

(*) Factor:- A factor of a number is an exact divisor of that number.

Example: Let us divide number 6 exactly by the numbers less than 6.

$$\begin{array}{r} 6 \\ 1 \overline{) 6} \\ \underline{6} \\ 0 \end{array}$$

$$\begin{array}{r} 3 \\ 2 \overline{) 6} \\ \underline{6} \\ 0 \end{array}$$

$$\begin{array}{r} 2 \\ 3 \overline{) 6} \\ \underline{6} \\ 0 \end{array}$$

$$\begin{array}{r} 1 \\ 4 \overline{) 6} \\ \underline{4} \\ 2 \end{array}$$

$$\begin{array}{r} 1 \\ 5 \overline{) 6} \\ \underline{5} \\ 1 \end{array}$$

$$\begin{array}{r} 1 \\ 6 \overline{) 6} \\ \underline{6} \\ 0 \end{array}$$

The numbers 1, 2, 3 and 6 divide exactly 6. So these are called factors of the number 6.

The numbers 4 & 5 do not divide the number 6 exactly. So they are not factors of 6.

Example 2: Factors of 12 are 1, 2, 3, 4, 6, 12.

Example 3: Factors of 18 are 1, 2, 3, 6, 9 and 18.

⊛ Multiples:- A number is a multiple of its factors.

Example: 12 is a multiple of 1, 2, 3, 4, 6, & 12.

$1 \times 12 = 12,$	$2 \times 6 = 12,$
$3 \times 4 = 12,$	$4 \times 3 = 12$
$6 \times 2 = 12,$	$12 \times 1 = 12.$

Example 2:- multiples of 3 are: 3, 6, 9, 12, 15, 18, 21, etc. ...

Example 3:- multiples of 8 are: 8, 16, 24, 32, 40, ... etc.

⊛ Every number is multiple of itself:

Examples:-

a) 1 is multiple of 1 $\Rightarrow 1 \times 1 = 1$

b) 2 is multiple of 2 $\Rightarrow 2 \times 1 = 2$

c) 18 is multiple of 18 $\Rightarrow 18 \times 1 = 18$

⊛ Every number is multiple of 1.

Examples:-

a) 1 is multiple of 1 $\Rightarrow 1 \times 1 = 1$

b) 3 is multiple of 3 $\Rightarrow 1 \times 3 = 3$

c) 9 is multiple of 9 $\Rightarrow 1 \times 9 = 9.$

(*) 1 is a factor of every number:

Examples:

$$6 = 1 \times 6,$$

$$12 = 1 \times 12$$

$$28 = 1 \times 28.$$

(*) Every number is a factor of itself:

Examples:

$$7 = 7 \times 1$$

$$13 = 13 \times 1$$

$$20 = 20 \times 1.$$

(*) Every factor of a given number is less than or equal to the number.

Example:- Factors of 12 are 1, 2, 3, 4, 6 & 12.

(*) Every multiple of a number is greater than or equal to that number.

Example:- Multiples of 7 are 7, 14, 21, 28, 35, 42, ...

perfect number:

If the sum of all the factors of a given number is equal to twice the number, then the number is called a perfect number.

Factors of 6 are, 1, 2, 3 and 6.

Sum of all factors of 6 is $1+2+3+6=12$.

$2 \times 6 = 12$. So 6 is the first perfect -
- number.