Class 10 Maths Chapter 14: Probability - Notes, Important Questions and MCQs (2026-27)

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These Probability Class 10 notes cover NCERT Class 10 Maths Chapter 14: theoretical probability, sure and impossible events, complementary events and standard problems on coins, dice, cards and bags of balls – with sample-space tables, solved questions, 10 MCQs and a free PDF.

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Chapter Overview

Probability measures how likely an event is. For an experiment whose outcomes are equally likely, the theoretical (classical) probability of an event E is P(E) = number of outcomes favourable to E / total number of possible outcomes.

Probability always lies between 0 and 1. An impossible event has probability 0, a sure event has probability 1, and the probabilities of an event and its complement add up to 1.

Important Topics and Concepts

Basic Terms

- Experiment: an action with well-defined outcomes (tossing a coin, throwing a die).
- Outcome: a possible result; sample space: the set of all outcomes.
- Event: a collection of outcomes; elementary event: a single outcome.
- Equally likely outcomes: each outcome has the same chance.

Probability Formula and Range

- P(E) = favourable outcomes / total outcomes.
- $0 \le P(E) \le 1$.
- P(sure event) = 1; P(impossible event) = 0.
- The sum of probabilities of all elementary events = 1.

Complementary Events

- "Not E" is written $\bar{E}$.
- $P(E) + P(\bar{E}) = 1$, so $P(\bar{E}) = 1 - P(E)$.
- Use it for "at least one" or "not" questions – often quicker.

Standard Sample Spaces

- One coin: {H, T}; two coins: {HH, HT, TH, TT}; three coins: 8 outcomes.
- One die: {1, 2, 3, 4, 5, 6}; two dice: 36 ordered pairs.
- Deck of 52 cards: 4 suits (spades ♠, clubs ♣ – black; hearts ♥, diamonds ♦ – red) of 13 cards each; 12 face cards (J, Q, K); 4 aces.

Solved Examples

Board-pattern questions with full working.

- Two dice are thrown. Find P(sum = 8). Favourable: (2,6), (3,5), (4,4), (5,3), (6,2) → 5/36.
- A card is drawn from a well-shuffled deck. Find P(red king) and P(face card). Red kings 2 → 2/52 = 1/26. Face cards 12 → 12/52 = 3/13.
- Two coins are tossed. Find P(at least one head). $1 - P(TT) = 1 - 1/4 = 3/4$.
- Find the probability that a leap year has 53 Sundays. 366 days = 52 weeks + 2 days; 7 possible pairs, 2 include Sunday → 2/7.

Sum of Two Dice

Count favourable outcomes quickly.

Sum	Favourable outcomes	Probability
2	1	1/36
3	2	1/18
4	3	1/12
5	4	1/9
6	5	5/36
7	6	1/6
8	5	5/36
9	4	1/9

Sum	Favourable outcomes	Probability
10	3	1/12
11	2	1/18
12	1	1/36

Key Facts at a Glance

Item	Fact
Formula	P(E) = favourable / total
Range	$0 \le P(E) \le 1$
Complement	P(E) + P(not E) = 1
Two dice	36 outcomes
Three coins	8 outcomes
Deck	52 cards, 26 red, 26 black, 12 face cards, 4 aces

Important Formulas and Definitions

Formula / Term	Meaning / Use
Experiment	An action with well-defined outcomes
Sample space	Set of all possible outcomes
Event	A subset of the sample space
Elementary event	An event with only one outcome
Sure event	Event certain to happen; P = 1
Impossible event	Event that cannot happen; P = 0
Complementary event	The event “not E”

Short Answer Questions

Q1. A die is thrown once. Find P(a prime number).

Primes: 2, 3, 5 → 3/6 = 1/2.

Q2. A bag has 3 red and 5 black balls. One ball is drawn at random. Find P(red) and P(not red).

P(red) = 3/8; P(not red) = 5/8.

Q3. If P(E) = 0.05, what is P(not E)?

1 − 0.05 = 0.95.

Q4. A box has 100 shirts: 88 good, 8 with minor defects and 4 with major defects. Jimmy buys only good shirts; Sujatha rejects only major defects. Find the probability each accepts a randomly drawn shirt.

Jimmy: 88/100 = 0.88. Sujatha: 96/100 = 0.96.

Q5. One card is drawn from 52. Find P(an ace).

Q6. Three coins are tossed. Find P(exactly two heads).

HHT, HTH, THH → 3/8.

Q7. Can the probability of an event be 1.5? Why?

No. Probability always lies between 0 and 1.

Q8. A die is thrown. Find P(a number less than 7).

All 6 outcomes are favourable → 1 (sure event).

Long Answer Questions

Q1. Two dice are thrown at the same time. Find the probability of getting (i) the same number on both, (ii) a sum less than 5, (iii) a product equal to 12.

Total outcomes = 36.

(i) Doublets (1,1) ... (6,6): 6 → 6/36 = 1/6.

(ii) Sum 2, 3 or 4: 1 + 2 + 3 = 6 → 6/36 = 1/6.

(iii) Product 12: (2,6), (3,4), (4,3), (6,2) → 4/36 = 1/9.

Answers: 1/6, 1/6, 1/9.

Q2. Cards marked 2 to 101 are placed in a box and one is drawn. Find the probability that the number is (i) even, (ii) less than 14, (iii) a perfect square, (iv) a prime less than 20.

Total cards = 100.

(i) Even: 2, 4, ..., 100 → 50 → 1/2.

(ii) Less than 14: 2 to 13 → 12 → 3/25.

(iii) Perfect squares: 4, 9, ..., 100 → 9 → 9/100.

(iv) Primes below 20: 2, 3, 5, 7, 11, 13, 17, 19 → 8 → 2/25.

Q3. From a deck of 52 cards, the jack, queen and king of clubs are removed. A card is drawn from the rest. Find P(a heart), P(a king), P(a club), P(the 10 of hearts).

Remaining cards = 49.

Hearts: 13 → 13/49.

Kings: 3 left (club king removed) → 3/49.

Clubs: 10 left → 10/49.

10 of hearts: 1 → 1/49.

MCQs with Answers

1. Probability of an impossible event is(a) 0 (b) 1 (c) 0.5 (d) −1Answer: (a) 0

2. P(E) + P(not E) =(a) 0 (b) 1 (c) 2 (d) −1Answer: (b) 1

3. Probability of getting a head on tossing a coin is(a) 0 (b) 1/2 (c) 1 (d) 1/4Answer: (b) 1/2

4. Number of outcomes when two dice are thrown(a) 12 (b) 18 (c) 36 (d) 6Answer: (c) 36

6. Which cannot be a probability?(a) 0.7 (b) 2/3 (c) −0.2 (d) 0Answer: (c) −0.2

7. P(sum 7) with two dice is(a) 1/6 (b) 5/36 (c) 1/9 (d) 7/36Answer: (a) 1/6

8. A leap year has 53 Sundays with probability(a) 1/7 (b) 2/7 (c) 3/7 (d) 53/366Answer: (b) 2/7

9. If P(E) = 0.3, P(not E) =(a) 0.3 (b) 0.7 (c) 1.3 (d) 0Answer: (b) 0.7

10. Three coins tossed – P(no head) =(a) 1/8 (b) 3/8 (c) 1/2 (d) 7/8Answer: (a) 1/8

Quick Revision Points

- P(E) = favourable/total (equally likely outcomes).
- $0 \le P(E) \le 1$; sure = 1, impossible = 0.
- $P(E) + P(\bar{E}) = 1$.
- Two dice → 36 outcomes; three coins → 8.
- 52 cards: 26 red/26 black, 13 per suit, 12 face cards, 4 aces.
- Use the complement for “at least one” questions.

Chapter Summary

Probability measures the chance of an event: P(E) = favourable outcomes / total outcomes when all outcomes are equally likely. It always lies between 0 (impossible) and 1 (sure), and an event and its complement have probabilities adding to 1.

Most questions use coins, dice, playing cards, numbered cards or balls in a bag; listing the sample space carefully is the key to getting them right.

Exam Tips and PYQ Pattern

- Probability questions are easy marks (1–3 marks) – list the sample space.
- Know the deck of cards breakdown thoroughly.
- Simplify fractions in your final answer.
- Use 1 − P(not E) for “at least” questions.
- Read whether cards/balls are removed before drawing.

Frequently Asked Questions

Is this chapter in the 2026-27 CBSE syllabus?

Yes. It is part of the NCERT Class 10 Mathematics textbook and the rationalised CBSE syllabus for 2026-27.

Can I download these notes as a PDF?

Yes. Use the free PDF link at the top of this page – no signup needed.

What is the formula of probability in Class 10?

P(E) = number of outcomes favourable to E / total number of possible outcomes.

How many face cards are in a deck?

Conclusion

Probability is among the easiest chapters to score full marks in. Learn the sample spaces and card facts, practise the solved questions here, and save the free PDF for revision.

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Author Bio: Written and reviewed by the Nextoper Editorial Team, a group of CBSE mathematics educators who build chapter notes directly from the NCERT textbook and past board paper patterns.

Freshness Note: These notes follow the NCERT Class 10 Maths textbook, Mathematics (Reprint 2026-27), and the CBSE syllabus for the 2026-27 session. Last checked on 16 November 2026.