

Grade 7 Math Formulas

Algebraic Expressions Formulas

Based on Maharashtra Board Syllabus (NEP 2025-26)

Note:

This document contains key concepts and operations related to Algebraic Expressions for Grade 7.

Basic Concepts (Revision from Grade 6)

- Variable: A letter representing an unknown value (e.g., x , y).
- Constant: A fixed numerical value (e.g., 5, -3).
- Term: A single number, a single variable, or a product of numbers and variables (e.g., 7, y , $3x$, $-4ab$).
- Coefficient: The numerical factor of a term (e.g., in $5x$, the coefficient is 5).
- Algebraic Expression: A combination of terms using addition and subtraction (e.g., $2x + 5$, $3a - 4b$).
- Like Terms: Terms that have the same variables raised to the same powers (e.g., $3x$ and $5x$, $2y^2$ and $-7y^2$).
- Unlike Terms: Terms that have different variables or the same variables raised to different powers (e.g., $3x$ and $5y$, $2x$ and $2x^2$).

Operations on Algebraic Expressions

- Addition and Subtraction: Only like terms can be added or subtracted. Add or subtract their coefficients and keep the variables the same. Example: $3x + 5x = (3+5)x = 8x$. Example: $7y - 2y = (7-2)y = 5y$. Example: $(2x + 3y) + (4x - y) = (2x + 4x) + (3y - y) = 6x + 2y$.
- Multiplication of Monomials: Multiply the coefficients and multiply the variables (using exponent rules if applicable). Example: $(3x)$ multiplied by $(5y) = (3 \cdot 5) \cdot (x \cdot y) = 15xy$. Example: $(2a^2)$ multiplied by $(4a^3) = (2 \cdot 4) \cdot (a^2 \cdot a^3) = 8a^{(2+3)} = 8a^5$.
- Multiplying a Monomial by a Polynomial: Use the distributive property. Multiply the monomial by each term inside the polynomial. Example: $2x(x + 3) = (2x \cdot x) + (2x \cdot 3) = 2x^2 + 6x$.
- Multiplying a Binomial by a Binomial: Use the distributive property (often remembered as FOIL - First, Outer, Inner, Last). Example: $(a + b)(c + d) = a(c + d) + b(c + d) = ac + ad + bc + bd$.

Evaluating Algebraic Expressions

- To evaluate an algebraic expression, substitute the given numerical values for the variables and then perform the operations using the order of operations (BODMAS/PEMDAS).
- Example: Evaluate $2x + 5$ when $x = 3$. Substitute $x=3$: $2(3) + 5 = 6 + 5 = 11$.
- Example: Evaluate $a^2 - b$ when $a = 4$ and $b = 2$. Substitute $a=4$, $b=2$: $4^2 - 2 = 16 - 2 = 14$.

End of Formulas - Algebraic Expressions Formulas

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