CHAPTER- 6

Multiples and Factors

You have learnt how to multiply by making use of tables. We shall talk more about the values you get when you make use of tables and multiply the number respectively by 1,2,3,...



Now we will do the same with 3.



On multiplying 3 by 1,2,3,4.... what numbers do we get? Write in the space given below:

.....

The numbers you have written here are all multiples of 3. On dividing these numbers by 3 they get completely divided without a remainder.

By multiplying 2 with 1,2,3.... respectively we get 2,4,6,.... There are known as multiples of 2.

When we divide these numbers by 2

They get completely divided without a remainder.





Look at the picture and answer the questions:

- The deer will jump on which rocks to reach the other side?
- The rabbit will jump on which rocks to reach the other side? Now multiply the numbers given below by 1,2,3,.... and find their multiples
- Multiples of 4Multiples of 5Multiples of 9

Look at the numbers given below and answer the given questions:



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•	Which of them are multiple of 2?
•	Can you write four multiples of 2 which are not given?
•	Which of them are multiples of 4?
•	Can you write three multiples of 4 which are not given?
•	Besides 2 and 4 which other numbers multiples are given here?
•	Out of the given numbers which are not the multiples of 2?
•	Which are the given numbers which are not the multiples of 5?
•	List the numbers which are multiples of 2 and 3 both.

The biggest multiple



Write as many multiples of 3 as you can.

..... Which of these is the biggest multiple? Can there be a bigger multiple than this?



Try to identify the multiples of 2 and 3 form the table given below and colour the space given below as shown.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Multiples of 2																	
Multiples of 3																	

Observe the table and write:

- The multiples of 3
- The multiples of 2
 Are there some numbers which are multiples of both 2 and 3? Note it down.

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These numbers are the common multiples of 2 and 3 both.

Which of these is the smallest common multiple?

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This the least common multiple of 2 and 3.

Hence the least common multiple means it is that number which is a multiple both of the given numbers and the smallest of all the common multiples.

Let us find the least common multiple of 4 and 5:

The multiples of 4 : 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, The multiples of 5 : 5, 10, 15, 20, 25, 30, 35, 40, 45, The common multiples of 4 and 5 are 20, 40, and the smallest common multiple = 20

Hence 20 is the smallest number which is divisible completely by both 4 and 5

Now find the least common multiple of the numbers given below:

Example 1:	2 and 5						
Solution :	Multiples of 2						
	Multiples of 5						
	Common multiples of 2 and 5						
	The smallest common multiple						
Try these:	Hence least common multiple of 2 and 5 is						
(1) 8 and 12							
Solution :							

Multiples and factors

(2) Can you find the least common multiple of 3 numbers? Solution : To find this let us take 3 numbers 6, 10 and 15 Multiples of 6 Multiples of 10

Multiples of 15	
Common multiples of 6,10,15	
The smallest common multiple	

Hence the least common multiple of 6,10,15 is

Now take two or three numbers and find the LCM and show it to your teacher.

Factors

How can you write 12 as a product of two different numbers?

	1×12	12
	2×6	12
	3×4	12
$\bullet \bullet $	4×3	12
	6×2	12
	12×1	12

Can you write the number which completely divide 12 and leave no remainders?

.....

All these numbers are factors of 12.

Those number are known as factors of a given number if they completely divide the given number.

Find the factors of the numbers given below:

- Factors of 6 are 1, 2, 3, 6
- Factors of 8 are
- Factors of 12 are
- Factors of 15 are

You can also determine factors by dividing the given number respectively by 1,2,3.... and identifying those which divides the given numbers completely.

Give reasons to say whether the given statements are true or false.

Example 2:

3 is a factor of 8 False Because 3 does not divide 8 completely and gives a remainder 2 on dividing. 1. 6 is a factor of 36 2. 8 is a factor of 8 5 is a factor of 12 3. 7 is a factor of 25 4.

Multiples and factors

5. 6 is a factor of 48.
6. 12 is a factor of 96.

Write the factors of the numbers given below:

Factors	of	2	•••••
Factors	of	3	
Factors	of	4	
Factors	of	5	
Factors	of	8	
Factors	of	12	
Factors	of	7	



Which number is a factor of all the numbers?
 Is there a number which is not a factor of itself?
 Write down those numbers which have exactly two factors.

Numbers which have exactly two factors are called prime numbers

The numbers which you have written in which there are numbers which have more than two factors. List those numbers.

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• circle the prime numbers-

12, 22, 15, 23, 17, 25, 21, 19, 20, 35

- Write the prime numbers between 4 and 10.
- Which is the prime number nearest to 35?
- Write the prime numbers less than 4.
- Write the composite numbers between 1 and 10.

Highest common factor

You know that the factors of a number completely divides that number.

Can you write all the factors of 12?

Let us see which numbers have 12 is their tables.

1,2,3,4,6 and 12

All of these numbers divide 12 completely and are therefore factor of 12 Now write all the factors of 18.

.....

Are there any factors of 18 which are also factors of 12?

Let us write the factors of both 12 and 18.

.....

They are known as the common factors of 12 and 18

Now let us try to find the common factors of 16 and 20.

Factors of 16 - 1, 2, 4, 8, 16 Factors of 20 - 1, 2, 4, 5, 10, 20

The common factors of 16 and 20 are 1, 2 and 4. 4 is the biggest common factor and is known as the highest common factor (HCF)

So, the highest common factor of given numbers is the largest number of the common factors.

Let us find the highest common factor of 16 and 32.

Factors of 16 - 1, 2, 4, 8, 16

Factors of 32 - 1, 2, 4, 8, 16, 32

The common factors are 1,2,4,8 and 16 and the largest among these is 16, hence 16 is the highest common factor of 16 and 32.

Find the HCF of-

(1)	8 and 12	(2)	10 and 20	(3)	16 and 20
(4)	9 and 27	(5)	13 and 39	(6)	15 and 22

Now take any two numbers and find their HCF. Show the result to your teacher.

Take 12,18 and 24 and find their HCF.

Now take any 3 numbers by yourselves and try finding their HCF. Confirm with your teacher.

Think and answer-

- 1. Can you find the smallest multiple of 8 and 12?
- 2. Can you find the largest multiple of 8 and 12? Discuss with your friends and teacher.
- 3. What will be the highest common factor of prime numbers like 5 and 7?

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