Facts and Formulae

- 0 is neither a prime number nor a composite number.
- 0 is neither a negative number nor a positive number.
- 1 is the only natural number that is neither a prime number nor a composite number.
- 1 is the smallest natural number.
- -1 is the largest negative integer.
- 2 is the only even prime number.
- The unit's digit of any perfect square number must be 0,1,4, 5, 6, or 9.
- The unit's digit of the square of a number whose unit's digit is 0 will be 0.
- The unit's digit of the square of a number whose unit's digit is 1 or 9 will be 1.
- The unit's digit of the square of a number whose unit's digit is 2 or 8 will be 4.
- The unit's digit of the square of a number whose unit's digit is 3 or 7 will be 9.
- The unit's digit of the square of a number whose unit's digit is 4 or 6 will be 6.
- Sum of numbers from

  1 to n = $\frac{n(n+1)}{2}$

  Example: Sum of the first 5 natural numbers = $\frac{5(5+1)}{2}$= 15
- Number of odd numbers from

  1 to n = $\frac{(Last\ odd\ number\ +1)}{2}$

  Example: Number of odd numbers from 1 to 99 = $\frac{99+1}{2} = 50$
- Sum of odd numbers from

  1 to n = (Number of odd numbers)^2

  Example: Number of odd numbers from 1 to 99 = $\frac{99+1}{2} = 50$

  ∴ Sum of odd numbers from 1 to 99 = 50^2 = 2500
- Number of even numbers from

  1 to n = $\frac{Last\ even\ number}{2}$

  Example: Number of even numbers from 1 to 50 = $\frac{50}{2} = 25$
- Sum of even numbers from 1 to n = Number of even numbers × (Number of even numbers + 1)

  Example: Number of even numbers from 1 to 50 = $\frac{50}{2} = 25$

  ∴ Sum of even numbers from 1 to 50 = $\frac{50}{2} = 25(25 + 1) = 650$

Properties of Numbers

- The product of two consecutive numbers is divisible by 2. For example, 4 × 5 = 20, which is divisible by 2.
- The product of three consecutive numbers is divisible by 6. For example, 3 × 4 × 5 = 60, which is divisible by 6.
- The product of four consecutive numbers is divisible by 24. For example, 3 × 4 × 5 × 6 = 360, which is divisible by 24.
- The product of five consecutive numbers is divisible by 120. For example, 3 × 4 × 5 × 6 × 7 = 2520, which is divisible by 120.
- The product of 'n' consecutive numbers is divisible by 1 × 2 × 3 × …… × n. For example, the product of ten consecutive numbers will divisible by 1 × 2 × 3 × 4 × 5 × 6 × 7 × 8 × 9 × 10.
- The difference between the squares of two consecutive numbers is always equal to the sum of both numbers. For example, $16^2 - 15^2 = 16 + 15 = 31$
- The difference between the square of two consecutive odd numbers is always a multiple of 8. For example, $17^2 - 15^2 = 289 - 225 = 64$
- The sum of the first 'n' odd numbers is the square of 'n'. For example, the sum of the first five odd numbers = $1 + 3 + 5 + 7 + 9 = 5^2 = 25$