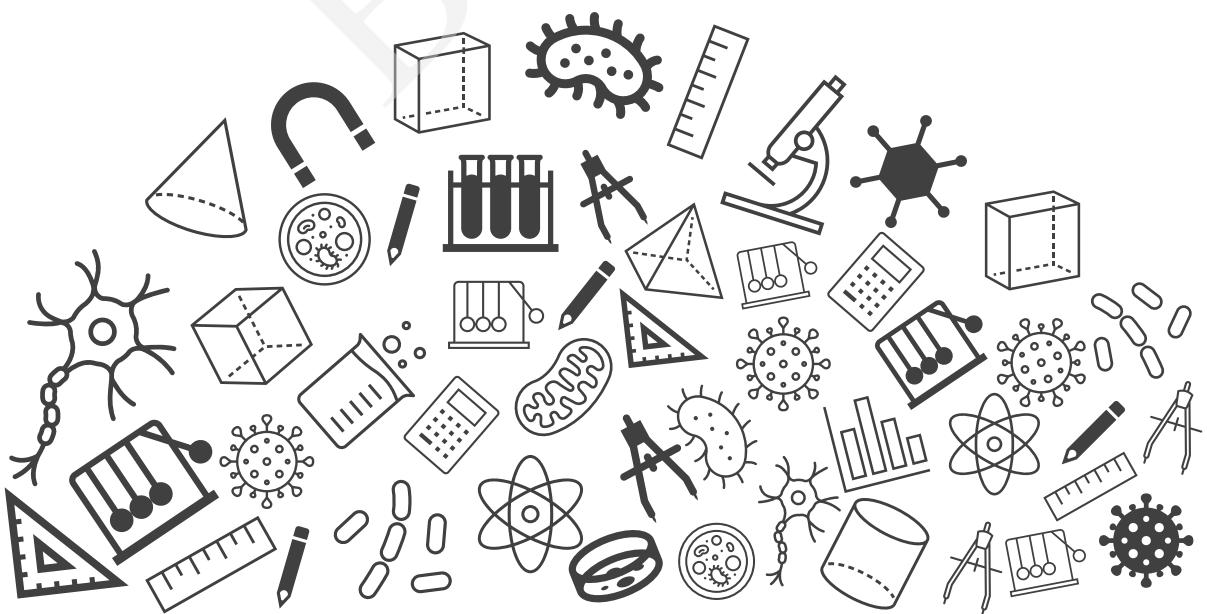




Grade 10

Mathematics Chapter Notes



M A T H E M A T I C S



PROBABILITY





Topics



- 1. Basic Terminology
- 2. Types of Probability
 - 2.1 Theoretical Probability
- 3. Types of Events
- 4. Important Formulae



1. Basic Terminology

Random Experiment

- ❖ Has more than one possible outcomes.
- ❖ It is impossible to predict any outcome in advance.
- ❖ Examples:



Tossing a coin



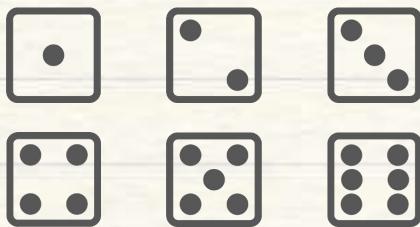
Rolling a dice



Drawing a card from a well-shuffled deck

Outcome

- ❖ A possible result of an experiment or a trial.
- ❖ Examples:



Six outcomes for rolling a dice: 1, 2, 3, 4, 5, 6



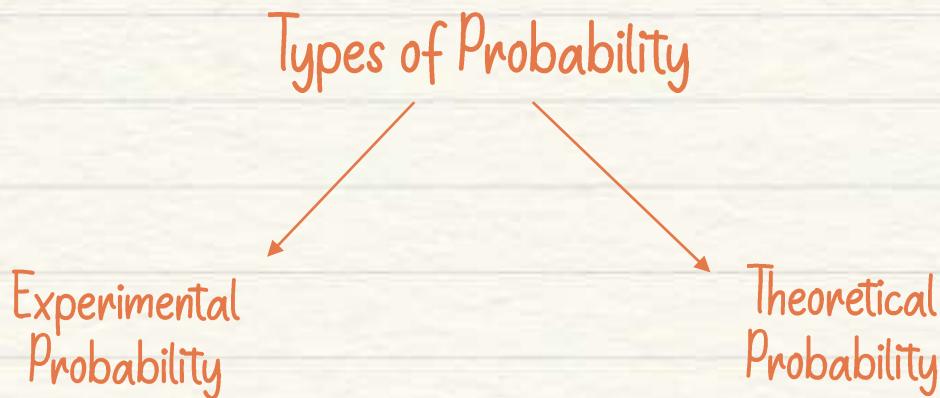
Two outcomes for coin toss:
Heads, Tails

Event

- ❖ A set of one or more outcomes for a random experiment.
- ❖ Example:
 - Getting a tail when a coin is tossed.
 - Getting an odd number when a dice is rolled.



2. Types of Probability



2.1 Theoretical Probability

$$P(E) = \frac{\text{Number of favourable outcomes}}{\text{Total number of possible outcomes}}$$



When a coin is tossed:

- ❖ The probability of getting a **head** is $\frac{1}{2}$
- ❖ The probability of getting a **tail** is $\frac{1}{2}$



The probability $P(E)$ of an event will be a number such that,

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



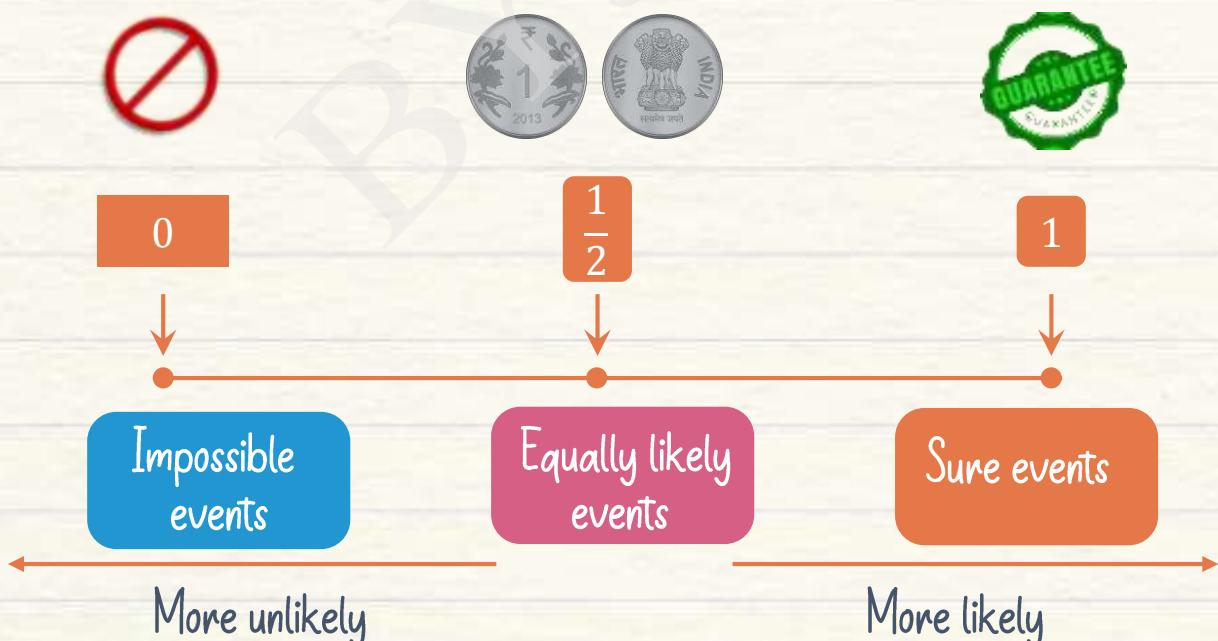
3. Types of Events

Elementary Event

- ❖ Has as **only one outcome**.
- ❖ Sum of all the elementary events for an experiment = 1

Equally likely Event

- ❖ When all the outcomes of an experiment have the **same chance of occurring**.
- ❖ Example: Tossing a coin



Impossible Event

- ❖ $P(E) = 0$.
- ❖ Example: Getting a 7 when rolling a die

Sure/Certain Event

- ❖ $P(E) = 1$.
- ❖ Example: Christmas being celebrated on the 25th of December

3. Types of Events

Complementary Events

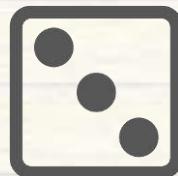
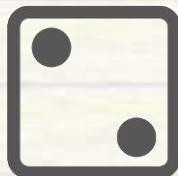
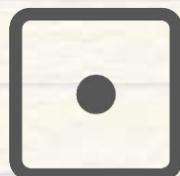
- ❖ IF E denotes happening of an event, then \bar{E} denotes NOT happening of that event.
- ❖ E and \bar{E} are said to be complementary events.
- ❖ \bar{E} is the complement of E .

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

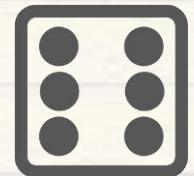
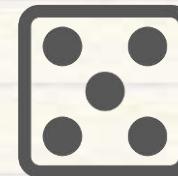
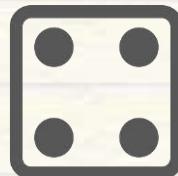


For an event of getting a number less than four on rolling a dice:

E



\bar{E}





4. Important Formulae

Theoretical Probability

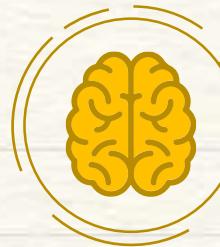
$$P(E) = \frac{\text{Number of favourable outcomes}}{\text{Total number of possible outcomes}}$$

Probability of an event

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

For two complementary events, E and \bar{E} ,

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



Mind Map

