UNIQUE STUDY POINT

BY SUMEET SAHU

Amitesh Nagar, Indore (M.P.)

Class: **X**	Subject: **Mathematics**	Session: **2025-26**
Chapter: **Ch 1: Real Numbers (PYQ)**		

PREVIOUS YEAR QUESTIONS (PYQ)

Chapter 1: Real Numbers

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This document contains chapter-wise Previous Year Questions from CBSE Class X Board Examinations (2019–2025) for **Chapter 1: Real Numbers**. Each question includes the year of examination, marks allotted, and direct answer for quick revision.

Note: Questions based on Euclid's Division Lemma are excluded as it is deleted from CBSE 2025-26 syllabus.

1 Mark Questions (MCQ / VSA)

[CBSE 2025 | 1 Mark]

Q1. If $(-1)^n + (-1)^8 = 0$, then n is:

(a) any positive integer
(b) any negative integer
(c) any odd number
(d) any even number

Ans: (c) any odd number

[CBSE 2025 | 1 Mark]

Q2. Which of the following cannot be the unit digit of 8^n, where n is a natural number?

(a) 4
(b) 2
(c) 0
(d) 6

Ans: (c) 0

[CBSE 2025 | 1 Mark]

Q3. If x is the LCM of 4, 6, 8 and y is the LCM of 3, 5, 7 and p is the LCM of x and y, then which is true?

(a) p = 35x
(b) p = 4y
(c) p = 8x
(d) p = 16y

Ans: (a) p = 35x

[CBSE 2025 | 1 Mark]

Q4. If HCF(98, 28) = m and LCM(98, 28) = n, then the value of n − 7m is:

(a) 0
(b) 28
(c) 98
(d) 198

Ans: (c) 98

[CBSE 2025 | 1 Mark]

Q5. The greatest number which divides 70 and 125, leaving remainders 5 and 8 respectively, is:

(a) 13
(b) 65
(c) 875
(d) 1750

Ans: (a) 13

[CBSE 2025 | 1 Mark]

Q6. A rational number between √3 and √5 is:

(a) 1.4142387954012...
(b) 1.7320508...
(c) π
(d) 1.857142

Ans: (d) 1.857142

[CBSE 2024 | 1 Mark]

Q7. The smallest irrational number by which √20 should be multiplied so as to get a rational number, is:

(a) √20
(b) √2
(c) 5
(d) √5

Ans: (d) √5

[CBSE 2024 | 1 Mark]

Q8. The LCM of two prime numbers p and q (p > q) is 221. Then the value of 3p − q is:

(a) 4
(b) 28
(c) 38
(d) 48

Ans: (c) 38

[CBSE 2024 | 1 Mark]

Q9. A pair of irrational numbers whose product is a rational number is:

(a) (√16, √4)
(b) (√5, √2)
(c) (√3, √27)
(d) (√36, √2)

Ans: (c) (√3, √27)

[CBSE 2024 | 1 Mark]

Q10. Given HCF(2520, 6600) = 40, LCM(2520, 6600) = 252 × k, then k is:

(a) 1650
(b) 1600
(c) 165
(d) 1625

Ans: (a) 1650

[CBSE 2024 | 1 Mark]

Q11. If $p = 18a^2b$ and $q = 20a^3b^2$ (a, b are prime numbers), then LCM(p, q) is:

(a) $2a^2b^2$
(b) $180a^2b^2$
(c) $12a^2b^2$
(d) $180a^3b^2$

Ans: (d) $180a^3b^2$

[CBSE 2024 | 1 Mark]

Q12. LCM(850, 500) is:

(a) 850 × 50
(b) 17 × 500
(c) $17 \times 5^2 \times 2^2$
(d) $17 \times 5^3 \times 2$

Ans: (b) 17 × 500 = 8500

[CBSE 2023 | 1 Mark]

Q13. The ratio of HCF to LCM of the least composite number and the least prime number is:

(a) 1 : 2
(b) 2 : 1
(c) 1 : 1
(d) 1 : 3

Ans: (a) 1 : 2

[CBSE 2022 | 1 Mark]

Q14. Two positive numbers have their HCF as 12 and their product as 6336. The number of pairs possible is:

(a) 2
(b) 3
(c) 4
(d) 1

Ans: (a) 2

[CBSE 2022 | 1 Mark]

Q15. The number 385 can be expressed as the product of prime factors as:

(a) 5 × 11 × 13
(b) 5 × 7 × 11
(c) 5 × 7 × 13
(d) 5 × 11 × 17

Ans: (b) 5 × 7 × 11

[CBSE 2020 | 1 Mark]

Q16. The HCF and the LCM of 12, 21 and 15 respectively, are:

(a) 3, 140
(b) 12, 420
(c) 3, 420
(d) 420, 3

Ans: (c) 3, 420

Assertion-Reason Questions (1 Mark)

[CBSE 2025 | 1 Mark]

Q17. Assertion (A): For any two prime numbers p and q, their HCF is 1 and LCM is p + q.
Reason (R): For any two natural numbers, HCF × LCM = product of numbers.

(a) Both A and R true, R is correct explanation of A
(b) Both A and R true, R is not correct explanation of A
(c) A is true, R is false
(d) A is false, R is true

Ans: (d) A is false, R is true

2 Mark Questions (SA-I)

[CBSE 2025 | 2 Marks]

Q18. Find the smallest number that is divisible by both 644 and 462.

Ans: LCM(644, 462) = 21252

[CBSE 2025 | 2 Marks]

Q19. Two numbers are in the ratio 4 : 5 and their HCF is 11. Find the LCM of these numbers.

Ans: Numbers = 44 and 55. LCM = 220.

[CBSE 2024 | 2 Marks]

Q20. Show that 11 × 19 × 23 + 3 × 11 is not a prime number.

Ans: = 11(19 × 23 + 3) = 11 × 440. Has factors other than 1 and itself, hence not prime.

[CBSE 2024 | 2 Marks]

Q21. Show that 5 × 11 × 17 + 3 × 11 is a composite number.

Ans: = 11(85 + 3) = 11 × 88 = $2^3 \times 11^2$. Has more than two factors, hence composite.

[CBSE 2020 | 2 Marks]

Q22. The LCM of two numbers is 182 and their HCF is 13. If one number is 26, find the other.

Ans: Other number = (13 × 182) / 26 = 91

[CBSE 2021 | 2 Marks]

Q23. Explain why 2 × 3 × 5 + 5 and 5 × 7 × 11 + 7 × 5 are composite numbers.

Ans: 2 × 3 × 5 + 5 = 5 × 7 = 35 (composite). 5 × 7 × 11 + 7 × 5 = 5 × 7 × 12 = 420 (composite).

[CBSE 2023 | 2 Marks]

Q24. Find the least number which when divided by 12, 16, and 24 leaves remainder 7 in each case.

Ans: LCM(12, 16, 24) = 48. Required number = 48 + 7 = 55.

3 Mark Questions (SA-II)

[CBSE 2023 | 3 Marks]

Q25. Prove that √3 is an irrational number.

Ans: Assume √3 = a/b (co-prime). Then $a^2 = 3b^2 \Rightarrow 3|a$. Let a = 3c, then $b^2 = 3c^2 \Rightarrow 3|b$. Contradicts co-prime. Hence √3 is irrational.

[CBSE 2024 | 3 Marks]

Q26. Prove that 6 − 4√5 is an irrational number, given that √5 is irrational.

Ans: Assume rational. Then √5 = (6b − a)/(4b) = rational. Contradiction. Hence irrational.

[CBSE 2024 | 3 Marks]

Q27. Prove that 5 − 2√3 is an irrational number, given that √3 is irrational.

Ans: Assume rational. Then √3 = (5b − a)/(2b) = rational. Contradiction. Hence irrational.

[CBSE 2025 | 3 Marks]

Q28. Prove that 3 + 2√5 is irrational, given that √5 is irrational.

Ans: Assume rational = a/b. Then √5 = (a − 3b)/(2b) = rational. Contradiction. Hence irrational.

[CBSE 2025 | 3 Marks]

Q29. Prove that 2 − √3/5 is an irrational number, given that √3 is irrational.

Ans: Assume rational = a/b. Then √3 = 5(2b − a)/b = rational. Contradiction. Hence irrational.

Case Study / 4-5 Mark Questions

[CBSE 2024 | 4 Marks]

Q30. Case Study: Ms. Mukta announced the number 2 and asked students to multiply it by a prime number and pass it on. The last student got 173250.
(A) What is the least prime number used by students? [1]
(B) How many students are in the class? [1]
(C) Which prime number has been used maximum times? [2]

Ans: 173250 = $2 \times 3^2 \times 5^3 \times 7 \times 11$. (A) Least prime by students = 3. (B) 7 students. (C) 5 used 3 times (maximum).

[CBSE 2025 | 4 Marks]

Q31. Three sets of Physics, Chemistry and Mathematics books have to be stacked such that all books are stored subject-wise and height of each stack is same. Physics = 144, Chemistry = 180, Maths = 192. Find number of stacks of each subject.

Ans: HCF(144, 180, 192) = 12. Physics = 12 stacks, Chemistry = 15 stacks, Maths = 16 stacks.

[CBSE 2024 | 3 Marks]

Q32. In a teachers' workshop, teachers of French = 48, Hindi = 80, English = 144. Find minimum rooms required if same number of teachers per room, all of same subject.

Ans: HCF(48, 80, 144) = 16. Total rooms = 3 + 5 + 9 = 17.

[CBSE 2025 | 5 Marks]

Q33. Let p, q, r be three distinct prime numbers. Check whether p·q·r + q is composite. Give examples: (i) p·q·r + 1 is composite (ii) p·q·r + 1 is prime.

Ans: pqr + q = q(pr + 1) — composite. (i) p=3, q=5, r=7: 106 (composite). (ii) p=2, q=3, r=5: 31 (prime).

CHAPTER SUMMARY: PYQ Analysis

(As per CBSE 2025-26 Syllabus | Euclid's Division Lemma Excluded)

Topic	Years Asked	Frequency	Marks
HCF & LCM by Prime Factorisation	2020, 2022, 2023, 2024, 2025	10+	1–3
Fundamental Theorem of Arithmetic	2022, 2024, 2025	5+	1–2
Composite/Prime Number Proof	2021, 2024, 2025	4+	2
Irrational Number Proof	2023, 2024, 2025	6+	3
HCF × LCM = Product Property	2020, 2024, 2025	4+	1–2
Word Problems (HCF/LCM)	2024, 2025	3+	3–5
Assertion-Reason (HCF/LCM)	2024, 2025	2+	1
Case Study (Prime Factorisation)	2024, 2025	2+	4

Key Observations:

- HCF and LCM by prime factorisation is the most frequently asked topic — appears every year.
- Irrationality proofs ($\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$ and expressions like $3+2\sqrt{5}$) are asked as 3-mark questions consistently.
- Case study questions on prime factorisation are a newer pattern (2024–2025).
- Assertion-Reason on HCF/LCM properties is a recent trend.
- Euclid's Division Lemma is DELETED from 2025-26 syllabus — no questions from this topic.
- Expected marks from this chapter: 5–6 marks.

"Practice makes perfect. Solve PYQs to master your Board Exam!"

Best Wishes for Your Board Exam!

Prepared by: Sumeet Sahu | UNIQUE STUDY POINT, Indore

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