

Probability

1. Define probability
2. If you roll a fair six-sided die, what is the probability of rolling a 4?
3. A deck of playing cards has 52 cards. What is the probability of drawing a heart from the deck?
4. You flip a coin. What is the probability of getting heads?
5. If you draw one card from a standard deck without replacement, what is the probability of drawing a king on the second draw, given that the first card drawn was a king?
6. You roll a fair six-sided die twice. What is the probability of rolling a 3 on the first roll and a 5 on the second roll?
7. A bag contains 5 red balls, 3 blue balls, and 2 green balls. If you randomly select a ball from the bag, what is the probability of getting a red ball?
8. Two six-sided dice are rolled. What is the probability of getting a sum of 7?

Answers:

1. Probability is a measure of the likelihood that a specific event will occur, expressed as a number between 0 and 1, where 0 indicates impossibility and 1 indicates certainty.
2. The probability of rolling a 4 on a fair six-sided die is $\frac{1}{6}$
3. The probability of drawing a heart from a standard deck of 52 playing cards is $\frac{1}{4}$
4. The probability of getting heads when flipping a fair coin is $\frac{1}{2}$
5. After drawing a king on the first draw, there are now 51 cards left in the deck. The probability of drawing another king on the second draw is $\frac{3}{51}$, or simplified, $\frac{1}{17}$
6. The probability of rolling a 3 on the first roll and a 5 on the second roll is $\frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$
7. The probability of getting a red ball is $\frac{5}{10} = \frac{1}{2}$
8. There are 6 ways to get a sum of 7: (1,6), (2,5), (3,4), (4,3), (5,2), and (6,1). Since there are a total of $6 \times 6 = 36$ possible outcomes when rolling two six-sided dice, the probability is $\frac{6}{36} = \frac{1}{6}$