Factors

A **factor** of a number is a number that divides it exactly without leaving any remainder. In other words, if you divide a number by one of its factors, the remainder is 0. For example, the factors of 6 are 1, 2, 3, and 6 because 6 can be divided by these numbers without leaving any remainder.

How to Find Factors?

To find the factors of a number:

- i. Start with 1 and the number itself (as every number is divisible by 1 and itself).
- ii. Try dividing the number by all the numbers from 1 up to the number itself.

iii. If the division results in a whole number (remainder = 0), then the number you divided by is a factor of the given number.

For example, to find the factors of 12:

 $12 \div 1 = 12$ $12 \div 2 = 6$ $12 \div 3 = 4$ $12 \div 4 = 3$ $12 \div 6 = 2$ $12 \div 12 = 1$ So, the factors of 12 are 1, 2, 3, 4, 6, 12.

Properties of Factors

Factors are always less than or equal to the number: The largest factor of any number is the number itself.

1 and the number are always factors: Every number is divisible by 1 and itself.

Factors come in pairs: For example, the factors of 12 come in pairs: (1, 12), (2, 6), and (3, 4).

A number can have more than two factors: Numbers that have only two factors (1 and the number itself) are called prime numbers.

Example 1

Question: Find the factors of 18.

Solution: To find the factors of 18, divide it by all numbers from 1 to 18:

 $18 \div 1 = 18$ $18 \div 2 = 9$ $18 \div 3 = 6$ $18 \div 6 = 3$ $18 \div 9 = 2$

18 ÷ 18 = 1

So, the factors of 18 are 1, 2, 3, 6, 9, 18.

Answer: The factors of 18 are 1, 2, 3, 6, 9, 18.

Example 2

Question: Find the factors of 24.

Solution: To find the factors of 24, divide it by all numbers from 1 to 24:

 $24 \div 1 = 24$ $24 \div 2 = 12$ $24 \div 3 = 8$ $24 \div 4 = 6$ $24 \div 6 = 4$ $24 \div 8 = 3$ $24 \div 12 = 2$ $24 \div 24 = 1$ So, the factors of 24 are 1, 2, 3, 4, 6, 8, 12, 24.

Answer: The factors of 24 are 1, 2, 3, 4, 6, 8, 12, 24.

Summary Points

- Factors are numbers that divide a number exactly without leaving a remainder.
- Every number is divisible by 1 and itself.
- Factors come in pairs, and a number can have more than two factors, except for prime numbers.
- Understanding factors helps in simplifying fractions and solving problems in mathematics.