

Siddhardhan

# Basics of Probability

Math for Machine Learning



## **Basics of Probability**

**Probability** is a branch of Mathematics that deals with calculating the likelihood of a given event to occur.

The Probability value lies between 0 and 1.

**Consider Rolling a Die**



- ❖ What is the probability of getting a number greater than 10 when we roll a die?

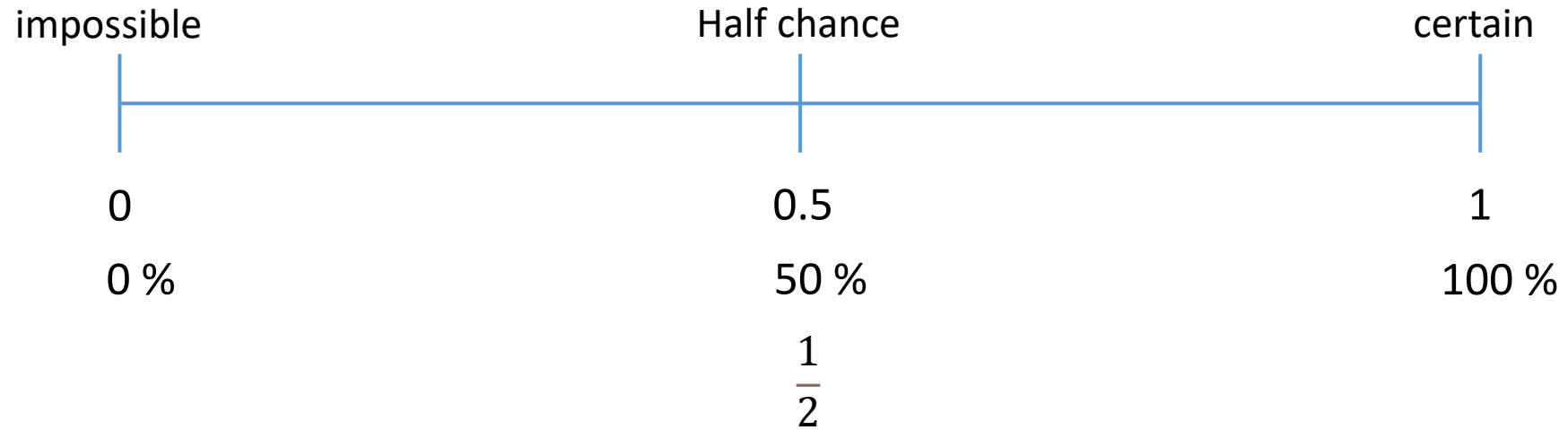
Answer: 0

- ❖ What is the probability of getting a number less than 10 when we roll a die?

Answer: 1

## Probability Value

The Probability value lies between 0 and 1.



## Basics of Probability

$$\text{Probability of an event to occur} = \frac{\text{Number of ways an event can occur}}{\text{Total number of outcomes}}$$



Head



Tail

( H, T )

Possible Outcomes

$$P(H) = \frac{1}{2}$$

$$P(T) = \frac{1}{2}$$



( 1, 2, 3, 4, 5, 6 )

Possible Outcomes

$$P(5) = \frac{1}{6}$$

$$P(\text{even}) = \frac{3}{6}$$

$$P(5) = 0.16$$

$$P(\text{even}) = 0.5$$