

Introduction to Probability

CBSE Class 9 Maths · Knowledge organiser



KEY DEFINITIONS

Experiment

An action with outcomes that can be observed, such as tossing a coin.

Event

A set of outcomes of an experiment.

Probability

A number from 0 to 1 showing how likely an event is.

KEY FORMULAS

Experimental $P(E) = \frac{\text{trials with } E}{\text{total trials}}$

Theoretical
(equally likely) $P(E) = \frac{\text{favourable}}{\text{total}}; P(\text{not } E) = 1 - P(E)$

$0 \leq P \leq 1$; tree diagram: one branch per stage; two coins 4, coin + die 12, two dice 36 outcomes

YOU SHOULD BE ABLE TO...

- Place events on the probability scale and find simple experimental and theoretical probabilities.
- List sample spaces for coins, dice and spinners, use data tables and estimate expected frequencies.
- Use tree diagrams and solve multi-part problems on bags, spinners and recorded data.
- Handle two-dice and two-spinner events such as 'the first number is larger' or 'sum greater than product'.

WORKED EXAMPLE

A fair die is thrown. Find the probability of a number greater than 4.

$$\text{Favourable } \{5, 6\}: P = \frac{2}{6} = \frac{1}{3}.$$

COMMON MISTAKES

- ✗ Listing two coins as $\{2H, 1H, 0H\}$: these are not equally likely; list HT and TH separately.
- ✗ Using the theoretical value when the question asks for the experimental probability from data.
- ✗ Probabilities greater than 1 or negative: check every answer lies in $[0, 1]$.
- ✗ Counting an outcome twice (for example 15 as both a multiple of 3 and of 5).