

Factors and Multiplies

TEST OF DIVISIBILITY

- Number divisible 2 are called even numbers. They have 0,2,6,8 in units place.
- A number divisible by 3, if the sum of all digits is divisible by 3.
 - Example: $1563 = 1+5+3+6=15$. [$3 \times 5=15$]
- A number divisible by 4, if the number formed by its ones and tens in tens place is divisible by 4 are 00.
Example: 1688 [$88 \div 4=22$]
- A number is divisible by 5 if its units place is either 0 or 5. Eg: 790
- A number is divisible by 6 only if its divisible 2 or 3
- A number is divisible by 8 if the number formed by last three digit is either 000 or 8.
- A number is divisible by 9 if sum of all its digit is divisible by 9
- A number is divisible by 10 if its ones digit is 0
- A number is divisible by 11 if the difference of all sum its alternate digits is either 0 or multiple of 11.
- A number is divisible by 12 if it is divisible by 3 as well as 4.
- A number is divisible by 15 if its divisible by 3 as well 5.

FACTORS

Activity. You have 2 toffees. You have to arrange them in group of equal numbers.

What you can do is: arrange these 2 toffees in 1 group of 2 toffees;

Or arrange them in 2 groups of 1 toffee each.

Hence, $2=1 \times 2$

$2=1 \times 2$

Thus, $2=1 \times 2=2 \times 1$

- From the above discussion, in a division when there is no remainder, the quotient re factors of the dividend.
- 1 is a factor of every number.
- A number is a factor of itself.
- 1 is the smallest factor o every number.

PERFECT NUMBER: A perfect number is a number whose sum of all factors is twice the number.

LISTING FACTORS OF GIVEN NUMERS

- Unique number
- Prime number
- Prime
- Composite number
- Prime number

- All the numbers with only two factors are called prime numbers.
- All the numbers with more than two factors are called composite numbers.

MULTIPLES

Multiples is a number that contains another number for exact number of times.

Example: 10 is a multiple of 2

12 is a multiple of 3

15 is a multiple of 5

Observation: Every number is multiple of 1.

Multiples are infinite.

Every number is a multiple of itself.

To find multiples of a number in an ascending order we multiply it by 1,2,3,4, etc.

Exploring Multiplies to learn prime factorization of composite numbers.

All natural numbers are classified in to prime and composite.

- A number which has only 2 different factors, 1 and the number itself is a prime number. Eg: 2,3,5,7,11,13
- A natural number which has more than two different factors is a composite number. Eg: 4, 6, and 8,9,10.
- 1 is neither a prime number nor a composite number because it only one factor. It is a special natural number.

The process of decomposition of a composite number into prime factors is known as factorization.

For example- $30=2 \times 3 \times 5$

Every composite number has one and only one prime factorization.

MAGIC PRIME NUMBERS: 2, 3, 7.

Example:

A) 252

2	252
2	126
3	63
3	21
	7

Example:

B) 1024

2	1024
2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
	2

Prime factorization of composite number

For example- $12 = 2 \times 2 \times 3$

