

L5 Factoring More Difficult Trinomials

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Lesson 5 Factoring More Difficult Trinomials

Form: $ax^2 + bx + c$, where $a \neq 1$

PSF shortcut: ex) $2x^2 + 7x + 6$

➤ Product of (a)(c) $2(6)$

➤ Sum of "b" 7

➤ Factors of the product (a)(c)

➤ Take the GCF of each factor and "a"

➤ Use GCFs as the coefficients of the first term

$$(2x + ?)(x + ?)$$

➤ Divide each factor by the GCF to get the second variable in the **opposite** bracket

$$\left(\frac{4}{2}\right) 4 \div 2 = 2 \text{ and } \left(\frac{3}{1}\right) 3 \div 1 = 3, \text{ therefore } (2x + 3)(x + 2)$$

P $(2 \times 6 = 12)$

S (7)

F $\frac{4}{2}$ and $\frac{3}{1}$

GCF of 4 and 2 is 2 $\left(\frac{4}{2}\right)$

GCF of 3 and 2 is 1 $\left(\frac{3}{1}\right)$

Example 1

Factor.

a) $3x^2 + 7x + 2$

Handwritten notes for Example 1:

- PSF: P 6, S 7, F 6, 1
- Factors of 6: $\frac{6}{3}, \frac{1}{1}$
- Annotations: "divide", "switch", "in front of x (in order)", "go in opposite order"
- Result: $(3x + 1)(x + 2)$

Handwritten notes for Example 1 (continued):

- PSF: P 6, S 7, F 1, 6
- Factors of 6: $\frac{1}{1}, \frac{6}{3}$
- Result: $(x + 2)(3x + 1)$

b) $4x^2 + 11x + 6$

P 24
S 11
F 8, 3

$\frac{4}{2} \quad \frac{1}{3}$

$(4x + 3)(x + 2)$

c) $6x^2 - 7x - 10$

d) $6x^2 - 11x - 35$

P -60
S -7
F $-\frac{12}{6}, \frac{5}{1}$

$(6x + 5)(x - 2)$

-2 5

e) $6x^2 - 9x + 3$

f) $24h^2 - 20h - 24$

g) $2c^2 + 7cb + 6b^2$

h) $6x^2 - 21xy + 9y^2$