CLASS 10 | MATHS | NCERT SOLUTIONS

NCERT Solutions for Class 10 Maths Chapter 1: Real Numbers – Free PDF Download

Students searching for “NCERT Solutions Class 10 Maths Chapter 1” are almost always stuck on the same handful of questions from Exercise 1.1. Below are complete, step-by-step solutions for the current 2026-27 NCERT Class 10 Maths textbook, Chapter 1 — Real Numbers.

Contents

Students searching for "NCERT Solutions Class 10 Maths Chapter 1" are almost always stuck on the same handful of questions from Exercise 1.1. Below are complete, step-by-step solutions for the current 2026-27 NCERT Class 10 Maths textbook, Chapter 1 — Real Numbers.

NCERT Solutions for Class 10 Maths Chapter 1: Real Numbers (Exercise 1.1)

Q1. Express each number as a product of its prime factors: (i) 140 (ii) 156 (iii) 3825 (iv) 5005 (v) 7429.
(i) $140 = 2 \times 2 \times 5 \times 7 = 2^2 \times 5 \times 7$
(ii) $156 = 2 \times 2 \times 3 \times 13 = 2^2 \times 3 \times 13$
(iii) $3825 = 3 \times 3 \times 5 \times 5 \times 17 = 3^2 \times 5^2 \times 17$
(iv) $5005 = 5 \times 7 \times 11 \times 13$
(v) $7429 = 17 \times 19 \times 23$

Q2. 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.
(i) $26 = 2 \times 13$, $91 = 7 \times 13$. HCF = 13, LCM = $2 \times 7 \times 13 = 182$. Verification: $13 \times 182 = 2{,}366 = 26 \times 91$.
(ii) $510 = 2 \times 3 \times 5 \times 17$, $92 = 2^2 \times 23$. HCF = 2, LCM = $2^2 \times 3 \times 5 \times 17 \times 23 = 23{,}460$. Verification: $2 \times 23{,}460 = 46{,}920 = 510 \times 92$.
(iii) $336 = 2^4 \times 3 \times 7$, $54 = 2 \times 3^3$. HCF = $2 \times 3 = 6$, LCM = $2^4 \times 3^3 \times 7 = 3{,}024$. Verification: $6 \times 3{,}024 = 18{,}144 = 336 \times 54$.

Q3. 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.
(i) $12 = 2^2 \times 3$, $15 = 3 \times 5$, $21 = 3 \times 7$. HCF = 3, LCM = $2^2 \times 3 \times 5 \times 7 = 420$.
(ii) 17, 23 and 29 are all prime numbers, so HCF = 1, LCM = $17 \times 23 \times 29 = 11{,}339$.
(iii) $8 = 2^3$, $9 = 3^2$, $25 = 5^2$. HCF = 1, LCM = $2^3 \times 3^2 \times 5^2 = 1{,}800$.

Q4. Given that HCF(306, 657) = 9, find LCM(306, 657).
Using the relation HCF × LCM = product of the two numbers:
LCM = $(306 \times 657) \div 9 = 306 \times 73 =$ **22,338**.

Q5. Explain why 7 × 11 × 13 + 13 and 7 × 6 × 5 × 4 × 3 × 2 × 1 + 5 are composite numbers.
$7 \times 11 \times 13 + 13 = 13 \times (7 \times 11 + 1) = 13 \times 78 = 1{,}014$. Since it can be written as a product of 13 and 78, it is composite.
$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5 = 5 \times (7 \times 6 \times 4 \times 3 \times 2 \times 1 + 1) = 5 \times 1{,}009 = 5{,}045$. Since it can be written as a product of 5 and 1,009, it is composite.

Q6. Check whether 6^n can end with the digit 0 for any natural number n.
For a number to end in 0, it must be divisible by 10, i.e. by both 2 and 5. Now $6^n = (2 \times 3)^n = 2^n \times 3^n$. The only prime factors of 6^n are 2 and 3 — 5 is never a factor, no matter what value n takes. So 6^n can **never** end with the digit 0.

Q7. 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?
They will meet again at the starting point after a time equal to the LCM of 18 and 12. $18 = 2 \times 3^2$, $12 = 2^2 \times 3$. LCM = $2^2 \times 3^2 =$ **36 minutes**.

NCERT Solutions for Class 10 Maths Chapter 1: Real Numbers (Exercise 1.2)

Q1. Prove that √5 is irrational.
Assume, for contradiction, that √5 is rational. Then √5 = p/q, where p and q are coprime integers (q ≠ 0). Squaring both sides: $5q^2 = p^2$, so p^2 is divisible by 5, which means p itself must be divisible by 5. Let p = 5m. Substituting back: $5q^2 = 25m^2$, so $q^2 = 5m^2$, meaning q is also divisible by 5. But this contradicts our assumption that p and q are coprime (they now share a common factor of 5). Hence, √5 is irrational.

Q2. Prove that 3 + 2√5 is irrational.
Assume 3 + 2√5 is rational, equal to some rational number r. Then 2√5 = r – 3, so √5 = (r – 3)/2. Since r is rational, (r – 3)/2 is also rational, which would mean √5 is rational — contradicting Q1's result. Hence, 3 + 2√5 is irrational.

Q3. Prove that the following are irrational: (i) 1/√2 (ii) 7√5 (iii) 6 + √2.
(i) Assume 1/√2 is rational, equal to some rational number r. Then √2 = 1/r, and since r is a non-zero rational number, 1/r is also rational — meaning √2 would be rational. But √2 is irrational (by the same contradiction method as Q1 above: if √2 = p/q in lowest terms, then $p^2 = 2q^2$, so p is even; writing p = 2m gives $q^2 = 2m^2$, so q is also even — contradicting that p and q are coprime). This contradiction shows 1/√2 is irrational.
(ii) Assume 7√5 is rational, equal to some rational number r. Then √5 = r/7, and since r is rational, r/7 is also rational — meaning √5 would be rational, contradicting Q1's result above. Hence 7√5 is irrational.
(iii) Assume 6 + √2 is rational, equal to some rational number r. Then √2 = r – 6, which would be rational since r is rational — contradicting the fact that √2 is irrational (shown in part (i) above). Hence 6 + √2 is irrational.

Why This Chapter Matters

Real Numbers is a short but high-yield chapter — it typically contributes 1–2 direct questions in the CBSE Class 10 board Maths paper (proof-of-irrationality and HCF/LCM application questions are recurring favourites), and the proof techniques here (contradiction, prime factorisation) reappear across Class 10 and Class 11 algebra. Students preparing for JEE Foundation-level material also encounter the same number-theory groundwork later.

CBSE Exam Weightage

This chapter falls under **Unit I: Number Systems** in the CBSE Class 10 Maths board exam syllabus. This unit typically carries around **6 marks (7.5%)** of the 80-mark theory paper, based on CBSE's published unit-wise weightage (Question Paper Design). CBSE sets weightage at the unit level rather than chapter-by-chapter, so the exact share from this specific chapter can vary a little between years and sample papers.

How to Use These Solutions

Try each question yourself first using a rough sheet, then check your working against the steps above — the goal is to internalise the proof pattern (assume the opposite, reach a contradiction) rather than memorise this specific answer, since board exams frequently rephrase the same question with different numbers. You can download the full chapter directly from our Class 10 Maths NCERT book page, or browse every Class 10 subject on our Class 10 hub.

Class 10 Mathematics Chapter 1 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the Class 10 Mathematics Chapter 1 Extra Questions and Class 10 Mathematics Chapter 1 Revision Notes for quick revision and extra practice.