

3

Playing with Numbers

In the previous class, you have studied about the concept of factors and multiples. You have also studied about the patterns in numbers. In this chapter, you will study about the problems involving more than one operations.



BODMAS Rule

We follow the BODMAS rule to solve the problems where more than two operations are involved. Look at each of the letters.

- B** stands for Brackets
- O** stands for Of (multiplication)
- D** stands for Division
- M** stands for Multiplication
- A** stands for Addition
- S** stands for Subtraction

Always follow this order while solving problems involving more than one operations. The term 'operation' means addition, subtraction, multiplication, division, etc.

Example 1 : Solve: $4 \text{ of } 3 \times 6 \div 2$.

Solutions : According to BODMAS rule, we will apply 'of' then 'multiplication' and finally 'division'.

$$\begin{aligned}
 &4 \text{ of } 3 \times 6 \div 2 \\
 &4 \times 3 \times 6 \div 2 \quad [\text{of}] \\
 &= 12 \times 6 \div 2 \quad [\text{Apply division}] \\
 &= 12 \times 3 \quad [\text{Multiplication}] \\
 &= 36
 \end{aligned}$$

If you do not follow BODMAS rule, you may get different result. Look at the problem.

$$\begin{aligned}
 &12 - 6 \times 4 \\
 &= (12 - 6) \times 4 \\
 &= 6 \times 4 = 24 \quad (\text{apply 'subtraction before multiplication'})
 \end{aligned}$$

Correct Method

$$\begin{aligned}
 &12 - 6 \times 4 \quad (\text{apply 'multiplication'}) \\
 &= 12 - 24 \quad (\text{apply 'subtraction'}) \\
 &= -12
 \end{aligned}$$

We get two different results for the same problem. There must be one standard method. Therefore, we must follow BODMAS rule.

Example 2 : Solve $6 \times 5 + 4 - 9$

Solution : Applying BODMAS rule we get the following.

$$\begin{aligned}
 &30 + 4 - 9 \\
 &= 34 - 9 = 25
 \end{aligned}$$

Example 3 : Solve $16 + 8 - 10 \times 2$

Solution : Applying BODMAS rule we will first perform 'multiplication', 'addition' and finally 'subtraction'.

$$\begin{aligned}
 &16 + 8 - 20 \\
 &= 24 - 20 = 4
 \end{aligned}$$



- Example 4 :** Solve : 7 of $4 - 2 + 10 \div 5$
Solution : Similarly, we first perform 'of' operation followed by 'division', 'addition' and finally 'subtraction'.
 $= 28 - 2 + 10 \div 5$
 $= 28 - 2 + 2$
 $= 30 - 2 = 28$
- Example 5 :** Solve : $6 + 32 \div 2$ of 4
Solution : We first perform 'of' operation followed by 'division' and finally 'addition'.
 $= 6 + 32 \div 8$
 $= 6 + 4$
 $= 10$
- Example 6 :** Solve : $[2 \times \{4 + (12 - 9 + 2)\} + 12 + 3]$
Solution : $= [2 \times \{4 + (12 - 11)\} + 15]$ [solved firstly vinculum or brackets]
 $= [2 \times 5 + 15] = 10 + 15$
 $= 25$

While removing the sequence of brackets, we must keep in mind that –
 '—' is the line bracket or vinculum to be removed first.
 () is the simple bracket to be removed second.
 { } is the curly bracket to be removed third.
 [] is the square bracket to be removed fourth.



Exercise 3.1

1. Solve the following :

- | | |
|---|--|
| (a) $12 + \{(64 \div 8) + 12\} \div 5$ | (b) $35 - [25 - \{6 \times 3 + (14 - 6 \times 2)\}]$ |
| (c) $[7 \times \{27 - 12 - 8 - 6\}] \div 7$ | (d) $[48 \div \{8 + 16 \div 4\}] + 6 - 5$ |
| (e) $27 + \{(72 \div 9) + 27\} \div 7$ | (f) $5 \{(72 \div 9) \times 6 - 20\} - 8$ |
| (g) $20 \div [10 - \{81 \div 9 - (24 - 5 \text{ of } 4)\}]$ | (h) $16 + [32 - \{10 + 8 \div 4\}]$ |



Divisibility Rules

If we need to find whether a given number is divisible by any other number or not, we perform actual division. If the remainder comes zero, it means division process is complete. This method is called **long division** method. Therefore, we check a given number for its divisibility without actual division by using the test of divisibility. Let us do a quick revision of the same.

1. A number is divisible by 2, if the last or right most digit (ones digit) is 0, 2, 4, 6, or 8. The numbers divisible by 2 are called even numbers.
2. A number is divisible by 3, if the sum of its digits is divisible by 3.
3. A number is divisible by 4, if it is formed by last two digits tens and ones are either 00 (two zeroes) or divisible by 4.
4. A number is divisible by 5, if the last digit (ones digit) is either 0 or 5.
5. A number is divisible by 6, if it is even and the sum of its digits is divisible by 3. A number divisible by 6 is also divisible by 2 and 3.
6. A number is divisible by 7 if the difference between twice of the last digit and the number formed by other digits is either 0 or a multiple of 7.
7. A number is divisible by 8, if it is formed by the last three digits (hundreds, tens and ones) is divisible by 8. A number divisible by 8 is also divisible by 2 and 4.



8. A number is divisible by 9, if sum of its digits is divisible by 9.
9. A number is divisible by 10, if the right most digit (ones place) is 0. This number is also divisible by 2 and 5.
10. A number is divisible by 11, if the difference between the sums of alternate digits is either 0 or a multiple of 11.
11. A number is divisible by 12, if it is exactly divisible by both 3 and 4.
12. A number is divisible by 15, if it is divisible by both 3 and 5.
13. A number is divisible by 18, if it is divisible by both 9 and 2.
14. A number is divisible by 25, if the two digits are either 00 (two zeroes) or 25.



Exercise 3.2

1. Test the divisibility of the following numbers by 6 :
 (a) 2611 (b) 39235 (c) 902802
2. Test the divisibility of the following numbers by 3 :
 (a) 3771 (b) 2594 (c) 3564
3. Test the divisibility of the following numbers by 5:
 (a) 13456 (b) 12095 (c) 26500
4. Test the divisibility of the following numbers by 6 :
 (a) 14692 (b) 4884 (c) 49077
5. Test the divisibility of the following numbers by 9 :
 (a) 257062 (b) 57969 (c) 94320
6. Test the divisibility of the following numbers by 7 :
 (a) 45843 (b) 78526 (c) 936607
7. Test the divisibility of the following numbers by 11:
 (a) 7326 (b) 8932 (c) 9790
8. Write down any ten number between 500 and 1000 which are divisible by 3.
9. If a number is divisible by 8, then it is always divisible by
10. Write down the divisibility test for 18.



Factors and Multiples

Numbers 1, 2, 4, 7, 14, and 28 are all exact divisors of 28, i.e. they leave no remainder.

So, 1, 2, 4, 7, 14 and 28 are factors of 28. Similarly, 1 and 19 are exact divisors of 19. So, 1 and 19 are factors of 19.

Factor

A factor of a number is an exact divisor of that number.

Therefore, we can say that –

- ❖ Every number other 1 has at least 2 factors.
- ❖ Every number is a factor of itself.
- ❖ Every factor is less than or equal to the given number.

Similarly, when a natural number 5 is multiplied with other natural numbers like 2, 3, 7 and 11, we get 10, 15, 35 and 55. Therefore, 10, 15, 35 and 55 are multiples of 5.

In the same way, we find out that 22, 33, 44, 55 are multiples of 11.

Multiple

When a number is multiplied by any natural number, we get a number which is known as multiple of a number.



Let us look at some examples.

Example 7 : Find all the factors of 36.

Solution : We can solve it by two methods :

1st method : $1 \times 36 = 36$, $2 \times 18 = 36$, $3 \times 12 = 36$, $4 \times 9 = 36$, $6 \times 6 = 36$. So, 1, 36, 2, 18, 3, 12, 4, 9, and 6 are factors of 36. Therefore, we have used multiplication method.

2nd method : $36 \div 1 = 36$, $36 \div 2 = 18$, $36 \div 3 = 12$, $36 \div 4 = 9$, $36 \div 6 = 6$
We find out that quotient and divisor both are the factors of 36. Here division method is used to find factors.

So, 1, 2, 3, 4, 6, 9, 12, 18 and 36 are all factors of 36.



Facts to Know

- Zero (0) is not a natural number. Therefore, zero (0) can not have factors. If we multiply zero (0) with any natural number, we always get zero.

Example 8 : Find the first five multiples of 3.

Solution : We get $3 \times 1 = 3$, $3 \times 2 = 6$, $3 \times 3 = 9$, $3 \times 4 = 12$ and $3 \times 5 = 15$
Thus, 3, 6, 9, 12, 15, are the first five multiples of 3.

[One point to note here is that multiples are infinite but factors are limited. It is also possible that two or more numbers may have common multiples.]

Example 9 : Find the first five common multiples of 2 and 3.

Solution : Multiples of 2 = 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30

Multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30

Five common multiples are 6, 12, 18, 24, and 30.

We notice that 6 is the first common multiple of both the numbers. It is the least common multiple in both the numbers.

You have already studied about prime numbers in your previous class, so we will not study it in details. We know that prime numbers have only two factors i.e., 1 and number itself.

How to find prime factors?

We can find prime factors in the following ways :

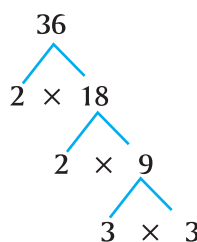
- Factor tree or prime factorisation
- Division method

Example 10 : Find all the prime factors of 36.

Solution : We use two methods.

(a) Factors tree or prime factorisation.

So, prime factors of 36 are $2 \times 2 \times 3 \times 3$.



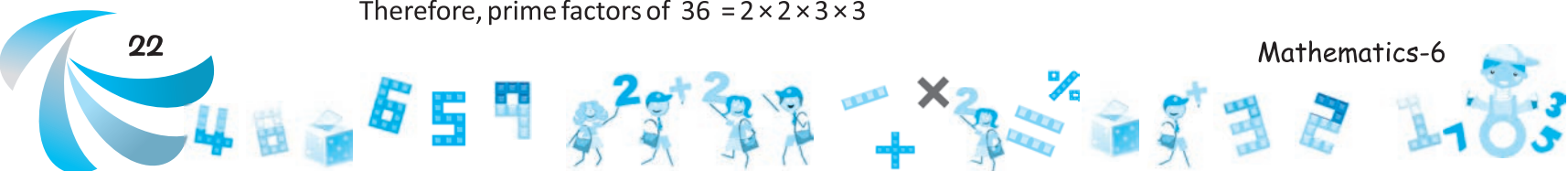
Prime factorisation is a method in which we factorise a given number into a product of prime numbers.

(b) Division method

We simply factorise 36 to find the prime factors.

2	36
2	18
3	9
3	3
	1

Therefore, prime factors of $36 = 2 \times 2 \times 3 \times 3$





Exercise 3.3



1. Find all the factors of the given numbers :

- (a) 56 (b) 96 (c) 78 (d) 44 (e) 66 (f) 90

2. Find the first five multiples of the following:

- (a) 6 (b) 7 (c) 9 (d) 15 (e) 23 (f) 37

3. Find all the prime factors of the following:

- (a) 80 (b) 129 (c) 144 (d) 145 (e) 64 (f) 236



Types of Numbers

We can classify natural numbers into different types. Let us study one by one.

Even Number : A number which is either a multiple of 2 or divisible by 2 is called **even number**.

Example 11 : Find the first five even numbers between 6 to 26.

Solution : Five numbers between 6 and 26 are 8, 10, 12, 14.

Odd Numbers : A number which is not divisible by 2 or not a multiple of 2. We always get remainder as 1 when we divide it by 2.

Example 12 : Find the odd numbers between 7 to 19.

Solution : The odd numbers between 7 to 19 are 9, 11, 13, 15, 17.

Prime Numbers : A prime number is a natural number which has only two factors.

Or

A multiple of 1 and the number itself.

Example 13 : Try to find out the prime numbers.

- (i) 51 (ii) 79 (iii) 87 (iv) 93

Solution : (i) $51 = 3 \times 17$ or 1×51 (Number of factors are more than 2)
Hence, 51 is not a prime number.

(ii) $79 = 1 \times 79$ (Number of factors are only two)
Hence, 79 is a prime number.

(iii) $87 = 1 \times 87$ or 3×29 (Number of factors are more than 2)
Hence, 87 is not a prime number.

(iv) $93 = 1 \times 93$ or 3×31 (Number of factors are more than 2)
Hence, 93 is not a prime number.

Composite Numbers : These are the numbers with more than two distinct factors.

Example 14 : Do you think 12 is a composite numbers or not.

Solution : $12 = 1 \times 12$ or 2×6 or 4×3

Since 12 has more than 2 factors, i.e. 1, 2, 3, 4, 6, and 12 itself. Therefore, 12 is a composite number.



Facts to Know

The number 1 is neither prime nor composite number.

Twin Prime : It is a pair of prime numbers with the difference of only 2.

Example 15 : Write any 3 pairs of twin prime numbers.

Solution : By the concept of prime numbers and twin primes, we have (17, 19), (29, 31) and (41, 43) as the required twin prime numbers.





Prime Triplet : A set of three prime numbers which form an arithmetic sequence with common difference two is called a prime triplet.
(3, 5, 7) is the only prime triplet.

Co-Prime Numbers : Two numbers are said to be co-prime if they do not have a common factor other than 1.

Example 16 : Find only two pairs of co-prime numbers.

Solution : We find out that (7, 10) and (31, 65) are two such pairs of co-prime numbers which do not have any common factor other than 1.



Exercise 3.4

1. Which of the following numbers are prime ?

(a) 56

(b) 37

(c) 94

(d) 19

(e) 21

(f) 29

2. Separate even and odd numbers of the following.

(a) 5, 82, 294

(b) 3, 45, 260

(c) 3, 300

(d) 1986, 231

(e) 18, 27, 30

(f) 16, 29

3. Find out whether the following pairs are twin prime or not :

(a) (6, 8)

(b) (11, 13)

(c) (62, 64)

4. Write five pairs of co-prime numbers.

5. Express 55 as a sum of three odd prime.

6. Express each of the following as sum of two odd prime :

(a) 36

(b) 66

(c) 56



Patterns in Numbers

Many years ago, Greeks, Babylonians, Mayans and Egyptians believed that counting numbers were linked to a certain geometric patterns. They used dots and lines to make the numbers.

The Mayans used dots and Egyptians used only vertical lines to express numbers.

We obtain different types of numbers depending upon different geometric shapes. Let us learn about some of them.

(a) Square Numbers : When any number is multiplied by itself, we get a square number. Some examples are 1, 4, 9, 16, 25, ... Have a look.

$$4 = 2 \times 2 = 2^2$$

$$9 = 3 \times 3 = 3^2$$

It is read as 4 is equal to 2 to the power 2 or 4 is equal to two square. Similarly, 9 is equal to 3 to the power 2 or 9 is equal to three square.

Similarly, $25 = 5 \times 5 = 5^2$ and so on.

We can represent these numbers with the help of dots arranged in row and columns.

We can arrange dots in 2 rows and 2 columns to represent number 4. For example,

Similarly, we can arrange nine dots in three rows and three columns to represent the number 9. For example,

There is another pattern by which square numbers can be shown.

$$1 = 1$$

$$4 = 1 + 2 + 1$$

$$9 = 1 + 2 + 3 + 2 + 1$$

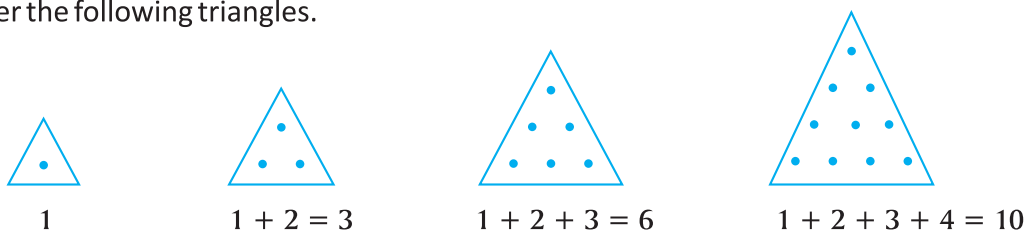
$$16 = 1 + 2 + 3 + 4 + 3 + 2 + 1$$

and so on.





- (b) **Triangular Numbers** : There are some numbers which can be represented in the shapes of triangle. Consider the following triangles.



Now, try to represent the following by dots in triangular pattern.

- (i) 15 (ii) 21 (iii) 28

- (c) **Cube Numbers** : We get a new number when we multiply a number three times of itself. This new number is called Cube Number.

For example, $2 \times 2 \times 2 = 8 = 2^3$

8 is a cube number. It represents a cubic unit, say length $\times$ breadth $\times$ height. Therefore, a cubic number will represent a number powered three times.

Can you think of other numbers which represent a cubic form ?



Powers of Numbers

Let us learn to represent the square numbers and cubic numbers with the help of an index. Look at the example.

Example : $8 = 2^3$ (Read as 2 cube)
 $36 = 6^2$ (Read as 6 square)

This type of representation is called **index notation**.

In 6^2 , 2 is called **power** or **exponent** and 6 is called the **base**.

In scientific notation, we use index notation because some values cannot be represented exclusively by numbers. For example, mass of an electron is 5.489×10^{-4} atomic mass unit (amu).



Exercise 3.5

1. Find the base and power of the following numbers :

- (a) 7^6 (b) 4^7 (c) 12^6
 (d) 5^{-8} (e) 6^5 (f) 3^0

2. Express the following by index notation:

- (a) 10,000,000 (b) 100,000 (c) 25,000



H.C.F and L.C.M.

H.C.F. stands for **Highest Common Factor** and L.C.M. stands for **Lowest Common Multiple**. H.C.F. is also known as the **Greatest Common Divisor** (G.C.D.)

Let us find the H.C.F. of 8, 16, 24.

The factors of 8 are 1, 2, 4, 8

The factors of 16 are 1, 2, 4, 8, 16

The factors of 24 are 1, 2, 3, 4, 6, 8, 12, 24

The common factors in all are 1, 2, 4 and 8.





We multiply $1 \times 2 \times 4 \times 8$ and get 64 as H.C.F.

We can find H.C.F. by :

- ❖ Prime factorization method
- ❖ Long Division Method

H.C.F. by Prime Factorization Method

Example 17 : Find the H.C.F. of 18 and 28 using prime factorization method.

Solution	:	<table><tr><td>2</td><td>18</td></tr><tr><td>3</td><td>9</td></tr><tr><td>3</td><td>3</td></tr><tr><td></td><td>1</td></tr></table>	2	18	3	9	3	3		1	<table><tr><td>2</td><td>28</td></tr><tr><td>2</td><td>14</td></tr><tr><td>7</td><td>7</td></tr><tr><td></td><td>1</td></tr></table>	2	28	2	14	7	7		1
	2	18																	
	3	9																	
	3	3																	
		1																	
2	28																		
2	14																		
7	7																		
	1																		

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

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

The only common factor between them is 2.

Therefore, H.C.F. of 18 and 28 is 2.

We find it by following two steps :

- (1) Find prime factors of each number.
- (2) Select all the **common** numbers among them and multiply them.

H.C.F. by Long Division Method

Example 18 : Find H.C.F. of 128 and 98

Solution :	$ \begin{array}{r} 1 \\ 98 \overline{) 128} \\ \underline{- 98} \quad 3 \\ 30 \overline{) 98} \\ \underline{- 90} \quad 3 \\ 8 \overline{) 30} \\ \underline{- 24} \quad 1 \\ 6 \overline{) 8} \\ \underline{- 6} \quad 3 \\ \text{H.C.F.} \longrightarrow 2 \overline{) 6} \\ \underline{- 6} \\ 0 \end{array} $
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H.C.F. of 128 and 98 is 2 (because 2 is the last divisor).

We find it by following these steps :

1. Divide the bigger number by the smaller one.
2. Again divide the divisor obtained by the remainder.
3. Continue the above two steps till the remainder becomes zero.

Similarly the two or more numbers may have unlimited multiples. The **least** of them is the Least or Lowest Common Multiple (L.C.M.).

We can calculate it by the following three methods:

L.C.M. through Multiples

Example 19 : Find L.C.M. of 8 and 12

Solution : Multiples of 8 are 8, 16, 24, 32, 40, 48, 56, 64, 72, ...
 Multiples of 12 are 12, 24, 36, 48, 60, 72, 84, 96, ...
 Common multiples are 24, 72, etc.
 We find that 24 is the smallest (least) multiple which is common.
 Therefore, L.C.M. of 8 and 12 is 24.





L.C.M. by Prime Factorization

Example 20 : Find L.C.M. of 62 and 32

Solution : Solve it using following steps.

Step 1 : We first factorise all the given numbers.

2	62	2	32
31	31	2	16
	1	2	8
		2	4
		2	2
			1

Step 2 : Write the numbers as their powers of prime factors.

$$62 = 2 \times 31$$

$$32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$$

Step 3 : Now, find the highest powers of the factors.

The highest powers of 2 and 31 are 5 and 1 respectively.

$$\text{Therefore, L.C.M.} = 2^5 \times 31 = 992$$

L.C.M. by Division

Example 21 : Find the L.C.M. of 28, 40, 56 and 105.

2	28, 40, 56, 105
2	14, 20, 28, 105
2	7, 10, 14, 105
3	7, 5, 7, 105
5	7, 5, 7, 35
7	7, 1, 7, 7
	1, 1, 1, 1

$$\text{Therefore, L.C.M.} = 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$$

We calculate it by these following steps:

Step 1 : Write all the numbers in a line.

Step 2 : Think of the smallest prime number which is a factor of any of these.

Step 3 : Divide all the numbers by this prime number obtained in step (2). Remember that if any of these numbers is not divisible, retain it as it is.



Relation Between H.C.F. and L.C.M. of Two Natural Numbers

For any two natural numbers:

$$\text{H.C.F.} = \frac{1^{\text{st}} \text{ number} \times 2^{\text{nd}} \text{ number}}{\text{Their L.C.M.}}$$

$$\text{L.C.M.} = \frac{1^{\text{st}} \text{ number} \times 2^{\text{nd}} \text{ number}}{\text{Their H.C.F.}}$$





Example 22 : If the L.C.M. and H.C.F. of two numbers are 40 and 6 respectively, and one of the numbers is 12, find the other number.

Solution : We know that

$$1^{\text{st}} \text{ number} \times 2^{\text{nd}} \text{ number} = (\text{L.C.M. of these two numbers}) \times (\text{H.C.F. of these two numbers})$$

$$12 \times 2^{\text{nd}} \text{ number} = 40 \times 6$$

$$\therefore 2^{\text{nd}} \text{ number (Other number)} =$$

=



Exercise 3.6

1. Find H.C.F. by prime factorization method.

(a) 28, 14

(b) 85, 102

(c) 56, 85

(d) 52, 70

(e) 12, 19

(f) 29, 93

2. Find L.C.M. by prime factorization method.

(a) 120, 80

(b) 29, 119

(c) 184, 680

(b) 85, 102

(e) 96, 132

(f) 210, 185

3. Find out the H.C.F. and L.C.M. of 126, 108, 225.

4. The L.C.M. of two prime numbers is 85. If one number is 5, find the other number.

5. Find out the lowest number which is exactly divisible by 36, 45, 63 and 80.



Points to Remember

- ❖ BODMAS rule is used to solve problems where more than two operations are involved.
- ❖ If you do not follow BODMAS rule, you may get different results.
- ❖ We must follow the sequence or order of brackets in BODMAS rule.
- ❖ We apply divisibility rule to check whether a given number is divisible by any other number or not.
- ❖ There are some divisibility rules from 2 to 25 that you must remember.
- ❖ Factors and multiples are related to each other.
- ❖ Factor of a number is an exact divisor of that number.
- ❖ Every natural number has infinite number of multiples.
- ❖ We can find prime factors with the help of prime factorization method and division method.
- ❖ We can classify natural numbers into even numbers, odd numbers, prime numbers, composite numbers, twin primes, prime triplet, co-prime numbers.
- ❖ 1 is neither prime nor composite number.
- ❖ There are some patterns to represent any number.
- ❖ Square numbers and cubic numbers are represented with the help of an index.
- ❖ We can find H.C.F. of two or more numbers by prime factorization method and division method.
- ❖ We can find LCM of two or more numbers by multiple method, prime factorization and division method.
- ❖ There is a relation between H.C.F. and L.C.M. of two numbers.

$$(1^{\text{st}} \text{ Number}) \times (2^{\text{nd}} \text{ Number}) = (\text{H.C.F. of these two numbers} \times \text{L.C.M. of these two numbers})$$





EXERCISE

1. MULTIPLE CHOICE QUESTIONS (MCQs):

Tick (✓) the correct options.

- (a) While solving a problem based on BODMAS rule, 'S' stands for :
 (i) Subtraction ☐ (ii) Addition ☐ (iii) Multiplication ☐ (iv) Division ☐
- (b) The value of $5 \times 24 \div 6 - 10$ is
 (i) 20 ☐ (ii) 30 ☐ (iii) 10 ☐ (iv) 15 ☐
- (c) While removing brackets, the first one to be removed is
 (i) {} ☐ (ii) _ _ ☐ (iii) [] ☐ (iv) none ☐
- (d) A number is divisible by 5, if the last digit is
 (i) 2 ☐ (ii) 7 ☐ (iii) 0 or 5 ☐ (iv) 14 ☐
- (e) Which one of the following is divisible by 3 ?
 (i) 2481 ☐ (ii) 3706 ☐ (iii) 9173 ☐ (iv) 10510 ☐
- (f) If a number is divisible by 8, then it is always divisible by
 (i) 2 ☐ (ii) 3 ☐ (iii) 5 ☐ (iv) 25 ☐
- (g) Which of the following is a composite number ?
 (i) 42 ☐ (ii) 59 ☐ (iii) 19 ☐ (iv) 17 ☐
- (h) Prime factors of 188
 (i) 2, 3, 2, 57 ☐ (ii) 2, 2, 57 ☐ (iii) 2, 2, 4, 7 ☐ (iv) 2, 2, 3, 19 ☐
- (i) The first four even numbers between 12 to 22 are
 (i) 14, 16, 18, 20 ☐ (ii) 8, 10, 12, 14 ☐ (iii) 12, 14, 16, 18 ☐ (iv) 18, 20, 22, 24 ☐
- (j) Which of the following is an L.C.M. of 90, 56, 72 ?
 (i) 2520 ☐ (ii) 20312 ☐ (iii) 20416 ☐ (iv) none ☐

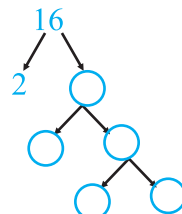
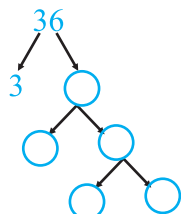
2. Solve the following by BODMAS rule.

- (a) $45 - [38 - \{5 \times 7 + (11 - 2 \times 5)\}]$ (b) $28 \div 4 - 13 + 16$
 (c) $96 \div [18 - \{63 \div 7 - (18 - 5 \text{ of } 3)\}]$ (d) $25 - \{(30 \div 5) + 10\} + 6$

3. Without actual division find out whether each number is divisible by 2, 3 and 5 or not.

- (a) 3402 (b) 5875 (c) 185
 (d) 15000 (e) 2370 (f) 3846

4. Find out all the factors of 82.
5. Write all the prime numbers and composite numbers less than 30.
6. Write three pairs of twin prime numbers.
7. **Find the H.C.F. of the following numbers.**
 - (a) 14, 24, 38
 - (b) 120, 675, 360
 - (c) 3, 27, 11
8. **Fill up the factor tree using prime numbers.**



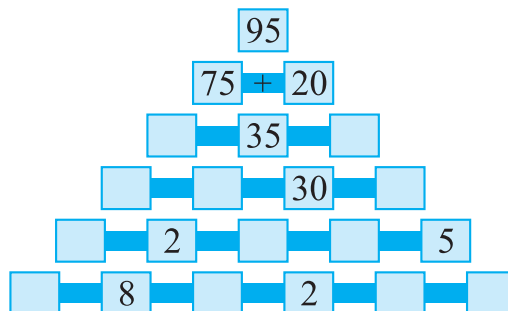
9. Show that H.C.F. of 12 and 15 is not greater than either 12 or 15.
10. The product of two numbers is 2160 and their H.C.F. is 12. Find their L.C.M.



I am a number between 20 and 30. If you divide 47 and 92 by me, the remainders are 3 and 4, respectively. What number am I?

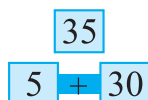


Objective : Complete the pyramid by using (+, −, ×, ÷).



Procedure :

- ❖ We are given 21 big squares for numbers and 15 small squares for the operation signs (+, −, ×, ÷).
- ❖ Each big square contains a number which is the result of numbers in small rectangle just below it. For example,



- ❖ The small squares carry the necessary operation signs.
- ❖ Some big and small squares are filled with numbers and signs as a **hint** to make you understand.
- ❖ Fill the rest of squares to complete the pyramid.

