

3.1 Solving Equations Using Tables and Graphs

In a relationship between two variables, if you know the value of one variable, you can use a table or a graph to find the value of the other variable. For example, suppose Alana raises \$10 from a sponsor in the walkathon from Problem 1.3. Then you can ask: How many kilometers does Alana walk?

In the equation $A = 5 + 0.5d$, this means that $A = 10$. The equation is now $10 = 5 + 0.5d$.

- What value of d will make this a true statement?

Finding the value of d that will make this a true statement is called *solving the equation* for d . You can use tables or graphs to find the missing value. In this Investigation, you will develop strategies for solving equations symbolically, using properties of operations and equality.



Problem 3.1



A Use the equation $A = 5 + 0.5d$.

- Suppose Alana walks 23 kilometers. Show how you can use a table and a graph to find the amount of money each sponsor donates.
 - Write an equation that represents the amount of money Alana collects if she walks 23 kilometers. Can you use the equation to find the amount? Explain.
- Suppose Alana writes the equation $30 = 5 + 0.5d$.
 - What question is she trying to ask?
 - Show how you can answer Alana's question by reasoning with a table of values, a graph of the relationship $A = 5 + 0.5d$, or with the equation $30 = 5 + 0.5d$ itself.

Problem 3.1 *continued*

- B** The equation $D = 25 + 2.5t$ is related to situations that you have explored. In parts (1) and (2) below, the value of one variable in the equation is known. Find the solution (the value of the unknown variable) in each part. Then, describe another way you can find the solution.

1. $D = 25 + 2.5(7)$

2. $70 = 25 + 2.5t$

A C E Homework starts on page 69.

3.2 Mystery Pouches in the Kingdom of Montarek

Exploring Equality

In the Kingdom of Montarek, money takes the form of \$1 gold coins called rubas. Messengers carry money between the king's castles in sealed pouches that always hold equal numbers of coins.



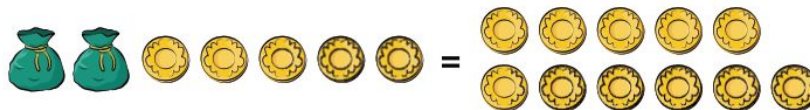
\$1 gold coin



sealed pouch

One day a messenger arrived at one of the castles with a box containing two sealed pouches and five loose \$1 coins. The ruler thanked the messenger for the money, which equaled \$11.

- Can you figure out the number of coins in each pouch?
- Does the following visual equation help in finding the number of coins in each pouch?



In this Problem, you will solve more problems involving mystery pouches.