

SC Algebra 1
10.6 Factoring Quadratic Trinomials

Warm Up:

Find each pair of mystery integers.

- 1) These integers multiply to get 2 and add to get 3.
- 2) These integers multiply to get -3 and add to get 2.
- 3) These integers multiply to get -15 and add to get -2.
- 4) These integers multiply to get -5 and add to get -4.
- 5) These integers multiply to get 24 and add to get -10.

Speak Like A Mathematician:

prime polynomial: a polynomial that _____ be written as the product of two polynomials with _____ coefficients.

Example 1: Factoring Trinomials in the form $x^2 + bx + c$.

Factor the following trinomials.

a) $x^2 - 9x + 18$

b) $x^2 + 8x + 15$

c) $x^2 + 10x + 24$

How can I meet today's standards?

*I can **factor polynomials** in the form $x^2 + bx + c$ and $ax^2 + bx + c$*

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Example 2: Factoring Trinomials in the Form $x^2 + bx - c$.

Factor the following trinomials. If the polynomials cannot be factored using integers, write *prime*.

a) $x^2 + 5x - 14$

b) $x^2 + 10x - 11$

Example 3: Factoring Trinomials in the Form $x^2 - bx - c$.

Factor the following trinomials. If the polynomials cannot be factored using integers, write *prime*.

a) $x^2 - 3x - 4$

b) $x^2 - 5x - 24$

Example 4: Factoring a Polynomial

Factor the following trinomials. If the polynomials cannot be factored using integers, write *prime*.

a) $x^2 - 4x + 8$

b) $x^2 - 2x + 24$

Example 5: Solve a Problem by Factoring

Switzerland's flag has a unique shape; it is a square. However, the flag used by the country's naval vessels is rectangular, as shown. If the area of the square flag is $x^2 - 6x + 9$ square feet, and the length is increased by 4 feet to make the naval flag, then what is the area of the naval flag in terms of x ?



Mindy is a landscaping contractor who has devised a formula for the new area of a patio given changes in the length and width. A customer's patio is $x^2 + 10x + 25$ square feet and the customer wants to increase both the length and width by 6 feet. Write an expression to represent the new area, in terms of x .

Check:

Factor each polynomial or write prime.

$$x^2 + 7x + 6$$

$$x^2 - 8x + 12$$

$$x^2 + 3x - 40$$

$$x^2 - 4x - 21$$

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Example 4: Factoring a Polynomial when $a \neq 1$.

Factor the following trinomials. If the polynomials cannot be factored using integers, write *prime*.

a) $2x^2 + 7x + 6$

e) $3x^2 + 22x + 7$

b) $7x^2 - 5x - 2$

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

c) $2x^2 - 17x + 21$

g) $9x^2 - 29x + 6$

d) $5x^2 - 27x + 10$

h) $6x^2 - 11x + 5$