

Algebra 1

Chapter 8
Section 8-5B

Factors Review

Two numbers multiply together to get 18 and add together to get -9.
What are the two numbers?

-1, -18

-2, -9

-3, -6

$$\mathbf{-3 + -6 = -9}$$

Two numbers multiply together to get -24 and add together to get 2.
What are the two numbers?

-1, 24

-2, 12

-3, 8

-4, 6

$$\mathbf{6 + (-4) = 2}$$

Factors Review

Two numbers multiply together to get 18 and add together to get -9. What are the two numbers?

-3 and -6

Two numbers multiply together to get -24 and add together to get 2. What are the two numbers?

-4 and 6

FOIL

$$\begin{aligned}(x - 3)(x - 6) \\ x^2 - 6x - 3x + 18 \\ x^2 - 9x + 18\end{aligned}$$

$$\begin{aligned}(x - 4)(x + 6) \\ x^2 + 6x - 4x - 24 \\ x^2 + 2x - 24\end{aligned}$$

Factoring a Polynomial

Factoring a polynomial means to separate all parts that are possible to separate. We always try to separate them into *linear factors*.

$$\text{i.e. } (x - 3)(x + 4) \quad \text{OR} \quad n(n - 15)$$

Factoring $x^2 + bx + c$

Factor:

$$x^2 + 9x + 20$$

What two numbers add to 9 and multiply to 20?

Factors	Sums
1, 20	21
2, 10	12
4, 5	9

Factoring in the form:

$$x^2 + bx + c$$

Factor the expressions

$$x^2 - 13x + 30$$
$$(x - 3)(x - 10)$$

$$x^2 - 13x + 12$$
$$(x - 1)(x - 12)$$

$$x^2 + 11x + 28$$
$$(x + 7)(x + 4)$$

$$x^2 - 11x - 42$$
$$(x + 3)(x - 14)$$

$$x^2 + 2x - 15$$
$$(x - 3)(x + 5)$$

$$x^2 + 17x + 72$$
$$(x + 9)(x + 8)$$