QB365 Question Bank Software Study Materials

Probability Important 2 Marks Questions With Answers (Book Back and Creative)

9th Standard

Maths

Total Marks : 40

2 Marks

20 x 2 = 40

1) You are walking along a street. If you just choose a stranger crossing you, what is the probability that his next birthday will fall on a sunday?

Answer : (S) Days in a week = {Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}

n(S) = 7

∴ No. of days in week = 7

(A) Event of selecting Sunday = {Sunday}

n(A) = 1

∴ Probability of selecting Sunday = $\frac{n(A)}{n(S)} = \frac{1}{7}$.

2) What is the probability of drawing a King or a Queen or a Jack from a deck of cards?

Answer : Number of cards n(S) = 52

No. of King cards n(A) = 4

No. of Queen cards n(B) = 4

No. of Jack cards n(C) = 4

Probability of drawing a King card

$\frac{n(A)}{n(S)} = \frac{4}{52}$

Probability of drawing a Queen card

$= \frac{n(B)}{n(S)} = \frac{4}{52}$

Probability of drawing a Jack card

$= \frac{n(C)}{n(S)} = \frac{4}{52}$

∴ The Probability of drawing a King or a Queen or a Jack from a deck of cards

= p(A) + P(B)+ P(C) $= \frac{4}{52} + \frac{4}{52} + \frac{4}{52} = \frac{4+4+4}{52} = \frac{12}{52} = \frac{3}{13}$.

3) What is the probability of throwing an even number with a single standard dice of six faces?

Answer : Faces of a dice (S) = {1, 2, 3, 4,5, 6}

n(S) = 6

Event of throwing an even number

A = {2, 4, 6}, n(A) = 3

∴ Probability of throwing an even number

P(A) = $\frac{n(A)}{n(S)} = \frac{3}{6} = \frac{1}{2}$.

4) There are 24 balls in a pot. If 3 of them are Red, 5 of them are Blue and the remaining are Green then, what is the probability of picking out

(i) a Blue ball

(ii) a Red ball and

(iii) a Green ball?

Answer : n(S) = 24

Red = n(R) = 3

Blue = n(B) = 5

Green= n(G) = 16

(i) Probability of picking a Blue ball = $\frac{n(B)}{n(S)} = \frac{5}{24}$

(ii) Probability of picking a Red ball = $\frac{n(R)}{n(S)} = \frac{3}{24} = \frac{1}{8}$

(iii) Probability of picking a Green ball = $\frac{n(G)}{n(S)} = \frac{16}{24} = \frac{2}{3}$.

5) When two coins are tossed, what is the probability that two heads are obtained?

Answer : sample space when two coins are tossed (S) = {HH, TT, HT, TH}

n(S) = 4

Event of getting two heads (A) = {HH}

n(A) = 1

Probability of getting two heads p(A) = $\frac{n(A)}{n(S)} = \frac{1}{4}$.

6) Two dice are rolled, find the probability that the sum is

(i) equal to 1

(ii) equal to 4

(iii) less than 13

Answer : When two dice are rolled

Sample space

S = {(1,1), (1,2), (1,3), (1,4), (1,5), (1,6), (2,1), (2,2), (2,3), (2,4), (2,5), (2,6), (3,1), (3,2), (3,3), (3,4), (3,5), (3,6), (4,1), (4,2), (4,3), (4,4),(4,5),(4,6), (5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (6,1), (6,2), (6,3), (6,4), (6,5), (6,6)}

n(S) = 36

(i) Event of the sum is equal to 1 = 0

∴ Probability = $\frac{0}{n(S)}$ = 0

(ii) Event of the sum is equal to 4

B = {(1, 3), (2, 2), (3, 1)}

n(B) = 3

P(B)= $\frac{n(B)}{n(S)} = \frac{3}{6} = \frac{1}{12}$

(iii) Event of the sum is equal to less than 13

C= {(1,1), (1,2), (1,3), (1,4), (1,5), (1,6), (2,1), (2,2), (2,3), (2,4), (2,5), (2,6), (3,1), (3,2), (3,3), (3,4), (3,5), (3,6), (4,1), (4,2), (4,3), (4,4), (4,5), (4,6), (5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (6,1), (6,2), (6,3), (6,4), (6,5), (6,6)}

n(C) = 36

P(C) = $\frac{n(C)}{n(S)} = \frac{36}{6}$.

7) A manufacturer tested 7000 LED lights at random and found that 25 of them were defective. If a LED light is selected at random, what is the probability that the selected LED light is a defective one.

Answer : n(S) = 7000

S - Total no. of lights.

n(A) = 25

A - Defective ones.

P(A) = $\frac{n(A)}{n(S)} = \frac{25}{7000} = \frac{1}{280}$.

8) In a football match, a goalkeeper of a team can stop the goal, 32 times out of 40 attempts tried by a team. Find the probability that the opponent team can convert the attempt into a goal.

Answer : Total no. of attempts n(S) = 40

Total no. of attempts by A team n(A) = 32

Total no. of attempts by the opponent team B = n(B) = 40 - 32 = 8

P(B) = $\frac{n(B)}{n(S)} = \frac{8}{40} = \frac{1}{5}$.

9) What is the probability that the spinner will not land on a multiple of 3?

Answer : Total no. of choices = 8

n(S)

Total no. of multiples of 3 (A) = {3, 6}

n(A) = 2

Event of non-multiples of 3(B) = {1, 2, 4,5, 7, 8}

n(B) = 6

$\frac{n(B)}{n(S)} = \frac{6}{8} = \frac{3}{4}$.

10) Frame two problems in calculating probability, based on the spinner shown here.

Answer : (i) What is the probability that the spinner will not land on a multiple of 2?

(ii) What is the probability that the spinner will land on an odd number?

11) A company manufactures 10000 Laptops in 6 months. In that 25 of them are found to be defective. When you choose one Laptop from the manufactured, what is the probability that selected Laptop is a good one.

Answer : Total n(S) = 10,000

Defective n(A) = 25

Number of defective laptop is 25

Number of good laptop is = 10000 - 25 = 9975

Let A be the event of choosing a good laptop. n(A) = 9975

$P(A) = \frac{n(A)}{n(S)} = \frac{9975}{10000}$

P(A) = 0.9975

Probability of getting a good laptop is 0.9975

12) In a survey of 400 youngsters aged 16-20 years, it was found that 191 have their voter ID card. If a youngster is selected at random, find the probability that the youngster does not have their voter ID card.

Answer : No. of youngsters = 400

n(S)

No. of youngsters having voter id = 191

n(A)

No. of youngsters do not have their voter id

n(B) = 400 - 191 = 209

P(B) = $\frac{n(B)}{n(S)} = \frac{209}{400}$.

13) The probability of guessing the correct answer to a certain question is $\frac{x}{3}$. If the probability of not guessing the correct answer is $\frac{x}{5}$, then find the value of x.

Answer : $\frac{x}{3} + \frac{x}{5}$ = 1

$\frac{5x+3x}{15}$ = 1

$\frac{8x}{15}$ = 1

8x = 15

x = $\frac{15}{8}$

14) If a probability of a player winning a particular tennis match is 0.72. What is the probability of the player loosing the match?

Answer : p(A) = 0.72

P(A') = 1 - 0.72 = 0.28

15) 1500 families were surveyed and following data was recorded about their maids at homes

Type of maids	Only part time	Only full time	Both
Number of families	860	370	250

A family is selected at random. Find the probability that the family selected has

(i) Both types of maids

(ii) Part time maids

(iii) No maids

Answer : Total number of families S = 1500

n(S) = 1569

Let P be the event of selecting a family having part time maids and F be the event of selecting a family having full time maids.

(i) Both types of maids Let P ∩ F be the event of selecting a family having both types of maids.

Let (P ∩ F) = 259

$$P(P \cap F) = \frac{n(P \cap F)}{n(S)} = \frac{250}{1500} = \frac{1}{6}$$

(ii) Part time maids Part time maids = only part time maid + both

= 860 + 250 = 1110 '

n(P) = 1110

$$p(P) = \frac{n(P)}{n(S)} = \frac{1110}{1500} = \frac{111}{150}$$

(iii) No maids Let (P ∪ P)'be the event of choosing a family not having maids and (P u F) be the event of choosing a family having part time or fuli time or both maids.

n(P ∪ F) = only n(P) + only n(F) + n(p ∩ p) = 850 + 370 + 250

n(P∪F) = 1480

n(P∪F)' = n(S)-n(P∪F)

= 1500 - 1480

n(P ∪ F)' = 20

$$P(P \cup F)' = \frac{n(P \cup F)'}{n(S)} = \frac{20}{1500} = \frac{1}{75}$$

16) An unbiased die is thrown. What is the probability of getting

(i) an even number or a multiple of 3.

(ii) a number between 3 and 6.

Answer : Probability of getting an even number = $\frac{3}{6} = \frac{1}{2}$

Probability of getting a multiple of 3 = $\frac{2}{6}$

Probability of getting an even multiple of 3 = $\frac{1}{6}$

Probability of getting an even number or

a multiple of 3 = $\frac{1}{2} + \frac{2}{6} - \frac{1}{6}$

= $\frac{3+2-1}{6} = \frac{4}{6} = \frac{2}{3}$

(ii) Probability of a number between 3 and 6 = $\frac{2}{6} = \frac{1}{3}$.

17) Two unbiased coins are tossed simultaneously find the probability of getting

(i) two heads

(ii) one head

(iii) at least one head

(iv) at most one head

Answer : S = {HH, HT, TH, TT}

(i) probability of two heads = $\frac{1}{4}$

(ii) probability of one head = $\frac{1}{2}$

(iii) probability of at least one head = $\frac{3}{4}$

(iv) probability of at most one head = $\frac{3}{4}$.

18) Find the probability that a leap year selected at random will contain 53 Sundays.

Answer : S = {Sunday Monday, Monday Tuesday, Tuesday Wednesday, Wednesday Thursday, Thursday Friday, Friday Saturday, Saturday Sunday}

n(S) = 7; n (A) = 2; P(A) = $\frac{2}{7}$.

19) What is the probability that a number selected from the numbers 1, 2, 3, ..., 25 is prime number when each of the given numbers is equally likely to be selected?

Answer : A = {2, 3, 5, 7, 11, 13, 17, 19, 23}

P(A) = $\frac{9}{25}$.

20) Tickets numbered from 1 to 20 are mixed up together and then a ticket is drawn at random. What is the probability that the ticket has a number which is a multiple of 3 or 7?