8-3 Factoring $x^2 + bx + c$

Look for patterns as you multiply binomials. The patterns that you discover will help you factor trinomials.

1. Complete the table by multiplying the binomial factors. Be sure to write the products as trinomials in the form $x^2 + bx + c$.

Factors	Product
$(x + 2)(x + 4)$	
$(x + 5)(x + 3)$	
$(x + 3)(x - 7)$	
$(x - 5)(x + 2)$	
$(x - 5)(x - 9)$	

2. Look at the constant terms of the trinomials. How are these related to the constant terms of the binomial factors?

3. Look at the coefficients of the middle terms of the trinomials. How are these related to the constant terms of the binomial factors?

THINK AND DISCUSS

4. **Discuss** what you know about the constant terms of the binomial factors of $x^2 + 10x + 24$.

5. **Explain** how you know that $(x + 12)(x + 2)$ is not a correct factorization of $x^2 + 10x + 24$.

Holt Algebra 1

8-3 Factoring $x^2 + bx + c$

Look for patterns as you multiply binomials. The patterns that you discover will help you factor trinomials.

1. Complete the table by multiplying the binomial factors. Be sure to write the products as trinomials in the form $x^2 + bx + c$.

Factors	Product
$(x + 2)(x + 4)$	$x^2 + 6x + 8$
$(x + 5)(x + 3)$	$x^2 + 8x + 15$
$(x + 3)(x - 7)$	$x^2 - 4x - 21$
$(x - 5)(x + 2)$	$x^2 - 3x - 10$
$(x - 5)(x - 9)$	$x^2 - 14x + 45$

2. Look at the constant terms of the trinomials. How are these related to the constant terms of the binomial factors?

3. Look at the coefficients of the middle terms of the trinomials. How are these related to the constant terms of the binomial factors?

THINK AND DISCUSS

4. **Discuss** what you know about the constant terms of the binomial factors of $x^2 + 10x + 24$.

5. **Explain** how you know that $(x + 12)(x + 2)$ is not a correct factorization of $x^2 + 10x + 24$.

2. They are the products of the constant terms.

3. They are the sums of the constant terms.

4. Their product is 24, and their sum is 10.

5. The sum of the constant terms is not 10.

Holt Algebra 1