Numbers

1. Prime Numbers: Numbers that are divisible only by 1 and themselves.
    - Examples: 2, 3, 5, 7, 11, 13, 17, 19, 23, ...
2. Composite Numbers: Numbers that have more than two factors.
    - Examples: 4, 6, 8, 9, 10, 12, 14, 15, 16, ...
3. Factors: Numbers that divide evenly into another number.
    - Examples: Factors of 12 are 1, 2, 3, 4, 6, 12.
4. Multiples: Numbers that are obtained by multiplying a given number by any integer.
    - Examples: Multiples of 5 are 5, 10, 15, 20, ...
5. LCM (Least Common Multiple): The smallest multiple that is divisible by two or more numbers.
    - Example: LCM of 4 and 6 is 12.
6. GCD (Greatest Common Divisor): The largest number that divides two or more numbers without leaving a remainder.
    - Example: GCD of 12 and 18 is 6.
7. Squares: The product of a number multiplied by itself.
    - Examples: 1^2 = 1, 2^2 = 4, 3^2 = 9, 4^2 = 16, ...
8. Cubes: The product of a number multiplied by itself twice.
    - Examples: 1^3 = 1, 2^3 = 8, 3^3 = 27, 4^3 = 64, ...
9. Divisibility Rules:
    - Divisible by 2 if the last digit is even (0, 2, 4, 6, 8).
    - Divisible by 3 if the sum of digits is divisible by 3.
    - Divisible by 4 if the last two digits are divisible by 4.
    - Divisible by 5 if the last digit is 0 or 5.
    - Divisible by 6 if it is divisible by both 2 and 3.
    - Divisible by 9 if the sum of digits is divisible by 9.
10. Arithmetic Progression (AP): A sequence of numbers where the difference between consecutive terms is constant.
    - General form: a, a + d, a + 2d, a + 3d, ...
    - n-th term: a + (n - 1) * d

- Sum of n terms: n/2 * (2a + (n - 1) * d)