MATHS

BOOKS - NDA PREVIOUS YEARS

PROBABILITY AND PROBABILIYT DISTRIBUTION

Multiple Choice Question

1. From past experience it is known that an invester will invest in security A with a probability of 0.6, will invest in security B with a probability 0.3 and will invest in both A and B with a probability of 0.2. What is the probability that an investor will invest neither in A nor in B ?

A. 0.7

B. 0.28

C. 0.3

D. 0.4

2. Five coins whose faces are marked 2, 3 are thrown. What is the probability of obtaining a total of 12?

A. $\dfrac{1}{16}$

B. $\dfrac{3}{16}$

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

D. $\dfrac{7}{16}$

Answer: C

3. The following question consist of two statements, one labelled as the 'Assertion (A)' and the other as 'Reason (R)' You are to examine these two statements carefully and select the answer.

Assertion (A) : If $P(A) = \dfrac{3}{4}$ and $P(B) = \dfrac{3}{8}$, then $P(A \cup B) \geq \dfrac{3}{4}$

Reason (R) : $P(A) \leq P(A \cup B)$ and $P(B) \leq P(A \cup B)$, hence $P(A \cup B) \geq \max . \{P(A), P(B)\}$

    A. Both A and R are individually true, and R is the correct explanation of A.

    B. Both A and R are individually true but R is not the correct explanation of A.

    C. A is true but R is false.

    D. A is false but R is true.

Answer: B

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4. An aircraft has three engines A, B and C. The aircraft crashes if all the three engines fail. The probabilties of failure are 0.03, 0.02 and 0.05 for engines A, B and C respectively. What is probability that the aircraft will not crash ?

    A. 0.00003

    B. 0.90

    C. 0.99997

    D. 0.90307

Answer: C

5. A coin is tossed three times. The probability of getting head and tail alternately, is

    A. $1/4$

B. $1/5$

C. $1/6$

D. $1/8$

Answer: A

6. The probability that a student passes in mathematics is $\dfrac{4}{9}$ and that he passes in physics is $\dfrac{2}{5}$. Assuming that passing in mathematics and physics are independent of each other, what is the probability that he passes in mathematics but fails in physics ?

A. $\dfrac{4}{15}$

B. $\dfrac{8}{45}$

C. $\dfrac{26}{45}$

D. $\dfrac{19}{45}$

Answer: A

7. From a pack of 52 cards, two cards are drawn, the first being replaced before the second is drawn. What is the probability that the first is a diamond and the second is a king ?

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

B. $\dfrac{4}{13}$

C. $\dfrac{1}{52}$

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

Answer: C

8. What is the probability of having a king and a queen when two cards are drawn from a pack of 52 cards ?

A. $\dfrac{16}{663}$

B. $\dfrac{2}{663}$

C. $\dfrac{4}{663}$

D. $\dfrac{8}{663}$

Answer: C

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9. Consider the following statement :

"The mean of a binomial distribution is 3 and variance is 4." Which of the following is correct regarding this statement ?

A. It is always true

B. It is sometimes true

C. It is never true

D. No conclusion can be drawn

Answer: C

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10. In throwing of two dice, what is the number of exhaustive events ?

A. 6

B. 12

C. 36

D. 18

Answer: C

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11. What is the probability of getting five heads and seven tails in 12 flips of a balanced coin?

    A. $C(12, 5) / (2^5)$

    B. $C(12, 5) / (2^7)$

    C. $C(12, 5) / (2^{12})$

    D. $C(12, 7) / (2^6)$

Answer: C

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12. In a lottery, 16 tickets are sold and 4 prizes are awarded. If a person buys 4 tickets,what is the probability of his winning a prize?

    A. $\dfrac{4}{16^4}$

    B. $\dfrac{175}{256}$

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

D. $\dfrac{81}{256}$

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13. If A and B are any two events such that $P(A \cup B) = \dfrac{3}{4}$, $P(A \cap B) = \dfrac{1}{4}$ and $P(\overline{A}) = \dfrac{2}{3}$, where $\overline{A}$ stands for the complementary event of A, then what is P(B) ?

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

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

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

D. $\dfrac{2}{9}$

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14. A card is drawn from an ordinary pack of 52 cards and a gambler bets that, it is a spade or an ace. What are the odds against his wining this bet?

A. 13 to 4

B. 4 to 13

C. 9 to 4

D. 4 to 9

Answer: C

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15. A can hit a target 4 times in 5 shots ,

B can hit a target 3 times in 4 shots ,

C can hit a target 2 times in 3 shots,

All the three fire a shot each. What is the probability that two shots are at least hit ?

A. $1/6$

B. $3/5$

C. $5/6$

D. $1/3$

Answer: C

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16. A box contains 10 identical electronic components of which 4 are defective. If 3 components are selected at random from the box in succession, without replacing the units already drawn, what is the probability that two of the selected components are defective ?

A. $1/5$

B. $5/24$

C. $3/10$

D. $1/40$

Answer: C

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17. Each of A and B tosses two coins. What is the probability that they get equal number of heads ?

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

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

C. $\dfrac{4}{16}$

D. $\dfrac{6}{16}$

Answer: B

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18. Examples of some random varibales are given below :

1. Number of sons among the children of parents with five children

2. Number of sundays in some randomly selected months with 30 days

3. Number of apples in some 3 kg packets, purchased from a retail shop

Which of the above is expected to follow binomial distribution ?

A. Variable 1

B. Variable 2

C. Variable 3

D. None of these

Answer: B

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19. A, B are two events and $\overline{A}$ denotes the complements of A. Consider the following statements

1. $P(A \cup B) \leq P(B) + P(A)$

2. $P(A) + P(\overline{A} \cup B) \leq 1 + P(B)$

Which of the above statements is/are correct ?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

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20. Six text books numbered 1, 2, 3, 4, 5 and 6 are arranges at random. What is the probability that the text books 2 and 3 will occupy consecutive places ?

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

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

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

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

Answer: B

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21. What is the probability that in a family of 4 children there will be at least one boy ?

A. $\dfrac{15}{16}$

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

C. $\dfrac{1}{16}$

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

Answer: A

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22. In a school there are 40% science students and the remaining 60% are arts students. It is known that 5% of the science students are girls

and 10 % of the arts students are girls. One student selected at random is a girl. What is the probability that the she is an arts student ?

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

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

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

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

Answer: B

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23. Given $P(A \cup B) = \dfrac{5}{6}$, $P(A \cap B) = \dfrac{1}{3}$ and $P(\overline{B}) = \dfrac{1}{2}$. What is $P(\overline{A})$?

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

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

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

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

Answer: B

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24. The outcomes of 5 tosses of a coin are recorded in a single sequence as H(head) and T(tail) for each toss. What is the number of elementary events in the sample space ?

A. 5

B. 10

C. 25

D. 32

Answer: B

25. Which of the following numbers is nearest to the probability that three randomly selected persons are born on three different days of the week ?

A. 0.7

B. 0.6

C. 0.5

D. 0.4

Answer: B

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26. One bag contains 5 white balls and 3 black balls and a second bag contains 2 white balls and 4 black balls. One ball drawn from the first bag and placed unseen in the second bag. What is the probability that a ball now drawn from second bag is black?

A. $\dfrac{15}{56}$

B. $\dfrac{35}{56}$

C. $\dfrac{37}{56}$

D. $\dfrac{25}{48}$

Answer: B

27. If $P(A) = 0.8, P(B) = 0.9, P(A \cap B) = p,$ which one of the following is correct ?

A. $0.72 \leq p \leq 0.8$

B. $0.7 \leq p \leq 0.8$

C. $0.72 < p < 0.8$

D. $0.7 < p < 0.8$

Answer: B

28. The following questions consist of two statements, one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answer.

Assertion (A) : For a binomial distribution B(n, p), Mean gt Variance

Reason (R) : Probability is less than or equal to 1

    A. Both A and R individually true and R is the correct explanation of A

    B. Both A and R are individually true but R is not the correct explanation of A.

    C. A is true but R is false.

    D. A is false but R is true.

Answer: B

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29. The chance of winning the race of the horse A is 1/5 and that of horse B is 1/6. What is the probability that the race will be won by A or B ?

A. $1/30$

B. $1/3$

C. $11/30$

D. $1/15$

Answer: C

30. What is the probability of two persons being born on the same day ?

A. $1/49$

B. $1/365$

C. $1/7$

D. $2/7$

Answer: B

31. A coin is tossed. If a head is observed, a number is randomly selected from the set $\{1, 2, 3\}$ and if a tail is observed, a number is randomly selected from the set $\{2, 3, 4, 5\}$. If the selected number be denoted by X, what is the probability that X = 3 ?

A. $2/7$

B. $1/5$

C. $1/6$

D. $7/24$

Answer: D

32. Consider the following statements related to the nature of Bayes' theorem

1. Bayes' theorem is a formula for computation of a conditional probability.

2. Bayes' theorem modifies an assumed probability of an event in the light of a related event which is observed. Which of the statements given above is/are correct ?

    A. 1 only

    B. 2 only

    C. Both 1 and 2

    D. Neither 1 nor 2

Answer: C

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33. The outcomes of an experiment classified as success A or failure A will follow a binomial distribution, if

A. $P(A) = 1/2$

B. $P(A) = 0$

C. $P(A) = 1$

D. $P(A)$ remains constant in all trials

Answer: D

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34. If A, B and C are any three arbitrary events then which one of the following expressions shows that both A and B occur but not C ?

A. $A \cap \overline{B} \cap \overline{C}$

B. $A \cap B \cap \overline{C}$

C. $A \cap B \cap C$

D. $A \cap \bar{B} \cap C$

Answer: B

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35. By Baye's theorem, which one of the following probabilities is calculated ?

    A. Prior probability

    B. Likelihood probability

    C. Posterior probability

    D. Conditional probability

Answer: D

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36. Given that $P(A) = 1/3, P(B) = 1/4, P(A/B) = 1/6,$ then what is $P(B/A)$ equal to ?

A. $1/4$

B. $1/8$

C. $3/4$

D. $1/2$

Answer: B

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37. If A and B are two mutually exclusive and exhaustive events with $P(B) = 3P(A),$ then what is the value of $P(\overline{B})$?

A. $3/4$

B. $1/4$

C. $1/3$

D. $2/3$

Answer: B

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38. Two dice are thrown. What is the probability that the sum of the faces equals or exceeds 10 ?

A. $1/12$

B. $1/4$

C. $1/3$

D. $1/6$

Answer: D

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39. For a binomial distribution $B(n, p)$, $np = 4$ and varience npq = 4/3. What is the probability $P(x \geq 5)$ equal to ?

A. $(2/3)^6$

B. $(1/3)^6$

C. $(1/3)^6$

D. $(2^8/3^6)$

Answer: D

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40. From a well-shuffled deck of 52 cards, one card is drawn at random. What is the probability of getting a queen?

A. $2/13$

B. $1/13$

C. $1/26$

D. $1/52$

Answer: B

41. The following questions consist of two statements, one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answer.

Assertion (A) : The probability of drawing either an ace or a king from a deck of card in a single draw is $\dfrac{2}{13}$.

Reason (R) : For two events E_1 and E_2, which are not mutually exclusive probability is given by

$$P(E_1 + E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: B

42. Three letters are randomly selected from the 26 capital letters of the English Alphabet. What is the probability that the letter 'A' will not be included in the choice ?

A. $1/2$

B. $23/26$

C. $12/13$

D. $25/26$

Answer: B

43. A coin is tossed 10 times. The number of heads minus the number of tails in 10 tosses is considered as the outcome of the experiment. What is the number of points in the sample space ?

A. 10

B. 11

C. 21

D. 99

Answer: B

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44. Two numbers are successively drawn from the set {1, 2, 3, 4, 5, 6, 7} without replacement and the outcomes recorded in that order. What is the number of elementary events in the random experiment ?

A. 49

B. 42

C. 21

D. 14

Answer: B

45. The probabilities of two events A and B are given as $P(A) = 0.8$ and $P(B) = 0.7$. What is the minimum value of $P(A \cap B)$?

A. 0

B. 0.1

C. 0.5

D. 1

Answer: C

46. Two numbers X and Y are simultaneously drawn from the set {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}. What is the conditional probability of exactly one of the two numebrs X and Y being even, given (X + Y) = 15?

A. 1

B. $3/4$

C. $1/2$

D. $1/4$

Answer: A

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47. Given that $P(A) = 1/3$, $P(B) = 3/4$ and $P(A \cup B) = 11/12$ then what is $P(B/A)$?

A. $1/6$

B. $4/9$

C. $1/2$

D. $1/3$

Answer: C

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48. The mean and variance of a binomial distribution are 8 and 4 respectively. What is P(X = 1) equal to ?

A. $\dfrac{1}{2^{12}}$

B. $\dfrac{1}{2^{8}}$

C. $\dfrac{1}{2^{6}}$

D. $\dfrac{1}{2^{4}}$

Answer: A

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49. An observed event B can occur after one of the three events A_1, A_2, A_3. If

$P(A_1) = P(A_2) = 0.4, P(A_3) = 0.2$ and $P(B/A_1) = 0.25, P(B/A_2) =$

, what is the probability of A_1 after observing B ?

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

B. $\dfrac{6}{19}$

C. $\dfrac{20}{57}$

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

Answer: C

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50. The probability distribution of random variable X with two missing

probabilities p_1 and p_2 is given below

X	$P(X)$
1	k
2	p_1
3	$4k$
4	p_2
5	$2k$

It is further given that $P(X \le 2) = 0.25$ and $P(X \ge 4) = 0.35$.

Consider the following statements

1. $p_1 = p_2$

2. $p_1 + p_2 = P(X = 3)$

which of the statements given above is/are correct ?

    A. 1 only

    B. 2 only

    C. Both 1 and 2

    D. Neither 1 nor 2

Answer: D

51. Consider the following statements :

1. The probablity that there are 53 Sundays in a leap year is twice the probability that there are 53 Sundays in a non-leap year.

2. The probability that there are 5 Mondays in the month of March is thrice the probability that there are 5 Mondays in the month of April.

Which of the statements given above is/are correct ?

    A. 1 only

    B. 2 only

    C. Both 1 and 2

    D. Neither 1 nor 2

Answer: A

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52. In tossing three coins at a time, what is the probability of getting at most one head ?

A. $\dfrac{3}{8}$

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

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

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

Answer: C

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53. Two balls are selected from a box containing 2 blue and 7 red balls.

What is the probability that at least one ball is blue?

A. $\dfrac{2}{9}$

B. $\dfrac{7}{9}$

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

D. $\dfrac{7}{12}$

Answer: A

54. The probability of guessing the correct answer to a certain test questions is $\dfrac{x}{12}$. If the probability of not guessing the correct answer to this question is $\dfrac{2}{3}$. then x = 2 (b) 3 (c) 4 (d) 6

A. 2

B. 3

C. 4

D. 6

Answer: C

55. Consider the following statements related to a veriable X having a binomial distribution $b_x(n, p)$

1. If $p = \dfrac{1}{2}$, then the distribution is symmetrical.

2. p remaining constant, P(X = r) increases as n increases. Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

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56. Find the probability of 53 Sundays and 53 Mondays in a leap year.

A. $2/7$

B. $3/7$

C. $4/7$

D. $5/7$

Answer: B

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57. Three digit numbers are formed using the digits $Q, 2, 4, 6, 8.$ A number is chosen at random out of these numbers what is the probability that this number has the same digits?

A. $1/16$

B. $1/25$

C. $16/25$

D. $1/645$

Answer: B

58. A lot of 4 white and 4 red balls is randomly divided into two halves. What is the probability that there will be 2 red and 2 white balls in each half ?

A. $18/35$

B. $3/35$

C. $1/2$

D. None of these

Answer: A

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59. Consider the following statements :

if A and B are independent events, then

1. A and $\overline{B}$ are independent.

2. $\overline{A}$ and B are independent.

3. $\bar{A}$ and $\bar{B}$ are independent.

Which of the above statements is/are correct ?

A. 3 only

B. 1 and 2 only

C. 1, 2 and 3

D. None of these

Answer: C

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60. An experiment consists of flipping a coin and then flipping it a second time if head occurs. If a tail occurs on the first flip, then a six - faced die is tossed once. Assuming that the outcomes are equally likely, what is the probability of getting one head and one tail ?

A. $1/4$

B. $1/36$

C. 1/6

D. 1/8

Answer: D

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61. A box contains 6 distinct dolls. From this box, 3 dolls are randomly selected one by one with replacement. What is the probability of selecting 3 distinct dolls ?

A. $5/54$

B. $12/25$

C. $1/20$

D. $5/9$

Answer: D

62. If A and B are events such that $P(A \cup B) = 0.5, P(\overline{B}) = 0.8$ and $P(A/B) = 0.4$, then what is $P(A \cap B)$ equal to ?

A. 0.08

B. 0.02

C. 0.8

D. 0.2

Answer: A

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63. In an examination, there are 3 multiple choice questions and each question has 4 choices. If a student randomly selects answer for all the 3 questions, what is the probability that the student will not answer all the 3 questions correctly ?

A. $1/64$

B. $63/64$

C. $1/12$

D. $11/12$

Answer: B

64. If A and B are two mutually exclusive events, then what is P(AB) equal to ?

A. 0

B. P(A) + P(B)

C. P(A)P(B)

D. $P(A)P\left(\dfrac{B}{A}\right)$

Answer: A

65. There are 4 letters and 4 directed envelopes. These 4 letters are randomly inserted into the 4 envelops. What is the probability that the letters are inserted into the corresponding envelopes ?

A. $\dfrac{11}{12}$

B. $\dfrac{23}{24}$

C. $\dfrac{1}{24}$

D. None of these

Answer: C

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66. Two letters are drawn at random from the word 'HOME'. What is the probability that both the letters are vowels?

A. $1/6$

B. 5/6

C. 1/2

D. 1/3

Answer: C

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67. A husband and wife appear in an interview for two vacancies in the same post. The probability of husband's selection is 1/5 and that of wife's selection is 1/3. What is the probability that only one of them will be selected ?

A. 1/5

B. 2/5

C. 3/5

D. 4/5

Answer: B

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68. There is a point inside a circle. What is the probability that this point is close to the circumference than to the centre ?

A. $3/4$

B. $1/2$

C. $1/4$

D. $1/3$

Answer: A

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69. Find the probability that in a random arrangement of the letters of the word UNIVERSITY the two Is do not come together.

A. $4/5$

B. $1/5$

C. $1/10$

D. $9/10$

Answer: A

70. In a class of 125 students 70 passed in Mathematics, 55 in statistics, and 30 in both. Then find the probability that a student selected at random from the class has passes in only one subject.

A. $13/25$

B. $3/25$

C. $17/25$

D. $8/25$

Answer: A

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71. Three identical dice are rolled. The probability that same number appears on them, is

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

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

C. $\dfrac{1}{24}$

D. $\dfrac{1}{36}$

Answer:

72.. Find the probability of 53 Mondays in a leap year.

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

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

C. $\dfrac{7}{366}$

D. $\dfrac{26}{183}$

Answer:

73. If four dice are thrown toghether , then what is the probability that the sum of the numbers appearing on them is 25 ?

A. 0

B. $1/2$

C. 1

D. $1/1296$

Answer:

74. If P(E) denotes the probability of an event E, then E is called certain

event if :

   A. P(E) = 0

   B. P(E) = 1

   C. P(E) is either 0 or 1

   D. P(E) = 1/2

Answer:

75. Find the probability that a leap year selected at random will contain

53 days.

   A. $2/5$

B. 2/7

C. 1/7

D. 5/7

Answer:

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76. If A and B are two event such that $P(A \cup B) = \dfrac{3}{4}, P(A \cap B) = \dfrac{1}{4}, = \dfrac{1}{4}, P(\overline{A}) = \dfrac{2}{3}$, where $P(\overline{A})$ is the complement of A, then what is P(B) equal to?

A. 1/3

B. 2/3

C. 1/9

D. 2/9

Answer: B

77. Three coins are tossed simultaneously. What is the probability that they will fall two heads and one tail?

A. $1/3$

B. $1/2$

C. $1/4$

D. $3/8$

Answer: D

78. Which of the following is correct?

A. An event having no sample point is called an elementary event.

B. An event having one sample point is caled elementary event.

C. An event having two sample point is caled elementary event.

D. An event having many sample point is caled elementary event.

Answer: B

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79. What is the most probable number of successes in 10 trials with probability of success $\frac{2}{3}$? (d) 4 (b) 7 (a) 10 (c) 5

A. 10

B. 7

C. 5

D. 4

Answer: B

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80. An urn contains one black ball and one green ball. A second urn contains one white and one green ball. One ball is drawn at random from each urn.

What is the probability that both balls are of same colour?

A. $1/2$

B. $1/3$

C. $1/4$

D. $2/3$

Answer: C

81. An urn contains one black ball and one green ball. A second urn contains one white and one green ball. One ball is drawn at random from each urn.

What is the probability of getting at least one green ball?

A. $1/2$

B. $1/3$

C. $2/3$

D. $3/4$

Answer: D

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82. Two dice each numbered from 1 and 6 are thrown together. Let A and

B be two events given by

A: even number on the first die.

B: number on the second die is greater than 4.

What is $P(A \cap B)$ equal to?

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

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

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

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

Answer: C

83. Two dice each numbered from 1 and 6 are thrown together. Let A and B be two events given by

A: even number on the first die.

B: number on the second die is greater than 4.

What is $P(A \cap B)$ equal to?

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

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

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

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

Answer: D

84. Consider a random experiment of throwing together a die and two coins. The associated sample space has

    A. 8 points

    B. 12 points

    C. 24 points

    D. 36 points

Answer: C

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85. In throwing a six faced die, let A be the event that an even number occurs, B be the event that an odd number occurs and C be the event that a number a oreater than 3 occurs. Which one of the following is correct?

A. A and C are mutually exclusive

B. A and B are mutually exclusive

C. B and C are mutually exclusive

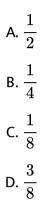D. A,B and C are mutually exclusive

Answer: B

86. Two fair dice are rolled. What is the probability of getting a sum of 7 ?

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

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

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

D. $\dfrac{5}{36}$

Answer: A

87. Four coins are tossed simultaneously. What is the probability of getting exactly 2 heads?

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

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

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

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

Answer: D

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88. A bag contins 5 black and 3 white balls. Two balls are drawn at random one after the other without replacement. What is the probability that both are white?

A. $\dfrac{1}{28}$

B. $\dfrac{1}{14}$

C. $\dfrac{3}{28}$

D. None of these

Answer: C

89. If A and B are any two events such that $P\left(\overline{A}\right) = 0.4, P\left(\overline{B}\right) = 0.9$ then what is the value of $P\left(\overline{A} \cup \overline{B}\right)$ equal to

A. 0.2

B. 0.5

C. 0.6

D. 0.7

Answer: C

90. A fair coin is tossed repeatedly. The probability of getting a result in fifth toss different from those obtained in the first four tosses is

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

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

C. $\dfrac{31}{32}$

D. $\dfrac{1}{16}$

Answer: D

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91. Two number are successively drawn from the set U={1,2,3,4,5,6,7,8} the second being drawn without replacing the first. The number of elementary event in the sample is:

A. r=16

B. r=32

C. r=33

D. r=34

Answer: C

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92. Two number are successively drawn from the set U={1,2,3,4,5,6,7,8} the second being drawn without replacing the first. The number of elementary event in the sample is:

A. 64

B. 56

C. 32

D. 14

Answer: B

93. The binomial distribution has:

A. only one parameter

B. two parameter 1

C. three parameter

D. four parameter

Answer: B

94. A bag contians balls of two colours, 3 black and 3 white. What is the smallsest number of balls which must be drawn from the bag, without looking, so that the among these three are two of the same colour?

A. 2

B. 3

C. 4

D. 5

Answer: C

95. If three events A,B,C are mutually exclusive, then which one of the following is correct?

A. $P(A \cup B \cup C) = 0$

B. $P(A \cup B \cup C) = 1$

C. $P(A \cap B \cap C) = 0$

D. $P(A \cap B \cap C) = 1$

Answer: C

96. A and B are two independent events such that $P(A) = \dfrac{1}{5}, P(A \cup B) = \dfrac{7}{10}.$ Then , $P(\overline{B})=$

A. $\dfrac{2}{7}$

B. $\dfrac{3}{7}$

C. $\dfrac{3}{8}$

D. $\dfrac{7}{9}$

Answer: B

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97. If a binomial distribution, the occurrence and the non-occurrence of

an event likely and the mean is 6.

The number of trials required is

A. 15

B. 12

C. 10

D. 6

Answer: C

98. A die is tossed twice. What is the probability of getting a sum of 10?

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

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

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

D. $\dfrac{5}{12}$

Answer: C

99. Three dice are thrown. What is the probability of getting a triplet?

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

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

C. $\dfrac{1}{36}$

D. $\dfrac{1}{72}$

Answer: A

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100. Consider the following statements:

1. If A and B are exhaustive event, then their union is the sample space.

2. If A and B are exhaustive events, then their intersection must be an empty event.

Which of the above statement is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: D

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101. Which one of the following may be parameter of a binomial distribution?

A. np=2, npq=4

B. $n = 4, p = \dfrac{3}{2}$

C. n=8, p=1

D. np=10, npq=8

Answer: B

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102. Describe the sample space for the indicated experiment : A coin is tossed and then a die is rolled only in case a head is shown on the coin.

A. 6

B. 7

C. 8

D. None of these

Answer: C

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103. If $P(A) = \dfrac{2}{3}, P(B) = \dfrac{2}{5}$ and $P(A \cup B) - P(A \cap B) = \dfrac{2}{5}$ then what is $P(A \cap B)$ equal to?

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

B. $\dfrac{5}{11}$

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

D. None of these

Answer: B

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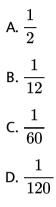
104. What is the probability that there are 5 Monday in the month of February 2016.

A. 0

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

C. $\dfrac{2}{7}$

D. None of these

Answer: D

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105. In a relay race there are five teams A. B, C. D and E. (a) What is the probability that A. B and C finish first, second and third, respectively. (b) What is the probability that A. B and C are first three to finish (in any order) (Assume t

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

B. $\dfrac{1}{12}$

C. $\dfrac{1}{60}$

D. $\dfrac{1}{120}$

Answer: B

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106. A box contains 3 white and 2 balck balls. Two balls are drawn at random one after the other. If the balls are not replaced. What is the probability that both the balls are black.?

A. $2/5$

B. 1/5

C. 1/10

D. None of these

Answer: B

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107. It has been found that if A and B play a game 12 times, A wins 6 times, B wins 4 times and they draw twice. A and B take part in a series of 3 games. The probability that they will win alternately is

A. 5/12

B. 5/36

C. 19/27

D. 5/27

Answer: B

108. Number of X is randomly selected from the set of odd numbers and Y is randomly selected from the set of even numbers of the set {1,2,3,4,5,6,7}. Let Z = X + Y, then What is P(Z=5) equal to?

A. $1/2$

B. $1/3$

C. $1/4$

D. $1/6$

Answer: D

109. Number of X is randomly selected from the set of odd numbers and Y is randomly selected from the set of even numbers of the set {1,2,3,4,5,6,7}. Let Z = X + Y, then What is P(Z=10) equal to?

A. 0

B. $1/2$

C. $1/3$

D. $1/5$

Answer: A

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110. Number of X is randomly selected from the set of odd numbers and Y is randomly selected from the set of even numbers of the set {1,2,3,4,5,6,7}. Let Z = X + Y, then What is $P(Z > 11)$ equal to?

A. 0

B. $1/4$

C. $1/6$

D. $1/12$

Answer: D

---

111. Number of X is randomly selected from the set of odd numbers and Y is randomly selected from the set of even numbers of the set {1,2,3,4,5,6,7}. Let Z = X + Y, then What is P(Z is the product of two prime numbers) equal to?

   A. 0

   B. $1/2$

   C. $1/4$

   D. None of these

Answer: C

112. Suppose A and B are two events. Event B occurred and it is known that P(B) <1

A. $\dfrac{P(A) - P(B)}{1 - P(B)}$

B. $\dfrac{P(A) - P(AB)}{1 - P(B)}$

C. $\dfrac{P(A) - P(B^c)}{1 - P(B)}$

D. None of these

Answer: B

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113. Consider events A,B,C,D,E of the sample space S={n:n is an integer such that $10 \leq n < 20$} given by

A is the set of all even numbers.

B is the set of all prime numbers.

C=(15)

D is the set of all integers ≤ 16

E is the set of all double digit numbers expressible as a power of 2.

A,B and D are

A. Mutually exclusive events but not exhaustive events

B. Exhausitve events but not mutually exclusive events

C. Mutually exclusive and exhaustive events

D. Elementary events

Answer: B

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114. Consider events A,B,C,D,E of the sample space S={n:n is an integer such that $10 \leq n < 20$} given by

A is the set of all even numbers.

B is the set of all prime numbers.

C=(15)

D is the set of all integers ≤ 16

E is the set of all double digit numbers expressible as a power of 2.

A,B and C are

A. Mutually exclusive events but not exhaustive events

B. Exhausitve events but not mutually exclusive events

C. Mutually exclusive and exhaustive events

D. Elementary events

Answer: C

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115. Consider events A,B,C,D,E of the sample space S={n:n is an integer such that $10 \leq n < 20$} given by

A is the set of all even numbers.

B is the set of all prime numbers.

C=(15)

D is the set of all integers ≤ 16

E is the set of all double digit numbers expressible as a power of 2.

B and C are

   A. Mutually exclusive events but not exhaustive events

   B. Compounds events

   C. Mutually exclusive and exhaustive events

   D. Elementary events

Answer: A

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116. Consider events A,B,C,D,E of the sample space S={n:n is an integer such that $10 \leq n < 20$} given by

A is the set of all even numbers.

B is the set of all prime numbers.

C=(15)

D is the set of all integers ≤ 16

E is the set of all double digit numbers expressible as a power of 2.

C and E are

   A. Mutually exclusive events but not exhaustive events

   B. Exhausitve events but not mutually exclusive events

   C. Mutually exclusive and exhaustive events

   D. Elementary events

Answer: D

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117. For any two events A and B, which one of the following holds?

   A. $P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$

   B. $P(A \cup B) \leq P(A) \leq P(A \cap B) \leq P(A) + P(B)$

   C. $P(A \cup B) \leq P(B) \leq P(A \cap B) \leq P(A) + P(B)$

   D. $P(A \cap B) \leq P(B) \leq P(A) + P(B) \leq P(A \cup B)$

Answer: A

---

118. Find the probability that in a random arrangement of the letters of the word UNIVERSITY the two Is do not come together.

A. $4/5$

B. $1/5$

C. $1/10$

D. $9/10$

Answer: A

---

119. A box contains 4 white and 3 black balls. Another box contains 3 white and 4 black balls. A die is thrown. If it exhibits a number ≥ 3, the ball is

drawn from the first box. Otherwise, a ball is drawn from the second box. A ball drawn is found to be black. The probability that it has been drawn from the second box is

A. $1/2$

B. $6/7$

C. $4/7$

D. $3/7$

Answer: D

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120. Two students Anil and Ashima appeared in an examination. The probability that Anil will qualify the examination is 0.05 and that Ashima will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02. Find the

A. 0.15

B. 0.14

C. 0.12

D. 0.11

Answer: D

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121. A fair coin is tossed four time. What is the probability that at most three tails occur?
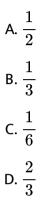
A. $7/9$

B. $15/16$

C. $13/16$

D. $3/4$

Answer: B

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122. Two men hit at a target with probabilityes $\dfrac{1}{2}$ and $\dfrac{1}{3}$ respectively.

What is the probability that exactly one of the them hits the target.

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

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

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

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

Answer: A

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123. Two similar boxes $B_i(i \equiv 1, 2)$ contain(i+1) red and (5-i-1) black balls.

One box is chosen at random and two balls are drawn randomly. What is

the probability that both the balls are of different colours?

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

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

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

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

Answer: D

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124. In an examination, the probability of a candidate solving a questions is $\dfrac{1}{2}$ Out of given 5 question in the examination, what is the probability that the candidate was able to solve at least 2 questions?

A. $\dfrac{1}{64}$

B. $\dfrac{3}{16}$

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

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

Answer: D

125. If $A \subseteq B$, then which one of the following is not correct?

A. $P\left(A \cap \overline{B}\right) = 0$

B. $P(A \mid B) = \dfrac{P(A)}{P(B)}$

C. $P(B \mid A) = \dfrac{P(B)}{P(A)}$

D. $P(A \mid (A \cup B)) = \dfrac{P(A)}{P(B)}$

Answer: C

126. The mean and the variance in a bionomial distribution of found to be

2 and 1 respectively. The probability P(X=0) is

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

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

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

D. $\dfrac{1}{16}$

Answer: D

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127. If A and B are two events such that $P(A \cup B) = \dfrac{3}{4}$ $P(A \cap B) = \dfrac{1}{4}$ and P(overset(_)A)=(2)/(3)` then what is P(B) equal to?

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

B. (2)/(3)`

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

D. $\dfrac{2}{9}$

Answer: B

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128. In throwing of two dice, the number of exhaustive events that '5' will never appear on any one of the dice is

A. 5

B. 18

C. 25

D. 36

Answer: C

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129. Two cards drawn without replacement from a well shuffled pack of 52 cards. Find the probability that cards drawn are aces.

A. $\dfrac{1}{26}$

B. $\dfrac{1}{221}$

C. $\dfrac{4}{223}$

D. $\dfrac{1}{13}$

Answer: B

---

130. Three digits are chosen at random from 1,2,3,4,5,6,7,8 and 9 without repeating any digit. What is the probability that the product is odd?

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

B. $\dfrac{7}{48}$

C. $\dfrac{5}{42}$

D. $\dfrac{5}{108}$

Answer: C

131. Two events A and B are such that P(not B)=0.8 $P(A \cup B) = 0.5$ and $P(A \mid B) = 0.4.$ Then P(A) is equal to

A. 0.28

B. 0.32

C. 0.38

D. None of these

Answer: C

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132. If the mean and the variance of a binomial variable X are 2 and 1 respectively, then the probability that X takes a value greater than one is equal to:

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

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

C. $\dfrac{7}{8}$

D. $\dfrac{11}{16}$

Answer: D

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133. Seven unbaised coins are tossed 128 times, In how many throws would you find at least three heads?

A. 99

B. 102

C. 103

D. 104

Answer: A

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134. A Coin is tossed five time. What is the probability that heads are observed more than three times?

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

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

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

D. $\dfrac{3}{32}$

Answer: A

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135. An unbiased coin is tossed untill the first head appears or until four tosses are completed, whichever earlier. Which of the following statement is/are correct?

1. The probability that no head is observed is $\dfrac{1}{16}$.

2. The probability that the experiment ends with three tosses is $\dfrac{1}{8}$.

Select the correct anser using the code given below.

A. 1 only

B. 2only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

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136. If $x \in [0, 5]$, then what is the probability that $x^2 - 3x + 2 > 0$

A. $\dfrac{4}{5}$

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

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

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

Answer: A

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137. A bag contians 4 white and 2 black balls and another bag contain 3 white and 5 black balls. If one ball is drawn from each bag, then the probability that one ball is white and one ball is black is

A. $\dfrac{5}{24}$

B. $\dfrac{13}{24}$

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

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

Answer: B

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138. A problem in mathematics is given to 3 students whose chances of solving it are $\dfrac{1}{2}; \dfrac{1}{3}; \dfrac{1}{4}$. What is the probability that the problem is solved?

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

B. $\dfrac{11}{12}$

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

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

Answer: D

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139. An insurance company insured 2000 scooter drivers, 4000 car drivers and 6000 truck drivers. The probability of an accidents are 0.01, 0.03 and 0.15 respectively. One of the insured persons meets with an accident. What is the probability that he i

A. $\dfrac{1}{52}$

B. $\dfrac{3}{52}$

C. $\dfrac{15}{52}$

D. $\dfrac{19}{52}$

Answer: A

---

140. A coin is tossed 5 times. What is the probability that tail appears and odd number of times?

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

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

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

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

Answer: A

---

141. What is the probability that the sum of any two different single digit natural numbers is a prime number?

A. $\dfrac{5}{27}$

B. $\dfrac{7}{18}$

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

D. None of the above

Answer: B

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142. Three dice are thrown simultaneously. What is the probability that the sum on the three faces is at least 5?

A. $\dfrac{17}{18}$

B. $\dfrac{53}{54}$

C. $\dfrac{103}{108}$

D. $\dfrac{215}{216}$

Answer: B

143. Two independent events A and B have $P(A) = \dfrac{1}{3}$ and $P(B) = \dfrac{3}{4}$

What is the probability that exactly one of the two events A or B occurs?

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

B. $\dfrac{5}{6}$

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

D. $\dfrac{7}{12}$

Answer: D

144. A coin is tossed three times. The probability of getting head and tail alternately, is

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

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

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

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

Answer: B

145. A card is drawn from a wel-shuffled deck of 52 cards. What is the probability that it is queen of spade?

A. $\dfrac{1}{52}$

B. $\dfrac{1}{13}$

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

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

Answer: A

146. If two dice are thrown, then what is the probability that the sum on the two faces is less than 4?

A. $\dfrac{13}{18}$

B. $\dfrac{5}{6}$

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

D. $\dfrac{35}{36}$

Answer: C

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147. A certain type of missile hits the 36 probability target with p 0.3. What is the least number of missiles should be fired so that there is at least an 80% probability that the target is hit?

A. 5

B. 6

C. 7

D. None of the above

Answer: A

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148. For two mutually exclusive events A and B, P(A) = 0.2 and $P(\overline{A}CB) = 0.3$. What is $P(A \mid (A \cup B))$ equal to ?

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

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

C. $\dfrac{2}{7}$

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

Answer: B

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149. What is the probability of 5 Sundays in the month of December?

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

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

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

D. None of the above

Answer: C

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150. A point is chosen at random inside a rectangle measuring 6 inches by 5 inches. What is the probability that the randomly selected point is at least one inch from the edge of the rectangle?

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

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

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

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

Answer: D

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151. A fair coin is tossed 100 times. The probability of getting tails an odd number of times is $1/2$ b. $1/8$ c. $3/8$ d. none of these

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

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

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

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

Answer: A

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152. A special dice with numbers 1,-1,2,-2,0 and 3 is thrown thrice. What is the probability that the sum of the numbers occurring on the upper face is zero?

A. $1/72$

B. $1/8$

C. $7/72$

D. $25/216$

Answer: D

153. There is 25% chance that it rains on any particular day. What is the probability that there is at least one rainy day within a period of 7 days?

A. $1 - \left(\frac{1}{4}\right)^7$

B. $\left(\frac{1}{4}\right)^7$

C. $\left(\dfrac{3}{7}\right)^7$

D. $1 - \left(\dfrac{3}{4}\right)^7$

Answer: D

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154. A salesman has a 70% hance to sell a product to any customer. The behaviour of successive is the customers is independent. If two customers A and B enter, what is the probability that the salesman will sell the product to customer A or B (A) 0.95 (B) 0.91 (C) 0.70 (D) 0.49

A. 0.98

B. 0.91

C. 0.7

D. 0.49

Answer: B

155. A student appears for tests I, II and III. The student is considered successful if he passes in tests I, II or I, III or all the three. The probabilities of the Student passing in tests II and III are m, n and $\dfrac{1}{2}$ respectively. If the probability of the student to be successful is $\dfrac{1}{2}$, then which one of the following is correct? (a) $m(1+n) = 1$ (B) $n(1+m) = 1$ (C) $m = 1$ (D) $mn = 1$

A. $m(1+n) = 1$

B. $n(1+m) = 1$

C. $m = 1$

D. $mn = 1$

Answer: A

156. Three candidates solve a question. Odds in favour of the correct answer are 5:2, 4: 3 and 3:4 respectively for the three candidates. What is the probability that at least two of them solve the question correctly?

A. 209/343

B. 134/343

C. 149/343

D. 60/343

Answer: A

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157. A medicine is known to be 75% effective to cure a patient. If the medicine is given to 5 patients, what is the probability that at least one patient is cured by this medicine?

A. $\dfrac{1}{1024}$

B. $\dfrac{243}{1024}$

C. $\dfrac{1023}{1024}$

D. $\dfrac{781}{1024}$

Answer: C

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158. For two events, A and B, it is given that $P(A) = \dfrac{3}{5}, P(B) = \dfrac{3}{10},$ and $P(A \mid B) = \dfrac{2}{3}$. If $\overline{A}$ and $\overline{B}$ are the complementary events of A and B, then $P(\overline{A} \mid \overline{B})$ equal to ?

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

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

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

D. $\dfrac{4}{7}$

Answer: A

159. A machine has three parts, A, B and C, whose chances of being defective are 0.02, 0.10 and 0.05 respectively. The machine stops working if any one of the parts becomes defective. What is the probability that the machine will not stop working?

A. 0.06

B. 0.16

C. 0.84

D. 0.94

Answer: C

160. For n independent events $A_i{}'s$, $p(A_i) = \dfrac{1}{1+i}$, $i = 1, 2, ...n$. The probability that at least one of the events occurs, is

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

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

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

D. $\dfrac{1}{24}$

Answer: C

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161. In a series of 3 one-day cricket matches between teams A and B of a college, the probability of team A winning or drawing are 1/3 and 1/6 respectively. If a win, loss or draw gives 2, 0 and I point respectively, then what is the probability that team A will score 5 points in the series?

A. $\dfrac{17}{18}$

B. $\dfrac{11}{12}$

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

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

Answer: D

162. Let the random variable X follow B (6,p). If 16 $P(X = 4) = P(X = 2)$, then what is the value of p?

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

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

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

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

Answer: C

163. A committee of two persons is selected from two men and two women. The probability that the committee will have exactly one woman

is.

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

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

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

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

Answer: A

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164. A question is given to theree students A,B and C whose chances of solving it are $\dfrac{1}{2}, \dfrac{1}{3}$ and $\dfrac{1}{4}$ respectively. What is the probaility that the question will be solved ?

A. $\dfrac{1}{24}$

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

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

D. $\dfrac{23}{24}$

165. For two dependent events A and B it is given that $P(A) = 0.2$ and $P(B) = 0.5$ If $A \subseteq B$ then the value of conditional probabilites $P(A \mid B)$ and `P(B|A) are respectively

A. $\dfrac{2}{5}, \dfrac{3}{5}$

B. $\dfrac{2}{5}, 1$

C. $1, \dfrac{2}{5}$

D. Information is insufficient

166. A point is selected at random from the interior of a circle. The probability that the point is closer to the centre than the boundary of the circle is

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

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

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

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

Answer: B

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167. A card is darw from a well - shuffled ordinary deck of 52 cards. What is the probability that is an ace?

A. $\dfrac{1}{13}$

B. $\dfrac{2}{13}$

C. $\dfrac{3}{13}$

D. $\dfrac{1}{52}$

Answer: A

168. Consider the followin Statements:

1. Two events are mutually exculsive if the occurrence of the other.

(2) The probability of the union of two mutually exclusivce events is the sum of their individual probabilities.

Which of the abobbe statements is / are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

169. If two fair dice are thrown, then what is the probability that the sum is neither 8 nor 9?

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

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

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

D. $\dfrac{5}{6}$

Answer: C

170. Let A and B are two mutually exclusive events with $P(A) = \dfrac{1}{3} P(B) = \dfrac{1}{4}$ What is the value of $P(\overline{A} \cap \overline{B})$?

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

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

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

D. $\dfrac{5}{12}$

Answer: D

171. The mean and standard deviation of a binomial distribution are 12 and 2 respectively. What is the number of trials?
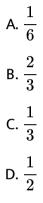
A. 2

B. 12

C. 18

D. 24

Answer: C

172. A committee of two persons is selected from two men and two women. The probability that the committee will have exactly one woman is.

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

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

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

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

Answer: B

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173. Let a die be loaded in such a way that even faces are twice likely to occur as the odd faces. What is the probability that a prime number will show up when the die is tossed?

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

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

C. $\dfrac{4}{9}$

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

Answer: C

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174. Let the sample space consist of non-negative integers up to 50, X denote the numbers which are multiples of 3 and Y denote the odd numbers. Which of the following is/are correct?

1. $P(X) = \dfrac{8}{25}$ 2. $P(Y) = \dfrac{1}{2}$

Select the correct answer using the code given below.

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

175. For two events A and B, let $P(A) = \dfrac{1}{2}$, $P(A \cup B) = \dfrac{2}{3}$ and $P(A \cap B) = \dfrac{1}{6}$. What is $P(\overline{A} \cap B)$ equal to ?

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

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

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

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

176. Let A and B be tow events with $P(A) = \dfrac{1}{3}, P(B) = \dfrac{1}{6}$ and $P(A \cap B) = \dfrac{1}{12}.$ What is $P\left(B \mid \overline{A}\right)$ equal to ?

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

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

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

D. $\dfrac{1}{10}$

Answer: C

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177. In a binomail distribution , then mean is $\dfrac{2}{3}$ and the variance is $\dfrac{5}{9}.$ What is the probability that $X = 2?.$

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

B. $\dfrac{25}{36}$

C. $\dfrac{25}{216}$

D. $\dfrac{25}{54}$

Answer: C

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178. The probability that a ship safely reaches a port is $\dfrac{1}{3}$. The probability that out of 5 ships, at least 4 ships would arrive safely is

A. $\dfrac{1}{243}$

B. $\dfrac{10}{243}$

C. $\dfrac{11}{243}$

D. $\dfrac{13}{243}$

Answer: C

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179. What is the probability that at least two persons out of a group of three persons were born in the same month (disregard year)?

A. $\dfrac{33}{144}$

B. $\dfrac{17}{72}$

C. $\dfrac{1}{144}$

D. $\dfrac{2}{9}$

Answer: B

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180. If $P(B) = \dfrac{3}{4}$, $P(A \cap B \cap \overline{C}) = \dfrac{1}{3}$ and $P(\overline{A} \cap B\overline{C}) = \dfrac{1}{3}$ then $P(B \cap C) =$

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

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

C. $\dfrac{1}{15}$

D. $\dfrac{1}{9}$

Answer: A

181. In a multiple-choice test, an examinee either knows the correct answer with probability p, or guesses with probability 1-p. The probability of answering a question correctly is $\dfrac{1}{m}$, if the he or she merely guessess. If the examinee answers a question correctly, the probability that he or she really knows the answer is .

A. $\dfrac{mp}{1+mp}$

B. $\dfrac{mp}{1+(m-1)p}$

C. $\dfrac{(m-1)p}{1+(m-1)p}\Big)$

D. $\dfrac{(m-1)p}{1+mp}$

Answer: B

182. Five sticks of length 1, 3, 5, 7 and 9 feet are given. Three of these sticks are selected at random. What is the probability that the selected sticks can from a triangle?

A. 0.5

B. 0.4

C. 0.3

D. 0

Answer: C

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183. Consider the following statements:

1. $P(\overline{A} \cup B) = P(\overline{A}) + P(B) - P(\overline{A} \cap B)$

2. $P(A \cap \overline{B}) = P(B) - P(A \cap B)$

3. $P(A \cap B) = P(B)P(A \mid B)$

Which of the above statements are correts ?

A. 1 and 2 only

B. 1 and 3 only

C. 2 and 3 only

D. 1,2 and 3

Answer: B

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184. The probabilities that a student will solve Question A and Question B are 0.4 and 0.5 respectively. What is the probability that he solves at least one of the two questions ?

A. 0.6

B. 0.7

C. 0.8

D. 0.9

Answer: B

185. Two fair dice are rolled. What is the probability of getting a sum of 7
?

A. $\dfrac{1}{36}$

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

C. $\dfrac{7}{12}$

D. $\dfrac{5}{12}$

Answer: B

186. If A and Bare two events such that 2P(A) = 3P(B), where $0 < P(A) < P(B) < 1$, then which one of the following is correct?

A. $P(A \mid B) < P(B \mid A) < P(A \cap B)$

B. $P(A \cap B) < P(B \mid A) < P(A \mid B)$

C. $P(B \mid A) < P(A \mid B) < P(A \cap B)$

D. $P(A \cap B) < P(A \mid B) < P(B \mid A)$

Answer: B

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187. A box has ten chits numbered 0, 1, 2, 3, .., 9. First, one chit is drawn at random and kept aside. From the remaining, a second chit is drawn at random. What is the probability that the second chit drawn is "9"?

A. $\dfrac{1}{10}$

B. $\dfrac{1}{9}$

C. $\dfrac{1}{90}$

D. None of the above

Answer: C

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188. One bag contains 3 white and 2 black balls, another bag contains 5 white and 3 black balls. If a bag is chosen at random and a ball is drawn from it, what is the chance that it is white?

A. $\dfrac{3}{8}$

B. $\dfrac{49}{80}$

C. $\dfrac{8}{13}$

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

Answer: B

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189. Consider the following in respect of two events A and B : 1. P(A occurs but not B) $= P(A) - P(B)$ if $B \subset A$. 2. P(A alone or B alone occurs) $= P(A) + P(B) - P(A \cap B)$. 3. $P(A \cup B) = P(A) + P(B)$ if A and B are mutually exclusive . Which of the above is/are correct?

A. 1 only

B. 1 and 3 only

C. 2 and 3 only

D. 1 and 2 only

Answer: B

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190. A committee of three has to be chosen from a group of 4 men and 5 women. If the selection is made at randon, what is the probability that exactly two members are men?

A. $\dfrac{5}{14}$

B. $\dfrac{1}{21}$

C. $\dfrac{3}{14}$

D. $\dfrac{8}{21}$

Answer: A

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191. If two dice are thrown and at least one of the dice shows 5.then the probability that the sum is 10 or more is

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

B. $\dfrac{4}{11}$

C. $\dfrac{3}{11}$

D. $\dfrac{2}{11}$

Answer: C

192. Let A, B and C be three mutually exclusive and exhaustive events associated with a random experiment. IfP(B) = 1.5 P(A) and P(C)=0.5P(B), then P(A) is equal to

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

B. $\dfrac{4}{13}$

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

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

Answer: B

193. In a bolt factory, machines X, Y, Z manufacture bolts that are respectively 25%, 35% and 40% of the factory's total output. The machines X, Y, Z respectively produce 2%, 4% and 5% defective bolts. A

bolt is drawn at random from the product and is found to be defective.

What is the probability that it was manufactured by machine X?

A. $\dfrac{5}{39}$

B. $\dfrac{11}{39}$

C. $\dfrac{20}{39}$

D. $\dfrac{34}{39}$

Answer: A

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194. 8 coins are tossed simultaneously. The probability of getting at least

6 heads is

A. $\dfrac{7}{64}$

B. $\dfrac{57}{64}$

C. $\dfrac{37}{256}$

D. $\dfrac{229}{256}$

Answer: C

---

195. Three groups of children contain 3 girls and 1 boy; 2 girls and 2 boys; 1 girl and 3 boys respectively. One child is selected at random from each group. Find the chance that the three selected comprise one girkl and 2 boys.

A. $\dfrac{13}{32}$

B. $\dfrac{9}{32}$

C. $\dfrac{3}{32}$

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

Answer: A

196. If the probability of simultaneous occurrence of two events A and B is

p and the probability that exactly one of A, Boccurs is q, then which of the

following is'are correct? 1. $P(\overline{A}) + P(\overline{B}) = 2 - 2p - q$. 2. $P(\overline{A} \cap \overline{B})$ =

1- p - q elect the correct answer using the code given below:

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

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197. Two integers x and y are chosen with replacement out of the set

$\{0, 1, , 2, 3, 10\}$. Then find the probability that $|x - y| > 5$.

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

B. $\dfrac{35}{121}$

C. $\dfrac{30}{121}$

D. $\dfrac{25}{121}$

Answer: C

---

198. From a deck of cards, cards are taken out with replacement. What is the probability that the fourteenth card taken out is an ace ?

A. $\dfrac{1}{51}$

B. $\dfrac{4}{51}$

C. $\dfrac{1}{52}$

D. $\dfrac{1}{13}$

Answer: D

199. If A and B are two events such that P(A) = 0.5, P(B) =0.6 and $P(A \cap B) = 0.4$, then what is $P\overline{A \cup B}$ equal to ?

A. 0.9

B. 0.7

C. 0.5

D. 0.3

Answer: D

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200. A problem is given to three students A, B and C whose probabilities of solving the problem are $\frac{1}{2}, \frac{3}{4}$ and $\frac{1}{4}$ respectively. What is the probability that the problem will be solved if they all slove the problem independently?

A. $\dfrac{29}{32}$

B. $\dfrac{27}{32}$

C. $\dfrac{25}{32}$

D. $\dfrac{23}{32}$

Answer: A

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201. A pair of fair dice is rolled. What is the probability that the second dice lands on a higher value than does the first ?

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

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

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

D. $\dfrac{5}{18}$

Answer: C

202. A fair coin is tossed and an unbiased dice is rolled together. What is the probability of getting a 2 or 4 or 6 along with head?

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

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

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

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

Answer: C

203. If A, B, C are three events, then what is the probability that at least two of these events occur together?

A. $P(A \cap B) + P(B \cap C) + P(C \cap A)$

B. $P(A \cap B) + P(B \cap C) + P(C \cap A) - P(A \cap B \cap C)$

C. $P(A \cap B) + P(B \cap C) + P(C \cap A) - 2P(A \cap B \cap C)$

D. $P(A \cap B) + P(B \cap C) + P(C \cap A) - 3P(A \cap B \cap C)$

Answer: C

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204. If two variables X and Y are independent, then what is thecorrelation coefficient between them ?

A. 1

B. -1

C. 0

D. None of the above

Answer: C

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205. Two independent events A and B are such that $P(A \cup B) = \dfrac{2}{3}$ and P(A n B) = (1)/(6). IfP(B) < P(A), then what is $P(B)$ equal to ?

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

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

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

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

Answer: B

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206. If two fair dice are rolled then what is the conditional probability that the first dice lands on 6 given that the sum of numbers on the dice is 8 ?

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

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

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

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

Answer: C

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207. Two symmetric dice flipped with each dice having two side painted red, two painted black, one painted yellow and the other painted white. What is the probability that both land on the same ?

A. $\dfrac{3}{18}$

B. $\dfrac{2}{9}$

C. $\dfrac{5}{18}$

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

Answer: C

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208. There are n socks in a drawer, of which 3 socks are red. If 2 of the socks are chosen randomly and the probability tha both selected socks are red is $\frac{1}{2}$, then what is the value of n?

A. 3

B. 4

C. 5

D. 6

Answer: B

209. Five cards are drawn at random from a well shuffled pack of 52 playing cards. The probability |that four of them may have the same face value is

A. $\dfrac{1}{17}$

B. $\dfrac{3}{17}$

C. $\dfrac{5}{17}$

D. $\dfrac{7}{17}$

Answer: A

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210. In eight throws of a die 5 or 6 is considered a success, find the mean number of successes and the standard deviation.

A. $\dfrac{8}{6}, \dfrac{16}{9}$

B. $\dfrac{8}{3}, \dfrac{4}{3}$

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

D. `(4)/(3

Answer: B

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211. A and B are two events such that $\overline{A}$ and $\overline{B}$ are mutually exclusive. If P(A)=0.5 and P(B)=0.6, then what is the value of $P(A \mid B)$?

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

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

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

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

Answer: B

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212. A point is selected at random from the interior of a circle. The probability that the point is closer to the centre than the boundary of the circle is

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

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

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

D. It cannot be determined

Answer: A

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213. If A and B are two eveuts, then what is the probability of occurrence of either event A or event B?

A. $P(A) + P(B)$

B. $P(A \cup B)$

C. $P(A \cap B)$

D. $P(A)P(B)$

Answer: B

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