REVIEW: Properties of Equality

Name _____

Key Concept and Vocabulary

Addition Property of Equality:

If $a = b$, then $a + c = b + c$.

Subtraction Property of Equality:

If $a = b$, then $a - c = b - c$.

Multiplication Property of Equality:

If $a = b$, then $a \cdot c = b \cdot c$.
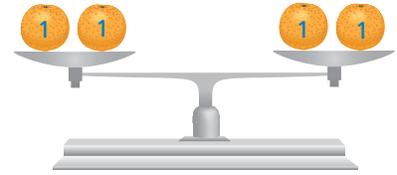
Division Property of Equality:

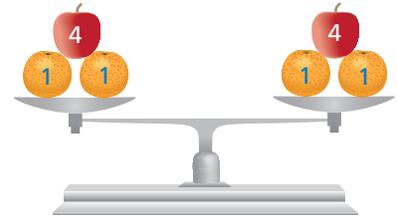If $a = b$, then $a \div c = b \div c, c \neq 0$.

Visual Model

If two sides of a scale weigh the same, the scale balances.

If you add or subtract the same amount on each side of the scale, the scale still balances.

Skill Example

1. Solve $\dfrac{x}{4} - 3 = 7$.

$$\dfrac{x}{4} - 3 = 7 \qquad \text{Write the equation.}$$

$$\underline{+3 \quad +3} \qquad \text{Addition Property of Equality}$$

$$\dfrac{x}{4} = 10 \qquad \text{Simplify.}$$

$$\dfrac{x}{4} \cdot 4 = 10 \cdot 4 \qquad \text{Multiplication Property of Equality}$$

$$x = 40 \qquad \text{Simplify.}$$

Application Example

2. Ski rental is $45 for 3 hours and $10 for each additional hour. You pay $75. Write and solve an equation to find the number of additional hours you rented the skis.

$$10h + 45 = 75 \qquad \text{Write the equation.}$$

$$\underline{-45 \quad -45} \qquad \text{Subtraction Property of Equality}$$

$$10h = 30 \qquad \text{Simplify.}$$

$$\dfrac{10h}{10} = \dfrac{30}{10} \qquad \text{Division Property of Equality}$$

$$h = 3 \qquad \text{Simplify.}$$

⋮ You rented the skis for 3 additional hours.

PRACTICE MAKES *PURR*-FECT™

Check your answers at BigIdeasMath.com.

Solve the equation. Identify the properties used.

3. $2y + 9 = 13$

$2y =$ _____ _____

$y =$ _____ _____

4. $\dfrac{n}{4} - 2 = 10$

$\dfrac{n}{4} =$ _____ _____

$n =$ _____ _____

5. COMPUTER You pay $87 to get your computer repaired. You are charged $37 for parts and $20 per hour of labor. Write and solve an equation to find the number of labor hours you were charged. _____