**Problems of Probability**

**1)** A coin is flipped three times.
   **a)** What is the probability of getting at least one head?
   **b)** What is the probability of getting at least two head?
   **c)** Find the probability that one head only is obtained.
   **d)** What is the probability of obtaining exactly two heads.

**2)** Two fair coins are tossed.
   **a)** What is the probability of getting at least one head?
   **b)** What is the probability of no heads will be obtained?
   **c)** Find the probability that one head only is obtained.

**3)** A six sided die is rolled.
   **a)** Find the probability that the number obtained is less than 4.
   **b)** Find the probability that the number obtained is less than 2.
   **c)** Find the probability that the die shows a 4.
   **d)** Find the probability that the number obtained is not multiple of three.

**4)** Two dice are rolled.
   **a)** Find the probability that the sum obtained is greater than 10.
   **b)** Find the probability that the sum obtained is a prime number.
   **c)** Find the probability that the sum obtained is less than 6.
   **d)** Find the probability that the sum obtained is at least 8.

**5)** A box contains 10 black marbles, 4 white marbles, and 12 grey marbles. A marble is drawn from the box and then replaced in the box. A second marble is then drawn and replaced.
   **a)** What is probability that all two marbles will be white marbles?
   **b)** What is the probability that no grey marbles will be selected?

**6)** A bag contains 11 black marbles, 3 white marbles, and 7 grey marbles. Two marbles are chosen at random without replacement.
   **a)** What is probability that all two marbles will be white marbles?
   **b)** What is the probability that no grey marbles will be selected?

**7)** A box contains 12 green marbles, 11 red marbles, and 7 yellow marbles. Three marbles are selected at random without replacement.
   **a)** What is the probability that no yellow marbles will be selected?
   **b)** What is the probability that one of each color marble will be selected?
   **c)** What is probability that all three marbles will be red marbles?

## Problems of Probability

**8)** A standard deck of cards has a total of 52 cards, consisting of 4 suits (diamonds, clubs, hearts, and spades) and 13 cards in each suit (ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, jack, queen and king). Two cards are selected without replacement. Find the following probabilities:

**a)** Both cards are jacks.

**b)** Both cards are spades .

**c)** Drawing a black card on the first draw and a diamond card on the second draw.

**9)** A standard deck of cards has a total of 52 cards, consisting of 4 suits (diamonds, clubs, hearts, and spades) and 13 cards in each suit (ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, jack, queen and king). One card is randomly selected.

**a)** Find the probability of getting a club.

**b)** Find the probability of getting a red queen.

**c)** Find the probability of getting the jack of hearts.

**Answers:**

**1)**      **a)** $\dfrac{7}{8}$   **b)** $\dfrac{1}{2}$   **c)** $\dfrac{3}{8}$   **d)** $\dfrac{3}{8}$

**2)**      **a)** $\dfrac{3}{4}$   **b)** $\dfrac{1}{4}$   **c)** $\dfrac{1}{2}$

**3)**      **a)** $\dfrac{1}{2}$   **b)** $\dfrac{1}{6}$   **c)** $\dfrac{1}{6}$   **d)** $\dfrac{2}{3}$

**4)**      **a)** $\dfrac{1}{12}$   **b)** $\dfrac{5}{12}$   **c)** $\dfrac{5}{18}$   **d)** $\dfrac{5}{12}$

**5)**      **a)** $\dfrac{4}{169}$   **b)** $\dfrac{49}{169}$

**6)**      **a)** $\dfrac{1}{70}$   **b)** $\dfrac{13}{30}$

**7)**      **a)** $\dfrac{253}{580}$   **b)** $\dfrac{33}{290}$   **c)** $\dfrac{33}{812}$

**8)**      **a)** $\dfrac{1}{221}$   **b)** $\dfrac{1}{17}$   **c)** $\dfrac{13}{102}$

**9)**      **a)** $\dfrac{1}{4}$   **b)** $\dfrac{1}{26}$   **c)** $\dfrac{1}{52}$