Algebra 1 Guided Notes: Solving Multi-Step Equations

Objective

You will be able to solve multi-step equations and represent financial and other everyday problems using Multistep equations

Solve equations in the form: **ax + b = c**

Steps to Solve

Remember Big picture Get the X (variable) by itself and Stay in Balance

1. **Undo addition or subtraction first**
2. **Undo multiplication or division second**
3. **Simplify each step**
4. **Check your answer**

Key Vocabulary

- **Inverse Operations**: Operations that "undo" each other
  - Addition ↔ Subtraction
  - Multiplication ↔ Division
- **Isolate the variable**: Get the variable alone on one side

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Example 1

Solve:

$$2x + 3 = 11$$

Step 1: Subtract 3 from both sides

$$2x = 8$$

Step 2: Divide both sides by 2

$$x = 4$$

Check:

$$2(4) + 3 = 11 \checkmark$$

Example 2

Solve:

$$\frac{x}{5} - 2 = 6$$

Step 1: Add 2 to both sides

$$\frac{x}{5} = 8$$

Step 2: Multiply both sides by 5

$$x = 40$$

Check:

40/5 - 2 = 6 ✔

Example 3 (Negative Coefficient)

Solve:

$$-\frac{x}{2} - 4 = 6$$

Step 1: Add 4 to both sides

$$-\frac{x}{2} = 10$$

Step 2: Multiply both sides by -2

$$x = -20$$

Check:

$$-\frac{(-20)}{2} - 4 = 6 \checkmark$$

Common Mistakes to Avoid

- Forgetting to do the same operation to **both sides**
- Missing a negative symbol
- Doing steps in the wrong order
- Not checking your answer