MATHS

BOOKS - MODERN PUBLICATION

PROBABILITY

Example

1. In a cricket match, a batsman hits a boundary 10 times out of 50 balls he plays.

Find the probability that the does not hit a boundary.

2. A coin is tossed 500 times with the following frequencies: Head : 255, Tail: 245. Compute the probability for each event.

3. Two coins are tossed simultaneously 500 times, and we get:

Two heads: 115 times, One head: 165 times, No head: 120 times, Find the probability of occurrence of each of these events.

4. Three coins are tossed simultaneously 150 times and it is found that 3 heads appear 25 times, 2 heast appear 40 times, 1 head appears

75 times and no head appears 10 times. If three coins are tossed simultaneously at random, find the probability of getting:

3 heads.

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5. Three coins are tossed simultaneously 150 times and it is found that 3 heads appear 25 times, 2 heast appear 40 times, 1 head appears 75 times and no head appears 10 times. If three coins are tossed simultaneously at

random, find the probability of getting:

2 heads.

6. Three coins are tossed simultaneously 150 times and it is found that 3 heads appear 25 times, 2 heast appear 40 times, 1 head appears 75 times and no head appears 10 times. If three coins are tossed simultaneously at random, find the probability of getting:

1 head

7. Three coins are tossed simultaneously 150 times and it is found that 3 heads appear 25 times, 2 heast appear 40 times, 1 head appears 75 times and no head appears 10 times. If three coins are tossed simultaneously at random, find the probability of getting:

0 head

8. 1500 families with 2 children each, were selected randomly and the following data were recorede:

Number of Girls in the family	0	1	2
Number of families	102	723	675

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

no girl.

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9. 1500 families with 2 children each, were selected randomly and the following data were recorede:

Number of Girls in the family	0	1	2
Number of families	102	723	675

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

1 girl

10. 1500 families with 2 children each, were selected randomly and the following data were recorede:

Number of Girls in the family	0	1	2
Number of families	102	723	675

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

3 girls?

11. Marks obtained by 2500 students are shown in the following table:

Class Interval	Frequency
Less than 40	610
40–60	840
60–80	750
80–100	300
Total	2500

A student is selected at random. Find the probability that : he scores more than 80% marks.

12. Marks obtained by 2500 students are shown in the following table:

Class Interval	Frequency
Less than 40	610
40–60	840
60–80	750
80–100	300
Total	2500

A student is selected at random. Find the probability that : he scores less than 60% marks.

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13. Four coins are tossed simultanesouly 150 times with the following frequencies of difference outcomes:

Outcome	Frequency
4 heads	20
3 heads	25
2 heads	35
1 head	30
0 head	40

Find the probability of more than 2 heads

14. Four coins are tossed simultanesouly 150 times with the following frequencies of difference outcomes:

Outcome	Frequency
4 heads	20
3 heads	25
2 heads	35
1 head	30
0 head	40

Find the probability of less than 2 heads.

15. The record of a weather station shows that out of the past 250 consecutive days, its weather forecasts were correct 175 times. (i) What is the probability that on a given day it was correct? (ii) What is the probability that it was not correct on a given day?

16. 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

not correct on that day ?

17. In a cricket match, a batsman hits a boundary 10 times out of 50 balls he plays.

Find the probability that the does not hit a boundary.

18. A coin is tossed 1000 times with the following frequencies: Head : 455, Tail : 545 Compute the probability for each event.

19. Two coins are tossed 400 times, we get: Two heads: 128 times, ON e head: 160 times, No head : 112 times when two coins are tossed at random, what is the probability of getting 2 heads.

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20. Two coins are tossed 400 times, we get: Two heads: 128 times, ON e head: 160 times, No head : 112 times when two coins are tossed

at random, what is the probability of getting 2 heads.

21. Two coins are tossed 400 times, we get: Two heads: 128 times, One head: 160 times, No head : 112 times when two coins are tossed at random, what is the probability of getting 0 head?

22. A survey of 250 boys of a school was conducted and it was found that 110 like coffee and 140 do not like coeffee. Out these boys, one boy is selected at random. What is the probability that the selected boy:

likes coffee.

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23. A survey of 250 boys of a school was conducted and it was found that 110 like coffee and 140 do not like coeffee. Out these

boys, one boy is selected at random. What is the probability that the selected boy:

does not like coffee?

24. The probability of guessing the correct answer to a certain question is $\frac{x}{2}$.If the probability of not guessing the correct answer is $\frac{2}{3}$. Find x

25. An integer is chosen form 1 to 100. Find the probability that:

integer chosen is a prime number.

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26. An integer is chosen form 1 to 100. Find the probability that:

integer chosen is composite.

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27. An integer is chosen form 1 to 100. Find the probability that:

a multiple of 11.

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28. The following table gives life time of 400 neon lamps:

Life-time (in hours)	Number of lamps
300-400	13
400-500	57
500-600	65
600-700	81
700-800	74
800-900	60
900-1000	50

A bulb is

selected at random. Find the probability of that the life time of the selected bulb is less than 500 hours.

29. The following table gives life time of 400 neon lamps:

Life-time (in hours)	Number of lamps
300-400	13
400-500	57
500-600	65
600-700	81
700-800	74
800-900	60
900-1000	50

A bulb is

selected at random. Find the probability of that the life time of the selected bulb is between 400 to 900 hours.

30. The following table gives life time of 400 neon lamps:

Life-time (in hours)	Number of lamps
300-400	13
400-500	57
500-600	65
600-700	81
700-800	74
800-900	60
900-1000	50

A bulb is

selected at random. Find the probability of that the life time of the selected bulb is atleast 800 hours.

31. Two coins tossed simultaneously 300 times and its is found that two heads appeared 136 times, one head appeared 112 times and no head appeared 52 times. If two coins are tossed at random, what is the probability of geeting 2 heads.

32. Two coins tossed simultaneously 300 times and its is found that two heads appeared 136 times, one head appeared 112 times and no head appeared 52 times. If two coins are tossed at random, what is the probability of geeting 1 head.

33. Two coins tossed simultaneously 300 times and its is found that two heads appeared 136 times, one head appeared 112 times and no head appeared 52 times. If two coins are tossed at random, what is the probability of geeting 0 head?

34. 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?

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35. A man speaks truth 6 out of 9 times. What is the probability that he would not narrate an incident correctly.

36. In an experiment, a coin is tossed 500 times, If the head turns up 270 times. Find the experiment probability of getting a head.

37. In an experiment, a coin is tossed 500 times, If the head turns up 270 times. Find the experiment probability of getting a tail.

38. In a cricket match, a batswoman hits a boundary 6 times out of 30 balls she plays. Find the probability that she did not hit a boundary.

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39. Refer the data:

Marks	Number of students
0-20	7
20-30	10
30-40	10
40-50	20
50-60	20
60-70	15
70- above	8
Total	90

Find the probability that a student obtained less than 20% in the mathematics test.

40. Refer the data:

Marks	Number of students
0-20	7
20-30	10
30-40	10
40-50	20
50-60	20
60-70	15
70- above	8
Total	90

Find the probability that a student obtained marks 60 or above.

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41. Activity : Ask all the students in your class to write a 3-digit number. Choose any student from the room at random. What is the probability that the number written by her/him is divisible by 3? Remember that a number is divisible by 3, if the sum of its digits is divisible by 3.

42. The blood groups of 30 students of Class VIII are recorded as follows:

A,B,O,O,AB,O,A,O,B,A,O,B,A,O,O,

A,AB,O,A,A,O,O,AB,B,A,O,B,A,B,O. Use this table to determine the probability that a student of this class, selected at random, has blood group AB.

43. Can the experiment probability of an event be a negative number? If not, why?

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44. Can the experimental probability of an event be greater than 1? Jusitfy your answer.

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45. As the number of tosss of a coin increases, the ratio of the number of heads to the total number of tosses will be $\dfrac{1}{2}$. Is it correct? If not, write the correct one.

46. Two dice are thrown simultaneously 500 times. Each time the sum of two numbers appearing on their tops is noted and recorded as given in the following table:

the following table:

Sum	Frequency
2	14
3	30
4	42
5	55
6	72
7	75
8	70
9	53
10	46
11	28
12	15

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

3

47. Two dice are thrown simultaneously 500 ties. Each time the sum of two numbers appearing on their tops is noted and recorded as given in the following table:

the following table:

Sum	Frequency
2	14
3	30
4	42
5	55
6	72
7	75
8	70
9	53
10	46
11	28
12	15

If the dice are thrown once more, what is the

probability of getting a sum:

more than 10

48. Two dice are thrown simultaneously 500

ties. Each time the sum of two numbers

appearing on their tops is noted and recorded

as given in the following table:

Sum	Frequency
2	14
3	30
4	42
5	55
6	72
7	75
8	70
9	53
10	46
11	28
12	15

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

less than or equal to 5?

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49. Two dice are thrown simultaneously 500 ties. Each time the sum of two numbers appearing on their tops is noted and recorded as given in the following table:

Sum	Frequency
2	14
3	30
4	42
5	55
6	72
7	75
8	70
9	53
10	46
11	28
12	15

If the dice are thrown once more, what is the

probability of getting a sum:

between 8 and 12?

50. Over the apst 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		
Days	50	32	22	18	12	12	10	10
	10	8	6	6	2	2		

Determine the probability that tommorow's

output will have

no defective part.

51. Over the apst 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		
Days	50	32	22	18	12	12	10	10
	10	8	6	6	2	2		

Determine the probability that tommorow's

output will have

at least one defective part.

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

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

Determine the probability that tommorow's

output will have

not more than 5 defective parts.

53. Over the apst 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		
Days	50	32	22	18	12	12	10	10
	10	8	6	6	2	2		

Determine the probability that tommorow's

output will have

more than 13 defective parts.

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1. Define a trial.

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2. Define a event.

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3. Define an elementary event.

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4. Define the probability of an event.

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5. When a die is thrown, what are the six possible outcomes?

6. Describe two events that are sure to happen.

7. Describe two events that are impossible to happen.

8. A fair coins is tossed 60 times and it came up with tails 27 times. Find the probability of head.

9. A die is thrown 100 times if the probability of getting an even number is $\dfrac{2}{5}$. How many times an odd number is obtained?

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10. A coin is tossed 50 times and the tail appears 28 times. In a single throw of a coin, what is the probability of getting a head?

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11. True/False:

Probability of a sure event is 0.

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12. True/False:

Probability of an impossible event is 1.

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13. True/False:

If E is an event, then $0 \leq P(E) \leq 1$

14. True/False:

If E is an event, the P(E) + P(notE) = 0

15. True|false: use the theoretical probability of an event 'E' is 0.47, use the theoretical probability of event 'not E' is 0.53?

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16. Can the experiment probability of an event be a negative number? If not, why?

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17. True/False:

The experimental probability of an event cannot be greater than 1.

18. True/False:

Out of 35 students participating in a debate 10 are boys. The probability that the winner is a girl is $\dfrac{5}{7}$

19. True/False:

The probability of losing a game is 0.7. The probability of winning the game is 0.3.

20. True/False:

In a one-day cricket match, a batsman hits the boundary 6 times out of 30 balls the plays. Then the probability that the does not hit the boundary is $\dfrac{3}{5}$

21. Fill in the blanks:

$P(E) + P(bar(E))` =$ _____

22. Fill in the blanks:

$P(E)$ lies between _____ and _____

23. Fill in the blanks:

P(E) lies between _____ and _____

24. Fill in the blanks:

Let E be an event, that P(not E) = _____

25. Fill in the blanks:

Sample space, when two coins are tosses is _____

26. Fill in the blanks:

An event is _____ of sample space.

27. Fill in the blanks:

Probability of _____ events is 100%

28. Fill in the blanks:

Probability of two approaches namely _____ probability and _____ probability.

29. Fill in the blanks:

Experimental probability is based on performing.

30. The probability of an impossible event is

   A. 1

   B. less than 0

   C. 0

D. greater than 1

Answer:

31. Which of the following cannot be the probability of an event?

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

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

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

D. 1

Answer:

32. Two coins are tossed simultaneously. The probability of getting atmost one head is

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

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

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

D. $\dfrac{1}{4}$

Answer:

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33. 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 back?

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

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

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

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

Answer:

34. In 40 tosses of a coin, tail appears 32 times. If a coin is tossed at random, what is the probability of getting a head?

A. $\dfrac{1}{18}$

B. $\dfrac{1}{32}$

C. $\dfrac{16}{25}$

D. $\dfrac{9}{25}$

Answer:

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35. Three unbiased coins are tossed. What is the probability of getting at least 2 heads?

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36. In a single throw of a die, what is the probability of getting a number greater than 4?

37. One card is drawn at random from pack of 52 cards. What is the probability that the card drawn is a face card?

38. Two unbiassed coins are tossed. Find the probability of getting at most one head.

39. In a simultaneous throw of a pairof dice, find the probability of getting a total more than 7.

40. A bag contains 4 white and 3 black balls. Two balls are drawn at random. Find the probability that they are of the same colour.

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41. A man speaks truth 6 out of 9 times. What is the probability that he would not narrate an incident correctly.

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42. Two regular dice (on blue and other red) are rolled. Find the nuber of possible outcomes.

43. A bag contains'n' red heads, 'y' yellow heads, 'z' blue heads. A head is drawn at random. Find the probability that it would be non-red head.

44. In a raffle 200 tickets are sold. Reena buys one ticket. What is the probability that she won first prize?

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45. Eleven bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg): 4.97 5.05 5.08 5.03 5.00 5.06 5.08 4.98 5.04 5.07 5.00 Find the probability that

any of these bags chosen at random contains more than 5 kg of flour.

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