

Theoretical Probability

Chapter 14: Probability · Topic 1

Key Concept

For example, the probability of rolling a 4 on a fair six-sided die is $\frac{1}{6}$, since there is exactly 1 favourable outcome (rolling a 4) out of 6 equally likely total outcomes (1 through 6). Probability values always range between 0 (impossible event, will never happen) and 1 (certain event, will definitely happen), with values in between representing varying degrees of likelihood — this framework is fundamental to statistics, risk assessment, and decision-making in real-world uncertain situations.

Quick Revision Notes

- Theoretical probability $P(E) = \text{favourable outcomes} \div \text{total equally likely outcomes}$.
- Example: probability of rolling a 4 on a fair die = $\frac{1}{6}$.
- Probability values range from 0 (impossible) to 1 (certain).
- This framework underlies statistics, risk assessment, and real-world decision-making.

Practice Questions

- 1 Find the probability of getting a 4 when rolling a fair die.
- 2 A bag has 5 red and 3 blue balls. Find the probability of drawing a red ball.
- 3 Explain what a probability of exactly 0 and exactly 1 each represent.