



Completing the Square



Lesson Objectives (p. 341):

Vocabulary

1. Completing the square (p. 342): _____

Key Concepts

2. Square-Root Property (p. 341):

| WORDS | NUMBERS | ALGEBRA |
|-------|---------|---------|
| | | |

3. Completing the Square (p.342):

| WORDS | NUMBERS | ALGEBRA |
|-------|---------|---------|
| | | |



Completing the Square

Note

Lesson Objectives (p. 341):

solve quadratic equations by completing the square; write quadratic equations in vertex form.

Vocabulary

1. Completing the square (p. 342): the process of adding $\left(\frac{b}{2}\right)^2$ to form a perfect square trinomial.

Key Concepts

2. Square-Root Property (p. 341):

| WORDS | NUMBERS | ALGEBRA |
|--|---|---|
| To solve a quadratic equation, you can take the square root of both sides. Be sure to consider the positive and negative square roots. | $x^2 = 15$ $\sqrt{x^2} = \pm\sqrt{15}$ $x = \pm\sqrt{15}$ | If $x^2 = a$ and a is a nonnegative real number, then $x = \pm\sqrt{a}$. |

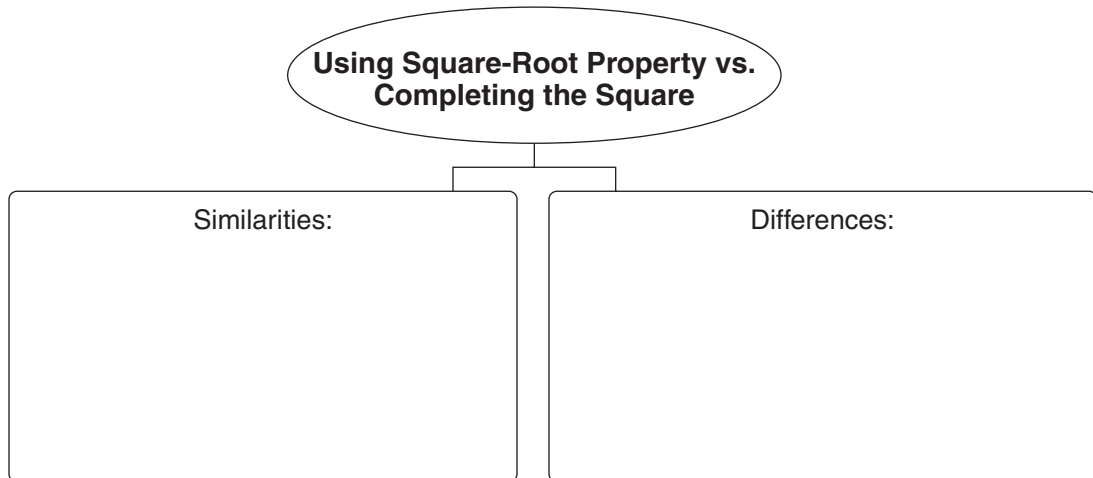
3. Completing the Square (p.342):

| WORDS | NUMBERS | ALGEBRA |
|---|--|--|
| To complete the square of $x^2 + bx$, add $\left(\frac{b}{2}\right)^2$. | $x^2 + 6x + \blacksquare$ $x^2 + 6x + \left(\frac{6}{2}\right)^2$ $x^2 + 6x + 9$ $(x + 3)^2$ | $x^2 + bx + \blacksquare$ $x^2 + bx + \left(\frac{b}{2}\right)^2$ $\left(x + \frac{b}{2}\right)^2$ |

4. Solving Quadratic Equations $ax^2 + bx + c = 0$ by Completing the Square (p. 343):

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

5. **Get Organized** Compare and contrast two methods of solving quadratic equations. (p. 344).



4. Solving Quadratic Equations $ax^2 + bx + c = 0$ by Completing the Square (p. 343):

1. Collect variable terms on one side of the equation and constants on the other.
2. As needed, divide both sides by a to make the coefficient of the x^2 term 1.
3. Complete the square by adding $\left(\frac{b}{2}\right)^2$ to both sides of the equation.
4. Factor the variable expression as a perfect square.
5. Take the square root of both sides of the equation.
6. Solve for the values of the variable.

5. **Get Organized** Compare and contrast two methods of solving quadratic equations. (p. 344).

