CLASS 10 • CBSE MATHEMATICS

REAL NUMBERS

CHAPTER 1 | STUDY & PRACTICE GUIDE

Academic session: 2026–27

Chapter notes • Exercise 1.1 guided solutions • Extra questions • Answer key

A concise revision companion designed for SchoolOkay learners.

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Use this guide with your NCERT textbook. Attempt each question yourself before checking the solution.

01 | Chapter Introduction

Real numbers include both rational and irrational numbers. In earlier classes, you studied natural numbers, whole numbers, integers and fractions. This chapter revisits number properties and focuses on prime factorisation, the Fundamental Theorem of Arithmetic, HCF and LCM.

What you will learn

- Express composite numbers as products of prime factors.
- Find HCF and LCM using prime factorisation.
- Use the relationship between HCF and LCM for two positive integers.
- Understand the uniqueness of prime factorisation.

Key terms

TERM	MEANING
Prime number	A natural number greater than 1 with exactly two factors: 1 and itself.
Composite number	A natural number greater than 1 with more than two factors.
Prime factorisation	Writing a number as a product of prime numbers.
HCF	The greatest number that divides each given number exactly.
LCM	The smallest positive common multiple of the given numbers.
Coprime numbers	Two integers whose HCF is 1.

02 | Important Rules

Fundamental Theorem of Arithmetic

Every composite number can be expressed as a product of prime numbers, and this factorisation is unique apart from the order of the factors.

Example: 360 = 2 × 2 × 2 × 3 × 3 × 5 = $2^3 \times 3^2 \times 5$.

HCF: Multiply the common prime factors with the smallest powers.
LCM: Multiply all prime factors present with the greatest powers.

Worked example: $24 = 2^3 \times 3$ and $36 = 2^2 \times 3^2$
HCF = $2^2 \times 3 = 12$ | LCM = $2^3 \times 3^2 = 72$

For two positive integers a and b:
HCF(a, b) × LCM(a, b) = a × b

This product identity is for two numbers; do not apply it directly as a three-number product rule.

03 | NCERT Exercise 1.1

Guided solutions. Show the prime factorisation and intermediate steps in your notebook.

Q1. Express each number as a product of its prime factors.

(i) 140 $140 = 2 \times 2 \times 5 \times 7 = 2^2 \times 5 \times 7$

(ii) 156 $156 = 2 \times 2 \times 3 \times 13 = 2^2 \times 3 \times 13$

(iii) 3825 $3825 = 3 \times 3 \times 5 \times 5 \times 17 = 3^2 \times 5^2 \times 17$

(iv) 5005 $5005 = 5 \times 7 \times 11 \times 13$

(v) 7429 $7429 = 17 \times 19 \times 23$

Q2. Find the HCF and LCM of 26 and 91.

$26 = 2 \times 13$; $91 = 7 \times 13$
HCF = 13; LCM = $2 \times 7 \times 13 = 182$.
Check: $13 \times 182 = 26 \times 91 = 2366$.

Q3. Find the HCF and LCM of 510 and 92.

$510 = 2 \times 3 \times 5 \times 17$; $92 = 2^2 \times 23$
HCF = 2; LCM = $2^2 \times 3 \times 5 \times 17 \times 23 = 23{,}460$.
Check: $2 \times 23{,}460 = 510 \times 92 = 46{,}920$.

Q4. If the HCF of 306 and 657 is 9, find their LCM.

LCM = $(306 \times 657) \div 9 = 22{,}338$.

Q5. Can 6^n end with the digit 0 for any natural number n?

No. $6^n = 2^n \times 3^n$. A number ending in 0 must be divisible by 10, and hence by 5. There is no factor 5 in 6^n, so it cannot end in 0.

Exercise 1.1 — Continued

Q6. Explain why each number is composite.

(i) $7 \times 11 \times 13 + 13$
$= 13(7 \times 11 + 1) = 13 \times 78$. It has factors other than 1 and itself, so it is composite.

(ii) $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$
$= 5(7 \times 6 \times 4 \times 3 \times 2 \times 1 + 1) = 5 \times 1009$. It is composite.

Q7. Two people walk around a circular path. Their times for one round are 18 minutes and 12 minutes. When will they next meet at the starting point?

They meet at the starting point after LCM(18, 12) minutes.
$18 = 2 \times 3^2$; $12 = 2^2 \times 3$
LCM $= 2^2 \times 3^2 = 36$ minutes.

04 | Extra Practice Questions

Try these additional questions independently. Answers are provided on the next page.

1. Find the prime factorisation of 924.
2. Find the HCF and LCM of 72 and 120 using prime factorisation.
3. Find the HCF and LCM of 144 and 180. Verify the product relationship.
4. The HCF of two numbers is 12 and their product is 5,184. Find their LCM.
5. Can 15^n end with the digit 0 for any natural number n? Give a reason.
6. Show that $5 \times 7 \times 11 + 11$ is a composite number.
7. Three bells ring at intervals of 8, 12 and 15 minutes. If they ring together now, after how many minutes will they ring together again?
8. Find the smallest number exactly divisible by 18, 24 and 30.
9. If two positive integers are coprime, what is their HCF?
10. State the Fundamental Theorem of Arithmetic in your own words.

05 | Extra Practice — Answer Key

1. $924 = 2^2 \times 3 \times 7 \times 11$.
2. HCF = 24; LCM = 360.
3. HCF = 36; LCM = 720. Check: $36 \times 720 = 144 \times 180 = 25{,}920$.
4. LCM = 5,184 ÷ 12 = 432.
5. No. $15^n = 3^n \times 5^n$ has no factor 2, so it is not divisible by 10.
6. $5 \times 7 \times 11 + 11 = 11(35 + 1) = 11 \times 36$; hence composite.
7. LCM(8, 12, 15) = 120 minutes.
8. LCM(18, 24, 30) = 360.
9. Their HCF is 1.
10. Every composite positive integer can be expressed as a product of primes, uniquely apart from the order.

Quick Revision Checklist

☐ I can identify prime and composite numbers.
☐ I can write a number as a product of prime factors.
☐ I can find HCF using the smallest powers of common primes.
☐ I can find LCM using the greatest powers of all primes present.
☐ I can use HCF × LCM = product of two numbers.
☐ I can solve real-life LCM questions.

NCERT textbook reference

For the complete official chapter, examples and textbook exercise, refer to the NCERT PDF: Class 10 Mathematics — Real Numbers. This SchoolOkay document is an independently prepared study companion.

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