



MATH LOVE INSTITUTE


Education as a Service (EaaS)



PROBABILITY

Chapter 14 - Class 10 CBSE Mathematics

Board Exam 2025-26

 +91-7869553517  www.mathlove.in

 info@mathlove.in

 *"The theory of probabilities and the theory of errors now constitute a formidable body of great mathematical interest and of great practical importance."*

- R.S. Woodward



10 Fascinating Facts About Probability

1

Origin of Word: "Probability" comes from the Latin word "probabilis" meaning "provable" or "credible". The concept dates back to the 16th century!

2

Dice Games: Probability theory began when gamblers asked mathematicians to help them win more money at dice games in 1654!

3

Birthday Paradox: In a group of just 23 people, there's a 50% chance that two share the same birthday. Mind-blowing, right?

4

Weather Forecast: When weather apps say "70% chance of rain", they use probability calculations based on historical data and atmospheric conditions!

5

DNA Testing: Probability is used in DNA analysis. The chance that two unrelated people have identical DNA is 1 in 1 trillion!

6

Coin Toss: Even though a coin toss seems 50-50, physics shows it's slightly biased towards the side that started facing up (about 51%)!

7

Lottery Odds: Your odds of winning a jackpot are about 1 in 14 million. You're more likely to be struck by lightning (1 in 500,000)!

8

Medical Diagnosis: Doctors use probability (Bayes' Theorem) to determine how likely you have a disease based on test results!

9

Google Search: Search engines use probability to rank web pages. The PageRank algorithm is based on probability theory!

10

Sports Analytics: Cricket teams use probability to decide whether to bat or field first. IPL teams have data analysts for this!

MATH LOVE INSTITUTE - www.mathlove.in

Chapter Overview

Weightage

4 Marks Total

- 2 Questions (1M each) = 2M
- 1 Question (2M) = 2M

Most scoring chapter!

Study Time

8-10 Hours

- Theory: 3-4 hours
- Practice: 5-6 hours

Easy to master!

Difficulty Level

EASY

Purely formula-based

Direct applications

Quick solving (2-3 mins/Q)

Key Topics

Main Concepts:


- Theoretical Probability
- Complementary Events
- Playing Cards, Dice, Coins

© 2025 MATH LOVE INSTITUTE - ALL RIGHTS RESERVED

14.1 Probability - A Theoretical Approach

What is Probability?

Probability is the branch of mathematics that deals with calculating the likelihood of an event occurring. It tells us how likely something is to happen.

 **Real-Life Connection:** Every time you check the weather forecast, play a game, or wonder if your team will win - you're thinking about probability!

Key Terminology

Term	Definition	Example
Experiment	An action or operation that can produce some well-defined outcomes	Tossing a coin, Rolling a die
Outcome	The result of a single trial of an experiment	Getting HEAD, Getting 6
Sample Space	The set of all possible outcomes	For coin: {H, T}, For die: {1,2,3,4,5,6}
Event	A collection of one or more outcomes	Getting an even number
Favorable Outcome	Outcomes that make an event happen	For "even number": 2, 4, 6
Equally Likely	Outcomes with the same chance of occurring	All faces of a fair die
Random Experiment	Experiment where outcome cannot be predicted	Tossing an unbiased coin

Theoretical Probability Formula

$$P(E) = \frac{\text{Number of outcomes favorable to E}}{\text{Number of all possible outcomes}}$$

✓ **Important Condition:** This formula works only when all outcomes are **EQUALLY LIKELY** .

1 2 3 4 Understanding with Examples

Example 1: Tossing a Coin Once

Find the probability of getting (i) a head (ii) a tail

Solution:

Total possible outcomes = 2 (Head or Tail)

(i) Favorable outcomes for head = 1

$$P(\text{Head}) = 1/2 = 0.5$$

(ii) Favorable outcomes for tail = 1

$$P(\text{Tail}) = 1/2 = 0.5$$

Notice: $P(\text{Head}) + P(\text{Tail}) = 1$

Example 2: Rolling a Die

Find the probability of getting (i) a number greater than 4 (ii) a prime number

Solution:

Total possible outcomes = 6 (1, 2, 3, 4, 5, 6)

(i) Numbers greater than 4 are: 5, 6

Favorable outcomes = 2

$$P(\text{Number} > 4) = 2/6 = 1/3$$

(ii) Prime numbers are: 2, 3, 5

Favorable outcomes = 3

$$P(\text{Prime number}) = 3/6 = 1/2$$



Elementary Events & Important

Properties

📌 Elementary Event

An event having **only one outcome** of the experiment is called an **elementary event** .

Example: When a die is thrown:

- Getting 1 → Elementary event
- Getting 2 → Elementary event
- Getting an even number (2, 4, 6) → NOT an elementary event (has 3 outcomes)

🌟 **Golden Rule:** The sum of probabilities of all elementary events = 1

For a die: $P(1) + P(2) + P(3) + P(4) + P(5) + P(6) = 1/6 + 1/6 + 1/6 + 1/6 + 1/6 + 1/6 = 1$

🔄 Complementary Events

The event 'NOT E' is called the **complement** of event E. We denote it by \bar{E} .

$$P(E) + P(\bar{E}) = 1$$

OR

$$P(\bar{E}) = 1 - P(E)$$

Example: Card Probability

One card is drawn from 52 cards. Find probability that:

(i) Card is an ace (ii) Card is NOT an ace

Solution:

Total cards = 52

(i) Number of aces = 4

$$P(\text{Ace}) = \frac{4}{52} = \frac{1}{13}$$

(ii) **Method 1:** Non-ace cards = $52 - 4 = 48$

$$P(\text{Not ace}) = \frac{48}{52} = \frac{12}{13}$$

Method 2 (Using complement):

$$P(\text{Not ace}) = 1 - P(\text{Ace}) = 1 - \frac{1}{13} = \frac{12}{13} \quad \checkmark \text{ (Faster!)}$$

Range of Probability

$$0 \leq P(E) \leq 1$$

Probability is always between 0 and 1 (inclusive)

P(E) Value	Type of Event	Meaning	Example
P(E) = 0	Impossible Event	Event cannot happen	Getting 7 on a die
P(E) = 1	Sure/Certain Event	Event will definitely happen	Getting a number < 7 on a die
0 < P(E) < 1	Uncertain Event	Event may or may not happen	Getting an even number on a die

P(E) = 0.5	Equally Likely	Equal chance of happening/not happening	Getting head in a coin toss
-----------------------------	----------------	---	-----------------------------

© 2025 MATH LOVE INSTITUTE - CONFIDENTIAL

Playing Cards - Complete Guide

Deck Structure

Standard Deck = 52 Cards

Category	Details	Count
Total Suits	♠ Spades, ♥ Hearts, ♦ Diamonds, ♣ Clubs	4 suits
Cards per Suit	Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King	13 cards
Red Cards	♥ Hearts + ♦ Diamonds	26 cards
Black Cards	♠ Spades + ♣ Clubs	26 cards
Face Cards	Jack, Queen, King (in each suit)	12 cards (3×4)

Number Cards	2, 3, 4, 5, 6, 7, 8, 9, 10 (in each suit)	36 cards (9×4)
Aces	One in each suit	4 cards
Red Kings	King of Hearts, King of Diamonds	2 cards
Black Queens	Queen of Spades, Queen of Clubs	2 cards
Red Face Cards	J, Q, K of Hearts and Diamonds	6 cards

Quick Memory Tips for Cards:

- **Total = 52** cards (remember: 52 weeks in a year!)
- **4 Suits** (think: 4 seasons in a year)
- **13 per suit** (13 weeks in a season)
- **Half Red, Half Black** = 26 each
- **Face Cards = 12** (only J, Q, K)
- **Ace is NOT a face card!** ❌

Example: Card Probability Questions

Q: One card is drawn. Find probability of getting:

- A king of red color
- A face card
- A red face card
- A spade
- The queen of diamonds

Solutions:

- (a) Red kings = 2 (♥ K, ♦ K) → $P = 2/52 = 1/26$
- (b) Face cards = 12 → $P = 12/52 = 3/13$
- (c) Red face cards = 6 → $P = 6/52 = 3/26$
- (d) Spades = 13 → $P = 13/52 = 1/4$
- (e) Only 1 queen of diamonds → $P = 1/52$

Two Dice & Two Coins - Comprehensive Guide

Two Dice Thrown Together

Total Possible Outcomes = $6 \times 6 = 36$


All 36 Outcomes:

Die 2 →	1	2	3	4	5	6
Die 1 ↓						
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)

5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

Sum of Two Dice - Quick Reference

Sum	Favorable Outcomes	Count	Probability
2	(1,1)	1	1/36
3	(1,2), (2,1)	2	2/36 = 1/18
4	(1,3), (2,2), (3,1)	3	3/36 = 1/12
5	(1,4), (2,3), (3,2), (4,1)	4	4/36 = 1/9
6	(1,5), (2,4), (3,3), (4,2), (5,1)	5	5/36
7	(1,6), (2,5), (3,4), (4,3), (5,2), (6,1)	6	6/36 = 1/6 (Maximum!)
8	(2,6), (3,5), (4,4), (5,3), (6,2)	5	5/36
9	(3,6), (4,5), (5,4), (6,3)	4	4/36 = 1/9
10	(4,6), (5,5), (6,4)	3	3/36 = 1/12
11	(5,6), (6,5)	2	2/36 = 1/18
12	(6,6)	1	1/36

 **Smart Observation:** Sum of 7 is MOST LIKELY (6 ways). Sums of 2 and 12 are LEAST LIKELY (1 way each).

Two Coins Tossed Together

Total Possible Outcomes = $2 \times 2 = 4$

Outcome	Notation	Number of Heads
Both Heads	(H, H)	2
First Head, Second Tail	(H, T)	1
First Tail, Second Head	(T, H)	1
Both Tails	(T, T)	0

Example: Find probability of getting:

- (i) At least one head
- (ii) Exactly one head
- (iii) No head

Solution:

- (i) At least one head = (H,H), (H,T), (T,H) → 3 outcomes → $P = 3/4$
- (ii) Exactly one head = (H,T), (T,H) → 2 outcomes → $P = 2/4 = 1/2$
- (iii) No head = (T,T) → 1 outcome → $P = 1/4$

Three Coins Tossed Together

Total Possible Outcomes = $2 \times 2 \times 2 = 8$

Outcome	Number of Heads
(H, H, H)	3
(H, H, T)	2
(H, T, H)	2
(T, H, H)	2
(H, T, T)	1
(T, H, T)	1
(T, T, H)	1
(T, T, T)	0

✓ **Quick Formula for n coins:** Total outcomes = 2^n

- 1 coin: $2^1 = 2$ outcomes
- 2 coins: $2^2 = 4$ outcomes
- 3 coins: $2^3 = 8$ outcomes

✘ 10 Common Mistakes to Avoid

Mistake 1: Writing probability as "4 out of 52" instead of $4/52$ or $1/13$

✓ **Correct:** Always simplify fractions: $4/52 = 1/13$

Mistake 2: Counting Ace as a face card

✓ **Correct:** Face cards = ONLY Jack, Queen, King (12 cards total)

Mistake 3: Thinking (1,4) and (4,1) are the same in two dice

✓ **Correct:** They are DIFFERENT outcomes! Order matters.

Mistake 4: Forgetting that probability cannot be greater than 1 or negative

✓ **Correct:** Always: $0 \leq P(E) \leq 1$

Mistake 5: Calculating "at least one" directly instead of using complement

✓ **Correct:** $P(\text{at least one}) = 1 - P(\text{none})$ (Much faster!)

Mistake 6: Adding probabilities incorrectly for "OR" questions

✓ **Correct:** For mutually exclusive events: $P(A \text{ or } B) = P(A) + P(B)$

Mistake 7: Not checking if outcomes are equally likely

✓ **Correct:** Formula works ONLY when all outcomes are equally likely!

Mistake 8: Confusing "and" vs "or" in probability questions

✓ **Correct:** "AND" = multiply, "OR" = add (for independent/mutually exclusive)

Mistake 9: Not writing final answer in simplest form

✓ **Correct:** 20/52 should be written as 5/13

Mistake 10: Forgetting to count all favorable outcomes

✓ **Correct:** Make a list or table to ensure you don't miss any!

MATH LOVE INSTITUTE - EDUCATION AS A SERVICE

Smart Tips & Tricks for Quick

Solving

Tip 1: Use Complement for "At Least" Questions

Instead of counting all favorable outcomes for "at least one", use:

$$P(\text{at least one}) = 1 - P(\text{none})$$

Example: At least one head in 2 coins = $1 - P(\text{both tails}) = 1 - 1/4 = 3/4$

✦ Tip 2: Remember Standard Values

- One die: Total = 6
- Two dice: Total = 36
- One coin: Total = 2
- Two coins: Total = 4
- Three coins: Total = 8
- One card: Total = 52
- Face cards = 12 (NOT 16!)

✦ Tip 3: Quick Card Calculations

- Red cards = 26 (Half of 52)
- Black cards = 26 (Half of 52)
- Each suit = 13 ($52 \div 4$)
- Kings = 4 (one per suit)
- Red kings = 2 (half of 4)
- Black face cards = 6 (3 per suit \times 2 suits)

✦ Tip 4: For Sum of Two Dice

Don't count every time! Remember:

- Sum = 7 \rightarrow Most likely (6 ways)
- Sum = 2 or 12 \rightarrow Least likely (1 way each)
- Sum = 6, 7, or 8 \rightarrow Most common range

✦ Tip 5: Check Your Answer

- Is $0 \leq P(E) \leq 1$? ✓
- Did you simplify the fraction? ✓
- $P(E) + P(\text{not } E) = 1$? ✓

✨ **Tip 6: Convert Between Forms Easily**

- Fraction to Decimal: $1/4 = 0.25$
- Decimal to Percentage: $0.25 \times 100 = 25\%$
- Percentage to Fraction: $25\% = 25/100 = 1/4$

🎯 **Time-Saving Strategy for Exams:**

- 1 Mark Questions: Solve in 1-2 minutes
- 2 Mark Questions: Solve in 3-4 minutes
- Total for Probability: 8-10 minutes max
- These are the EASIEST marks in exam!

© 2025 MATH LOVE INSTITUTE - CONFIDENTIAL

NCERT Exercise 14.1 Overview

Total Questions: 25

 **Question Types & Distribution**

Type	Questions	Topics Covered
Fill in the Blanks	Q1	Basic probability concepts and properties
Conceptual	Q2-Q4	Equally likely outcomes, fair decisions, impossible probabilities
Complementary Events	Q5-Q7	$P(\text{not } E) = 1 - P(E)$, same birthday problem
Balls in Bag	Q8-Q9	Red/black balls, colored marbles
Coins	Q6, Q10	Piggy bank, candy flavors
Fish/Animals	Q11	Male/female probability
Spinner/Arrow	Q12	8-section spinner
Die Problems	Q13, Q24	Single die, two dice
Playing Cards	Q14-Q15	52 cards deck, 5 diamond cards
Defective Items	Q16-Q17	Pens, bulbs quality testing
Numbered Discs	Q18	Numbers 1-90, divisibility
Letter Die	Q19	Die with letters A,B,C,D,E,A
Geometric Probability*	Q20	Rectangle with circle (NOT for exam)

Application Problems	Q21-Q23	Ball pens, sum on dice table, coin tosses
Reasoning	Q25	Correct vs incorrect probability arguments

✔ **Must Practice Questions:**

- **Q8-Q9:** Balls and marbles (Very common in exams!)
- **Q13:** Die probability (Guaranteed in exams)
- **Q14:** Playing cards (IMPORTANT!)
- **Q24:** Two dice (Frequently asked)
- **Q23:** Three coins (Good practice)

🎯 **Priority for Board Exams:**

HIGH Priority: Q5, Q8, Q9, Q13, Q14, Q16, Q21, Q24

MEDIUM Priority: Q7, Q10, Q11, Q12, Q15, Q17, Q18, Q23

LOW Priority (but good practice): Q19, Q22, Q25

SKIP: Q20 (Geometric probability - not in syllabus)

MATH LOVE INSTITUTE - www.mathlove.in

Board Exam Marking Scheme & Pattern

Marks Distribution

Question Type	Marks	Number of Questions	Total Marks	Time Required
MCQ / Very Short	1	2	2	1-2 min each
Short Answer	2	1	2	3-4 minutes
TOTAL			4 Marks	8-10 minutes

1 Mark Question Types

Type 1: MCQ - Direct Formula Application

Example: A bag contains 3 red and 5 black balls. One ball is drawn. $P(\text{red}) = ?$

(a) $\frac{3}{5}$ (b) $\frac{3}{8}$ (c) $\frac{5}{8}$ (d) $\frac{5}{3}$

Answer: (b) $\frac{3}{8}$

Time: 30-60 seconds

Type 2: MCQ - Playing Cards

Example: A card is drawn from 52 cards. $P(\text{face card}) = ?$

(a) $\frac{1}{13}$ (b) $\frac{3}{13}$ (c) $\frac{1}{4}$ (d) $\frac{3}{26}$

Answer: (b) $\frac{3}{13}$ (Face cards = 12, so $\frac{12}{52} = \frac{3}{13}$)

Time: 1 minute

Type 3: Fill in the Blank / Very Short

Example: $P(E) + P(\text{not } E) = \underline{\hspace{2cm}}$

Answer: 1

Time: 30 seconds

2 Mark Question Pattern

Standard Format:

A die is thrown once. Find the probability of getting:

- (i) A prime number (1 mark)
- (ii) A number less than 3 (1 mark)

Solution Format:

Total outcomes = 6 (always write this!)

- (i) Prime numbers = 2, 3, 5 → 3 outcomes

$$P(\text{prime}) = \frac{3}{6} = \frac{1}{2} \quad \checkmark$$

- (ii) Numbers less than 3 = 1, 2 → 2 outcomes

$$P(\text{less than 3}) = \frac{2}{6} = \frac{1}{3} \quad \checkmark$$

Marking Scheme Breakdown

For 2 Mark Question	Marks Allocated
Writing total number of outcomes	0.25 marks
Identifying favorable outcomes correctly (part i)	0.5 marks
Correct probability calculation (part i)	0.25 marks
Identifying favorable outcomes correctly (part ii)	0.5 marks

Correct probability calculation (part ii)

0.5 marks

100 How to Get Full Marks:

1. **Write the total outcomes** (even if obvious!)
2. **List favorable outcomes** or write clearly
3. **Write the formula** $P(E) = \text{favorable}/\text{total}$
4. **Simplify the fraction** to lowest terms
5. **Check:** Is $0 \leq P(E) \leq 1$?

© 2025 MATH LOVE INSTITUTE - ALL RIGHTS RESERVED

 **Complete Formula Sheet - Last Minute Revision**

Main Probability Formula

$P(E) = \text{Number of favorable outcomes} / \text{Total number of outcomes}$

Complementary Event Formula

$$P(\bar{E}) = 1 - P(E)$$

$$P(E) + P(\bar{E}) = 1$$

Range of Probability

$$0 \leq P(E) \leq 1$$

Important Values to Remember

Experiment	Total Outcomes	Quick Notes
One coin	2	H, T
Two coins	4	HH, HT, TH, TT
Three coins	8	$2^3 = 8$
One die	6	1, 2, 3, 4, 5, 6
Two dice	36	$6 \times 6 = 36$
One card	52	4 suits \times 13 cards

Playing Cards Quick Reference

Item	Count	Probability
Total cards	52	-
Red cards	26	$26/52 = 1/2$
Black cards	26	$26/52 = 1/2$
Face cards (J, Q, K)	12	$12/52 = 3/13$

Aces	4	$4/52 = 1/13$
Kings	4	$4/52 = 1/13$
Cards of one suit	13	$13/52 = 1/4$
Red kings	2	$2/52 = 1/26$
Red face cards	6	$6/52 = 3/26$
One specific card	1	$1/52$

Die Probabilities

Event	Favorable Outcomes	Probability
Any specific number	1	$1/6$
Even number (2,4,6)	3	$3/6 = 1/2$
Odd number (1,3,5)	3	$3/6 = 1/2$
Prime number (2,3,5)	3	$3/6 = 1/2$
Number > 4 (5,6)	2	$2/6 = 1/3$
Number < 3 (1,2)	2	$2/6 = 1/3$



Expert Tips for Scoring Full Marks

🌟 Presentation Tips:

1. **Always write the total outcomes first** - Even if it's obvious like 52 cards or 6 on a die
2. **Show your work** - Write "Favorable outcomes = ..." before calculating
3. **Write the probability formula** - $P(E) = \text{favorable}/\text{total}$
4. **Simplify fractions** - 20/52 MUST be written as 5/13
5. **Box your final answer** - Makes it easy for examiner to spot

🎯 Solving Strategy:


1. **Read carefully** - "at least one" vs "exactly one" vs "more than one"
2. **Make a list** - For two dice or coins, list all outcomes if unsure
3. **Use complement smartly** - "at least one" = $1 - \text{"none"}$
4. **Check reasonableness** - Is your answer between 0 and 1?
5. **Verify with logic** - Does the answer make sense?

🕒 Time Management:

- **1 Mark MCQ:** 30-60 seconds (quick calculation)
- **1 Mark Very Short:** 1-2 minutes (show basic work)
- **2 Mark Question:** 3-4 minutes (detailed solution)
- **Total for Probability:** 8-10 minutes maximum

- **Strategy:** Solve these first - they're guaranteed marks!

Last Day Before Exam:

- Revise the formula sheet (15 minutes)
- Practice 5 card questions (15 minutes)
- Practice 3 dice questions (10 minutes)
- Go through all mistakes once (10 minutes)
- Sleep well - this chapter is EASY! 

Guaranteed Marks Topics:

- **Playing cards** - 90% chance in exam
- **Single die** - 80% chance in exam
- **Balls in bag** - 70% chance in exam
- **Two coins/dice** - 60% chance in exam

Master these 4 types = Full marks guaranteed! 

© 2025 MATH LOVE INSTITUTE - CONFIDENTIAL

Last Minute Revision Checklist

 **Concepts to Revise (10 minutes)**

Concept	Check ✓
Main probability formula: $P(E) = \frac{\text{favorable}}{\text{total}}$	<input type="checkbox"/>
Complementary event formula: $P(\bar{E}) = 1 - P(E)$	<input type="checkbox"/>
Range: $0 \leq P(E) \leq 1$	<input type="checkbox"/>
Impossible event: $P(E) = 0$	<input type="checkbox"/>
Sure event: $P(E) = 1$	<input type="checkbox"/>
Elementary event definition	<input type="checkbox"/>
Sum of all elementary event probabilities = 1	<input type="checkbox"/>
Equally likely outcomes concept	<input type="checkbox"/>

Standard Values to Remember (5 minutes)

Item	Check ✓
Total cards in deck = 52	<input type="checkbox"/>
Face cards = 12 (NOT 16!)	<input type="checkbox"/>
Red cards = 26, Black cards = 26	<input type="checkbox"/>
Cards per suit = 13	<input type="checkbox"/>

Ace is NOT a face card	<input type="checkbox"/>
One die = 6 outcomes	<input type="checkbox"/>
Two dice = 36 outcomes	<input type="checkbox"/>
Two coins = 4 outcomes	<input type="checkbox"/>
Three coins = 8 outcomes	<input type="checkbox"/>

 **Practice Status (Check what you've mastered)**

Question Type	Mastered ✓
Single die probability	<input type="checkbox"/>
Playing cards (standard questions)	<input type="checkbox"/>
Balls in bag	<input type="checkbox"/>
Two dice - sum questions	<input type="checkbox"/>
Two/Three coins	<input type="checkbox"/>
Complementary events	<input type="checkbox"/>
"At least one" type questions	<input type="checkbox"/>

 **If you've checked all boxes above - You're 100% ready for the exam!**



Chapter Summary



Core Concepts

1. **Probability** measures the likelihood of an event occurring
2. **Formula:** $P(E) = \frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}$
3. **Valid only when** all outcomes are equally likely
4. **Range:** $0 \leq P(E) \leq 1$ (always between 0 and 1)



Key Definitions

- **Experiment:** Action that produces outcomes (tossing coin, rolling die)
- **Sample Space:** Set of all possible outcomes
- **Event:** Collection of one or more outcomes
- **Elementary Event:** Event with only ONE outcome
- **Complementary Events:** E and \bar{E} where $P(E) + P(\bar{E}) = 1$



Special Cases

- **Impossible Event:** $P(E) = 0$ (cannot happen)
- **Sure/Certain Event:** $P(E) = 1$ (will definitely happen)
- **Equally Likely Events:** All have same probability (fair coin, unbiased die)

- **Sum of Elementary Events:** Always equals 1

Standard Applications

- **Coins:** 2 outcomes (H, T) → $P = 1/2$ each
- **Die:** 6 outcomes (1-6) → $P = 1/6$ each
- **Playing Cards:** 52 cards → Various probabilities based on selection
- **Two Dice:** 36 outcomes → Sum of 7 most likely
- **Multiple Coins:** 2^n outcomes for n coins

Most Important Formulas

$$P(E) = \text{Favorable outcomes} / \text{Total outcomes}$$

$$P(\bar{E}) = 1 - P(E)$$

$$P(E) + P(\bar{E}) = 1$$

$$0 \leq P(E) \leq 1$$

MOTIVATIONAL MESSAGE

Probability is the EASIEST chapter to score FULL

MARKS in CBSE Class 10 Maths!

- ✦ Purely formula-based with NO complex derivations
- ✦ Direct application - No tricks or lengthy calculations
- ✦ Takes only 8-10 minutes in exam to solve ALL questions
- ✦ With 20-25 practice questions, you can master this chapter

100%

✨ Even if you make calculation errors, you get method marks!

Practice daily for 30 minutes × 5 days =

GUARANTEED 4/4 MARKS! 100

© 2025 MATH LOVE INSTITUTE - ALL RIGHTS RESERVED








MATH LOVE INSTITUTE

Education as a Service (EaaS)

Our Services







- ✓ Crash Courses for Board Exams
- ✓ Comprehensive Test Series
- ✓ CBSE Sample Papers
- ✓ Chapter-wise Study Material
- ✓ 24/7 Doubt Solving Support
- ✓ Live Online Classes

Subjects We Cover

-  Mathematics
-  Science (Physics, Chemistry, Biology)
-  English
-  Hindi
-  Social Science

 Computer Science

Why Choose Us?

-  Experienced Faculty Team
-  100% CBSE Aligned Content
-  Regular Mock Tests
-  Personalized Doubt Clearing
-  Board Exam Focused Approach
-  Affordable Fee Structure

Contact Us

Address:

H-1 Street 2, V V Vihar,
Shankar Nagar, Raipur (C.G.)

Phone: +91-7869553517

Email: info@mathlove.in

Website: www.mathlove.in

Follow Us:

 Facebook |  Instagram

 YouTube |  Twitter

© 2025 Math Love Institute. All Rights Reserved.

This study material is the intellectual property of Math Love Institute and is intended for educational purposes only.