

$$ax^2 + bx + c$$

Recall: FOIL
 $(2x+5)(3x+1)$
 $6x^2 + 2x + 15x + 5$
 $6x^2 + 17x + 5$

5/4/15

+8-6 Factoring a71

$$7x^2 + 29x + 4$$

★ $a=7$ $b=29$ $c=4$

$a \cdot c = 28$	$b = 29$
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$1 \cdot 28$	$1 + 28 = 29$
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★ $1x + 28x = 29x$

★ $7x^2 + 1x + 28x + 4$

$$x\left(\frac{7x^2 + 1x}{x}\right) + 4\left(\frac{28x + 4}{4}\right)$$

→ $x(7x+1) + 4(7x+1)$ ★

$$(7x+1)\left(\frac{x(7x+1) + 4(7x+1)}{(7x+1)}\right)$$

$(7x+1)(x+4)$ ★

$$7x^2 + 28x + 1x + 4$$

$$5x^2 + 27x + 10$$

$a=5$ $b=27$ $c=10$ ★

$a \cdot c = 50$	$b = 27$
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$1 \cdot 50$	
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$2 \cdot 25$	$2 + 25 = 27$
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$2x + 25x = 27x$ ★

$5x^2 + 2x + 25x + 10$

$$(5x+2)(x+5)$$

WITH A NEG!

$$24x^2 - 22x + 3$$

$$a=24 \quad b=-22 \quad c=3$$

$a \cdot c = 72$	$b = -22$
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$$1 \cdot 72$$

$$2 \cdot 36$$

$$3$$

$$-4 = 18$$

$$-4x + 18x = -22x$$

$$(24x^2 - 4x) + (-18x + 3)$$

↑ if front is NEG then factor NEG

$$4x \left(\frac{24x^2}{4x} - \frac{4x}{4x} \right) + -3 \left(\frac{-18x}{-3} + \frac{3}{-3} \right)$$

$$4x(6x-1) - 3(6x-1)$$

$$(6x-1)(4x-3)$$

$$x^2 + 3x + 2$$

$$a=1 \quad b=3 \quad c=2$$

$a \cdot c = 2$	$b = 3$
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$$2 \cdot 1$$

$$2+1=3$$

$$2x+1x=3x$$

$$(x^2 + 2x) + (1x + 2)$$

$$x \left(\frac{x^2}{x} + \frac{2x}{x} \right) + 1(x + 2)$$

$$x(x+2) + 1(x+2)$$

$$(x+2)(x+1)$$

Steps

1. ALWAYS LOOK FOR AND FACTOR OUT a GCF! (Standard form)
2. Make $a \cdot c / b$ table
3. Substitute 2 terms ($\frac{1}{x}$'s) for 1 x term
4. Pair up & factor
5. () ()
6. verify!

You try

$$3g^2 - 7g + 2$$

Quadratic $a > 1$

$$70x^2 + 98x - 84$$
$$14\left(\frac{70x^2}{14} + \frac{98x}{14} - \frac{84}{14}\right)$$

$$14(5x^2 + 7x - 6)$$

$$14(5x-3)(x+2)$$

$$5x^2 - 3x + 10x - 6$$

$$x(5x-3) + 2(5x-3)$$

$$(5x-3)(x+2)$$

1. Look at smallest #
Can you divide by it?
If not list factor

$$70: \begin{array}{l} 1 \cdot 70 \\ 2 \cdot 35 \\ 5 \cdot 14 \\ 7 \cdot 10 \end{array}$$

$$a=5 \quad b=7 \quad c=-6$$

$$ac = -30 \quad | \quad b = 7$$

$$\begin{array}{l|l} 1 \cdot 30 & \\ 2 \cdot 15 & \\ -3 \cdot 10 & -3x + 10x \end{array}$$

$$\begin{array}{l|l} -5880 & 98 \end{array}$$

15: $60y^2 + 180y + 135$