Class: **X**	Subject: **Mathematics**	Session: **2025-26**
Chapter: **Ch 14: Probability (PYQ)**		

PREVIOUS YEAR QUESTIONS (PYQ)

Chapter 14: Probability

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This document contains chapter-wise Previous Year Questions from CBSE Class X Board Examinations (2019–2025) for **Chapter 14: Probability**. Each question includes the year of examination, marks allotted, and direct answer for quick revision.

⚠ NOTE: All questions as per CBSE 2025–26 Syllabus. Topics: Classical (Theoretical) Probability, Simple events, Complementary events. P(E) = Favourable outcomes / Total outcomes. P(E) + P(not E) = 1.

SECTION A: Multiple Choice Questions (1 Mark Each)

[CBSE 2024 | 1 Mark]

Q1. A bag contains 3 red, 5 white and 7 black balls. The probability that a ball drawn at random is neither red nor black is:

(a) 1/3
(b) 1/5
(c) 7/15
(d) 8/15

Ans: (a) 1/3. Neither red nor black = white = 5. P = 5/15 = 1/3

[CBSE 2024 | 1 Mark]

Q2. The probability of getting a bad egg in a lot of 400 eggs is 0.045. The number of good eggs in the lot is:

(a) 18
(b) 180
(c) 382
(d) 220

Ans: (c) 382. Bad eggs = 400 × 0.045 = 18. Good = 400 − 18 = 382

[CBSE 2024 | 1 Mark]

Q3. Two dice are thrown together. The probability that they show different numbers is:

(a) 1/6
(b) 5/6
(c) 1/3
(d) 2/3

Ans: (b) 5/6. Same numbers: (1,1),(2,2),...,(6,6) = 6. P(same) = 6/36 = 1/6. P(different) = 1 − 1/6 = 5/6

[CBSE 2023 | 1 Mark]

Q4. A girl calculates that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, how many tickets has she bought?

(a) 40
(b) 240
(c) 480
(d) 750

Ans: (c) 480. 0.08 = x/6000 ⇒ x = 480

[CBSE 2023 | 1 Mark]

Q5. Two dice are thrown together. The probability of getting the difference of numbers on their upper faces equals 3 is:

(a) 1/9
(b) 2/9
(c) 1/6
(d) 1/12

Ans: (c) 1/6. Favourable: (1,4),(2,5),(3,6),(4,1),(5,2),(6,3) = 6. P = 6/36 = 1/6

[CBSE 2023 | 1 Mark]

Q6. A card is drawn at random from a well-shuffled pack of 52 cards. The probability that the card drawn is not an ace is:

(a) 1/13
(b) 9/13
(c) 4/13
(d) 12/13

Ans: (d) 12/13. P(ace) = 4/52 = 1/13. P(not ace) = 1 − 1/13 = 12/13

[CBSE 2022 | 1 Mark]

Q7. A card is drawn from a well-shuffled deck of 52 cards. The probability that drawn card is a red queen is:

(a) 1/26
(b) 2/13
(c) 1/13
(d) 1/52

Ans: (a) 1/26. Red queens = 2 (heart, diamond). P = 2/52 = 1/26

[CBSE 2020 | 1 Mark]

Q8. A die is thrown once. The probability of getting a prime number is:

(a) 2/3
(b) 1/3
(c) 1/2
(d) 1/6

Ans: (c) 1/2. Primes on die: 2, 3, 5 = 3 numbers. P = 3/6 = 1/2

[CBSE 2019 | 1 Mark]

Q9. If P(E) = 0.05, then P(not E) is:

(a) 0.05
(b) 0.5
(c) 0.9
(d) 0.95

Ans: (d) 0.95. P(not E) = 1 − 0.05 = 0.95

[CBSE 2019 | 1 Mark]

Q10. The probability of an event that is certain to happen is:

(a) 0
(b) 0.5
(c) 1
(d) 1.5

Ans: (c) 1. A certain event has probability 1.

[CBSE 2021 | 1 Mark]

Q11. If the probability of an event E is 0.012, what is the probability of the complementary event "not E"?

(a) 0.__(fill in)
(b) 0.__(fill in)
(c) 0.__(fill in)
(d) 0.988

Ans: (d) 0.988. P(not E) = 1 − 0.012 = 0.988

SECTION B: Assertion-Reason Questions (1 Mark Each)

[CBSE 2023 | 1 Mark]

Q12. Assertion (A): The probability that a leap year has 53 Sundays is 2/7.
Reason (R): The probability that a non-leap year has 53 Sundays is 5/7.

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

Ans: (c) A is true (leap year = 52 weeks + 2 days, P(Sunday) = 2/7). R is false (non-leap = 52 weeks + 1 day, P = 1/7, not 5/7).

[CBSE 2024 | 1 Mark]

Q13. Assertion (A): If a die is thrown, the probability of getting a number less than 3 and greater than 2 is zero.
Reason (R): Probability of an impossible event is zero.

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

Ans: (a) Both true. No number is simultaneously < 3 and > 2 (only integers on die). This is impossible. R explains A.

SECTION C: Short Answer Questions (2 Marks Each)

[CBSE 2024 | 2 Marks]

Q14. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball, determine the number of blue balls in the bag.

Ans: Let blue = x. P(red) = 5/(5+x), P(blue) = x/(5+x). Given P(blue) = 2P(red) ⇒ x/(5+x) = 10/(5+x) ⇒ x = 10.

[CBSE 2023 | 2 Marks]

Q15. A box contains 20 balls bearing numbers 1, 2, 3, ..., 20. A ball is drawn at random. Find the probability that the number on the ball is (i) divisible by 2 or 3, (ii) a perfect square.

Ans: (i) Div by 2: {2,4,6,8,10,12,14,16,18,20}=10. Div by 3: {3,6,9,12,15,18}=6. Both: {6,12,18}=3. P = (10+6−3)/20 = 13/20. (ii) Perfect squares: {1,4,9,16} = 4. P = 4/20 = 1/5.

[CBSE 2022 | 2 Marks]

Q16. Two different dice are thrown together. Find the probability that the numbers obtained have (i) even sum (ii) even product.

Ans: Total = 36. (i) Even sum: both even or both odd = 9+9 = 18. P = 18/36 = 1/2. (ii) Even product: at least one even. P = 1 − P(both odd) = 1 − 9/36 = 27/36 = 3/4.

[CBSE 2020 | 2 Marks]

Q17. A bag contains 6 red and 4 black balls. A ball is drawn at random. What is the probability of getting a black ball? If 2 more red balls are added, what is the new probability of getting a red ball?

Ans: Initially: P(black) = 4/10 = 2/5. After adding 2 red: Total = 12, Red = 8. P(red) = 8/12 = 2/3.

[CBSE 2021 | 2 Marks]

Q18. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting (i) a king of red colour (ii) a face card.

Ans: (i) Red kings = 2. P = 2/52 = 1/26. (ii) Face cards (J,Q,K) = 12. P = 12/52 = 3/13.

SECTION D: Short Answer Questions (3 Marks Each)

[CBSE 2024 | 3 Marks]

Q19. A jar contains 24 marbles, some are green and the others are blue. If a marble is drawn at random from the jar, the probability that it is green is 2/3. Find the number of blue marbles in the jar. If 5 more green marbles are added, find the new probability of drawing a green marble.

Ans: Green = 24 × 2/3 = 16. Blue = 24 − 16 = 8. After adding 5 green: Total = 29, Green = 21. P(green) = 21/29.

[CBSE 2022 | 3 Marks]

Q20. Two dice are thrown at the same time and the product of numbers appearing on them is noted. Find the probability that the product is (i) 6 (ii) less than 9 (iii) a perfect square.

Ans: Total = 36. (i) Product 6: (1,6),(2,3),(3,2),(6,1) = 4. P = 4/36 = 1/9. (ii) Product < 9: (1,1),(1,2),...,(1,6),(2,1),(2,2),(2,3),(2,4),(3,1),(3,2),(4,1),(4,2),(6,1),(1,5),(1,4),(5,1) = list all pairs with product < 9 = 20. P = 20/36 = 5/9. (iii) Perfect square products: 1,4,9,16,25,36. Count pairs: 1→(1,1); 4→(1,4),(2,2),(4,1); 9→(3,3); 16→(4,4); 25→(5,5); 36→(6,6) = 8. P = 8/36 = 2/9.

[CBSE 2021 | 3 Marks]

Q21. A number is selected at random from the numbers 1 to 30. Find the probability that the selected number is (i) a prime number (ii) a multiple of 7 (iii) a perfect cube.

Ans: (i) Primes: 2,3,5,7,11,13,17,19,23,29 = 10. P = 10/30 = 1/3. (ii) Multiples of 7: 7,14,21,28 = 4. P = 4/30 = 2/15. (iii) Perfect cubes: 1,8,27 = 3. P = 3/30 = 1/10.

[CBSE 2019 | 3 Marks]

Q22. Cards numbered 1 to 30 are put in a bag and a card is drawn at random. Find the probability that the drawn card has (i) a number which is a multiple of 3 and 5 (ii) a two-digit number.

Ans: (i) Multiples of both 3 and 5 (i.e., 15): {15, 30} = 2. P = 2/30 = 1/15. (ii) Two-digit: 10 to 30 = 21. P = 21/30 = 7/10.

SECTION E: Case Study Based Questions (4 Marks Each)

[CBSE 2025 | 4 Marks]

Q23. Case Study: In a game, a spinner is divided into 8 equal sectors numbered 1 to 8. A player spins it once.
(i) Find the probability of getting an odd number.
(ii) Find the probability of getting a number greater than 5.
(iii) Find the probability of getting a prime number.
(iv) Find P(getting 9).

Ans: Total outcomes = 8. (i) Odd: {1,3,5,7} = 4. P = 4/8 = 1/2. (ii) > 5: {6,7,8} = 3. P = 3/8. (iii) Prime: {2,3,5,7} = 4. P = 4/8 = 1/2. (iv) P(9) = 0 (impossible event, 9 not on spinner).

[CBSE 2024 | 4 Marks]

Q24. Case Study: A class has 30 students. Their ages are recorded as follows. A student is selected at random.

Age (years)	14	15	16	17
No. of students	8	10	7	5

(i) Find P(student is 15 years old).
(ii) Find P(student is older than 15).
(iii) Find P(student is not 14 years old).
(iv) Find P(student is at most 16 years old).

Ans: Total = 30. (i) P(15) = 10/30 = 1/3. (ii) P(>15) = (7+5)/30 = 12/30 = 2/5. (iii) P(not 14) = 1 − 8/30 = 22/30 = 11/15. (iv) P(≤16) = (8+10+7)/30 = 25/30 = 5/6.

★ PYQ SUMMARY & ANALYSIS

Topic	Years Asked	Frequency	Marks
Single die problems	2019–2025	Every Year	1–2
Two dice (sum/product/difference)	2019–2024	Every Year	1–3
Playing cards (52 deck)	2019–2025	Every Year	1–2
Balls in a bag	2019–2025	Every Year	1–3
Complementary events P(E)+P(Ē)=1	2019–2024	5 times	1
Numbers from 1 to N	2019–2024	5 times	2–3
Leap year / days problems	2019–2023	3 times	1–2
Case Study	2024–2025	2 times	4

Key Observations for Students:

- ✔ P(E) = Favourable outcomes / Total outcomes — this ONE formula solves 90% questions.
- ✔ Playing cards: 52 total, 4 suits (13 each), 12 face cards, 4 aces, 26 red + 26 black.
- ✔ Two dice: Total outcomes = 36. MUST know how to list favourable outcomes systematically.
- ✔ Complementary events: P(not E) = 1 − P(E) — use when "not" or "neither" appears.
- ✔ $0 \leq P(E) \leq 1$ always. P(impossible) = 0, P(certain) = 1.
- ✔ Leap year = 366 days = 52 weeks + 2 days. Non-leap = 365 = 52 weeks + 1 day.
- ✔ Expected marks: 4–6 marks in Board Exam.

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

Best Wishes for Your Board Exam!

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