2-3 Variables and Expressions Solving Multi-Step Equations

OBJECTIVE: I can solve multi-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 multi-step equations, you form a series of simpler equivalent equations. To do this, use the properties of equality, inverse operations, and properties of real numbers. You use the properties until you isolate the variable.

Example #1 Combining Like Terms

What is the solution of $5 = 5m - 23 + 2m$?

1. What is the solution of the equation? Check each answer.

$11m - 8 - 6m = 2$

#2 Solving a Multi-Step Equation

Concert Merchandise Martha takes her niece and nephew to a concert. She buys T-shirts and bumper stickers for them. The bumper stickers cost $1 each. Martha's niece wants 1 shirt and 4 bumper stickers, and her nephew wants 2 shirts but no bumper stickers. If Martha's total is $67, what is the cost of one shirt?

2. Noah and Kate are shopping for new guitar strings in a music store. Noah buys 2 packs of strings. Kate buys 2 packs of strings and a music book. The book costs $16. Their total cost is $72. How much is one pack of strings?

Example #3 Solving an Equation Using the Distributive Property

What is the solution of $-8(2x - 1) = 36$?

3. What is the solution of $18 = 3(2x - 6)$? Check your answer

#4 Solving an Equation That Contains Fractions

What is the solution of $\frac{3x}{4} - \frac{x}{3} = 10$?

4. Choose one methid to solve the equation?

Why did you choose the method you used to solve the equation?

$$\frac{2b}{5} + \frac{3b}{4} = 3$$

Example

#5 Solving an Equation That Contains Decimals

What is the solution of $3.5 - 0.02x = 1.24$?

5. What is the solution of 0.5x - 2.325 = 3.95? Check your answer.