

Problem-Based Task 2.4.1: Magic Number**Coaching Sample Responses**

- a. What number did you think of?

Responses will vary, but could include any number, such as 53.

- b. What expression represents doubling your number?

Using the number from part a, $2 \cdot 53$.

- c. How can you show adding 6 to the expression from part b?

Using the expression from part b, $2 \cdot 53 + 6$.

- d. How can you show taking half of the expression from part c?

Using the expression from part c, $\frac{2 \cdot 53 + 6}{2}$.

- e. How can you show subtracting the number you originally thought of from the expression in part d?

Using the expression from part d, $\frac{2 \cdot 53 + 6}{2} - 53$.

- f. How can you show that the result of the operations in parts b through e will always result in 3?

Using the expression from part d, $\frac{2 \cdot 53 + 6}{2} - 53 = 3$.

- g. How can you modify your equation in part f to work with any number?

Replace the value chosen in part a with the variable x : $\frac{2x + 6}{2} - x = 3$.

UNIT 2 • REASONING WITH LINEAR EQUATIONS AND INEQUALITIES**Lesson 4: Solving Equations and Inequalities**

Instruction

h. How can your equation from part g be simplified?

Begin by rewriting the term $\frac{2x+6}{2}$ as a sum of two fractions.

$$\frac{2x}{2} + \frac{6}{2} - x = 3$$

Simplify each fraction.

$$x + 3 - x = 3$$

Use the commutative property of addition to rewrite the expression on the left of the equal sign.

$$x - x + 3 = 3$$

Combine like terms.

$$3 = 3$$

The operations performed on any number will always result in the number 3.

Recommended Closure Activity

Select one or more of the essential questions for a class discussion or as a journal entry prompt.