NCERT Solutions for Class 10 Maths Chapter 1 Ex 1.2: NCERT Solutions for Class 10 Maths Chapter 1 Real Numbers Exercise 1.2, focus on understanding the Fundamental Theorem of Arithmetic and its applications in prime factorization. This exercise helps students learn how to express composite numbers as a product of prime numbers and solve related problems.

The solutions are created to improve problem-solving skills by providing step-by-step explanations. These detailed answers not only make the concepts clear but also build a strong foundation for future topics.

NCERT Solutions for Class 10 Maths Chapter 1 Ex 1.2 Overview

Chapter 1 of Class 10 Maths, Real Numbers explains the properties and applications of real numbers, including their classification, operations, and prime factorization. Real numbers include all rational and irrational numbers, forming a complete set that can be represented on the number line.

Exercise 1.2 focuses on the Fundamental Theorem of Arithmetic, which states that every composite number can be uniquely expressed as a product of prime numbers, except for the order of the factors. This theorem is essential for understanding prime factorization and solving problems related to the highest common factor (HCF) and least common multiple (LCM).

The NCERT Solutions for this exercise provide clear, step-by-step explanations to help students understand the method of prime factorization and its applications. These solutions are created to simplify the learning process helping students build a strong foundation in the concept of real numbers.

NCERT Solutions for Class 10 Maths Chapter 1 Ex 1.2 PDF

The NCERT Solutions for Class 10 Maths Chapter 1 Exercise 1.2 provide a detailed explanation of the problems based on the Fundamental Theorem of Arithmetic.

To access the solutions in a PDF format click on the link provided below for a convenient and comprehensive resource.

NCERT Solutions for Class 10 Maths Chapter 1 Ex 1.2 PDF

NCERT Solutions for Class 10 Maths Chapter 1 Ex 1.2

Here are the NCERT Solutions for Class 10 Maths Chapter 1 Exercise 1.2. This exercise focuses on the Fundamental Theorem of Arithmetic which involves expressing composite numbers as a product of their prime factors.

The step-by-step solutions help students solve problems related to HCF, LCM and the unique factorization of numbers. These solutions aim to build a strong conceptual understanding and enhance problem-solving skills, making them a valuable resource for exam preparation.

1. Express each number as a product of its prime factors.

(i) 140

(ii) 156

(iii) 3825

(iv) 5005

(v) 7429

Solutions:

(i) 140

By taking the LCM of 140, we will get the product of its prime factor.

Therefore, 140 = 2 × 2 × 5 × 7 × 1 = 2^2×5×7

(ii) 156

By taking the LCM of 156, we will get the product of its prime factor.

Hence, 156 = 2 × 2 × 13 × 3 × 1 = 2^2× 13 × 3

(iii) 3825

By taking the LCM of 3825, we will get the product of its prime factor.

Hence, 3825 = 3 × 3 × 5 × 5 × 17 × 1 = 3^2×5^2×17

(iv) 5005

By taking the LCM of 5005, we will get the product of its prime factor.

Hence, 5005 = 5 × 7 × 11 × 13 × 1 = 5 × 7 × 11 × 13

(v) 7429

By taking the LCM of 7429, we will get the product of its prime factor.

Hence, 7429 = 17 × 19 × 23 × 1 = 17 × 19 × 23

2. Find the LCM and HCF of the following pairs of integers and verify that LCM × HCF = product of the two numbers.

(i) 26 and 91

(ii) 510 and 92

(iii) 336 and 54

Solutions:

(i) 26 and 91

Expressing 26 and 91 as the product of its prime factors, we get

26 = 2 × 13 × 1

91 = 7 × 13 × 1

Therefore, LCM (26, 91) = 2 × 7 × 13 × 1 = 182

And HCF (26, 91) = 13

Verification

Now, product of 26 and 91 = 26 × 91 = 2366

And product of LCM and HCF = 182 × 13 = 2366

Hence, LCM × HCF = product of the 26 and 91

(ii) 510 and 92

Expressing 510 and 92 as the product of its prime factors, we get

510 = 2 × 3 × 17 × 5 × 1

92 = 2 × 2 × 23 × 1

Therefore, LCM (510, 92) = 2 × 2 × 3 × 5 × 17 × 23 = 23460

And HCF (510, 92) = 2

Verification

Now, product of 510 and 92 = 510 × 92 = 46920

And product of LCM and HCF = 23460 × 2 = 46920

Hence, LCM × HCF = product of the 510 and 92

(iii) 336 and 54

Expressing 336 and 54 as the product of its prime factors, we get

336 = 2 × 2 × 2 × 2 × 7 × 3 × 1

54 = 2 × 3 × 3 × 3 × 1

Therefore, LCM (336, 54) = = 3024

And HCF (336, 54) = 2×3 = 6

Verification

Now, product of 336 and 54 = 336 × 54 = 18,144

And product of LCM and HCF = 3024 × 6 = 18,144

Hence, LCM × HCF = product of the 336 and 54

3. Find the LCM and HCF of the following integers by applying the prime factorisation method.

(i) 12, 15 and 21

(ii) 17, 23 and 29

(iii) 8, 9 and 25

Solutions:

(i) 12, 15 and 21

Writing the product of prime factors for all the three numbers, we get

12=2×2×3

15=5×3

21=7×3

Therefore,

HCF(12,15,21) = 3

LCM(12,15,21) = 2 × 2 × 3 × 5 × 7 = 420

(ii) 17, 23 and 29

Writing the product of prime factors for all the three numbers, we get

17=17×1

23=23×1

29=29×1

Therefore,

HCF(17,23,29) = 1

LCM(17,23,29) = 17 × 23 × 29 = 11339

(iii) 8, 9 and 25

Writing the product of prime factors for all the three numbers, we get

8=2×2×2×1

9=3×3×1

25=5×5×1

Therefore,

HCF(8,9,25)=1

LCM(8,9,25) = 2×2×2×3×3×5×5 = 1800

4. Given that HCF (306, 657) = 9, find LCM (306, 657).

Solution: As we know,

HCF×LCM=Product of the two given numbers

Therefore,

9 × LCM = 306 × 657

LCM = (306×657)/9 = 22338

Hence, LCM(306,657) = 22338

5. Check whether 6^n can end with the digit 0 for any natural number n.

Solution: If the number 6^n ends with the digit zero (0), then it should be divisible by 5, as we know any number with the unit place as 0 or 5 is divisible by 5.

Prime factorisation of $6^n = (2×3)^n$

Therefore, the prime factorisation of 6^n doesn't contain the prime number 5.

Hence, it is clear that for any natural number n, 6^n is not divisible by 5, and thus it proves that 6^n cannot end with the digit 0 for any natural number n.

6. Explain why 7 × 11 × 13 + 13 and 7 × 6 × 5 × 4 × 3 × 2 × 1 + 5 are composite numbers.

Solution: By the definition of a composite number, we know if a number is composite, then it means it has factors other than 1 and itself. Therefore, for the given expression

7 × 11 × 13 + 13

Taking 13 as a common factor, we get

=13(7×11×1+1) = 13(77+1) = 13×78 = 13×3×2×13

Hence, 7 × 11 × 13 + 13 is a composite number.

Now let's take the other number,

7 × 6 × 5 × 4 × 3 × 2 × 1 + 5

Taking 5 as a common factor, we get

=5(7×6×4×3×2×1+1) = 5(1008+1) = 5×1009

Hence, 7 × 6 × 5 × 4 × 3 × 2 × 1 + 5 is a composite number.

7. There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time and go in the same direction. After how many minutes will they meet again at the starting point?

Solution: SincebBoth Sonia and Ravi move in the same direction and at the same time, the method to find the time when they will be meeting again at the starting point is LCM of 18 and 12.

Therefore, LCM(18,12) = $2\times3\times3\times2\times1=36$

Hence, Sonia and Ravi will meet again at the starting point after 36 minutes.

Benefits of Solving NCERT Solutions for Class 10 Maths Chapter 1 Ex 1.2

- **Concept Clarity**: Understanding the Fundamental Theorem of Arithmetic and its applications becomes easier with detailed step-by-step explanations.
- **Problem-Solving Skills**: Regular practice enhances the ability to solve problems involving prime factorization, HCF, and LCM efficiently.
- **Exam Preparation**: The solutions align with the NCERT syllabus, ensuring students are well-prepared for board exams.
- **Logical Thinking**: Working on these problems improves logical reasoning and analytical thinking by applying mathematical concepts systematically.
- **Time Management**: Practicing these solutions helps students solve similar problems faster, saving time during exams.
- **Strong Foundation**: Building a clear understanding of real numbers creates a solid base for tackling advanced topics in higher classes.