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Jender Heart High School; Sec-32B, Chandigarh

Class - IV

Subject - Maths

Date: - 29.07.24

Teacher - Ms. Sushma

Exercise 5.4

A. Write all the factors of the numbers in each pair.
Find their common factors.

1. 3 and 4

Soln:- Factors of 3 = 1, 3
Factors of 4 = 1, 2, 4
Common factors of 3 and 4 = 1 Ans

2. 6 and 8

Soln:- Factors of 6 = 1, 2, 3, 6
Factors of 8 = 1, 2, 4, 8
Common factors of 6 and 8 = 1, 2 Ans.

3. 30 and 45

Factors of 30 = 1, 2, 3, 5, 6, 10, 15, 30
Factors of 45 = 1, 3, 5, 9, 15, 45
Common factors of 30 and 45 = 1, 3, 5, 15

4. 28 and 35

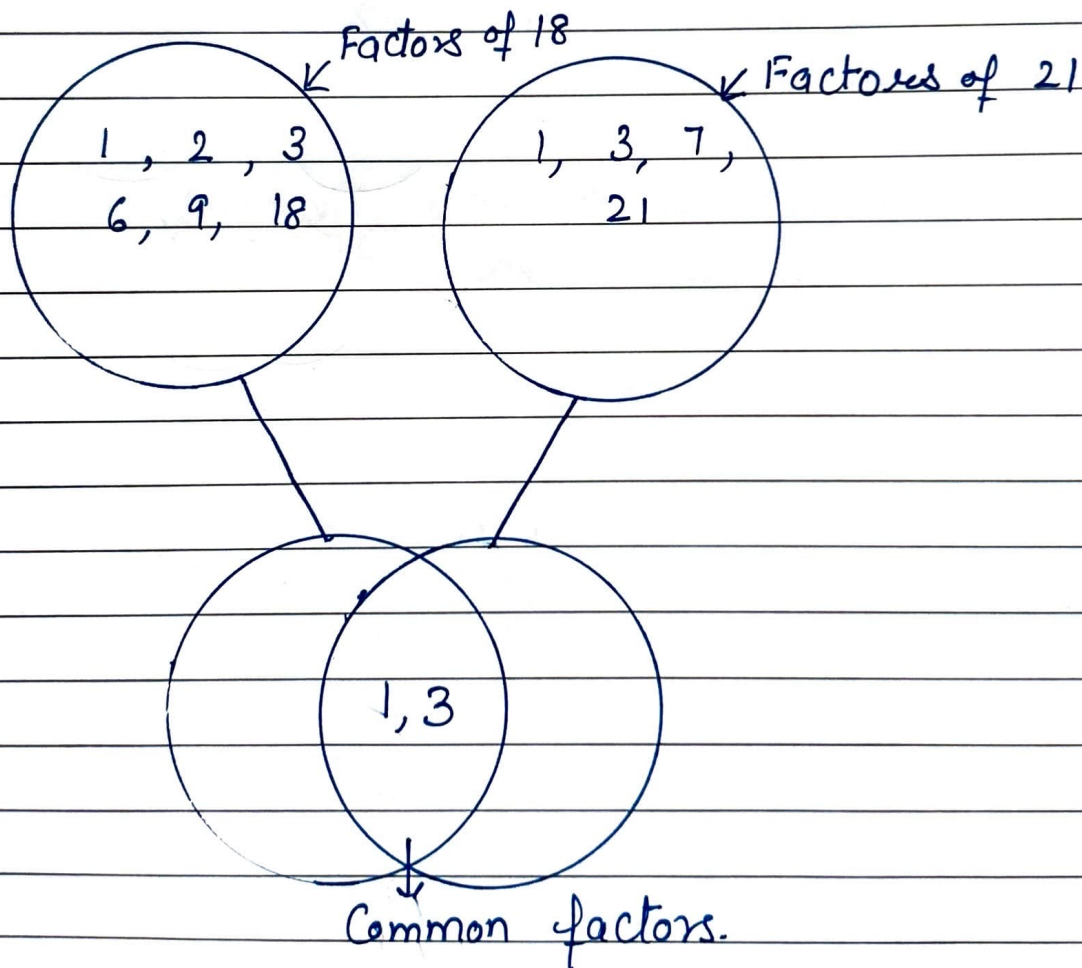
Factors of 28 = 1, 2, 4, 7, 14, 28
Factors of 35 = 1, 5, 7, 35
Common factors of 28 and 35 = 1, 7

Ques. 20 and 32

Soln:- Factors of 20 = 1, 2, 4, 5, 10, 20
Factors of 32 = 1, 2, 4, 8, 16, 32
Common factors of 20 and 32 = 1, 2, 4

B. Find the factors of these numbers and write their common factors.

1. 18 and 21



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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, ...

The number 1 is unique.
It has only one factor, that is, 1.
So, 1 is neither prime nor composite.

Prime factorization: → A factor that is a prime number is called a prime factor.

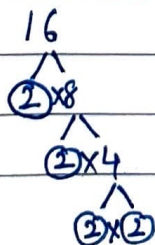
eg:- the prime factors of 15 are 3 and 5.

The method of writing a number as a product of factors that are only prime numbers is called prime factorization.

Factor tree method: → In this method, the number is factorized repeatedly into a pair of factors until all the factors become prime.

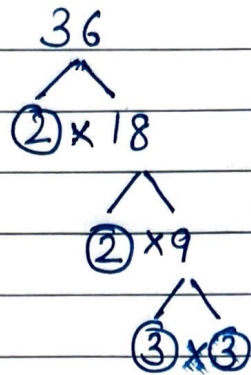
Exercise 5.5

A. Complete each factor tree.

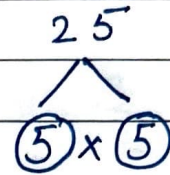


$$16 = 2 \times 2 \times 2 \times 2$$

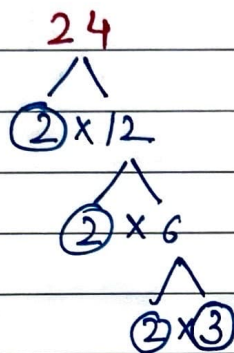
2. 36



3. 25



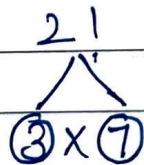
3.



B. Find the prime factorization of each number by the factor tree method.

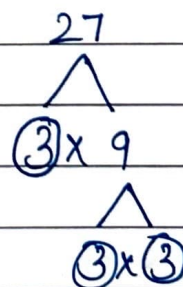
1) 21

Soln:-

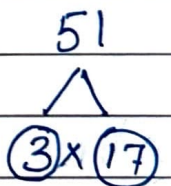


$$21 = 3 \times 7$$

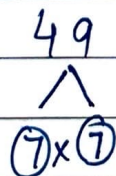
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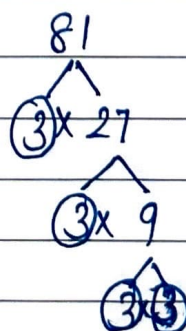
3)



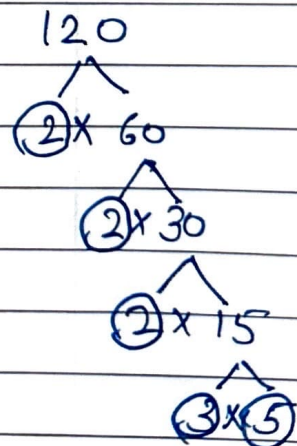
4)



5)



6)



C. Find the prime factorisation of each number by the division method

1. 72.

$$\begin{array}{r|l}
 2 & 72 \\
 \hline
 2 & 36 \\
 \hline
 2 & 18 \\
 \hline
 3 & 9 \\
 \hline
 3 & 3 \\
 \hline
 & 1
 \end{array}$$

$$72 = 2 \times 2 \times 2 \times 3 \times 3$$

2. 78

$$\begin{array}{r|l}
 2 & 78 \\
 \hline
 3 & 39 \\
 \hline
 13 & 13 \\
 \hline
 & 1
 \end{array}$$

$$78 = 2 \times 3 \times 13$$

3. 84

$$\begin{array}{r|l}
 2 & 84 \\
 \hline
 2 & 42 \\
 \hline
 3 & 21 \\
 \hline
 7 & 7 \\
 \hline
 & 1
 \end{array}$$

$$84 = 2 \times 2 \times 3 \times 7$$

4. 66

$$\begin{array}{r|l}
 2 & 66 \\
 \hline
 3 & 33 \\
 \hline
 11 & 11 \\
 \hline
 & 1
 \end{array}$$

$$66 = 2 \times 3 \times 11$$

5. 112

$$\begin{array}{r|l}
 2 & 112 \\
 \hline
 2 & 56 \\
 \hline
 2 & 48 \\
 \hline
 2 & 24 \\
 \hline
 2 & 12 \\
 \hline
 2 & 6 \\
 \hline
 3 & 3 \\
 \hline
 & 1
 \end{array}$$

$$112 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

6. 210

$$\begin{array}{r|l}
 2 & 210 \\
 \hline
 3 & 105 \\
 \hline
 5 & 35 \\
 \hline
 7 & 7 \\
 \hline
 & 1
 \end{array}$$

$$210 = 2 \times 3 \times 5 \times 7$$

Exercise 5-6

Find the HCF

1. 20, 35

$$20 = 2 \times 2 \times 5$$

$$35 = 3 \times 5 \times 7$$

Common factors = 5

$$\text{H.C.F} = 5$$

2. 30, 45

$$\begin{array}{r|l} 2 & 30 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 3 & 45 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 30 &= 2 \times \boxed{3} \times \boxed{5} \\ 45 &= 3 \times \boxed{3} \times \boxed{5} \\ \text{HCF} &= 3 \times 5 = 15 \end{aligned}$$

3. 51, 85

$$\begin{array}{r|l} 3 & 51 \\ \hline 17 & 17 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 5 & 85 \\ \hline 17 & 17 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 51 &= 3 \times \boxed{17} \\ 85 &= 5 \times \boxed{17} \\ \text{HCF} &= 17 \end{aligned}$$

4. 42, 48

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

$$\begin{array}{r|l} 2 & 48 \\ \hline 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$\begin{aligned} 42 &= \boxed{2} \times \boxed{3} \times 7 \\ 48 &= \boxed{2} \times 2 \times 2 \times 2 \times \boxed{3} \\ \text{HCF} &= 2 \times 3 = 6 \end{aligned}$$

5. 9, 18, 21

$$\begin{array}{r|l} 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

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

$$9 = 3 \times \boxed{3}$$

$$18 = 2 \times \boxed{3}$$

$$21 = \boxed{3} \times 7$$

$$\text{HCF} = 3$$

6. 12, 18, 28

$$\begin{array}{r|l} 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 28 \\ \hline 2 & 14 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

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

$$18 = 2 \times 3 \times 3$$

$$28 = 2 \times 2 \times 7$$

$$\text{HCF} = 2$$

Lowest Common Multiple (LCM)

The lowest common multiple of two or more numbers is the lowest number that is completely divisible by each of the given numbers.

Methods to find LCM of two or more numbers:

- ⇒ Listing out common multiples
- ⇒ Prime factorization
- ⇒ Division method

Exercise 5.7

Find the LCM: →

1. 4, 5

$$\begin{array}{r|l} 2 & 4, 5 \\ \hline 2 & 2, 5 \\ \hline 5 & 1, 5 \\ \hline & 1, 1 \end{array}$$

$$\text{LCM}(4, 5) = 2 \times 2 \times 5 \\ = 20$$

3. 3, 5

$$\begin{array}{r|l} 3 & 3, 5 \\ \hline 5 & 1, 5 \\ & 1, 1 \end{array}$$

$$\text{LCM}(3, 5) = 3 \times 5 = 15 \text{ Ans.}$$

4. 8, 12

$$\begin{array}{r|l} 2 & 8, 12 \\ \hline 2 & 4, 6 \\ 2 & 2, 3 \\ 3 & 1, 3 \\ & 1, 1 \end{array}$$

$$\begin{aligned} \text{LCM}(8, 12) &= 2 \times 2 \times 2 \times 3 \\ &= 24 \text{ Ans.} \end{aligned}$$

5. 5, 10, 25

$$\begin{array}{r|l} 2 & 5, 10, 25 \\ \hline 5 & 5, 5, 25 \\ 5 & 1, 1, 5 \\ & 1, 1, 1 \end{array}$$

$$\begin{aligned} \text{LCM}(5, 10, 25) &= 2 \times 5 \times 5 \\ &= 50 \end{aligned}$$

6. 18, 24, 27

$$\begin{array}{r|l} 2 & 18, 24, 27 \\ \hline 2 & 9, 12, 27 \\ 2 & 9, 6, 27 \\ 3 & 9, 3, 27 \\ 3 & 3, 1, 9 \\ 3 & 1, 1, 3 \\ & 1, 1, 1 \end{array}$$

$$\begin{aligned} \text{LCM}(18, 24, 27) &= 2 \times 2 \times 2 \times 3 \times 3 \times 3 \\ &= 216 \end{aligned}$$

7. 9, 15, 24

2	9, 15, 24
2	9, 15, 12
2	9, 15, 6
3	9, 15, 3
3	3, 5, 1
5	1, 5, 1
	1, 1, 1

$$\text{LCM}(9, 15, 24) = 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$$

8. 14, 21, 35

2	14, 21, 35
3	7, 21, 35
5	7, 7, 35
7	7, 7, 7
	1, 1, 1

$$\text{LCM}(14, 21, 35) = 2 \times 3 \times 5 \times 7 = 210$$

9. 16, 32, 36

2	16, 32, 36
2	8, 16, 18
2	4, 8, 9
2	2, 4, 9
2	1, 2, 9
3	1, 1, 9
3	1, 1, 3
	1, 1, 1

$$\text{LCM}(16, 32, 36) = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 288 \text{ Ans}$$

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Exercise 5.8

Q1 72

Soln:-

Given number is 72.

Divisibility by 2:- Unit place or ones place digit is 2 so, 72 is divisible by 2.

Divisibility by 3:- Sum of the digits = $7+2=9$, which is divisible by 3. $\therefore$ 72 is divisible by 3.

Divisibility by 4:- The no formed from last two digits is 72 which is divisible by 4.

Divisibility by 5:- ones place digit is not 0 or 5 so, 72 is not divisible by 5.

Divisibility by 6:- The given no. is divisible by 2 and 3 both so, given no. is divisible by 6.

Divisibility by 9:- $\rightarrow$ Sum of digits = $7+2=9$ which is divisible by 9. Hence, 72 is divisible by 9.

Divisibility by 10:- Given no. is not divisible by 10 as the ones place digit is not '0'.