Factor ax² + bx + c, Part 2

QE08-V2 · storyboard · QE08 Factor ax² + bx + c. Read each picture with its sentences.

Picture 1

Factor $5x^2 - 36x + 7.$

$(5x - \square)(x - \square)$ 5 and 7 are prime; both signs minus

$5x \cdot 7 + 1 \cdot x = 36x$ the big numbers meet

$\boxed{(5x - 1)(x - 7)}$

1. Factor 5 x squared, minus 36 x, plus 7.
2. 5 and 7 are both prime, so there are few choices.
3. The middle term is negative and the last is positive, so both signs are minus.
4. 36 is big: 5 x meets 7 in a cross product, giving 35 x, and 1 x more makes 36 x.
5. So it is 5 x minus 1, times x minus 7.

Picture 2

Solve $4x^2 = \frac{5}{3} - \frac{28x}{3}$.

$$12x^2 = 5 - 28x$$ multiply every term by 3

$$12x^2 + 28x - 5 = 0$$ everything on one side

$$(6x - 1)(2x + 5) = 0$$ 28 is big: $6x$ meets 5

$$\boxed{x = \frac{1}{6} \quad \text{or} \quad x = -\frac{5}{2}}$$

6. Solve 4 x squared equals 5 thirds, minus 28 x over 3.
7. First clear the fractions: multiply every term by 3.
8. Then everything on one side.
9. 5 has the fewest choices: 1 and 5.
10. 28 is big, so 6 x meets 5: 30 x minus 2 x is 28 x.
11. So x equals 1 over 6, or x equals negative 5 over 2.

Picture 3

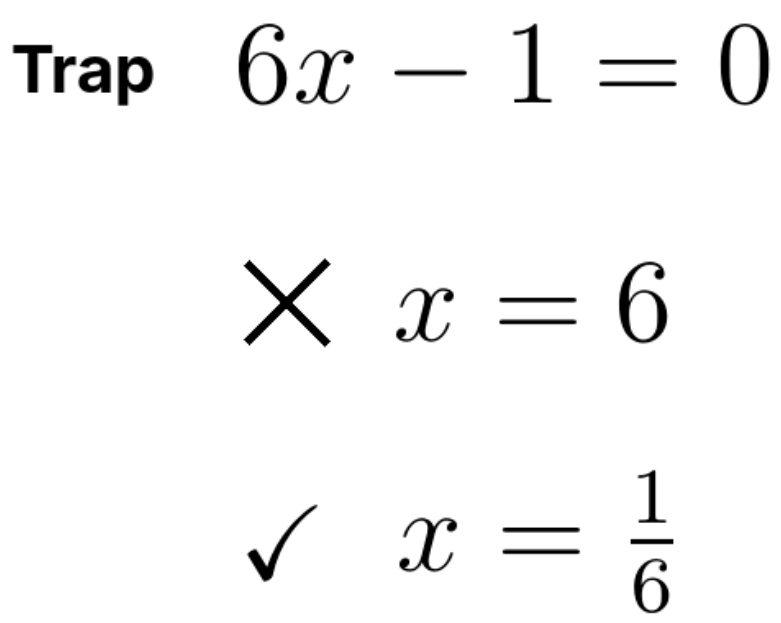
Trap $5x^2 - 36x + 7$

$\times$ $(5x + 1)(x + 7)$

✓ $(5x - 1)(x - 7)$

12. Watch for the trap: right sizes, wrong signs.
13. 5 x plus 1, times x plus 7, gives plus 36 x.
14. The middle term is negative, so both signs are minus.

Picture 4



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