

Real Numbers - Exercise 1.1

Exercise 1.1 with independently verified solutions.

CHAPTER

Real Numbers

RESOURCE

NCERT Exercises

SOURCE

NCERT Mathematics, Reprint 2026-27

PART 1

Verified NCERT questions and solutions

Verified NCERT questions and solutions

Solutions are checked independently and follow the supplied NCERT chapter edition.

QUESTION

Question 1

prime factorisation · fundamental theorem of arithmetic

Express each number as a product of its prime factors.

- | | |
|----|------|
| 1. | 140 |
| 2. | 156 |
| 3. | 3825 |
| 4. | 5005 |
| 5. | 7429 |

Solution

- | | |
|----|---|
| 1. | $140 = 2 \times 70 = 2 \times 2 \times 35 = 2^2 \times 5 \times 7$ |
| 2. | $156 = 2 \times 78 = 2 \times 2 \times 39 = 2^2 \times 3 \times 13$ |
| 3. | $3825 = 5 \times 765 = 5 \times 5 \times 153 = 5^2 \times 3 \times 51 = 3^2 \times 5^2 \times 17$ |

4. $5005 = 5 \times 1001 = 5 \times 7 \times 143 = 5 \times 7 \times 11 \times 13$

5. $7429 = 17 \times 437 = 17 \times 19 \times 23$

QUESTION

Question 2

HCF · LCM · prime factorisation

Find the LCM and HCF of the following pairs of integers and verify that $\text{LCM} \times \text{HCF}$ equals the product of the two numbers.

1. 26 and 91
2. 510 and 92
3. 336 and 54

Solution

1. $26 = 2 \times 13, \quad 91 = 7 \times 13$

$$\text{HCF} = 13, \quad \text{LCM} = 2 \times 7 \times 13 = 182$$

$$13 \times 182 = 2366 = 26 \times 91$$

2. $510 = 2 \times 3 \times 5 \times 17, \quad 92 = 2^2 \times 23$

$$\text{HCF} = 2, \quad \text{LCM} = 2^2 \times 3 \times 5 \times 17 \times 23 = 23460$$

$$2 \times 23460 = 46920 = 510 \times 92$$

3.

$$336 = 2^4 \times 3 \times 7, \quad 54 = 2 \times 3^3$$

$$\text{HCF} = 2 \times 3 = 6, \quad \text{LCM} = 2^4 \times 3^3 \times 7 = 3024$$

$$6 \times 3024 = 18144 = 336 \times 54$$

QUESTION

Question 3

HCF · LCM · prime factorisation

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

1. 12, 15 and 21
2. 17, 23 and 29
3. 8, 9 and 25

Solution

1.

$$12 = 2^2 \times 3, \quad 15 = 3 \times 5, \quad 21 = 3 \times 7$$

$$\text{HCF} = 3, \quad \text{LCM} = 2^2 \times 3 \times 5 \times 7 = 420$$

2.

$$17 = 17, \quad 23 = 23, \quad 29 = 29$$

The three prime numbers have no common prime factor.

$$\text{HCF} = 1, \quad \text{LCM} = 17 \times 23 \times 29 = 11339$$

3.

$$8 = 2^3, \quad 9 = 3^2, \quad 25 = 5^2$$

The three numbers have no common prime factor.

$$\text{HCF} = 1, \quad \text{LCM} = 2^3 \times 3^2 \times 5^2 = 1800$$

QUESTION

Question 4

HCF · LCM

Given that $\text{HCF}(306, 657) = 9$, find $\text{LCM}(306, 657)$.

Solution

Use $\text{HCF} \times \text{LCM} = \text{product of the two positive integers}$.

$$9 \times \text{LCM}(306, 657) = 306 \times 657$$

$$\text{LCM}(306, 657) = \frac{306 \times 657}{9} = 34 \times 657 = 22338$$

Final answer

22338

QUESTION

Question 5

prime factorisation · terminal digit

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

Solution

$$6^n = (2 \times 3)^n = 2^n \times 3^n$$

This factorisation has no factor 5, so 6^n is not divisible by 10.

Final answer

6^n cannot end with zero for any natural number n .

QUESTION

Question 6

composite numbers · factorisation

Explain why each expression is a composite number.

1.

$$7 \times 11 \times 13 + 13$$

2.

$$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$$

Solution

$$7 \times 11 \times 13 + 13 = 13(7 \times 11 + 1) = 13 \times 78 = 1014$$

$$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5 = 5(1008 + 1) = 5 \times 1009 = 5045$$

Each expression has a non-trivial factorisation, so each is composite.

QUESTION

Question 7

LCM · word problem

Sonia takes 18 minutes to complete one round of a circular track, while Ravi takes 12 minutes. If they start together at the same point and move in the same direction, after how many minutes will they meet again at the starting point?

Solution

$$18 = 2 \times 3^2, \quad 12 = 2^2 \times 3$$

$$\text{LCM}(18, 12) = 2^2 \times 3^2 = 36$$

Final answer

They meet again at the starting point after 36 minutes.