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Solving One-Step Equations

Unit 2 Lesson 1

SOLVING ONE-STEP EQUATIONS

Students will be able to:

Solve one-step equations using
properties of equality

Key Vocabulary:

- One-Step equation
- Properties of equality

SOLVING ONE-STEP EQUATIONS

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:

$$x + a = b$$

$$x - a = b$$

$$ax = b$$

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



SOLVING ONE-STEP EQUATIONS

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.

SOLVING ONE-STEP EQUATIONS

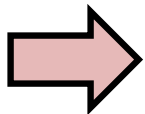
Using Addition Property of Equality

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

$$x - a = b$$

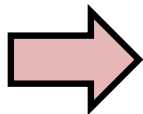
Example: Solve $x - 12 = 4$.

$$x - 12 = 4$$



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

Addition Property of Equality



$$x = 16$$



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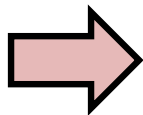
Using Subtraction Property of Equality

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

$$x + a = b$$

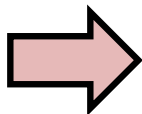
Example: Solve $z + 4 = 9$.

$$z + 4 = 9$$



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

Subtraction Property of Equality



$$z = 5$$



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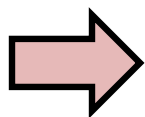
Using Multiplication Property of Equality

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

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

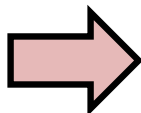
Example: Solve $\frac{y}{24} = 2$.

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



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

Multiplication Property of Equality



$$y = 48$$

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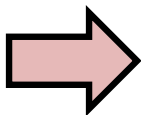
Using Division Property of Equality

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

$$ax = b$$

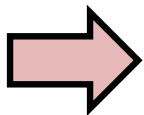
Example: Solve $3x = 24$.

$$3x = 24$$



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

Division Property of Equality



$$x = 8$$

