Probability

List the possible outcomes before counting favourable ones. The classical probability formula assumes that the elementary outcomes are equally likely.

Formulas and methods

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

$0 \le P(E) \le 1$. An impossible event has probability 0; a certain event has probability 1.

P(not E) = 1 − P(E). For two fair dice, use 36 ordered pairs, not 11 equally likely sums.

Worked examples

A fair die is rolled. Find the probability of a prime number.

The sample space is {1,2,3,4,5,6}. Prime outcomes are {2,3,5}; 1 is not prime. P = 3/6 = 1/2.

Two fair dice are rolled independently. Find the probability that their sum is 8.

Favourable ordered pairs are (2,6),(3,5),(4,4),(5,3),(6,2): 5 outcomes among 36 equally likely pairs. Probability = 5/36.

Common mistake

Count outcomes, not labels. A bag with repeated colours has one elementary outcome per equally likely individual ball; different colours need not be equally likely.

Probability — practice

Try these without looking at the answers. Show substitutions and units. Difficulty labels describe these questions, not official CBSE classifications.

1. [Foundation] A fair coin is tossed once. Find P(head).

2. [Core] A bag contains 4 red and 6 blue identical-sized balls. One ball is selected at random. Find P(red).

3. [Core] A fair die is rolled. Find P(not getting 6).

4. [Challenge] Two fair coins are tossed independently. Find P(exactly one head).

Probability — answers

1. A fair coin is tossed once. Find P(head).

One favourable outcome among two: 1/2.

2. A bag contains 4 red and 6 blue identical-sized balls. One ball is selected at random. Find P(red).

4/(4+6) = 2/5, assuming each ball is equally likely to be selected.

3. A fair die is rolled. Find P(not getting 6).

1 − 1/6 = 5/6.

4. Two fair coins are tossed independently. Find P(exactly one head).

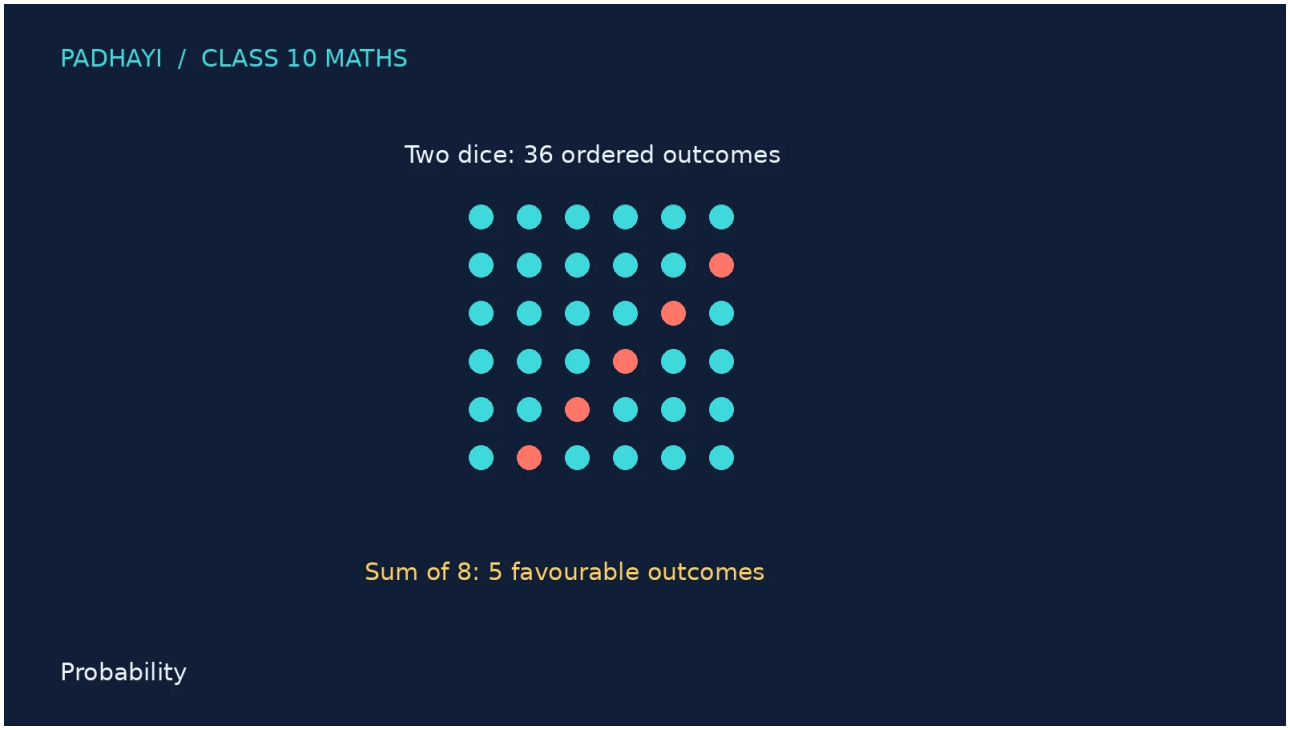
Equally likely outcomes HH,HT,TH,TT. HT and TH are favourable, so P = 2/4 = 1/2.

Next step: explain one method aloud, then solve a question from your NCERT textbook without using this sheet.

Original Padhayi revision material. Independent study aid; not an official CBSE or NCERT publication. Syllabus reference: CBSE Mathematics, Class X, 2026–27.

Official CBSE syllabus | NCERT textbooks

Visual reminder



Schematic illustration; diagrams are not necessarily drawn to scale.