BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI-110034

CLASS V SUBJECT– MATHEMATICS TERM 2 (2020-21)

TOPIC- PRIME FACTORISATION

NAME - _____ CLASS V/ SEC _____ DATES- 01.12.2020 to 11.12.2020

LEARNING OUTCOMES **: Each child will be able to:**

- **recapitulate the basics of factoring the numbers.**
- **relate factors with prime and composite numbers.**
- **find prime factors of any given number correctly.**

Do you remember what factoring/factorisation is?

Factoring or factorisation means breaking a composite number into its factors which multiply together to give the same number.

e.g 40 = 2 x 20 or 40 = 4 x 10
Composite Number — factors — factors

But, when this factorisation is done with PRIME FACTORS which multiply together to give the same number, then it is called PRIME FACTORISATION.

Example 1 40 = 2 x 2 x 2 x 5
Composite Number — Prime factors

Example 2 35 = 5 x 7
Composite Number — Prime factors

So we can say that PRIME FACTORISATION means breaking the composite numbers into their prime factors which multiply together to give the same composite number.

It can be done by two methods:

1. **FACTOR TREE METHOD**
2. **DIVISION METHOD**

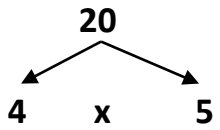
Ist Method: FACTOR TREE METHOD

Example 1: Factor Tree of 20

Steps to follow:

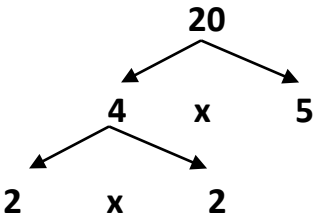
- **Break the composite number into any of its two factors:-**

e.g



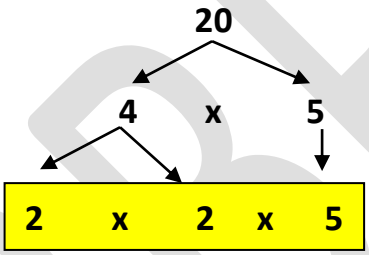
- **Factorize further, if you get any composite number as its factor:-**

e.g



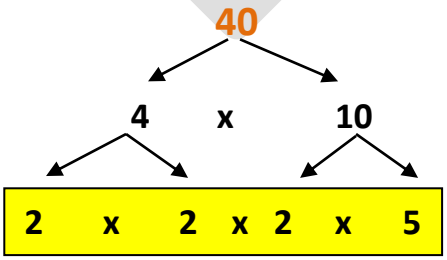
- **Keep factorising until you can't factorize further using prime numbers:-**

e.g Factor Tree of 20

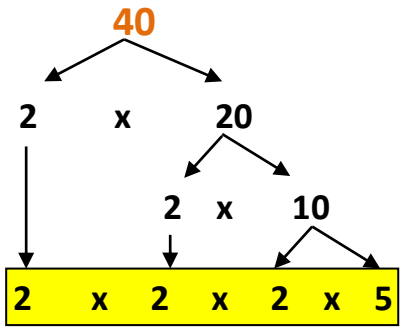


So, Prime Factorisation of 20 = 2 x 2 x 5

Example 2 **Factor tree of 40**



Or



So, Prime Factorisation of 40= 2 x 2 x 2 x 5

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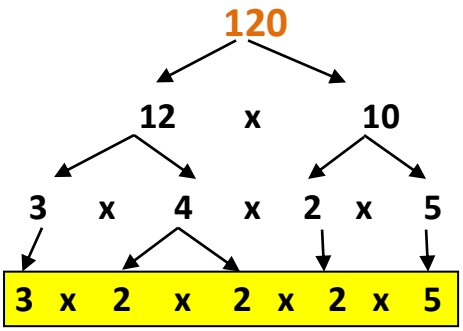
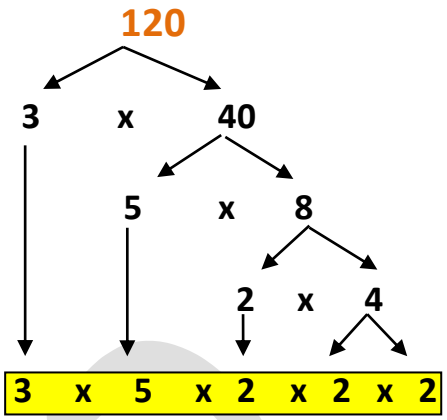
Example 3 **Factor tree of 120**

Or





So, Prime Factorisation of 120 = _____

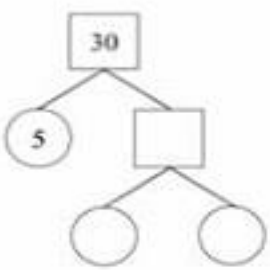
To recapitulate what we have learnt, let's watch a Youtube video:
https://youtu.be/Vdn7VEQp0cc

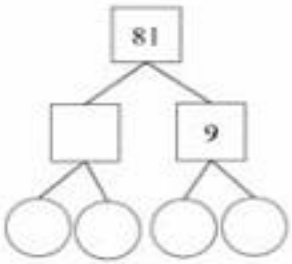
PRACTICE TIME **(TO BE DONE IN THE NOTEBOOK)**

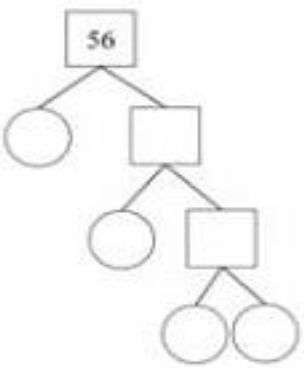
Q 1. Factorize the given numbers into any two factors:-

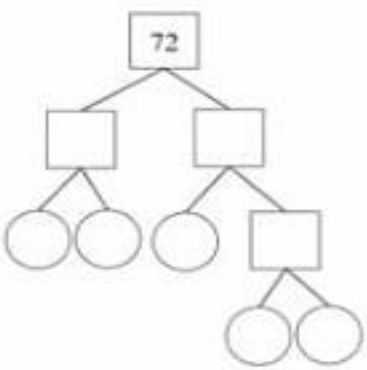
a) 16 = _____ x _____
b) 30 = _____ x _____
c) 24 = _____ x _____
d) 80 = _____ x _____
e) 64 = _____ x _____

Q2. Complete the factor tree to find the prime factors of the given numbers:-

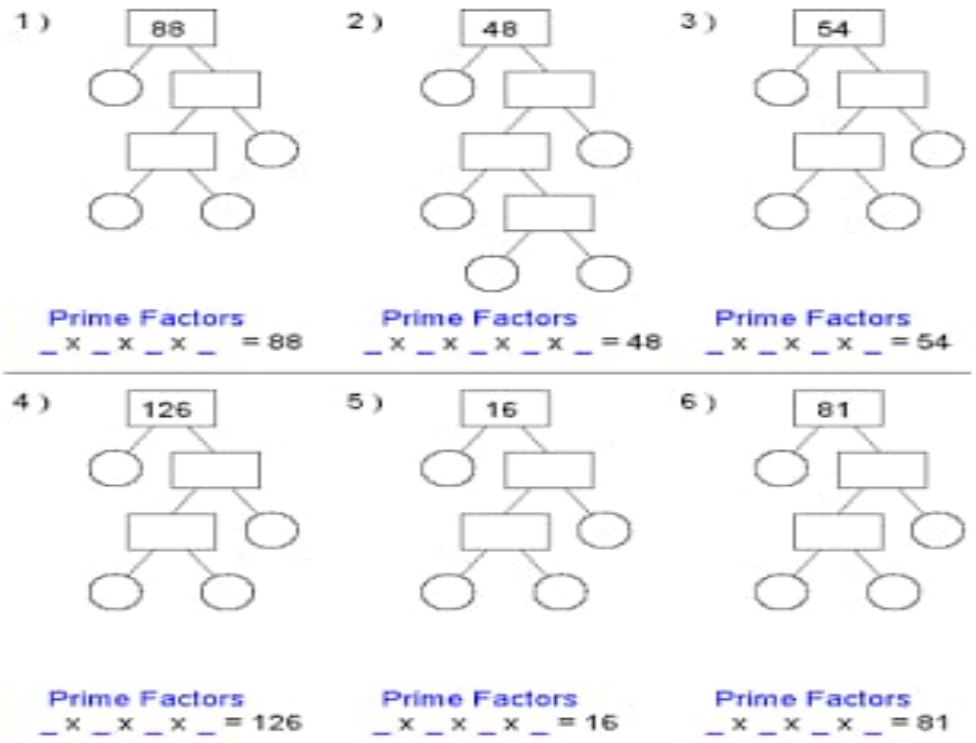








Q 3. Find the prime factors of the following composite numbers:-



Q 4. Find the prime factorisation of the following numbers using Factor Tree Method:-

A) 24 B) 63 C) 108 D) 36 E) 49 F) 91 G) 75 H) 100 I) 85

IInd Method : DIVISION METHOD

Example 1: Prime factorisation of 20

Steps to follow :

- **Divide the given composite number with any of its prime factors and write the quotient below the number:-**

5	20
	4

- **Continue dividing the resultant number with any of its prime factors and write the quotient below the number:-**

5	20
2	4
	2

❖ **Stop dividing when there is no prime factor possible of the resultant number:-**

5	20
2	4
2	2
	1

So, **Prime Factorisation of 20 = 2 x 2 x 5**

EXAMPLE 2

Prime Factorisation of 40

5	40
2	8
2	4
2	2
	1

Prime Factorisation of 40 = 2 x 2 x 2 x 5

EXAMPLE 3

Prime Factorisation of 120

2	120
2	60
2	30
3	15
5	5
	1

Prime Factorisation of 120 = 2 x 2 x 2 x 3 x 5

To understand better, let's watch the Youtube video

https://youtu.be/_SxuKsqBEC4

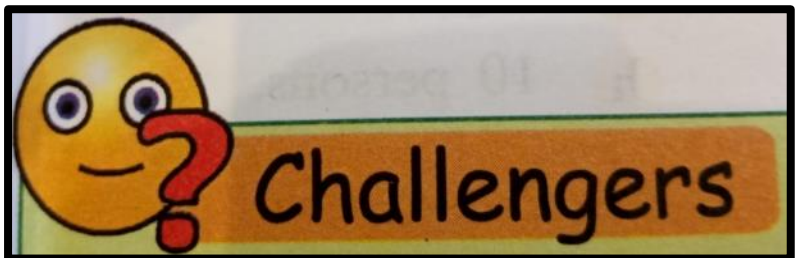
PRACTICE TIME **(TO BE DONE IN THE NOTEBOOK)**

Q1. Find prime factorisation:-

24 36 28 44 132

Q2. Find prime factorisation of the following composite numbers using any method:-

A) 26 B) 30 C) 42 D) 50 E) 48 F) 95 G) 140 H) 60 I) 117



1. **What number am I?**
   a) **I am an odd composite number more than 50. I am divisible by 3 and 17. Who am I? _____**
   b) **I am a 2-digit even palindromic number. I am 7 more than the square of a number. The sum of my digits is 16. Who am I? _____**
   c) **I am a 3-digit odd number. The product of my digits is 1. Find me. _____**

2. **A Russian mathematician Leonhard Euler stated in 1742 that:**
   Every even number greater than 2 can be written as the sum of two primes.

   Test this for following by expressing them as the sum of two primes:
   a) **46 = _____ + _____**
   b) **55 = _____ + _____**
   c) **74 = _____ + _____**
   d) **100 = _____ + _____**

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