INTRODUCTION

The number system is a way of representing and expressing quantities or values. It provides a systematic and organized structure for counting, measuring, and performing mathematical operations.

Natural Numbers

- Natural numbers, also known as counting numbers or positive integers, are the numbers used for counting and ordering. The set of natural numbers includes all positive whole numbers from 1 onwards, without any fractions, decimals, or negative numbers. In mathematical notation, natural numbers are represented by the symbol "N" or "ℕ."

- The sequence of natural numbers starts with 1 and continues indefinitely: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and so on. Natural numbers can be used for various purposes, such as representing quantities, positions, or identifying objects in a set.

- **Even Numbers**: Even numbers are integers that are divisible by 2 without leaving a remainder. In other words, an even number is any number that can be expressed in the form 2n, where n is an integer. Some examples of even numbers include:

  2, 4, 6, 8, 10, 12, 14, 16, 18, 20, ...

- **Odd Numbers** : Odd numbers are integers that cannot be divided evenly by 2, resulting in a remainder of 1. In other words, odd numbers are not multiples of 2. The sequence of odd numbers begins with 1 and continues indefinitely by adding 2 to the previous number.
- Here are some examples of odd numbers: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, and so on.

- **Integers** : Integers are whole numbers that do not include any fractions or decimal points. They can be positive, negative, or zero. In mathematics, integers are represented by the symbol "Z." Examples of integers include -3, -2, -1, 0, 1, 2, 3, and so on.

- **Prime Numbers** : Prime numbers are a fundamental concept in number theory. A prime number is a natural number greater than 1 that has no positive divisors other than 1 and itself. In other words, it cannot be evenly divided by any other numbers except 1 and the number itself.

  For example, the first few prime numbers are 2, 3, 5, 7, 11, 13, 17, and so on.

- **Real Numbers** : Real numbers are a fundamental concept in mathematics that includes all rational and irrational numbers. The real number system consists of the set of numbers that can be expressed on the number line, extending infinitely in both the positive and negative directions.

- Rational and irrational numbers are both types of real numbers, but they differ in their properties and characteristics.
- **Rational Numbers**: A rational number is any number that can be expressed as the quotient or fraction of two integers, where the denominator is not zero. In other words, a rational number can be written in the form p/q, where p and q are integers and q is not equal to zero. Some common examples of rational numbers include 1/2, -3/4, 5, and -2.
- **Irrational Numbers**: An irrational number is a number that cannot be expressed as a fraction or quotient of two integers. These numbers cannot be represented by terminating or repeating decimals. Instead, they have an infinite number of non-repeating decimal places.

  Some famous examples of irrational numbers include $\sqrt{2}$ (the square root of 2), π (pi), and e (Euler's number). The decimal representations of these numbers go on forever without repeating.

- **HCF**

  HCF stands for Highest Common Factor, also known as the Greatest Common Divisor (GCD). It is a mathematical term used to refer to the largest positive integer that divides two or more numbers without leaving a remainder.

  For example, if we have two numbers, 12 and 18, their factors are as follows:

  Factors of 12: 1, 2, 3, 4, 6, 12

  Factors of 18: 1, 2, 3, 6, 9, 18

  In this case, the common factors of 12 and 18 are 1, 2, 3, and 6. The largest number among these common factors is 6, so the HCF or GCD of 12 and 18 is 6.

LCM

LCM stands for Lowest Common Multiple. It is a mathematical term used to refer to the smallest positive integer that is divisible by two or more numbers without leaving a remainder.

For example, let's consider the numbers 4 and 6. To find the LCM, we can list the multiples of each number:

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, ... Multiples of 6: 6, 12, 18, 24, 30, 36, 42, ...

From the lists above, we can see that the first common multiple of 4 and 6 is 12. Therefore, the LCM of 4 and 6 is 12.

Thank You

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