

**RS Aggarwal Solutions for Class 8 Mathematics
Chapter 25 - Probability****EXERCISE 25A****PAGE NO: 282****1.**

- i. A coin is tossed. What are all possible outcomes?
- ii. Two coins are tossed simultaneously. What are all possible outcomes?
- iii. A die is thrown. What are all possible outcomes?
- iv. From a well-shuffled deck of 52 cards, one card is drawn at random.
What is the number of all possible outcomes?

Solution: We know that the coin has two sides head (H) and tail (T)

So the possible outcomes are X^m . (where x is the number of outcomes when a coin is tossed and m is number of coins)

- i. $\therefore 2^1 = 2$ i.e. head and tail

\therefore The possible outcomes are H and T.

- ii. When there are 2 coins

$\therefore 2^2 = 4$ i.e. head and tail

\therefore The possible outcomes are HH, HT, TH, TT.

- iii. We know that the die has 6 faces

So, they are 1, 2, and 3,4,5,6

\therefore The possible outcomes are 1, 2, 3,4,5,6.

- iv. We know that the deck of cards has a total of 52 cards

So, they are 52cards

\therefore The possible outcomes are 52cards.

2. In a single throw of coin, what is the probability of getting a tail?

Solution: We know that the coin has two sides head (H) and tail (T)

So the possible outcomes are X^m . (where x is the number of outcomes when a coin is tossed and m is number of coins)

\therefore The possible outcomes are H and T.

Total possible outcomes = 2

\therefore Chances of getting a tail = 1 (since there is a single coin)

By using the formula,

Probability $p () = \text{number of favorable outcomes} / \text{total number of outcomes}$

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∴ Probability of getting a tail $p(T) = \text{chances/total number of outcomes} = \frac{1}{2}$

3. In a single throw of two coins, find the probability of getting (i) both tails, (ii) at least 1 tail, (iii) at the most 1 tail.

Solution: We know that the coin has two sides head (H) and tail (T)

So the possible outcomes are X^m . (where x is the number of outcomes when a coin is tossed and m is number of coins)

i. When there are 2 coins

∴ $2^2 = 4$ i.e. head and tail

∴ The possible outcomes are HH, HT, TH, TT.

Total possible outcomes = 4

∴ Chances of getting a 2 tails = 1, i.e. TT

By using the formula,

Probability $p() = \text{number of favorable outcomes/ total number of outcomes}$

∴ Probability of getting a tail $p(\text{both T}) = \text{number of two tails occurred/total number of outcomes} = \frac{1}{4}$

ii. When there are 2 coins

∴ $2^2 = 4$ i.e. head and tail

∴ The possible outcomes are HH, HT, TH, TT.

Total possible outcomes = 4

∴ Chances of getting atleast 1 tail = 3, i.e. HT, TH, TT

By using the formula,

Probability $p() = \text{number of favorable outcomes/ total number of outcomes}$

∴ Probability of getting a tail $p(\text{atleast 1 T}) = \text{number of times 1 tail occurred/total number of outcomes} = \frac{3}{4}$

iii. When there are 2 coins

∴ $2^2 = 4$ i.e. head and tail

∴ The possible outcomes are HH, HT, TH, TT.

Total possible outcomes = 4

∴ Chances of getting atmost 1 tail = 3, i.e. HT, TH, TT

By using the formula,

Probability $p() = \text{number of favorable outcomes/ total number of outcomes}$

∴ Probability of getting a tail $p(\text{atmost 1 T}) = \text{number of times 1 tail occurred/total number of outcomes} = \frac{3}{4}$

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- 4. A bag contains 4 white and 5 blue balls. They are mixed thoroughly and one ball is drawn at random. What is the probability of getting (i) a white ball? (ii) A blue ball?**

Solution:

- i. We know that the bag containing the total balls = $4\text{white} + 5\text{blue} = 9\text{balls}$

White balls = 4

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting a white ball $p(W)$ = number of white balls/total number of balls
 $= 4/9$

- ii. We know that the bag containing the total balls = $4\text{white} + 5\text{blue} = 9\text{balls}$

Blue balls = 5

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting a blue ball $p(B)$ = number of blue balls/total number of balls
 $= 5/9$

- 5. A bag contains 5 white, 6 red and 4 green balls. One ball is drawn at random. What is the probability that the ball drawn is (i) green? (ii) White? (iii) Non-red?**

Solution:

- i. We know that the bag containing the total balls = $5\text{white} + 6\text{red} + 4\text{green} = 15\text{balls}$

Green balls = 4

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting a green ball $p(G)$ = number of green balls/total number of balls
 $= 4/15$

- ii. We know that the bag containing the total balls = $5\text{white} + 6\text{red} + 4\text{green} = 15\text{balls}$

White balls = 5

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting a white ball $p(W)$ = number of white balls/total number of balls
 $= 5/15 = 1/3$

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iii. We know that the bag containing the total balls = $4\text{white} + 6\text{red} + 4\text{green} = 15\text{balls}$

Number of outcomes (excluding red) = $5\text{white} + 4\text{green} = 9\text{balls}$

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting a green ball $p(G)$ = number of white balls/total number of balls
 $= 9/15 = 3/5$

6. In a lottery, there are 10 prizes and 20 blanks. A ticket is chosen at random.

What is the probability of getting a prize?

Solution: we know that the total number of lottery tickets = 30

Number of lottery tickets having prize = 10

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting a prized ticket $p(P)$ = number of prized tickets/total number of lottery tickets
 $= 10/30 = 1/3$

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Chapter 25 - Probability****EXERCISE 25B****PAGE NO: 283****OBJECTIVE QUESTIONS****Select the correct answer in each of the following:**

- 1. In a spinning wheel, there are 3 white and 5 green sectors. It is spinned. What is the probability of getting a green sector?**

- a) $\frac{5}{3}$
- b) $\frac{5}{8}$
- c) $\frac{1}{5}$
- d) $\frac{3}{8}$

Solution: we know that the,

Total number of sectors = 3 white + 5 green = 8 sectors

By using the formula,

Probability $p()$ = number of favorable outcomes / total number of outcomes

\therefore Probability of getting a green sector $p(G)$ = number of green sectors / total number of sectors = $\frac{5}{8}$

- 2. 8 cards are numbered as 1, 2, 3, 4, 5, 6, 7, 8 respectively. They are kept in a box and mixed thoroughly. Once card is chosen at random. What is the probability of getting a number less than 4?**

- a) $\frac{1}{2}$
- b) $\frac{3}{4}$
- c) $\frac{3}{8}$
- d) $\frac{3}{5}$

Solution: we know that the,

Total number of cards kept in the box = 8

\therefore number of cards having a number less than 4 on it = 3

By using the formula,

Probability $p()$ = number of favorable outcomes / total number of outcomes

\therefore Probability of selecting a card with a number less than 4 on it $p(\text{no. of cards less than 4})$
= number of cards having a number less than 4 / total number of cards = $\frac{3}{8}$

- 3. Two coins are tossed simultaneously. What is the probability of getting one head and one tail?**

- a) $\frac{1}{4}$
- b) $\frac{1}{2}$
- c) $\frac{3}{4}$
- d) $\frac{2}{3}$

Solution: We know that the coin has two sides head (H) and tail (T)

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So the possible outcomes are X^m . (where x is the number of outcomes when a coin is tossed and m is number of coins)

When there are 2 coins

$\therefore 2^2 = 4$ i.e. head and tail

\therefore The possible outcomes are HH, HT, TH, TT.

Total possible outcomes = 4

\therefore Chances of getting 1 head and 1 tail = 2, i.e. HT, TH

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting 1 head and 1 tail $p(1H\ 1T)$ = number of 1 head and 1 tail/total number of outcomes = $2/4 = \frac{1}{2}$

4. A bag contains 3 white and 2 red balls. One ball is drawn at random. What is the probability that the ball drawn is red?

a) $\frac{1}{2}$

b) $\frac{2}{3}$

c) $\frac{1}{5}$

d) $\frac{2}{5}$

Solution: We know that the bag containing the total balls = 3 white + 2 red = 5 balls

Red balls = 2

By using the formula,

Probability $p()$ = number of favorable outcomes/ total number of outcomes

\therefore Probability of getting a red ball $p(R)$ = number of red balls/total number of balls = $2/5$