MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

PROBABILITY

Example

1. A coin is tossed 1200 times whereby head occurred in 745 cases and in the reamaining tail occurred. Find the probability of each event.

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2. A coin is tossed 1200 times whereby head occurred in 745 cases and in the reamaining tail occurred. Find the probability of each event.

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3. A dice is rolled 100 times with the frequencies of the outcomes 1, 2, 3, 4, 5 and 6, which are given in the following table. Find the probaility of getting each outcome.

Outcome	1	2	3	4	5	6
Frequency	10	18	15	25	20	12

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4. A bulb-manufacturing company kept a record of the number of hours it can glow before a bulb needed to be replaced. The following table shows the results of 500 bulbs:

Life of the Bulb (in hours)	Less than 1500	1500 to Less than 2500	2500 to 5000	More than 5000
Frequency	10	150	250	90

If you buy a bulb of this company, then find the probability of the following events:

(a) The bulb needs to be replaced before it glows for less than 1500 hours.

(b) The bulb needs to be replaced when it glows between 1500 hours and 5000 hours.

(c) The bulb lasts for more than 2500 hours.

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5. The percentage of monthly targets achieved in producing a certaina type of bolts in a company for differen months is given in the following tabel:

Month	Jan	Feb	Mar	April	May	June
Target Achieved (in per cent)	55	87	73	82	74	80

Find the probability that the company achieved 80% of the monthly target in producing the bolts.

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6. A pack has 90 cards. Each card was marked with a different number among 110 to 199. A card was selected at random. Find the probability that the number on it is not a perfect square.

A. $\frac{37}{45}$

B. $\frac{13}{15}$

C. $\frac{41}{45}$

D. $\frac{43}{45}$

Answer: D

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7. A number was chosen at random from the first 300 three digits natural number. Find the probability of it ending with a zero.

A. $\frac{1}{15}$

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

C. $\frac{1}{10}$

D. $\frac{1}{20}$

Answer: C

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Very Short Answer Type Questions

1. When 2 coins are tossed simultaneously, write all possible outcomes.

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2. When a dice is rolled, what are all the possible outcomes?

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3. Two coins are tossed. Find the number of outcomes of getting one head.

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4. What is the sum of all the probabilities of trials of an experiment?

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5. When a dice is rolled, what is the number of possible outcomes of obtaining an even number?

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6. Probability of occurring of an event always lies between _____.

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7. Let n be the number of trials that an event E occurred and m be the total number of trials, then find the probability of the event E.

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8. A dice is rolled, the probability that the number on the face showing up is greater than 6 is _____.

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9. A dice is rolled, the probability that the number on the face showing up is greater than 6 is _____.

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10. A coin is tossed 20 times and head occurred 12 times. How many times did tail occur?

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Short Answer Type Questions

1. A coin is tossed 500 times. Head occurs 343 times and tail occurs 157 times. Find the probability of each event.

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2. A day is selected in a week, find the probability that the day is Monday.

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3. In a monthly test, 10 students were awarded marks in a Mathematics examination as follows:

23, 25, 15, 20, 17, 10, 24, 15, 19

If a student is selected at random, what is the probability that he gets more than 18 marks?

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4. In a cricket match, Dhoni hits a six 4 times from 24 balls he plays. Find the probability of hitting a six.

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5. Three coins are tossed 100 times, and three heads one head occurred 14 times and head did not occur 23 times. Find the probability of getting more than one head.

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Essay Type Questions

1. A dice is rolled 250 times, and the outcoms 1, 2, 3, 4, 5 and 6 occurred as given in the following table:

Outcome	1	2	3	4	5	6
Frequency	56	78	46	27	19	24

Find the probalility of getting an odd number.

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2. A Class IX English book contains 200 pages. A page is selected at random. What is the probability that the number on the page is divisible by 10?

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3. In a colony there are 75 families and each family has two children. Th number of made children of the families is as follows:

Male Child	2	1	0
Number of Families	27	38	10

If a family is selected at random, what is the probability that the family has only one male child?

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4. The percentage of marks obtained by a student in a monthly test is as follows:

Test	I	II	III	IV
Marks	78%	63%	82%	65%

What is the probability that the student gets more than 75% marks in a test?

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5. A box contains 50 tickets. Each ticket is numbered from 1 to 50. One ticket is selected at random, find the

probability that the number on the ticket is not a perfect square.

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Level 1

1. If a month is selected at random in a year, then find the probability that the month is either March or September.

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

B. $\frac{1}{6}$

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

D. None of these

Answer: B

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2. A coin is tossed 1000 times. Head occurred 625 times.

Find the probability of getting a tail.

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

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

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

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

Answer: D

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3. A dice is rolled 600 times and the occurrence of the outcomes 1, 2, 3, 4, 5 and 6 are given below in the table:

Outcome	1	2	3	4	5	6
Frequency	200	30	120	100	50	100

Find the probability of getting a prime number.

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

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

C. $\frac{49}{60}$

D. $\frac{39}{125}$

Answer: A

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4. A bag contains 50 coins and each coin is marked from 51 to 100. One coin is picked at random. What is the probability that the number on the coin is not a prime numbre?

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

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

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

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

Answer: D

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5. From the letters of the word 'MOBILE', if a letter is selected, what is the probability that the letter is a vowel?

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

B. $\frac{4}{7}$

C. $\frac{3}{7}$

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

Answer: D

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6. The percentage of attendance of different classes in a year, in a school is ginve below:

Class	X	IX	VIII	VII	VI	V
Attendance	30	62	85	92	76	55

What is the probability that the class attendance is more than 75%?

A. $\frac{1}{6}$

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

C. $\frac{5}{6}$

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

Answer: D

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7. In a book, the frequency of units digit of a number on the pages is givne below:

Units Digits	Frequency
0	50
1	40
2	10
3	25
4	15
5	80
6	90
7	110
8	120
9	60

Find the probability of getting 8 in the units place on the pages.

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

B. $\frac{1}{10}$

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

D. $\frac{1}{60}$

Answer: A

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8. 10 bags of rice, each bag marked 10 kg, actually contained the follwing weights of rice (in kgs). $10.03, 10.09, 9.97, 9.98, 10.01, 9.94, 10.05, 9.99, 9.95, 10.02.$ Find the probability that the bag chosen at random contains more than 10 kg.

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

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

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

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

Answer: A

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9. If a three digit number is chosen at random, what is the probability that the chosen number is a multiple of 2?

A. $\frac{499}{900}$

B. $\frac{5}{9}$

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

D. $\frac{500}{899}$

Answer: C

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10. If a two digits number is chosen at random, what is the probability that the number chosen is a multiple of 3?

A. $\frac{3}{10}$

B. $\frac{29}{100}$

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

D. $\frac{7}{25}$

Answer: C

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Level 2

1. A mathematics book contains 250 pages. A page is selected at random. What is the probability that the number on the page selected is a perfect square?

A. $\frac{3}{25}$

B. $\frac{7}{50}$

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

D. $\frac{7}{125}$

Answer: C

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2. The runs scored by Sachin Tendulkar in different years is given below:

Year	Score
1996–97	1000
1997–98	3000
1999–2000	1000
2000–01	5000
2001–02	3000
2002–03	8000
2003–04	4000

What is the porbability that in a year Sachin scored more than 3000 runs?

A. $\frac{3}{7}$

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

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

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

Answer: A

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3. To know the opinion of people about the political leaders, a survey on 1000 members was conducted. The data recorded is shown in the following table:

Find the probability that a person chosen at random is with no opinion on political leaders.

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

B. $\frac{3}{10}$

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

D. None of these

Answer: B

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4. From 101 to 500, if a number is chosen at random, what is the probability that the number ends with 0?

A. $\frac{41}{399}$

B. $\frac{40}{399}$

C. $\frac{1}{10}$

D. $\frac{41}{400}$

Answer: C

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5. A bag contains 12 pencils, 3 sharpeners and 7 pens. What is the probability of drawing a pencil from the bag?

A. $\frac{6}{11}$

B. $\frac{3}{22}$

C. $\frac{7}{22}$

D. $\frac{15}{22}$

Answer: A

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6. Find the probability of getting a sum 10, when two dice are rolled.

The following are the steps involved in solving the above problem. Arrange them in sequential order.

(A) When the two dices are rolled, the number of possible outcomes $= 6 \times 6 = 36$.

(B) Favourable outcomes are (4, 6), (5, 5) and (6, 4).

(C) The required probability $= \frac{3}{36} = \frac{1}{12}$

(D) When a dice is rolled, the possible outcomes are 1, 2, 3, 4, 5, and 6.

A. BADC

B. DBAC

C. BDAC

D. DABC

Answer: D

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7. Find the probability of getting a difference of 4, when two dice are rolled.

The following are the steps involved in solving the above problem. Arrange them in sequential order.

(A) When two dices are rolled, the numbre of possible outcoms $= 6 \times 6 = 36$.

(B) When a dice is rolled, the possible outcomes are 1, 2, 3, 4, 5 and 6.

(C) The required probabilty $= \frac{4}{36} = \frac{1}{9}$.

(D) Favourable outcomes are (1, 5), (5, 1), (2, 6) and (6, 2).

A. ABCD

B. ABDC

C. BADC

D. ADBC

Answer: C

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8. In a football match, Ronaldo scores 4 goals from 10 penalty kicks.Find the probability of converting a penalty kick into a goal by Ronaldo.

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

B. $\frac{1}{6}$

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

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

Answer: D

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9. From the month of August, whose first day is Tuesday, a day is selected at random. Find the probability that the day selected is not a Tuesday.

A. $\frac{5}{6}$

B. $\frac{26}{31}$

C. $\frac{6}{31}$

D. $\frac{27}{31}$

Answer: B

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10. In a cricket match, Warne took three wickets in every 27 balls that he bowled. Find the probability of a batsman not getting out by Warne's bowling.

A. $\frac{1}{9}$

B. $\frac{4}{9}$

C. $\frac{8}{9}$

D. $\frac{5}{9}$

Answer: C

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11. A day is selected at random from April, whose first day is Monday. Find the probability that the day selected is a Monday.

A. $\frac{1}{7}$

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

C. $\frac{1}{6}$

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

Answer: C

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12. A month is selected at random in a year. Find the probability that it is either January or June.

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

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

C. $\frac{1}{6}$

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

Answer: C

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13. A biased dice was rolled 800 times. The frequencies of the various outcomes are given in the table below.

Outcome	1	2	3	4	5	6
Frequency	150	200	100	75	125	150

When the dice is rolled, the probability of getting a number which is a perfect square is _____ (approximately).

A. $\frac{9}{32}$

B. $\frac{11}{32}$

C. $\frac{13}{32}$

D. $\frac{15}{32}$

Answer: A

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14. A two digits number is chosen at random. Find the probability that it is a multiple of 7.

A. $\frac{11}{90}$

B. $\frac{13}{90}$

C. $\frac{7}{45}$

D. $\frac{8}{45}$

Answer: B

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15. In City X, there were 900 residents. A survey was conducted in it reagrding the favourite beverages of the residents. The results of the survey are partially conveyed in the table below.

Beverages	Number of Residents Liking it/them
Only tea	350
Only coffee	250
Both tea and coffee	200

Find the probability that a resident chosen at random likes only tea or only coffee.

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

B. $\frac{5}{9}$

C. $\frac{7}{9}$

D. $\frac{4}{9}$

Answer: A

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16. Find the probability that a non-leap year contains exactly 53 Mondays.

A. $\frac{6}{7}$

B. $\frac{1}{7}$

C. $\frac{52}{365}$

D. None of these

Answer: B

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Level 3

1. Two dice were rolled simultaneously. Find the probability that the sum of the number on them was a two digits prime number .

A. $\frac{1}{9}$

B. $\frac{1}{18}$

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

D. $\frac{1}{6}$

Answer: B

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2. Three biased coins were tossed 800 times simultaneously. The outcomes are given in the table below partially.

Outcome	No head	One head	Two heads
Frequency	120	280	x

If the occurrence of two heads was thrice that of all heads. Find x.

A. 150

B. 240

C. 300

D. 360

Answer: C

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3. A die is rolled. Find the probability of getting a cube number

A. $\frac{5}{36}$

B. $\frac{7}{36}$

C. $\frac{2}{9}$

D. $\frac{1}{6}$

Answer:

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4. A three digits numbre was chosen at random. Find the probability that it's hundreds digit, tens digit and units digit are consecutive integers in descending order.

A. $\frac{1}{75}$

B. $\frac{4}{225}$

C. $\frac{2}{225}$

D. $\frac{1}{45}$

Answer: C

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5. x = ABCDEFGH!Z. Find the probability ofa letter selected from those in odd positions of xbeing a vowel.

A. $\frac{5}{13}$

B. $\frac{6}{13}$

C. $\frac{7}{13}$

D. $\frac{8}{13}$

Answer: A

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6. In a bag, there are 2 rad balls, 3 green balls and 4 brown balls. Find the probability of drawing a ball at

random being red or green.

A. $\frac{5}{9}$

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

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

D. $\frac{4}{9}$

Answer: A

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7. Year X is not a leap year. Find the probability of containing exactly 53 Sundays.

A. $\frac{1}{7}$

B. $\frac{2}{7}$

C. $\frac{3}{7}$

D. $\frac{1}{14}$

Answer: A

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8. A three digits number was chosen at random. Find the probability that it is divisible by both 2 and 3.

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

B. $\frac{1}{6}$

C. $\frac{1}{9}$

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

Answer: B

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