Grade 7 Math Formulas

Linear Equations Formulas

Based on Maharashtra Board Syllabus (NEP 2025-26)

Note:

This document contains key concepts and methods for solving Linear Equations in Grade 7.

What is a Linear Equation?

- An equation is a mathematical statement that shows two expressions are equal using an equality sign (=).

- A linear equation is an equation where the highest power of the variable is 1. It can have one or more variables. In Grade 7, we typically focus on linear equations in one variable.

- General form of a linear equation in one variable: $ax + b = c$, where a, b, and c are constants and a is not equal to 0.

Solving Linear Equations (Balancing Method)

- The goal is to isolate the variable on one side of the equation.

- Rule 1: If you add a number to one side of the equation, you must add the same number to the other side.

- Rule 2: If you subtract a number from one side of the equation, you must subtract the same number from the other side.

- Rule 3: If you multiply one side of the equation by a non-zero number, you must multiply the other side by the same number.

- Rule 4: If you divide one side of the equation by a non-zero number, you must divide the other side by the same number.

- Use inverse operations to undo operations on the variable. (Addition undoes Subtraction, Multiplication undoes Division).

- Example: Solve $x + 5 = 12$. Subtract 5 from both sides: $x + 5 - 5 = 12 - 5 \to x = 7$.

- Example: Solve $y - 3 = 8$. Add 3 to both sides: $y - 3 + 3 = 8 + 3 \to y = 11$.

- Example: Solve $4z = 20$. Divide both sides by 4: $4z / 4 = 20 / 4 \to z = 5$.

- Example: Solve $w / 2 = 6$. Multiply both sides by 2: $(w / 2) * 2 = 6 * 2 \to w = 12$.

Solving Linear Equations (Transposition Method)

- Transposition means moving a term from one side of the equation to the other.

- When a term is transposed, its sign changes.
    - Addition becomes Subtraction.
    - Subtraction becomes Addition.
    - Multiplication becomes Division.
    - Division becomes Multiplication.

- Example: Solve $x + 5 = 12$. Transpose +5 to the right side: $x = 12 - 5 \to x = 7$.

- Example: Solve $y - 3 = 8$. Transpose -3 to the right side: $y = 8 + 3 \to y = 11$.

- Example: Solve $4z = 20$. Transpose 4 (which is multiplying) to the right side by dividing: $z = 20 / 4 \to z = 5$.

- Example: Solve $w / 2 = 6$. Transpose 2 (which is dividing) to the right side by multiplying: $w = 6 * 2 \to w = 12$.

End of Formulas - Linear Equations Formulas