

Properties of Equality

P 1-14

1. You know $16 + 4 = 20$. Does $16 + 4 - 4 = 20 - 4$? Why or why not?

Explain how to get the variable alone in each equation.

2. $\frac{f}{25} = 3$

3. $54 + t = 132$

4. $m - 8 = 24$

5. $7t = 70$

6. $42 = 6v$

7. $\frac{y}{20} = 70$

8. **Reasoning** Explain why multiplication gets the variable alone in $a \div 32 = 2$.

Test Prep

9. How would you get the variable alone in the following equation: $g \div 9 = 7$?

- A. multiply both sides of the equation by 9
- B. multiply both sides of the equation by 7
- C. divide both sides of the equation by 9
- D. divide both sides of the equation by 7

10. **Writing in Math** To get the variable alone, Ranier added 29 to both sides of $b + 18 = 29$. Was he correct? Explain.

Properties of Equality

To keep both sides of an equation equal, you must do the same thing to both sides.

Balanced Equation	Unbalanced Equation
<p style="text-align: center;">$1 = 1$</p>	<p style="text-align: center;">$1 = 1$</p>
<p style="text-align: center;">$3 = 3$</p>	<p style="text-align: center;">$3 \neq 5$</p>
<p>The equation is balanced because both sides are equal, or have the same amount. We added the same amount to each side of the equation.</p>	<p>The equation is not balanced. 3 does not equal 5. We did not add the same amount to both sides of the equation.</p>

You can use inverse operations to get the variable alone in an equation. Example:

$$x + 5 = 21$$

The operation is addition, so use its inverse, subtraction.

$$x + 5 - 5 = 21 - 5$$

Subtract 5 from both sides of the equation to get x alone

$$x = 16$$

and keep the equation balanced.

Explain how to get the variable alone in each equation.

1. $3p = 27$ _____

2. $10 + h = 54$ _____

3. **Reasoning** A level pan balance shows $g - 47 = 15$. Explain why you should add to get the variable alone.
