

4.3 Factoring Quadratics- Notes

1. Factor out the GCF, if possible.
2. Look for numbers that multiply to ac and Add to b .
3. Rewrite the "bx" term using these 2 numbers.
4. Factor by grouping.

Example:

Factor $x^2 + 7x + 10$

M: 10

A: 7

F: 5, 2

Rewrite: $(x^2 + 5x) + (2x + 10)$

Factor by grouping: $x(x+5) + 2(x+5)$
 $(x+2)(x+5)$

Solution:

#2: Factor $2x^2 + 11x + 5$

M: 10

A: 11

F: 10, 1

Rewrite: $2x^2 + 10x + x + 5$

Factor by grouping:

$2(x+5) + 1(x+5)$

Solution:

$(2x+1)(x+5)$

Check:

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

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

$x^2 + 7x + 10$ ✓

Check:

$(2x+1)(x+5)$

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

$\checkmark 2x^2 + 11x + 5$

#3: Factor $x^2 - 9x + 14$

M: 14

A: -9

F: -7, -2

Rewrite: $x^2 - 7x - 2x + 14$

Factor by grouping:

$$x(x-7) - 2(x-7)$$

Solution: $(x-7)(x-2)$

Check: $(x-7)(x-2)$

$$x^2 - 2x - 7x + 14$$

$$x^2 - 9x + 14 \checkmark$$

#4: Factor $2x^2 + 12x + 10$

M: 25

A: 16

F: 15, 1

Rewrite: $x^2 + 5x + x + 5$

Factor by grouping:

$$x(x+5) + 1(x+5)$$

$$\leftarrow 2(x+1)(x+5)$$

Solution:

Check:

$$2(x+1)(x+5)$$

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

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

$$\checkmark 2x^2 + 12x + 10$$

#5: Factor $3x^2 + 16x - 12$

M: -36

A: 16

F: 18, -2

Rewrite: $3x^2 + 18x - 2x - 12$

Factor by grouping:

$$3x(x+6) - 2(x+6)$$

Solution:

$$(3x-2)(x+6)$$

Check:

$$(3x-2)(x+6)$$

$$3x^2 + 18x - 2x - 12$$

$$\checkmark 3x^2 + 16x - 12$$