Mathematics

Practice Test Paper 6

(Chapter 1: Real Numbers)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A: 5 × 1 = 5 marks; Section B: 4 × 2 = 8 marks; Section C: 3 × 3 = 9 marks; Section D: 1 × 3 = 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Use prime factorisation where required. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

1. If $7560 = 2^3 \times 3^p \times q \times 7$, where q is a prime other than 2, 3 or 7, then $p + q$ equals:

(A) 6 (B) 7

(C) 8 (D) 10

2. The HCF of two consecutive positive integers is always:

(A) 1 (B) 2

(C) their sum (D) their product

3. Which statement correctly describes $\frac{\sqrt{2}}{2}$?

(A) It is a whole number.

(B) It is rational.

(C) It is irrational.

(D) It equals 1.

4. For positive integers a and b, their HCF equals their LCM precisely when:

(A) they are coprime (B) $a = b$

(C) both are prime (D) one is twice the other

5. The simplified form of $\sqrt{50} - \sqrt{8}$ is:

(A) $\sqrt{42}$ (B) $7\sqrt{2}$

(C) $3\sqrt{2}$ (D) 3

SECTION B

(4 questions × 2 marks = 8 marks)

6. Find the HCF and LCM of 180, 252 and 324 using prime factorisation.

7. Given that $\sqrt{5}$ is irrational, prove that $\frac{1}{2-\sqrt{5}}$ is irrational.

8. Show that $3^2 \times 5 \times 7 + 3 \times 5^2 \times 7$ is composite by identifying a common factor.

9. Find the smallest positive perfect square divisible by 12, 15 and 20.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Find all rational values of a for which $a\sqrt{2} + 4$ is rational. Justify your conclusion, given that $\sqrt{2}$ is irrational.

11. Find all possible unordered pairs of positive integers with HCF 14 and LCM 420.

12. Find the smallest positive integer which, when increased by 17, is divisible by both 520 and 468.

SECTION D

(Application Based Question - 3 marks)

13. Buses on three routes leave a terminal every 12, 18 and 30 minutes. All three leave together at 6:00 a.m., and each route continues at its stated interval.

(i) At what time will the three buses next leave together?

(ii) How many departures does the 12-minute route make after 6:00 a.m. up to and including that time?

(iii) Can all three leave together at 8:00 a.m.? Give a reason.