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Tender Heart High School ; Sec 33B, Chandigarh

Class - V

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Subject - Mathematics

Teacher - Ms. Sushma

Chapter - 6
Multiples and Factors

When we multiply two or more numbers, the product is a multiple of those numbers.

The numbers being multiplied are called the factors of the product.

The multiples of even numbers are always even.
The multiples of odd numbers can be either odd or even.

A factor of a number divides the number without leaving a remainder.

Exercise 6.1

A. Find the first five multiples of the following.

(i) 9

$$9 \times 1 = 9$$

$$9 \times 2 = 18$$

$$9 \times 3 = 27$$

$$9 \times 4 = 36$$

$$9 \times 5 = 45$$

(ii) 11

$$11 \times 1 = 11$$

$$11 \times 2 = 22$$

$$11 \times 3 = 33$$

$$11 \times 4 = 44$$

$$11 \times 5 = 55$$

(iii) 13

$$13 \times 1 = 13$$

$$13 \times 2 = 26$$

$$13 \times 3 = 39$$

$$13 \times 4 = 52$$

$$13 \times 5 = 65$$

(iv) 21

$$21 \times 1 = 21$$

$$21 \times 2 = 42$$

$$21 \times 3 = 63$$

$$21 \times 4 = 84$$

$$21 \times 5 = 105$$

B List all the factors of each of the following.

(i) $18 = 1, 2, 3, 6, 9, 18$

(ii) $28 = 1, 2, 4, 7, 14, 28$

(iii) $35 = 1, 5, 7, 35$

C. Check if the first number is a multiple of the second number.

(i) 48, 4

Sol: The number 48 can be written as:-

$$48 = 4 \times 12$$

$\therefore 48$ is the multiple of 4.

$$\begin{array}{r} 12 \\ 4 \overline{) 48} \\ \underline{- 40} \\ 08 \\ \underline{- 08} \\ 0 \end{array}$$

(ii) 34, 7

The number 34 can be written as:-

$$34 = 2 \times 17$$

So, clearly, 34 is not a multiple of 7

$$\begin{array}{r} 4 \\ 7 \overline{) 34} \\ \underline{- 28} \\ 6 \end{array}$$

D. Check if the first number is a factor of the second number.

1. 1, 15

'1' is a factor of all the numbers.
So, 1 is a factor of 15.

2. 5, 43

$$\begin{array}{r} 8 \\ 5 \overline{)43} \end{array}$$

Here, the remainder is 3, 43 is not divisible by 5 completely.
So, 5 is not a factor of 43.

3. 9, 72

$$\begin{array}{r} 8 \\ 9 \overline{)72} \end{array}$$

On dividing 72 by 9 the remainder is 0.
i.e. 72 is completely divisible by 9.
Hence 9 is a factor of 72.

Prime numbers: →

The numbers with only two factors, that is, 1 and the number itself are called prime numbers.

eg:- 2, 3, 5, 7, ...

Composite numbers: →

The numbers with three or more factors are called composite numbers.

eg:- 4, 6, 8, 9, ...

Twin Primes:-

A pair of prime numbers that have only one composite number between them is called twin primes. eg:- (3, 5), (5, 7), (11, 13)...

Co-primes or Co-prime numbers: →

Two numbers that have only 1 as a common factor are called co-prime numbers. or co-primes.
eg:- (1, 17) are co-primes.

Exercise 6.2

A. Find the prime factors of each number.

1.

$$\begin{array}{r|l} 2 & 42 \\ \hline 3 & 21 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$42 = 2 \times 3 \times 7$$

2.

$$\begin{array}{r|l} 2 & 52 \\ \hline 2 & 26 \\ \hline 13 & 13 \\ \hline & 1 \end{array}$$

$$52 = 2 \times 2 \times 13$$

3.

$$\begin{array}{r|l} 3 & 63 \\ \hline 3 & 21 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$63 = 3 \times 3 \times 7$$

4.

$$\begin{array}{r|l} 2 & 76 \\ \hline 2 & 38 \\ \hline 19 & 19 \\ \hline & 1 \end{array}$$

$$76 = 2 \times 2 \times 19$$

B. Complete the following using the factor tree method.

1.

$$\begin{array}{c} 56 \\ \wedge \\ 2 \times 28 \\ \wedge \\ 2 \times 14 \\ \wedge \\ 2 \times 7 \end{array}$$

2.

$$\begin{array}{c} 96 \\ \wedge \\ 2 \times 48 \\ \wedge \\ 2 \times 24 \\ \wedge \\ 2 \times 12 \\ \wedge \\ 2 \times 6 \\ \wedge \\ 2 \times 3 \end{array}$$

3.

$$\begin{array}{c} 144 \\ \wedge \\ 2 \times 72 \\ \wedge \\ 2 \times 36 \\ \wedge \\ 2 \times 18 \\ \wedge \\ 2 \times 9 \\ \wedge \\ 3 \times 3 \end{array}$$

HCF $\rightarrow$ Highest Common Factor (HCF) $\rightarrow$

The highest common factor (HCF) of two or more numbers is the greatest of their common factors.

HCF is also known as the greatest common divisor (GCD)

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Exercise 6.3

A. Find the HCF by listing all the factors.

1. 15, 30

Factors of 15 = 1, 3, 5, 15

Factors of 30 = 1, 2, 3, 5, 6, 15, 10, 30

Common factors = 1, 3, 5, 15

Highest Common factor = 15

2. 64, 74, 84

Factors of 64 = 1, 2, 4, 8, 16, 32, 64

Factors of 74 = 1, 2, 37, 74

Factors of 84 = 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84

Common factors = 1, 2,

Highest Common factor = 2

3. 36, 48, 96

Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36

Factors of 48 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

Factors of 96 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96

Common factors = 1, 2, 3, 4, 6, 12,

Highest Common factor = 12

4. 45, 65, 75

Factors of 45 = 1, 3, 5, 9, 15, 45

Factors of 65 = 1, 5, 13, 65

Factors of 75 = 1, 3, 5, 15, 25, 75

Common factors = 1, 3, 5,

HCF = 5