CLASS-7

LESSON-4 SIMPLE EQUATION

(This PDF Based on NCERT Book)

EQUATION(समीकरण)-An **equation** is a mathematical statement that asserts the **equality** of two expressions. It always contains an **equals sign (=)**.

SOLVING EQUATION(समीकरण का हल):

Step-by-Step, Simple-Word Guide

Let's use the puzzle: $2x+4=10$. We want to find the value of x.

1. **Get the x term alone.**
   - Right now, the x is stuck with a +4.
   - To get rid of +4, you do the **opposite**: subtract 4.
   - Do it on **both sides** to keep the scale balanced: $2x+4-4=10-4$ $2x=6$
2. **Get the x completely alone.**
   - Now, the x is being multiplied by 2 (2x means "2 times x").
   - To get rid of the "times 2," you do the **opposite**: divide by 2.
   - Do it on **both sides**: $22x=26$ $x=3$

So, the missing number is 3.

How to Check Your Answer

To be sure, put the number you found back into the original puzzle.

- Original puzzle: $2x+4=10$
- Put in 3 for x: $2(3)+4=10$
- Solve: $6+4=10$
- $10=10$

Since both sides are the same, your answer is correct!

APPLICATION OF SIMPLE EQUATION TO PRACTICAL SITUATION(व्यावहारिक स्थिति में सरल समीकरण का अनुप्रयोग):

Simple equations are used every day to figure out a missing number in a situation. You might not even realize you're using them! They help us solve quick puzzles related to money, time, and other measurements.

Everyday Examples

1. Budgeting and Shopping

Imagine you have a **fixed amount of money** and want to buy something.

- **Problem:** You have $50 and want to buy a video game that costs $30. How much money do you have left for snacks?
- **Simple Equation:** $30+x=50$
- **Solving:** To get x alone, you subtract 30 from both sides:
    - $x=50-30$
    - $x=20$
    - **Answer:** You have $20 left for snacks.

2. Calculating Travel Time

You need to know how long a trip will take.

- **Problem:** You need to drive 100 miles. If you drive at a steady speed of 50 miles per hour, how long will it take?
- **Simple Equation:** $50 \times t=100$
    - Here, t stands for time.
- **Solving:** To get t alone, you divide both sides by 50:
    - $t=50100$
    - $t=2$
    - **Answer:** It will take 2 hours.

3. Cooking and Recipes

You often need to change a recipe to make more or less.

- **Problem:** A recipe calls for 2 cups of flour to make 8 servings. How much flour do you need to make 4 servings?
- **Simple Equation:** $8x=2(4)$
    - Here, x is the amount of flour per serving. The equation shows that 8 servings multiplied by the flour per serving equals 2 cups. You want to find out how much flour is needed for 4 servings.
- **Solving:**
    - $8x=8$
    - $x=1$
    - This is not the final answer. The question is how much flour you need to make 4 servings. The amount needed is x multiplied by 4, so $1 \times 4=4$.
    - **Answer:** You need 1 cup of flour.

In all these cases, simple equations help us solve a puzzle by finding a missing piece of information.