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Maharishi School of Excellence

Senior Secondary

Class : IX

Subject : Mathematics

Assignment : Probability

1. A coin is tossed 500 times and we get
heads: 285 times and tails: 215 times.

When a coin is tossed at random, what is the probability of getting

(i) a head? (ii) a tail?

2. Two coins are tossed 400 times and we get
two heads: 112 times; one head: 160 times; 0 head: 128 times.

When two coins are tossed at random, what is the probability of getting

(i) 2 heads? (ii) 1 head? (iii) 0 head?

3. Three coins are tossed 200 times and we get
three heads: 39 times; two heads: 58 times;
one head: 67 times; 0 head: 36 times.

When three coins are tossed at random, what is the probability of
getting (i) 3 heads? (ii) 1 head? (iii) 0 head? (iv) 2 heads?

4. A die is thrown 300 times and the outcomes are noted as given below:

Outcome	1	2	3	4	5	6
Frequency	60	72	54	42	39	33

When a die is thrown at random, what is the probability of getting a

- (i) 3? (ii) 6? (iii) 5? (iv) 1?
5. In a survey of 200 ladies, it was found that 142 like coffee, while 58 dislike it.

Find the probability that a lady chosen at random

- (i) likes coffee, (ii) dislikes coffee.
6. The percentages of marks obtained by a student in six unit tests are given below:

Unit test	I	II	III	IV	V	VI
Percentage of marks obtained	53	72	28	46	67	59

A unit test is selected at random. What is the probability that the student gets more than 60% marks in the test?

7. On a particular day, at a crossing in a city, the various types of 240 vehicles going past during a time interval were observed as under:

Type of vehicle	Two-wheelers	Three-wheelers	Four-wheelers
Frequency	84	68	88

Out of these vehicles, one is chosen at random. What is the probability that the chosen vehicle is a two-wheeler?

8. On one page of a telephone directory, there are 200 phone numbers. The frequency distribution of their unit's digits is given below:

Unit's digit	0	1	2	3	4	5	6	7	8	9
Frequency	19	22	23	19	21	24	23	18	16	15

One of the numbers is chosen at random from the page. What is the probability that the unit's digit of the chosen number is (i) 5? (ii) 8?

9. The following table shows the blood groups of 40 students of a class.

Blood group	A	B	O	AB
Number of students	11	9	14	6

One student of the class is chosen at random. What is the probability that the chosen student has blood group (i) O? (ii) AB?

10. 12 packets of salt, each marked 2 kg, actually contained the following weights (in kg) of salt:

1.950, 2.020, 2.060, 1.980, 2.030, 1.970,
2.040, 1.990, 1.985, 2.025, 2.000, 1.980.

Out of these packets, one packet is chosen at random.

What is the probability that the chosen packet contains more than 2 kg of salt?

11. In a cricket match, a batsman hits a boundary 6 times out of 30 balls he plays. Find the probability that he did not hit a boundary.

12. An organisation selected 2400 families at random and surveyed them to determine a relationship between the income level and the number of vehicles in a family. The information gathered is listed in the table below:

Monthly income (in ₹)	Number of vehicles per family			
	0	1	2	3 or more
Less than ₹ 25000	10	160	25	0
₹ 25000– ₹ 30000	0	305	27	2
₹ 30000– ₹ 35000	1	535	29	1
₹ 35000– ₹ 40000	2	469	59	25
₹ 40000 or more	1	579	82	88

Suppose a family is chosen at random. Find the probability that the family chosen is

- earning ₹ 25000–₹ 30000 per month and owning exactly 2 vehicles.
- earning ₹ 40000 or more per month and owning exactly 1 vehicle.
- earning less than ₹ 25000 per month and not owning any vehicle.
- earning ₹ 35000–₹ 40000 per month and owning 2 or more vehicles.
- owning not more than 1 vehicle.

13. The table given below shows the marks obtained by 30 students in a test.

Marks (Class interval)	1–10	11–20	21–30	31–40	41–50
Number of students (Frequency)	7	10	6	4	3

Out of these students, one is chosen at random. What is the probability that the marks of the chosen student

- are 30 or less?
- are 31 or more?
- lie in the interval 21–30?

14. The table given below shows the ages of 75 teachers in a school.

Age (in years)	18-29	30-39	40-49	50-59
Number of teachers	3	27	37	8

A teacher from this school is chosen at random. What is the probability that the selected teacher is

- 40 or more than 40 years old?
- of an age lying between 30-39 years (including both)?
- 18 years or more and 49 years or less?
- 18 years or more old?
- above 60 years of age?

NOTE Here 18-29 means 18 or more but less than or equal to 29.

15. Following are the ages (in years) of 360 patients, getting medical treatment in a hospital:

Age (in years)	10-20	20-30	30-40	40-50	50-60	60-70
Number of patients	90	50	60	80	50	30

One of the patients is selected at random.

What is the probability that his age is

- 30 years or more but less than 40 years?
- 50 years or more but less than 70 years?
- 10 years or more but less than 40 years?
- 10 years or more?
- less than 10 years?

16. The marks obtained by 90 students of a school in mathematics out of 100 are given as under:

Marks	0-20	20-30	30-40	40-50	50-60	60-70	70 and above
No. of students	7	8	12	25	19	10	9

From these students, a student is chosen at random.

What is the probability that the chosen student

- gets 20% or less marks?
- gets 60% or more marks?

17. It is known that a box of 800 electric bulbs contains 36 defective bulbs. One bulb is taken at random out of the box. What is the probability that the bulb chosen is nondefective?