

# CLASS 10 MATHS – CHAPTER 14

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## PROBABILITY – ALL FORMULAE

### Basic Idea

- Measures chance of events
- Value lies between 0 and 1
- 0  $\rightarrow$  impossible event
- 1  $\rightarrow$  certain event
- Can be in fraction/percentage
- Based on outcomes

### Important Terms

- Random experiment  $\rightarrow$  uncertain result
- Outcome  $\rightarrow$  single result
- Event  $\rightarrow$  set of outcomes
- Sample space  $\rightarrow$  all outcomes
- Represented as S
- Event  $\subseteq$  sample space

### Equally likely Outcome

- All outcomes have equal chance
- Example  $\rightarrow$  fair coin/die
- Required for theoretical probability
- Not always equal
- Depends on situation
- Important assumption

### Probability Formula

- $P(E) = \text{favourable} / \text{total outcomes}$
- Most important formula
- Used in all questions
- Based on sample space
- Works for equally likely cases

## Types of Probability

- Theoretical probability
- Based on logic
- Experimental probability
- Based on trials
- Formula  $\rightarrow$  trials method
- Both can differ

## Complementary Events

- $E' = \text{not } E$
- $P(E) + P(E') = 1$
- $P(E') = 1 - P(E)$
- Useful for tricky questions
- Used in “at least” cases
- Simplifies calculation

## Coins, Dies & Cards

- Coin  $\rightarrow S = \{H, T\}$
- Two coins  $\rightarrow 4$  outcomes
- Die  $\rightarrow 6$  outcomes
- Two dice  $\rightarrow 36$  outcomes
- Cards  $\rightarrow$  total 52
- Red = 26, Black = 26
- Face cards = 12

## Tips & Results

- $0 \leq P(E) \leq 1$
- Impossible  $\rightarrow 0$
- Certain  $\rightarrow 1$
- Sum of probabilities = 1
- Use complement when needed
- Write sample space clearly
- Avoid counting mistakes