MATHS

BOOKS - RS AGGARWAL MATHS (HINGLISH)

PROBABILITY

Solved Examples

1. A coin is tossed 600 times with the frequencies as :

heads : 342 and tails : 258

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

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

A. $0.77 , 0.83$

B. $0.37 , 0.33$

C. $0.57 , 0.43$

D. $0.47 , 0.53$

Answer: C

Watch Video Solution

2. Two coins are tossed simultaneously 400 times and we get

two heads : 180 times

one head : 148 times

no head : 72 times .

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

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

A. 0.45 , 0.37 , 0.18

B. 0.47 , 0.27 , 0.13

C. $0.40, 0.30, 0.10$

D. $0.65, 0.67, 0.68$

Answer: A

Watch Video Solution

3. A die thrown 500 times and the outcomes are noted as given below :

Outcome	1	2	3	4	5	6
Frequency	95	80	84	68	70	103

If a die is thrown at random , find the

probability of getting

$(i)1(ii)2(iii)3(iv)4(v)5(vi)6.$

Watch Video Solution

4. 1500 families with 2 children each , were selected randomly and the following data were recorded .

Number of girls in a family	2	1	0
Number of families	102	675	723

Out of these families , one family is selected at random . What is the probability that the

selected family has (i) 2 girls (ii) 1 girl , (iii) no girl ?

A. 0.129 , 0.26 , 0.256

B. 0.068 , 0.45 , 0.482

C. 0.069 , 0.35 , 0.352

D. 0.070 , 0.68 , 0.678

Answer: B

Watch Video Solution

5. On one page of a telephone directory , there were 200 telephone numbers . The frequency distribution of their unit's digits is given in the following table :

Unit's digit	0	1	2	3	4	5	6	7	8	9
Frequency	22	26	22	22	20	10	14	28	16	20

Out of the numbers on the page , a number is chosen at random .

What is the probability that the unit's digit of the chosen number is

(i) 6 ? (ii) a non zero multiple of 3 ?

(iii) a nonzero even number ? (iv) an odd number ?

Watch Video Solution

6. Fifty seeds were selected at random from each 5 bags of seeds and were kept under standardised conditions favourable to germination .

After 20 days , the number of seeds which had germinated in each collection were counted and recorded as follows :

Bag	1	2	3	4	5
Number of seeds germinated	40	48	42	39	41

What is the probability of germination of

(i) more than 40 seeds from a bag ?

(ii) 49 seeds from a bag ?

(iii) more than 35 seeds from a bag ?

Watch Video Solution

7. A tyre manufacturing company kept a record of the distance covered before a tyre needed to be placed . The table given below shows the

results of 1000 cases .

Distance in km	Less than 4000	4000 to 9000	9001 to 14000	More than 14000
Frequency	20	210	325	445

If you buy a tyre of this company , what is the probability that

(i) it will need to be replaced before it has covered 4000 km ?

(ii) It will last more than 9000 km ?

(iii) it will need to be replaced after it has covered somewhere between 4000 km and 14000 km ?

Watch Video Solution

8. Bulbs are packed in cartons , each containing 40 bulbs . 700 cartons were examined for defective bulbs and the results are given in the following table :

Number of defective bulbs	0	1	2	3	4	5	6	More than 6
Frequency (No. of cartons)	371	162	55	49	41	15	5	2

One carton is selected at random. What is the probability that it has

(i) no defective bulb?

(ii) defective bulbs less than 4 ?

(iii) defective bulbs more than 3 but less than

6 ?

(iv) defective bulbs 6 or more ?

Watch Video Solution

9. Over the past 200 working days , the number of defective parts produced by a machine is given in the following table :

Number of defective parts	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Number of days	50	32	22	18	12	12	10	10	10	8	6	6	2	2

From these days , one day is chosen at random . What is the probability that on that day , the

output has

(i) no defective part ?

(ii) at least 1 defective part ?

(iii) not more than 5 defective parts ?

(iv) more than 5 , but less than 8 defective parts ?

(v) more than 13 defective parts ?

Watch Video Solution

10. The table given below shows the months of birth of 40 students of a class in a school .

Month of birth	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. of students	3	4	2	2	5	1	2	6	3	4	4	4

If one student is chosen at random , what is the probability that the student is born

(i) in the latter half of the year ?

(ii) in a month having 31 days ?

(iii) in a month having 30 days ?

Watch Video Solution

11. According to a meteorological report for 300 consecutive days in a year , its weather

forecasts were correct 180 times .

Out of these days , one day is chosen at random .

What is the probability that the weather forecast was

(i) correct on that day ? (ii) not correct on that day ?

Watch Video Solution

12. A survey of 250 girls of a school was conducted and it was found that 105 girls like

tea while 145 dislike it . Out of these girls , one girl is selected at random .

What is the probability that the selected girl (i) likes tea , (ii) does not like tea ?

Watch Video Solution

13. In a cricket match , a batsman hits the boundary 5 times out of 40 balls played by him . Find the probability that the boundary is not hit by the ball.

A. $\frac{1}{8}$

B. $\frac{3}{8}$

C. $\frac{5}{8}$

D. $\frac{7}{8}$

Answer: D

Watch Video Solution

14. Two dice are thrown simultaneously 500 times . Each time , the sum of the two numbers appearing on their tops is noted and recorded as given below :

Sum	2	3	4	5	6	7	8	9	10	11	12
Frequency	22	30	48	56	64	70	64	26	53	39	28

If the two dice are thrown once more , what is the probability of getting a sum

(i) 5 ? (ii) more than 9 ?

(iii) less than or equal to 6 ? (iv) between 6 and 10 ?

Watch Video Solution

15. A recent survey shows that the ages of 200 workers in a factory is distributed as follows :

Age (in years)	20–29	30–39	40–49	50–59	60 and above
Number of workers	37	28	86	46	3

If a worker is selected at random , find the probability that the selected worker is

(i) 40 years or more

(ii) under 40 years

(iii) having an age from 30 to 39 years

(iv) under 60 but over 39 years .

Watch Video Solution

16. Following frequency distribution gives the weights of 40 students of a class .

Weight (in kg)	31–35	36–40	41–45	46–50	51–55	56–60	61–65	66–70	71–75
Number of students	10	6	14	4	1	1	2	1	1

A student from the class is chosen at random . What is the probability that the weight of the chosen student is

(i) at most 60 kg (ii) at least 56 kg (iii) not more than 50 kg ?

Watch Video Solution

17. An insurance company selected 2000 drivers at random in particular city to find a relationship between age and accidents . The

data obtained are given in the following table .

Age of drivers (in years)	*Accidents in one year*				
	0	1	2	3	Over 3
18–29	440	160	110	60	36
30–50	505	125	60	22	18
Above 50	360	45	35	15	9

Find the probability of each of the following events for a driver chosen at random from the city :

(i) being $18-29$ years of age and having exactly 3 accidents in one year .

(ii) being $30-50$ years of age and having one or more accidents in one year

(iii) having no accident in one year .

Watch Video Solution

18. The table given below shows the marks obtained by 80 students of a class in a test with maximum marks 100 .

Marks	0–15	15–30	30–45	45–60	60–75	Above 75
Number of students	6	13	17	24	16	4

A student of the class is selected at random . Find the probability that he gets

(i) less than $15\ \%$ marks ,

(ii) 60 or more marks and

(iii) less than 45 marks .

A. $\frac{3}{40}, \frac{1}{4}, \frac{9}{20}$

B. $\frac{7}{40}, \frac{3}{4}, \frac{3}{20}$

C. $\frac{9}{40}, \frac{3}{4}, \frac{11}{20}$

D. $\frac{17}{40}, \frac{1}{4}, \frac{17}{20}$

Answer: A

 Watch Video Solution

Exercise 19

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 probability of getting

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

 Watch Video Solution

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 ?

Watch Video Solution

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 ?

Watch Video Solution

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

(i) 3 ? (ii) 6 ? (iii) 5 ? (iv) 1 ?

Watch Video Solution

5. In a survey of 200 ladies , it was found that 142 like coffee , while 58 dislike it .

Find the probility that a lady chosen at random

(i) likes coffee , (ii) dislikes coffee .

A. (i) 0.29 (ii) 0.29

B. (i) 0.71 (ii) 0.29

C. (i) 0.71 (ii) 0.71

D. (i) 0.29 (ii) 0.71

Answer: B

Watch Video Solution

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 ?

A. $\frac{1}{5}$

B. $\frac{1}{4}$

C. $\frac{1}{2}$

D. $\frac{1}{3}$

Answer: D

Watch Video Solution

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 ?

A. 0.30

B. 0.34

C. 0.35

D. 0.25

Answer: C

Watch Video Solution

8. On one page of a telephone directory , there were 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 ?

A. (i) 0.02 (ii) 0.08

B. (i) 0.12 (ii) 0.18

C. (i) 0.1 (ii) 0.08

D. (i) 0.12 (ii) 0.08

Answer: D

Watch Video Solution

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 ?

A. (i) 0.35 (ii) 0.35

B. (i) 0.35 (ii) 0.15

C. (i) 0.15 (ii) 0.15

D. (i) 0.35 (ii) 0.35

Answer: B

 Watch Video Solution

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 ?

A. $\frac{7}{12}$

B. $\frac{5}{12}$

C. $\frac{1}{2}$

D. $\frac{1}{3}$

Answer: B

 Watch Video Solution

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 .

 Watch Video Solution

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

(i) earning ₹ 25000 - ₹ 30000 per month and owning exactly 2 vehicles .

(ii) earning ₹ 40000 or more per month and owing exactly 1 vehicle.

(iii) earning less than ₹ 25000 per month and not owing any vehicle .

(iv) earning ₹ 35000 - ₹ 40000 per month and owning 2 or more vehicles.

(v) Owing not more than 1 vehicle .

 Watch Video Solution

13. The table given below shows the marks out 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 ?

(i) are 30 or less (ii) are 31 or more ? (iii) lie in the interval 21-30 ?

Watch Video Solution

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

(i) 40 or more than 40 years old ?

(ii) of an age lying between 30-39 (including both) ?

(iii) 18 years or more old and 49 years or less ?

(iv) 18 years or more old ?

(v) above 60 years of age ?

Watch Video Solution

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

(i) 30 years or more but less than 40 years ?

(ii) 50 years or more but less than 70 years ?

(iii) 10 years or more but less than 40 years ?

(iv) 10 years or more ?

(v) less than 10 years ?

Watch Video Solution

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

(i) gets 20% or less marks ? (ii) gets 60% or more marks ?

A. $(i)\frac{7}{90}(ii)\frac{7}{90}$

B. $(i)\frac{19}{90}(ii)\frac{19}{90}$

C. $(i)\frac{19}{90}(ii)\frac{7}{90}$

D. $(i)\frac{7}{90}(ii)\frac{19}{90}$

Answer: D

Watch Video Solution

17. It is known that a box of 800 electric bulbs contains 36 defective bulbs .

One bulb is taken at random of the box. What is the probability that the bulb chosen is nondefective ?

A. $\frac{193}{200}$

B. $\frac{179}{200}$

C. $\frac{189}{200}$

D. $\frac{191}{200}$

Answer: D

Watch Video Solution

18. Fill in the blanks .

(i) Probability of an impossible event= .....

(ii) Probability of a sure event = ...

(iii) Let E be the event . Then , P(not E) = ...

(iv) P(E) + P(not E) = ...

(v) ..... $\leq P(E) \leq$ ..... .

Watch Video Solution

Multiple Choice Questions Mcq

1. In a sample survey of 645 people , it was found that 516 people have a high school certificate . If a person is chosen at random , what is the probability that he/she has a high school certificate ?

A. $\frac{1}{2}$

B. $\frac{3}{5}$

C. $\frac{7}{10}$

D. $\frac{4}{5}$

Answer: D

Watch Video Solution

2. In a medical examination of students of a class , the following blood groups are recorded :

Blood group	A	B	AB	O
Number of students	11	15	8	6

From this class , a student is chosen at random . What is the probability that the chosen student has blood group AB ?

A. $\frac{13}{20}$

B. $\frac{3}{8}$

C. $\frac{1}{5}$

D. $\frac{11}{40}$

Answer: C

Watch Video Solution

3. 80 bulbs are selected at random from a lot and their lifetime in hours is recorded as under :

Lifetime (in hours)	300	500	700	900	1100
Frequency	10	12	23	25	10

One bulb is selected at random from the lot . What is the probability that its life is 1150 hours ?

A. $\frac{1}{80}$

B. $\frac{7}{16}$

C. 1

D. 0

Answer: D

 Watch Video Solution

4. In a survey of 364 children aged 19-36 months , it was found that 91 liked to eat potato chips . If a child is selected at random , the probability that he/she does not like to eat potato chips is

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. $\frac{3}{4}$

D. $\frac{4}{5}$

Answer: C

Watch Video Solution

5. Two coins are tossed 1000 times and the outcomes are recorded as given below :

Number of heads	2	1	0
Frequency	200	550	250

Now , if two coins are tossed at random , what is the probability at most one head ?

A. $\frac{3}{4}$

B. $\frac{4}{5}$

C. $\frac{1}{4}$

D. $\frac{1}{5}$

Answer: B

Watch Video Solution

6. 80 bulbs are selected at random from a lot and their lifetime in hours is recorded as under

Lifetime (in hours)	300	500	700	900	1100
Frequency	10	12	23	25	10

One bulb is selected at random from the lot . What is the probability that the selected bulb has a life more than 500 hours ?

A. $\frac{27}{40}$

B. $\frac{29}{40}$

C. $\frac{5}{16}$

D. $\frac{11}{40}$

Answer: B

Watch Video Solution

7. To know the opinion of the students about the subject Sanskrit , a survey of 200 students was obtained . The data is recorded as under .

Opinion	like	dislike
Number of students	135	65

What is the probability that a student chosen at random does not like it ?

A. $\frac{13}{27}$

B. $\frac{27}{40}$

C. $\frac{13}{40}$

D. $\frac{27}{13}$

Answer: C

Watch Video Solution

8. A coin is tossed 60 times and the tail appears 35 times . In a random throw of a coin , what is the probability of getting a head ?

A. $\frac{7}{12}$

B. $\frac{12}{7}$

C. $\frac{5}{12}$

D. $\frac{1}{25}$

Answer: C

Watch Video Solution

9. It is given that the probability of winning a game is 0.7 . What is the probability of losing the game ?

A. 0.8

B. 0.3

C. 0.35

D. 0.15

Answer: B

Watch Video Solution

10. In a cricket match , a batsman hits a boundary 6 times out of 30 balls he plays .

What is the probability that in a given throw, the ball does not hit the boundary ?

A. $\frac{1}{4}$

B. $\frac{1}{5}$

C. $\frac{4}{5}$

D. $\frac{3}{4}$

Answer: C

Watch Video Solution

11. A bag contains 16 cards bearing number 1 , 2 , 3 ... , 16 respectively . One card is chosen at random . What is the probability that the chosen card bears a number which is divisible by 3 ?

A. $\frac{3}{16}$

B. $\frac{5}{16}$

C. $\frac{11}{16}$

D. $\frac{13}{16}$

Answer: B

Watch Video Solution

12. A bag contains 5 red , 8 black and 7 white balls . One ball is chosen at random . What is the probability that the chosen ball is black ?

A. $\frac{2}{3}$

B. $\frac{2}{5}$

C. $\frac{3}{5}$

D. $\frac{1}{3}$

Answer: B

Watch Video Solution

13. In 65 throws of a die , the outcomes were noted as under :

Outcome	1	2	3	4	5	6
Number of times	8	10	12	16	9	10

A die is thrown at random . What is the probability of getting a prime number ?

A. $\frac{3}{35}$

B. $\frac{3}{5}$

C. $\frac{31}{65}$

D. $\frac{36}{65}$

Answer: C

Watch Video Solution

14. In 50 throws of a die , the outcomes were noted as under :

Outcome	1	2	3	4	5	6
Number of times	8	9	6	7	12	8

A die is thrown at random . What is the probability of getting an even number ?

A. 0.48

B. $\frac{3}{50}$

C. $\frac{1}{8}$

D. $\frac{1}{2}$

Answer: A

Watch Video Solution

15. The table given below shows the months of birth of 36 students of a class :

Month of birth	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. of students	4	3	5	0	1	6	1	3	4	3	4	2

A student is chosen at random from the class . What is the probability that the chosen student was born in October ?

A. $\frac{1}{3}$

B. $\frac{2}{3}$

C. $\frac{1}{4}$

D. $\frac{1}{12}$

Answer: D

Watch Video Solution

16. Two coins are tossed simultaneously 600 times to get

2 heads , 234 times , 1 head : 206 times , 0 head : 160 times .

If two coins are tossed at random , what is the probability of getting at least one head ?

A. $\frac{103}{300}$

B. $\frac{39}{100}$

C. $\frac{11}{15}$

D. $\frac{4}{15}$

Answer: C

 Watch Video Solution