NCERT SOLUTIONS
CLASS-IX MATHS
CHAPTER-15 PROBABILITY

1. In an ODI match, a wicket keeper drops a catch 6 times out of 30 catches he gets. Find the probability of the wicketkeeper not dropping a catch.

Sol: Let E be the event of dropping a catch

P(E)= Probability of the wicketkeeper dropping a catch = $\frac{6}{30}$ = $\frac{1}{5}$

Thus, Probability of not dropping a catch is 1-P(E) = $1 - \frac{1}{5}$ = $\frac{4}{5}$

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

No of girls in a family	2		0
No of families	500	300	200

What is the probability that a family, chosen at random, has

i. 2 girls

ii. 1 girl

iii. No girl

Also check whether the sum of these probabilities is 1.

Sol: Total number of families = $500 + 300 + 200$= 1000

i. P(Probability of 2 girls) = $\frac{500}{1000}$ = $\frac{1}{2}$

ii. P(Probability of 1 girl) = $\frac{300}{1000}$ = $\frac{3}{10}$

iii. P(Probability of No girl) = $\frac{200}{1000}$ = $\frac{1}{5}$

Sum of all Probabilities = $P(Probability of 2 girls) + P(Probability of 1 girl) + P(Probability of No girl)$ = $\frac{1}{2} + \frac{3}{10} + \frac{1}{5}$ = 1

3. From the following table, Find the probability of a student selected at random being born in April.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
No of students	5	6	4	2	8		5	4	4	3	7	

Sol: Total number of students: $5 + 6 + 4 + 2 + 8 + 1 + 5 + 4 + 4 + 3 + 7 + 1$ = 50

P(Student born in April) = $\frac{2}{50}$ = $\frac{1}{25}$

4. Three coins are tossed simultaneously 210 times with the following frequencies of different outcomes:

Outcome	3 Heads	2 Heads	1 Head	No Head
Frequency	45	37	55	73

If the three coins are simultaneously tossed again, What is the probability of not getting even a single head?

Sol: Number of times the coins were tossed = 210

P(Not getting even a single head) = $\frac{73}{210}$

5. An organization selected 1900 families at random and surveyed them to determine a relationship between income level and the number of vehicles in a family. The information gathered is listed in the table below:

Vehicles per family

Income level	0	1	2	More than 2
Less than 6000	10	60	25	0
6000 to 11000	0	205	27	2
11000 to 14000	1	435	29	1
14000 to 17000	2	369	59	25
17000 or more	1	479	82	88

Find the probability that a family chosen at random is

(i) Earning 11000 – 14000 per month and owning exactly 1 vehicle.

(ii) Earning 17000 or more per month and owning exactly 2 vehicles.

(iii) Earning less than 6000 per month and does not own any vehicle.

(iv) Earning 6000-11000 per month and owning more than 2 vehicles

(v) Owning more than 2 vehicles

Sol: Total number of families: 1900

P(Earning 11000-14000 and owning 1 vehicle) = $\frac{435}{1900}$

P(Earning 17000 or more and owning 2 vehicles) = $\frac{82}{1900}$

P(Earning less than 6000 and doesn't own any vehicle) = $\frac{10}{1900}$

P(Earning 6000-11000 and owning more than 2 vehicles) = $\frac{2}{1900}$

P(Owning more than 2 vehicles) = $\frac{116}{1900}$

6. In a science test, the marks of 100 students of class VI are listed in the following table:

Marks (Out of 100)	No of students
0-20	18
20-30	17
30-40	15
40-50	8
50-60	14
60-70	21
70-100	7
Total	100

i. What is the probability that a student selected at random has scored less than 40?

ii. What is the probability that a student selected at random has scored more than 50?

Sol: Total number of students = 100

Number of students having scored less than 40% = 18 + 17 + 15 = 50

Number of students having scored more than 50% = 14 + 21 + 7 = 42

i. P(Less than 40%) = $\frac{50}{100}$ = $\frac{1}{2}$

ii. P(More than 50%) = $\frac{42}{100}$ = $\frac{21}{50}$

7. The distance (in km) of 20 doctors from their residence to their place of work were found as follows:

5, 6, 4, 7, 2, 9, 1, 6, 4, 3, 5, 32, 4, 6, 21, 15, 4,15,18,5

What is the probability that a doctor lives:

(i) Less than 6 km from her place of work?

(ii) More than or equal to 6 km from her place of work?

(iii) Within 0.5 km from her place of work?

Sol: Total number of doctors = 20

Number of doctors with travelling distance below 6km = 10

Number of doctors with travelling distance more than or equal to 6 km = 10

Number of doctors with travelling distance below 0.5 km = 0

(i) P(Less than 6 km) = $\frac{10}{20}$ = $\frac{1}{2}$

(ii) P(More than or equal to 6) = $\frac{10}{20}$ = $\frac{1}{2}$

(iii) P(Less than 0.5 km) = $\frac{0}{20}$ = 0

8. A survey of 100 students was conducted to know the opinion of the students about the subject statistics which is recorded in the following table.

Opinion	Number of students
Like	37
Dislike	63

What is the probability that a student selected at random

i. Likes the subject?

ii. Dislikes the subject?

Sol: Total number of students = 100

Number of students liking the subject = 37

Number of students disliking the subject = 63

i. P(liking the subject) = $\frac{37}{100}$

ii. P(Disliking the subject) = $\frac{63}{100}$

9. Nine bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg):

5.08 ,4.95, 5.00, 4.96, 5.08, 4.98, 5.04, 5.07 and 5.00

What is the probability that any of these bags chosen at random contains less than 5 kg of flour?

Sol: Total number of wheat bags = 9

Number of wheat bags weighing less than 5 kg = 3

P(Weighing less than 5 kg) = $\frac{3}{9}$ = $\frac{1}{3}$

10. You were asked to prepare a frequency distribution table regarding the blood groups of 30 students of a class. Use this table to determine the probability that a student of this class, selected at random, has blood group AB.

The blood groups of 10 students of Class VIII are recorded as follows:
O,AB,A,B,O,A,AB,AB,O and AB

Represent this data in the form of a frequency distribution table. Use this table to determine the probability that a student of this class, selected random, has blood group O.

Sol: Frequency Distribution Table:

Blood Group	Frequency
A	2
B	1
AB	4
O	3

Total number of students = 10

Number of students having blood group O = 3

P(Blood group O) = $\frac{3}{10}$