CH 3 – PLAYING WITH NUMBERS

POINTS TO REMEMBER:

Properties of factors

- ➢ 1 is a factor of every number.
- ➢ Every number is a factor of itself.
- ➢ Every factor of a number is an exact divisor of that number.
- ➢ Every factor is less than or equal to the given number.
- ➢ Number of factors of a given number is finite.

Properties of multiples

- ➢ Every multiple of a number is greater than or equal to that number.
- ➢ Number of multiples of a given number is infinite.
- ➢ Every number is a multiple of itself.

Perfect Numbers

A number for which sum of all its factors is equal to twice the number is called a perfect number. The numbers 6 and 28 are perfect numbers

1 + 2 + 4 + 7 + 14 + 28 = 56 = 2 × 28.

The sum of the factors of 28 is equal to twice the number 28.

Prime numbers.

Numbers other than 1 whose only factors are 1 and the number itself are called **Prime numbers**.

Example:2, 3, 5, 7, 11 ,13

Composite Numbers

Numbers having more than two factors are called **Composite numbers.**

Example: 4, 6, 8 etc.

1 is neither a prime nor a composite number

Twin primes.

Two prime numbers whose difference is 2 are called twin primes.

Example: (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43)

Divisibility Rule for 2

Any even number or number whose last digit is an even number i.e. 2,4,6,8 including 0 is always completely divisible by 2.

Divisibility Rule for 3

If the sum of the digits is a multiple of 3, then the number is divisible by 3.

Divisibility Rule for 4

If the last two digits of a number are divisible by4, then that number is a multiple of 4 and is divisible by 4 completely.

Divisibility Rule for 5

A number which has either 0 or 5 in its once place is divisible by 5.

Divisibility Rule for 6

If a number is divisible by 2 and 3 both then it is divisible by 6 also.

Divisibility Rule for 8

If the last three digits of a number are divisible by 8, then the number is completely divisible by 8.

Divisibility Rule for 9

If the sum of digits of the number is divisible by 9, then the number itself is divisible by 9.

Divisibility Rule for 10

Divisibility rule for 10 states that any number whose last digit is 0, is divisible by 10.

Divisibility Rule for 11

If the difference of the sum of alternative digits of a number is divisible by 11 then that number is divisible by 11 completely.

Co-prime numbers.

Two numbers having only 1 as a common factor are called co-prime numbers.

Prime Factorisation

When a number is expressed as a product of prime numbers is called prime factorisation.

The Highest Common Factor (HCF)

The Highest Common Factor (HCF) of two or more given numbers is the highest (or greatest) of their common factors. It is also known as the Greatest Common Divisor (GCD).

Least common multiple:

The least common multiple of two numbers is the **"smallest non-zero common number"** which is a multiple of both the numbers.