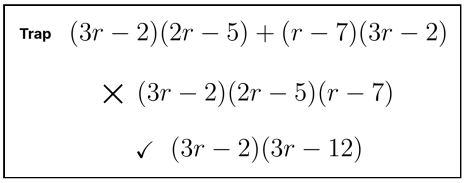
**11**




**Say.** Positive times negative: the product is negative, without working out e squared at all.

**Draw.** Write positive × negative < 0 and box it on the next line.

**12**




**Say.** Another trap: taking out the common factor 3 r minus 2 does not give a product of three brackets. Add what is left: 2 r minus 5, plus r minus 7, which is 3 r minus 12.

**Draw.** Clear the board. Write “Trap” and (3r − 2)(2r − 5) + (r − 7)(3r − 2). Below, write (3r − 2)(2r − 5)(r − 7) and cross it out ×. Then write (3r − 2)(3r − 12) with a tick ✓.

13

## Your turn

Look for a common factor first.
Never cancel a factor that can be 0.

**Say.** Now it is your turn. Look for a common factor before you expand, and never cancel a factor that can be 0.

**Draw.** Point to today’s activity: Look for a common factor first. Never cancel a factor that can be 0.