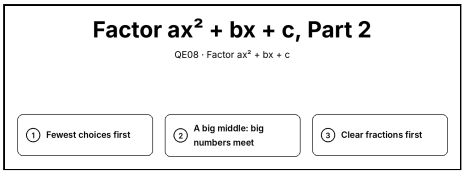
Factor ax² + bx + c, Part 2: teacher script

QE08-V2 · QE08 Factor ax² + bx + c · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 101 seconds as a video.

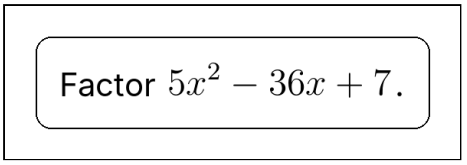
01



Say. More factoring with a number in front. Start with the number that has the fewest factor pairs. If the middle term is big, the big numbers must meet in a cross product. And clear fractions and common factors first.

Draw. Write the title “Factor ax² + bx + c, Part 2” and the steps: 1. Fewest choices first; 2. A big middle: big numbers meet; 3. Clear fractions first.

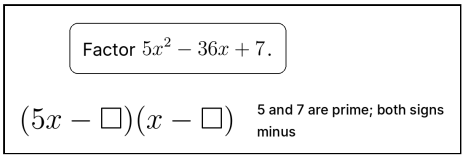
02



Say. Factor 5 x squared, minus 36 x, plus 7.

Draw. Clear the board. Write “Factor 5x² − 36x + 7.” in a box at the top.

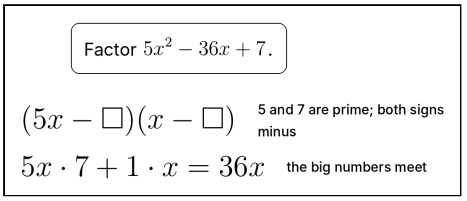
03



Say. 5 and 7 are both prime, so there are few choices. The middle term is negative and the last is positive, so both signs are minus.

Draw. Write (5x − ☐)(x − ☐) on the next line. Beside it, write “5 and 7 are prime; both signs minus”.

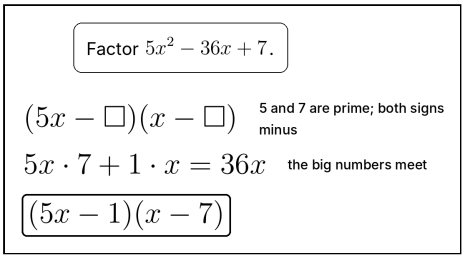
04



Say. 36 is big: 5 x meets 7 in a cross product, giving 35 x, and 1 x more makes 36 x.

Draw. Write 5x · 7 + 1 · x = 36x on the next line. Beside it, write “the big numbers meet”.

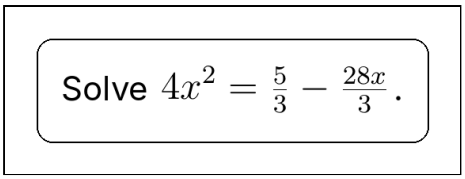
05



Say. So it is 5 x minus 1, times x minus 7.

Draw. Write (5x − 1)(x − 7) and box it on the next line.

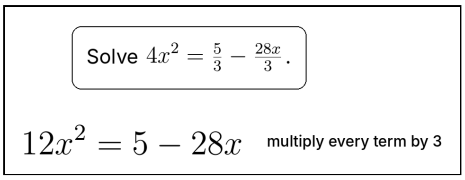
06



Say. Solve 4 x squared equals 5 thirds, minus 28 x over 3.

Draw. Clear the board. Write “Solve 4x² = 5/3 − 28x/3.” in a box at the top.

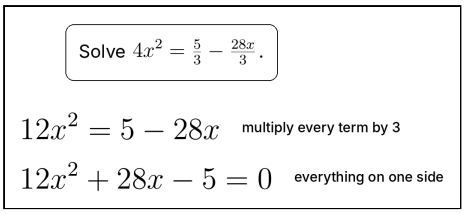
07



Say. First clear the fractions: multiply every term by 3.

Draw. Write 12x² = 5 − 28x on the next line. Beside it, write “multiply every term by 3”.

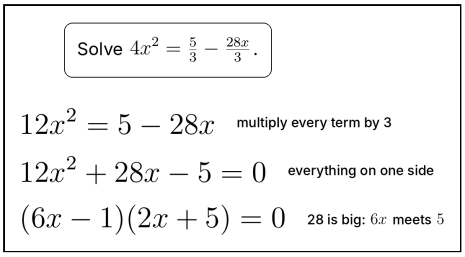
08



Say. Then everything on one side.

Draw. Write 12x² + 28x − 5 = 0 on the next line. Beside it, write “everything on one side”.

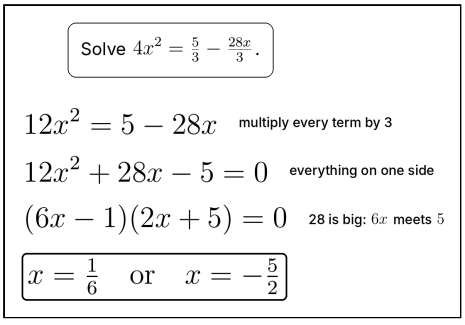
09



Say. 5 has the fewest choices: 1 and 5. 28 is big, so 6 x meets 5: 30 x minus 2 x is 28 x.

Draw. Write (6x − 1)(2x + 5) = 0 on the next line. Beside it, write “28 is big: 6x meets 5”.

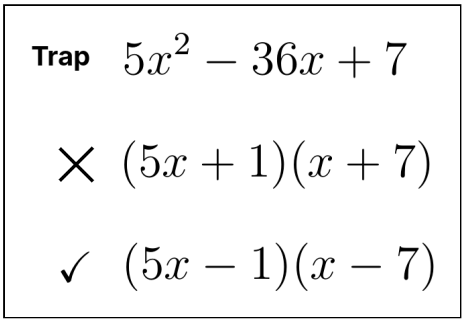
10



Say. So x equals 1 over 6, or x equals negative 5 over 2.

Draw. Write x = 1/6 or x = −5/2 and box it on the next line.

11



Say. Watch for the trap: right sizes, wrong signs. 5 x plus 1, times x plus 7, gives plus 36 x. The middle term is negative, so both signs are minus.

Draw. Clear the board. Write “Trap” and 5x² − 36x + 7. Below, write (5x + 1)(x + 7) and cross it out ×. Then write (5x − 1)(x − 7) with a tick ✓.

12

Trap $6x - 1 = 0$

$\times \quad x = 6$

$\checkmark \quad x = \frac{1}{6}$

Say. Another trap: 6 x minus 1 equals 0 does not give 6. Add 1, then divide by 6: x equals 1 over 6.

Draw. Clear the board. Write “Trap” and 6x − 1 = 0. Below, write x = 6 and cross it out ×. Then write x = 1/6 with a tick ✓.

13

Your turn

Fewest choices first; big numbers meet.
Clear fractions and common factors first.

Say. Now it is your turn. Fewest choices first, the big numbers meet for a big middle term, and clear fractions and common factors before you start.

Draw. Point to today’s activity: Fewest choices first; big numbers meet. Clear fractions and common factors first.