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:

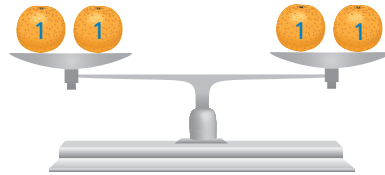If $a = b$, then $a \cdot c = b \cdot c$.

Division Property of Equality:

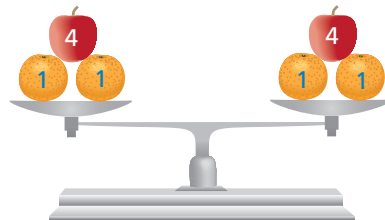If $a = b$, then $a \div c = b \div c$, $c \neq 0$.

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

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

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

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

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

$x = 40$ 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.

$10h + 45 = 75$ Write the equation.

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

$10h = 30$ Simplify.

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

$h = 3$ Simplify.

⋮ You rented the skis for 3 additional hours.

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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.   _____