Grade 6 Math Formulas

Complete Formula Sheet

Based on Maharashtra Board Syllabus (NEP 2025-26)

Note:

This document contains a collection of key mathematical formulas and concepts typically covered in Grade 6.

Integers Formulas

Integers

- Integers include positive numbers, negative numbers, and zero (... , -3, -2, -1, 0, 1, 2, 3, ...).
- Representing Integers on a Number Line: Positive numbers are to the right of 0, negative numbers are to the left of 0.
- Comparing Integers: On a number line, the number to the right is always greater than the number to the left.
- Absolute Value: The distance of an integer from zero on the number line, always positive. Example: Absolute value of 5 is 5; Absolute value of -5 is 5.

Operations on Integers

- Addition:
  - Same signs: Add the absolute values and keep the common sign. (e.g., 5 + 3 = 8, -5 + (-3) = -8)
  - Different signs: Subtract the smaller absolute value from the larger absolute value. The sign is the sign of the number with the larger absolute value. (e.g., 5 + (-3) = 2, -5 + 3 = -2)
- Subtraction: Subtracting an integer is the same as adding its additive inverse (opposite). Example: a - b = a + (-b). (e.g., 5 - 3 = 5 + (-3) = 2, 5 - (-3) = 5 + 3 = 8)
- Multiplication:
  - Positive multiplied by Positive = Positive
  - Negative multiplied by Negative = Positive
  - Positive multiplied by Negative = Negative
  - Negative multiplied by Positive = Negative
- Division:
  - Positive divided by Positive = Positive
  - Negative divided by Negative = Positive
  - Positive divided by Negative = Negative
  - Negative divided by Positive = Negative

Order of Operations (BODMAS / PEMDAS)

- B/P: Brackets / Parentheses
- O/E: Orders / Exponents (Powers, Square Roots)
- DM: Division and Multiplication (from left to right)
- AS: Addition and Subtraction (from left to right)

Algebra Basics Formulas

Basic Concepts

- Variable: A letter or symbol that represents an unknown number (e.g., x, y, a).
- Constant: A value that does not change (e.g., 5, -2, 1/2).
- Term: A single number, a single variable, or a product of numbers and variables (e.g., 7, y, 3x, -4ab).
- Coefficient: The numerical part of a term that contains a variable (e.g., in 5x, the coefficient is 5; in -y, the coefficient is -1).
- Algebraic Expression: A combination of terms connected by addition or subtraction signs (e.g., 2x + 5, 3a - 4b + 7).

Writing Algebraic Expressions

- "Sum of a and b" can be written as a + b.
- "Difference of x and y" can be written as x - y (if x is first) or y - x (if y is first).
- "Product of p and q" can be written as p multiplied by q or pq.
- "Quotient of m divided by n" can be written as m / n or m/n.
- "Twice a number x" can be written as 2x.
- "5 more than a number y" can be written as y + 5.
- "3 less than a number z" can be written as z - 3.

Simple Equations

- Equation: A mathematical statement that two expressions are equal, containing an equality sign (=) (e.g., x + 2 = 7).

- Solving an Equation: Finding the value of the variable that makes the equation true.
- Inverse Operations:
  - Addition is the inverse of Subtraction.
  - Multiplication is the inverse of Division.
- To solve an equation, perform the inverse operation on both sides to isolate the variable.
- Example: To solve x + 2 = 7, subtract 2 from both sides: x + 2 - 2 = 7 - 2 which simplifies to x = 5.
- Example: To solve 3y = 12, divide both sides by 3: 3y / 3 = 12 / 3 which simplifies to y = 4.

Geometry Formulas

Types of Angles

- Acute Angle: Measures between 0 and 90 degrees.
- Right Angle: Measures exactly 90 degrees.
- Obtuse Angle: Measures between 90 and 180 degrees.
- Straight Angle: Measures exactly 180 degrees.
- Reflex Angle: Measures between 180 and 360 degrees.
- Complete Angle: Measures exactly 360 degrees.
- Complementary Angles: Two angles whose sum is 90 degrees.
- Supplementary Angles: Two angles whose sum is 180 degrees.

Angles and Lines

- Vertically Opposite Angles: When two lines intersect, the angles opposite each other at the intersection point are equal.
- Angles on a Straight Line: The sum of angles on a straight line is 180 degrees.
- Angles around a Point: The sum of angles around a point is 360 degrees.

Triangles

- Sum of angles in a Triangle = 180 degrees.
- Types of Triangles (based on sides): Equilateral (all sides equal), Isosceles (two sides equal), Scalene (no sides equal).
- Types of Triangles (based on angles): Acute-angled (all angles acute), Right-angled (one right angle), Obtuse-angled (one obtuse angle).

Quadrilaterals

- Sum of angles in a Quadrilateral = 360 degrees.
- Properties of a Square: 4 equal sides, 4 right angles, opposite sides parallel.
- Properties of a Rectangle: Opposite sides equal and parallel, 4 right angles.
- Properties of a Rhombus: 4 equal sides, opposite angles equal, opposite sides parallel.
- Properties of a Parallelogram: Opposite sides equal and parallel, opposite angles equal, consecutive angles supplementary.
- Properties of a Trapezium: One pair of opposite sides is parallel.

End of Complete Formula Sheet - Grade 6