



Brief Description of the lesson:

Students will understand the concept of factors and Multiples. They will learn about different Divisibility Tests, Prime Factorization, H.C.F,L.C.M

UN Sustainable Goals to be achieved (if any):

Objectives: (Bloom's level)

Specific Objectives

students will be able

- To differentiate between factors and multiples.
- To list all the factors of a number.
- To find out common factors between two numbers. To list the multiples of a given number.
- To find out the common multiples of Two or more no.s
- To recall and apply the divisibility rules.
- To recognise co-prime numbers .
- Prime factorization HCF by prime factorization and long division method LCM by prime factorization and long division method.
- **Divisibility of 4, 8 and 11 is added**
- **Multiples of 2 digit number and Factors of 3 digit number only.**
- **No word problems in this topic is taken as they are of above their understanding level.**

II - Behavioral Objectives

- To create number patterns using factors, multiples and divisibility rules.
- Learn to share through equal division.
- Relate the concept of factors and multiples, hcf and lcm with real life situations(seating arrangement, using money, calculating time ..etc)

Activity (to support learning)

Activity 1

Students will form two groups. One group will give a number to the other group for which they will write the no. Second group will give the no.to the first group for which they will write multiples.



PRIME FACTORISATION:

Considering a no. say 30

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

Out of these factors the prime no.s are 2,3 and 5

$$30=2 \times 3 \times 5$$

Thus a composite no.can be shown as the product of prime factors.

This is called PRIME FACTORISATION

Co-prime numbers

Two nos that have no common factors other than 1 are called coprime nos.

Co-primes are not necessarily prime numbers.

For e. 18 & 25 are co primes.

HCF- Highest common Factor

I.Prime factorization Method

Eg. Find the HCF of 12, 24, &36

$$12 = 2 \times 2 \times 3$$

$$24 = 2 \times 2 \times 2 \times 3$$

$$36 = 2 \times 2 \times 3 \times 3$$

The marked prime factors are the common factors of 12 24 & 36

But the HCF is obtained by multiplying all the common factors. Therefore, HCF of 12, 24 & 36 is $2 \times 2 \times 3 = 12$

LCM –Least common Factor

Activity

On a sheet or a no. grid, encircle the multiples of 11 in red, the multiples of 5 blue and the multiples of 7 in green colour. The first no., which is encircled in all the three colours is the LCM.

I . Prime Factorisation Method

Find the LCM of 12, 24 & 36

$$12 = 2 \times 2 \times 3$$

$$24 = 2 \times 2 \times 2 \times 3$$

$$36 = 2 \times 2 \times 3 \times 3$$

$$\text{LCM} = 2 \times 2 \times 3 \times 2 \times 3 = 72$$

II. Long Division Method

2	12, 24, 36
2.	6, 12, 18
2	3, 6, 9
3	1, 2, 3
3.	1, 1, 3
	1, 1, 1

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 3 = 72$$

Activity: Real life examples like Finding the Bus Seat number for the Khana Family, which has seat numbers as multiples of 3

➤ **Skills (as per subject)**

Reasoning, Logical, Application, Calculation, Observation , Thinking & Analysis

➤ **Activity / Assignment (to assess learning)**



Exercise for Notebook (put Bloom's level)

Topics	Below average	Average	Good	Excellent	Exemplary
Rules of divisibility	Learn and apply rules of divisibility with difficulty.	Apply rules of divisibility in case of easier number 2, 3, 5 and 10.	Apply rules of divisibility on 3 or 4 digit numbers	Apply rules of divisibility independently and effectively on larger numbers.	Apply rules of divisibility independently and effectively on larger numbers and uses it while finding the factors.
Factors and Multiples	Find factors and multiples of given number with the help of the teacher.	Have knowledge about factors and multiples, at times seeks for help in finding factors or multiples.	Find factors and multiples of numbers independently through gets confused for large numbers	Have complete conceptual knowledge of factors and multiples.	Relate the concept of factors and multiples with real life situations.
Common factors and multiples	Has no understanding of the factors and common factors.	Tries to tell the common factors of given numbers	Tells most of the common factors of the given numbers.	Tells all the common factors of the given numbers and also represent it from Venn Diagram.	Tells all the common factors of the given numbers and sometimes tells the common factors and multiples of numbers without actual calculations and also represent it through Venn Diagram.
Prime Numbers, Twin Prime Numbers and Composite Numbers	Has no understanding of prime numbers and composite numbers.	Has understanding of prime numbers and composite numbers, however messes up with the two very often.	Has complete understanding of prime numbers and composite numbers, however messes up with twin prime numbers and co-prime numbers.	Has complete understanding of prime numbers and composite numbers, and almost complete understanding of twin prime numbers and co-prime numbers.	Has complete understanding of prime numbers and composite numbers, twin prime numbers and co-prime numbers.
Prime Factors by Rainbow Method, Factor Tree Method and Table (Ladder) Method	Is not able to find the prime factors.	Seeks for constant support in finding the prime factors by all the 3 methods.	Is able to find the prime factors by methods, and is confused in method.	Is able to find the prime factors by all the 3 methods almost accurately, commits silly mistakes in hurry.	Is able to find the prime factors by all the 3 methods perfectly.

Critical Thinking Questions:

1. Find the biggest no, which leaves remainder 1 when it divides 151, leaves 2 when it divides 127 and leaves remainder 3 when it divides 178.
2. In a school both Nursery and KG start at 8:40. KG classes have 30min period each and Nursery classes have 40min periods each. The principal of the school wants to give both Nursery and KG a milk break at the same time. But she does not want to take a break in the middle of any class. What would be the time when break would be given to both the classes.
3. Traffic lights at three different road crossings change after 10 min, 15min & 20min respectively. If they change together at 9 a.m. first then when will they change together again?

Digital Content to be used:

- <https://www.youtube.com/watch?v=DdoWbrHydiE>
- <https://www.youtube.com/watch?v=YB9w1pFHmfs>
- <https://www.youtube.com/watch?v=Ldx1BBmTsF0>

Expected Learning Outcomes:

Students will

- differentiate between factors and multiples(U)
- list all the factors of a number. (K)
- find out common factors between two numbers(Ap)
- list the multiples of a given number.(K)
- find out the common multiples of Two or more no.s(Ap)
- recall and apply the divisibility rules. (K)
- recognise co-prime numbers(An) .
- do Prime factorization(Ap)
- find HCF by prime factorization and long division method(Ap)
- find LCM by prime factorization and long division method.(Ap)
- solve the number patterns using the concept of factors, multiples and divisibility rules.(Ap)
- relate the concept of factors and multiples, HCF and LCM with real life situations(sitting arrangement, using money, calculating time ..etc)
- be systematic and do the work with accuracy.
- organize themselves well by relating the concept
- lead the life systematically
- share through equal division.
- organize events, calculate and justify their expenditure in life and learn to live justfully.
- learn division of work equally while working in a group
- work collaboratively

Assessment: (Bloom's level)

- Parameters:
- Rubrics: (table)

Rubrics for Assessment

Review of the Lesson Plan: To be done when the lesson gets over

Problems faced – Students were not using divisibility tests so needed time to do prime factorisation

Success- The concept was clear

Failure- students got confused in H.C.F and L.C.M

Real Learning Outcomes- the objective was achieved to some extent

Students Response / Participation- Actively participated in the activities

Teachers Learning to be added.- Students need assistance even though the concept is clear.