

Solving One-Step Equations

 Guided Notes

A **One-Step Equation** is an equation that can be solved in one-step using the properties of equality.

If x is the variable in the equation, then the one-step equation can be of the forms:

$$x + a = b$$

$$x - a = b$$

$$ax = b$$

$$\frac{x}{a} = b$$

Properties of Equality

To solve one-step equations, the following properties of equality are used.

- **Addition Property of Equality**
- **Subtraction Property of Equality**
- **Multiplication Property of Equality**
- **Division Property of Equality**

These properties are applied on both sides of the equality.

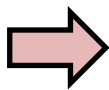
Using Addition Property of Equality

This property means adding same number on both sides of the equation and is applicable on the following type of equations:

$$x - a = b$$

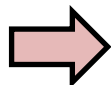
Problem 1: Solve $x - 12 = 4$.

$$x - 12 = 4$$



$$x - 12 + 12 = 4 + 12$$

Addition Property of Equality



$$x = 16$$

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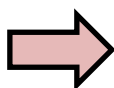
Using Subtraction Property of Equality

This property means subtracting same number on both sides of the equation and is applicable on the following type of equations:

$$x + a = b$$

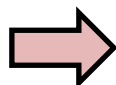
Problem 2: Solve $z + 4 = 9$.

$$z + 4 = 9$$



$$z + 4 - 4 = 9 - 4$$

Subtraction Property of Equality



$$z = 5$$

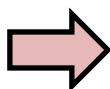
Using Multiplication Property of Equality

This property means multiplying same number on both sides of the equation and is applicable on the following type of equations:

$$\frac{x}{a} = b$$

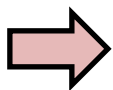
Problem 3: Solve $\frac{y}{24} = 2$.

$$\frac{y}{24} = 2$$



$$24 \times \frac{y}{24} = 2 \times 24$$

Multiplication Property of Equality



$$y = 48$$

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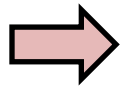
Using Division Property of Equality

This property means dividing same number on both sides of the equation and is applicable on the following type of equations:

$$ax = b$$

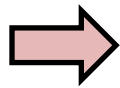
Problem 4: Solve $3x = 24$.

$$3x = 24$$



$$\frac{3x}{3} = \frac{24}{3}$$

Division Property of Equality



$$x = 8$$