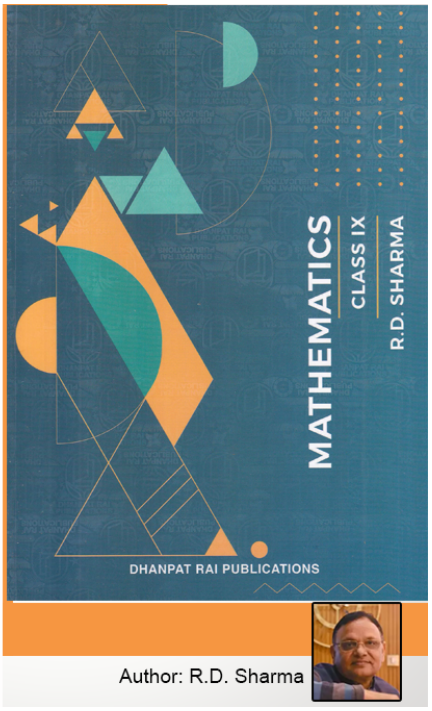
Class 9 - Chapter 25 Probability



RD Sharma Solutions for Class 9 Maths Chapter 25–Probability

Class 9: Maths Chapter 25 solutions. Complete Class 9 Maths Chapter 25 Notes.

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Exercise 25.1 Page No: 25.13

Question 1: A coin is tossed 1000 times with the following sequence:

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Head: 455, Tail: 545

Compute the probability of each event.

Solution:

Coin is tossed 1000 times, which means, number of trials are 1000.

Let us consider, event of getting head and event of getting tail be E and F respectively.

Number of favorable outcome = Number of trials in which the E happens = 455

So, Probability of E = (Number of favorable outcome) / (Total number of trials)

P(E) = 455/1000 = 0.455

Similarly,

Number of favorable outcome = Number of trials in which the F happens = 545

Probability of the event getting a tail, P(F) = 545/1000 = 0.545

Question 2: Two coins are tossed simultaneously 500 times with the following frequencies of different outcomes:

Two heads: 95 times

One tail: 290 times

No head : 115 times

Find the probability of occurrence of each of these events.

Solution:

We know that, Probability of any event = (Number of favorable outcome) / (Total number of trials)

Total number of trials = 95 + 290 + 115 = 500

Now,

P(Getting two heads) = 95/500 = 0.19

P(Getting one tail) = 290/500 = 0.58

P(Getting no head) = 115/500 = 0.23

Question 3: Three coins are tossed simultaneously 100 times with the following frequencies of different outcomes:

Outcome	No head	One head	Two heads	Three heads
Frequency	14	38	36	12

If the three coins are simultaneously tossed again, compute the probability of:

(i) 2 heads coming up

(ii) 3 heads coming up

(iii) At least one head coming up

(iv) Getting more heads than tails

(v) Getting more tails than heads

Solution:

We know, Probability of an event = (Number of Favorable outcomes) / (Total Numbers of outcomes)

In this case, total numbers of outcomes = 100.

(i) Probability of 2 Heads coming up = 36/100 = 0.36

(ii) Probability of 3 Heads coming up = 12/100 = 0.12

(iii) Probability of at least one head coming up = (38+36+12) / 100 = 86/100 = 0.86

(iv) Probability of getting more Heads than Tails = (36+12)/100 = 48/100 = 0.48

(v) Probability of getting more tails than heads = (14+38) / 100 = 52/100 = 0.52

Question 4: 1500 families with 2 children were selected randomly, and the following data were recorded:

No of girls in a family	0	1	2
No of girls	211	814	475

If a family is chosen at random, compute the probability that it has:

(i) No girl (ii) 1 girl (iii) 2 girls (iv) At most one girl (v) More girls than boys

Solution:

We know, Probability of an event = (Number of Favorable outcomes) / (Total Numbers of outcomes)

In this case, total numbers of outcomes = 211 + 814 + 475 = 1500.

(Here, total numbers of outcomes = total number of families)

(i) Probability of having no girl = 211/1500 = 0.1406

(ii) Probability of having 1 girl = 814/1500 = 0.5426

(iii) Probability of having 2 girls = 475/1500 = 0.3166

(iv) Probability of having at the most one girl = (211+814) /1500 = 1025/1500 = 0.6833

(v) Probability of having more girls than boys = 475/1500 = 0.31

Question 5: In a cricket match, a batsman hits a boundary 6 times out of 30 balls he plays. Find the probability that on a ball played:

(i) He hits boundary (ii) He does not hit a boundary.

Solution:

Total number of balls played by a player = 30

Number of times he hits a boundary = 6

Number of times he does not hit a boundary = 30 – 6 = 24

We know, Probability of an event = (Number of Favorable outcomes) / (Total Numbers of outcomes)

Now,

(i) Probability (he hits boundary) = (Number of times he hit a boundary) / (Total number of balls he played)

= 6/30 = 1/5

(ii) Probability that the batsman does not hit a boundary = 24/30 = 4/5

Question 6: The percentage of marks obtained by a student in monthly unit tests are given below:

UNIT TEST	I	II	III	IV	V
PERCENTAGE OF MARK OBTAINED	69	71	73	68	76

Find the probability that the student gets

(i) More than 70% marks

(ii) Less than 70% marks

(iii) A distinction

Solution:

Total number of unit tests taken = 5

We know, Probability of an event = (Number of Favorable outcomes) / (Total Numbers of outcomes)

(i) Number of times student got more than 70% = 3

Probability (Getting more than 70%) = 3/5 = 0.6

(ii) Number of times student got less than 70% = 2

Probability (Getting less than 70%) = 2/5 = 0.4

(iii) Number of times student got a distinction = 1[Marks more than 75%]

Probability (Getting a distinction) = 1/5 = 0.2

Question 7: To know the opinion of the students about Mathematics, a survey of 200 students were conducted. The data was recorded in the following table:

Opinion	Like	Dislike
Number of students	135	65

Find the probability that student chosen at random:

(i) Likes Mathematics (ii) Does not like it.

Solution:

Total number of students = 200

Students like mathematics = 135

Students dislike Mathematics = 65

We know, Probability of an event = (Number of Favorable outcomes) / (Total Numbers of outcomes)

(i) Probability (Student likes mathematics) = 135/200 = 0.675

(ii) Probability (Student does not like mathematics) = 65/200 = 0.325

Exercise VSAQs Page No: 25.16

Question 1: Define a trial.

Solution: When we perform an experiment it is called a trial of the experiment. Whereas, an operation which can produce some well-defined outcomes is called an experiment.

For example, we have 6 possible outcomes while rolling a die.

Question 2: Define an elementary event.

Solution: An outcome of a trial of an experiment is an elementary event.

Question 3: Define an event.

Solution: A subset of the sample space is called an event.

For Example: In the experiment of tossing a coin:

Event E = the event of getting a head

Event F = the event of getting a tail

Question 4: Define Probability of an Event.

Solution: Suppose an event E can happen in m ways out of a total of n possible equally likely ways.

Then, the probability of occurrence of the event = P(E) = m/n.

Chapterwise RD Sharma Solutions for Class 9 Maths :

About RD Sharma

RD Sharma i*sn't the kind of author you'd bump into at lit fests. But his bestselling books have helped many* CBSE *students lose their dread of* maths. *Sunday Times profiles the tutor turned internet star*

He dreams of algorithms that would give most people nightmares. And, spends every waking hour thinking of ways to explain concepts like 'series solution of linear differential equations'. Meet Dr Ravi Dutt Sharma — mathematics teacher and author of 25 reference books — whose name evokes as much awe as the subject he teaches. And though students have used his thick tomes for the last 31 years to ace the dreaded maths exam, it's only recently that a spoof video turned the tutor into a YouTube star.

R D Sharma had a good laugh but said he shared little with his on-screen persona except for the love for maths. "I like to spend all my time thinking and writing about maths problems. I find it relaxing," he says. When he is not writing books explaining mathematical concepts for classes 6 to 12 and engineering students, Sharma is busy dispensing his duty as vice-principal and head of department of science and humanities at Delhi government's Guru Nanak Dev Institute of Technology.