

Class : IX

Subject : Mathematics

Assignment 8: Probability

1. One card is drawn from a well shuffled deck of 52 cards. Find the probability that the number on it is a prime number.
2. Given below are the seats won by different political parties in the polling outcome of a state assembly elections:-

Political party	A	B	C	D	E	F
Seats won	75	55	37	29	10	37

Find the probability that any of the political parties chosen has won more than 30 seats.

(Ans: 2 / 3)

3. The following table gives distance (in km) that 40 engineers have to travel from their residences to their work places:-

Distance (in km)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35
No of engineers	5	11	11	9	1	1	2

Find the probability that an engineer selected at random lives at a distance of:-

- (i) 10 – 15 km (event E1) (ii) more than 35 km (event E2) (iii) less than 10 km (event E3) (iv) upto 35 km (event E4)
(Ans: 11/40, 0, 2/5, 1)

4. Blood groups of 30 students in a class are as follows:

Blood group	O ⁺	O ⁻	A ⁺	A ⁻	B ⁺	B ⁻	AB ⁺	AB ⁻
Total	8	2	6	1	10	2	1	0

Find the probability that a student selected at random has a blood group: - (i) O (ii) B + (iii) AB (Ans:- 4/15, 1/3, 1/30)

5. Weekly wages of workers in a factory are as follows:-

Weekly wages (in Rs)	325 - 350	350 - 375	375 - 400	400 - 425	425 - 450
No of workers	0	45	75	60	40

Find the probability that a worker selected at random earns: - (i) Rs 400 or more (ii) Rs 375 or more but less than Rs 425
(iii) Upto Rs 400 (iv) at least Rs 375 (Ans: 2/5, 27/50, 3/5, 7/10)

6. A batsman's score in 80 ODI's is as follows:-

Scores	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89	90 - 99
No of matches	1	1	8	13	20	22	12	3

What is the probability that the batsman will score (in the next match)

- (i) atleast 70 runs (ii) less than 50 runs (iii) 40 to 69 runs (iv) at most 59 runs
(Ans: 37/80 , 1/8, 41/80, 23/80)

7. Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes:

Outcomes	Frequency
3 heads	23
2 heads	72
1 head	77
No head	28

Find the probability of getting (i) 3 heads (ii) 2 heads & 1 tail (iii) at least 2 heads (iv) getting more tails than heads

8. The percentage of marks obtained by a student in the monthly unit tests are given below:

Unit test	% of marks obtained
I	58
II	64
III	76

IV	62
V	85

Find the probability that the student gets

- (i) a first class i.e. at least 60% marks (iii) a distinction i.e. 75% or above
(ii) marks between 70% and 80% (iv) less than 65% marks

9. Following frequency distribution gives the weights of 38 students of a class

Weight (in kg)	Number of students
31 – 35	9
36 – 40	5
41 – 45	14
46 – 50	3
51 – 55	1
56 – 60	2
61 – 65	2
66 – 70	1
71 – 75	1

Find the probability that weight of a student in the class is:

- (i) At most 60 kg (ii) at least 36 kg (iii) not more than 50 kg

10. Define two events each, one having probability 0 and the other having probability of 1.

11. In n trials of a random experiment if an event A occurs m times, event B occurs P times and event C occurs r times, s.t. $m+p+r = n$ then find the value of:

- (i) $P(A)$ (ii) $P(B)$ (iii) $P(C)$ (iv) $P(A) + P(B) + P(C)$ (v) $P(\text{not } C)$
(vi) $P(\text{neither } A \text{ nor } C)$ (VII) $P(\text{both } B \text{ and } C)$