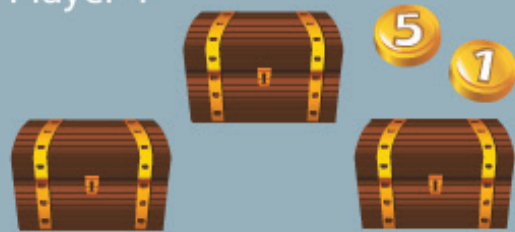## 2-2 Solving Two-Step Equations

OBJECTIVE: I can solve two-step equations in one variable

With the person sitting next to you, <u>discuss</u> the problem provided and <u>document</u> your response

The diagram shows the amount of money that each player starts with in a video game. To be fair, each player should have the same amount of money. If each chest contains the same amount of money, how much money must be in each chest? How do you know?

Player 1

Player 2

Essential Understanding To solve two-step equations, you can use the properties of equality and inverse operations to form a series of simpler equivalent equations. You can use the properties of equality repeatedly to isolate the variable. A two-step equation, like the one shown below, involves two operations.

Multiplication   Addition

$$2x + 3 = 15$$

To solve a two-step equation, identify the operations and undo them using inverse operations. You can undo the operations in the reverse order of the order of operations. For example, to solve 2x + 3 = 15, you can use subtraction first to undo the addition, and then use division to undo the multiplication.

#1 Solving a Two-Step Equation

What is the solution of $2x + 3 = 15$?

1. What is the solution of $5 = \frac{t}{2} - 3$?

Example · #2 Using an Equation as a Model

Community Service You are making a bulletin board to advertise community service opportunities in your town. You plan to use half $\frac{1}{2}$ a sheet of construction paper for each ad. You need 5 sheets of construction paper for a title banner. You have 18 sheets of construction paper. How many ads can you make?

2. Suppose you used one sheet of paper for each ad and four full sheets for the title banner in Example 2. How many ads could you make?

What is the solution of $\dfrac{x-7}{3} = -12$?

3. What is the solution of $6 = \frac{x-2}{4}$?

What is the solution of $-t + 8 = 3$? Justify each step.

Steps	Reasons

4. What is the solution of $\frac{x}{3} - 5 = 4$?