Unit 8, Lesson 19

# Quadratic Steps

Let's explore steps for solving an equation.

## 19.1 Quadratic Error

Here is Han's work to solve an equation. Determine the error he made and be prepared to explain the correct way to solve it.

$x = -3 + \sqrt{3^2 - 4 \cdot 1 \cdot 2}$

$x = -3 + 3 - 2 \cdot 1 \cdot 2$

$x = -4$

## 19.2 Multiplying to Make Perfect Squares

The class is asked to multiply 5 by a number to make it a perfect square.

- Jada multiplies the number by 5.
- Han multiplies the number by 15.
- Elena multiplies the number by 9.
- Kiran multiplies the number by 20.
- Mai multiplies the number by 45.

1. Do you agree with any of the students that their multiplication will make a perfect square?

2. Find the pairs of positive integer factors of each of the numbers the students want to use.

3. What do you notice about the factors of the values that do create a perfect square? What do you notice about the factors of the values that do not create a perfect square?

4. What are some values you could multiply the number 7 by to make it a perfect square?

5. If $a$ is an integer, which of these values could be multiplied by $a$ so that the product is a perfect square?

   A. $a$

   B. $3a$

   C. $4a$

   D. $6a$

   E. $9a$

# 19.3 Stepping Through Completing the Square

For each step of the solution, explain what happened in each step and why that step might be taken.

Solve $x^2 + 8x - 3 = 6$.

1. $x^2 + 8x = 6 + 3$

2. $x^2 + 8x + 16 = 9 + 16$

3. $(x + 4)^2 = 25$

4. $x + 4 = \pm 5$

5. $x = -4 \pm 5$

6. $x = 1, -9$