# Lesson 4 Teaching Portal Materials

## Episode Supports

### Episode 4: Exploring

#### Episode Description

Sasha and Keoni generalize their "short cut" method from Episode 3 by solving x=$\sqrt{4y}$ for y.

#### Students' Conceptual Challenges

Students often find tasks like the following challenging: "Solve $x = \sqrt{4y}$ for y". In part, that's because their conception of solving the equation is to produce a numerical value for y.

- By generalizing their method for solving for y when x takes on different values [see **0:42 – 1:27**], Sasha and Keoni are able to rewrite the equation successfully [**1:57-2:12**].

#### Focus Questions

For use in a classroom, pause the video and ask these questions:

1. [Pause the video at **1:27**]. Summarize Sasha and Keoni's method for solving $x = \sqrt{4y}$ for y when x is known.

2. [Pause the video at **1:50**]. Sasha just said, "What?" What is different about this request to solve for y?

#### Supporting Dialogue

Ask students to relate this mathematics to other math from school by asking:

- Where else in our math class have you been asked to solve an equation with two variables for one of the variables (like Sasha and Keoni rewrote $x = \sqrt{4y}$ in terms of y)?

**Math Extensions**

1. Sometimes equations can have more than one variable. Solve the equation below for x. Solve the equation for y. Which is easier?

$$x^2 + 25y^2 = 100$$

2. Are there some values of (x, y) that you can see will or will not satisfy the equation without solving for x or y? What are your strategies?