



MATHS

BOOKS - TARGET MATHS (HINGLISH)

PROBABILITY

Classical Thinking Algebra Of Events Concept Of Probability

1. The probability of an impossible event is 0 (b) 1 (c) $\frac{1}{2}$ (d) non-existent

A. 1

B. 2

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

D. 0

Answer: D



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2. What is the probability of a sure event?

A. 1

B. 2

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

D. 0

Answer: A



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3. If E is any event associated with an experiment then.

A. $P(E) \leq 0$

B. $P(E) \geq 1$

C. $P(E) \geq 0$

$$D. 0 \leq P(E) \leq 1$$

Answer: D



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4. F or any event A

A. $P(A) + P(\bar{A}) = 0$

B. $P(A) + P(\bar{A}) = 1$

C. $P(A) > 1$

D. $P(A) < 1$

Answer: B



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5. If A is a sure event, then $P(\bar{A})$ is.

A. 0

B. -1

C. 1

D. 2

Answer: A



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6. 4 coins are tossed . The probability that they are all heads is

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

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

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

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

Answer: A



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7. A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is

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

B. $\frac{1}{26}$

C. $\frac{1}{13}$

D. $\frac{2}{13}$

Answer: B



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8. A card is drawn at random from a pack of 52 cards. Find the probability that the card drawn is a jack, queen or a king

A. $\frac{3}{52}$

B. $\frac{3}{13}$

C. $\frac{4}{13}$

D. $\frac{3}{26}$

Answer: B



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9. Two dice are thrown together. The probability of getting the same number on both dice is

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

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

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

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

Answer: B



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10. Two dice are thrown. The probability that the sum of numbers appearing is more than 10, is

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

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

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

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

Answer: B



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11. If in a lottery there are 5 prizes and 20 blanks, then the probability of getting a prize is

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

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

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

D. None of these

Answer: A



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12. A number is chosen at random from first ten natural numbers. The probability that number is odd and perfect square is .

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

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

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

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

Answer: D



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13. If a single letter is selected at random from the word 'PROBABILITY', then the probability that it is a vowel is

A. $\frac{2}{11}$

B. $\frac{3}{11}$

C. $\frac{4}{11}$

D. 0

Answer: C



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14. 3 mangoes and 3 apples are in a box. If 2 fruits are chosen at random, the probability that one is a mango and the other is an apple, is

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

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

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

D. $\frac{2}{15}$

Answer: B



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15. From a group of 5 boys and 3 girls, three persons are chosen at random. Find the probability that there are more girls than boys

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

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

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

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

Answer: D



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16. From 10,000 lottery tickets numbered from 1 to 10,000, one ticket is drawn at random. What is the probability that the number marked on the drawn ticket is divisible by 20

A. $\frac{1}{100}$

B. $\frac{1}{50}$

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

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

Answer: C



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17. What is the probability that an ordinary year has 53 sundays?

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

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

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

D. None of these

Answer: B



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18. Three letters are written to different persons and addresses to three envelopes are also written. Without looking at the addresses, the probability that probability that the letters go into right envelopes, is

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

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

C. $\frac{23}{24}$

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

Answer: B



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19. There are n letters and n addressed envelopes. Find the probability that all the letters are not kept in the right envelope.

A. $\frac{1}{n!}$

B. $1 - \frac{1}{n!}$

C. $1 - \frac{1}{n}$

D. $\frac{1}{2!} - \frac{1}{3!} + \dots + \frac{(-1)^n}{n!}$

Answer: B



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20. Six dice are thrown simultaneously. The probability that all of them show the same face, is

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

B. $\frac{1}{6^5}$

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

D. 6^6

Answer: B



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Classical Thinking Addition Theorem And Conditional Probability

1. If $P(A) = \frac{1}{4}$, $P(B) = \frac{1}{2}$, $P(A \cup B) = \frac{5}{8}$, then $P(A \cap B)$ is equal to .

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

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

C. $\frac{2}{8}$

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

Answer: B



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2. If $P(A) = 0.4P(B) = x$, $P(A \cup B) = 0.7$ and the events A and B are mutually exclusive, then $x =$

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

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

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

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

Answer: A



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3. Two events A and B have probabilities 0.25 and 0.5 respectively. The probabilities that A and B occur simultaneously is 0.15. Then the probability that A or B occurs is

A. 0.61

B. 0.7

C. 0.61

D. 0.72

Answer: A



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4. If A and B are two events such that $P(A \cup B) = \frac{5}{6}$, $P(A \cap B) = \frac{1}{3}$ and $P(\overline{B}) = \frac{1}{3}$ then $P(A) =$

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

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

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

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

Answer: C



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5. Two events A and B have probability 0.28 and 0.55 respectively. The probability that A and B occur simultaneously is 0.14. Find the probability that neither A nor B occurs

A. 0.39

B. 0.41

C. 0.4

D. 0.31

Answer: D



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6. The probability that at least one of A or B occurs is 0.6. If A and B occur simultaneously with probability 0.3, then find the value of $P(A') + P(B')$.

A. 0.9

B. 0.15

C. 1.1

D. 1.2

Answer: C



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7. The probabilities of a student getting first class or second class or third class in an examination are $\frac{2}{7}$, $\frac{3}{5}$, $\frac{1}{10}$ respectively . The probability that the students fails is .

A. $\frac{6}{70}$

B. $\frac{11}{70}$

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

D. $\frac{1}{70}$

Answer: D



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8. Find the probability of getting a king or a heart from a pack of 52 cards.

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

B. $\frac{1}{52}$

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

D. $\frac{16}{52}$

Answer: D



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9. A coin is tossed twice. If events A and B are defined as:

A = head on first toss, B = head on second toss. Then the probability of

$A \cap B =$

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

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

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

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

Answer: D



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10. If A and B are two independent events, then A and \bar{B} are

A. Not independent

B. Also independent

C. Mutually exclusive

D. None of these

Answer: B



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11. If A and B are any two events associated with an experiment, then

A. $P(A \cup B) = P(A) + P(B)$ if A and B independent

B. $P(A \cup B) = 1 - P(A')P(B')$ if A and B are independent

C. $P(A \cap B) = P(A)P(B)$ if A and B are exclusive

D. $P(A \cap B) = P(A) + P(A \cap B)$.

Answer: B



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12. Events A and B are independent if

A. $P(A \cap B) = P(A/B) \cdot P(B)$

B. $P(A \cap B) = P(B/A) \cdot P(A)$

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

D. $P(A \cap B) = P(A) \cdot P(B)$

Answer: D



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13. If the events A and B are mutually exclusive, then $P(A/B) =$

A. 0

B. 1

C. $\frac{P(A \cap B)}{P(A)}$

D. $\frac{P(A \cap B)}{P(B)}$

Answer: A



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14. A and B are two events such that $P(A) = 0.8$, $P(B) = 0.6$ and $P(A \cap B) = 0.5$, then the value of $P(A/B)$ is

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

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

C. $\frac{9}{10}$

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

Answer: A



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15. If A and B are two events such that $P(A) = \frac{3}{8}$, $P(B) = \frac{5}{8}$ and $P(A \cup B) = \frac{3}{4}$, then $P\left(\frac{\bar{A}}{B}\right)$

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

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

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

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

Answer: A



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16. If $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$ and $P(A \cap B) = \frac{1}{4}$ then $P(B/A)$

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

B. 0

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

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

Answer: C



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17. If $P(A \cap B) = 0.15$. $P(B) = 0.90$ then $P(A/B)$ is

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

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

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

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

Answer: D



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18. If A and B are two events such that $P(A) \neq 0$ and $P(B) \neq 1$ then

$$P\left(\frac{\bar{A}}{B}\right)$$

A. $1 - P\left(\frac{A}{B}\right)$

B. $1 - P\left(\frac{\bar{A}}{B}\right)$

C. $\frac{1 - P(A \cup B)}{P(\bar{B})}$

D. $\frac{P(\bar{A})}{P(\bar{B})}$

Answer: C



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19. A man and a woman appear in an interview for two vacancies in the same post. The probability of mans selection of $\frac{1}{4}$ and that the womans selection is $\frac{1}{3}$. What is the probability that none of them will be selected?

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

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

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

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

Answer: A



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Classical Thinking Bayes Theorem And Odds

1. A bag X contains 2 white and 3 black balls and another bag Y contains 4 white and 2 black balls. One bag is selected at random and a ball is drawn

from it. Then the probability for the ball chosen be white is -

A. $\frac{2}{15}$

B. $\frac{7}{15}$

C. $\frac{8}{15}$

D. $\frac{14}{15}$

Answer: C



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2. If the odds against an event be 2 : 3, then the probability of its occurrence is

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

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

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

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

Answer: C



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3. For an event, odds against is 6 : 5. The probability that event does not occur, is

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

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

C. $\frac{5}{11}$

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

Answer: B



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4. In solving any problem, odds against A are 4 to 3 and in favour of Bin solving the same is 7 to 5. The probability that problem will be solved is

A. $\frac{5}{21}$

B. $\frac{16}{21}$

C. $\frac{15}{84}$

D. $\frac{69}{84}$

Answer: B



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Critical Thinking Algebra Of Events Concept Of Probability

1. Two coins are tossed. What is the probability of getting 2 heads or 2 tails?

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

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

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

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

Answer: A



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2. A card is drawn at random from a pack of 52 cards . The probability of getting red queen is

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

B. $\frac{1}{26}$

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

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

Answer: B



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3. From a book containing 100 pages, one page is selected randomly. The probability that the sum of the digits of the page number of the selected

page is 11, is

A. $\frac{2}{25}$

B. $\frac{9}{100}$

C. $\frac{11}{100}$

D. $\frac{1}{100}$

Answer: A



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4. A digit is selected at random from either of the two sets $\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ and $\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. What is the chance that the sum of the digits selected is 10?

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

B. $\frac{10}{81}$

C. $\frac{10}{18}$

D. $\frac{1}{81}$

Answer: A



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5. Six dice are thrown. The probability that different numbers will turn up is equal to

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

B. $\frac{5}{324}$

C. $\frac{3}{324}$

D. $\frac{1}{324}$

Answer: B



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6. Two dice are thrown simultaneously. The probability of getting the sum 2 or 8 or 12 is

A. $\frac{5}{18}$

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

C. $\frac{7}{18}$

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

Answer: B



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7. The probability of getting a number between 1 and 100 which is divisible by one and itself only is.....

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

B. $\frac{25}{99}$

C. $\frac{25}{98}$

D. None of these

Answer: C



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8. These is an objective type question with 4 answer choices exactly one of which is correct. A student has not studied the topic on which the question has been set. The probility that the student guesses the correct answer is

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

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

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

D. 4

Answer: B



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9. Find the probability that a leap year selected at random will contain 53 Sundays.

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

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

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

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

Answer: B



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10. A coin is tossed once. If a head comes up, then it is tossed again and if a tail comes up, a dice is thrown. The number of points in the sample space of experiment is

A. 24

B. 12

C. 4

D. 8

Answer: D



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11. Two dice are thrown. The number of sample points in the sample space when six does not appear on either dice is

A. 11

B. 30

C. 18

D. 25

Answer: D



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12. In a single throw of two dice, what is the probability of getting a total 13

A. 0

B. 1

C. $\frac{13}{36}$

D. $\frac{25}{36}$

Answer: A



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13. Three horses H_1 , H_2 and H_3 are in a race which is won by one of them. If H_1 is twice as likely to win as H_2 and H_2 is twice as likely to win as H_3 , then their respective probabilities of winning are .

A. $\frac{4}{7}, \frac{2}{7}, \frac{1}{4}$

B. $\frac{2}{7}, \frac{4}{7}, \frac{1}{7}$

C. $\frac{1}{7}, \frac{2}{7}, \frac{4}{7}$

D. None of these

Answer: A



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14. The letters of the word FATHER are written on separate cards, two cards are drawn at random. Probability that both are vowels is

A. $\frac{2}{15}$

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

C. $\frac{3}{15}$

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

Answer: D



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15. A box contains 10 sample watches, 2 of which are defective. If 2 are selected at random, the probability that both selected are defective is,

A. $\frac{2}{25}$

B. $\frac{9}{20}$

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

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

Answer: D



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16. A drawer contains 5 brown socks and 4 blue socks well mixed a man reaches the drawer and pulls out socks at random. What is the probability that they match? 4/9 b. 5/8 c. 5/9 d. 7/12

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

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

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

D. $\frac{41}{81}$

Answer: B

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17. From a pack of 52 cards, the cards are drawn till an ace appears .

Probability that an ace does not come in first 26 cards is,

A. $\frac{{}^4C_1}{{}^{52}C_{26}}$

B. $\frac{{}^4C_1}{{}^{48}C_{26}}$

C. $\frac{1}{{}^{52}C_{26}}$

D. $\frac{{}^{48}C_{26}}{{}^{52}C_{26}}$

Answer: D

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18. A cricket club has 16 members out of which 6 can bowl. If a team of 11 members is selected. Find the probability that the team will contain exactly four bowlers

A. $\frac{5}{146}$

B. $\frac{7}{1456}$

C. $\frac{5}{1456}$

D. $\frac{75}{182}$

Answer: D



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19. From 4 children, 2 women and 4 men , 4 are selected. Probability that there are exactly 2 children among the selected is

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

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

C. $\frac{10}{21}$

D. $\frac{2}{10}$

Answer: B



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20. An organization consists of 25 members including 4 doctors. A committee of 4 is to be formed at random. The probability that the committee contains at least 3 doctors is

A. $\frac{17}{2530}$

B. $\frac{4}{2300}$

C. $\frac{1}{12640}$

D. $\frac{1}{2300}$

Answer: B



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21. A person draws . two cards with replacement from a pack of 52 cards .

What is the chance that he gets both cards of the same suit?

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

B. $\frac{3}{13}$

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

D. $\frac{2}{13}$

Answer: A



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22. Five persons entered the lift cabin on the ground floor of an 8 floors house. Suppose that each of them, independent and with equal probability can leave the cabin at any of floor beginning with the first.

Find put the probability of all five persons leaving at different floors.

A. $\frac{{}^7C_5}{7^5}$

B. $\frac{{}^7C_5 \times 5!}{5^7}$

C. $\frac{{}^7C_5 \times 5!}{7^5}$

D. $\frac{5!}{7^5}$

Answer: C



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23. A fair coin is tossed three times . The probability that there is atleast one tail is

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

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

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

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

Answer: D



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24. Three persons work independently on a problem. If the respective probabilities that they will solve it are $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$, then find the probability that not can solve it.

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

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

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

D. None of these

Answer: A



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25. Three numbers are chosen from 1 to 30 . The probability that they are not consecutive , is

A. $\frac{142}{145}$

B. $\frac{144}{145}$

C. $\frac{143}{145}$

D. $\frac{1}{145}$

Answer: B



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26. A group of 4 boys and 3 girls are arranged at random , one after the other. Probability that girls and boys occupy alternate seats is ,

A. $\frac{1}{34}$

B. $\frac{1}{35}$

C. $\frac{1}{33}$

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

Answer: B



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27. Mr . A gave his telephone number to Mr . B .Mr . B remembers that the first two digits were 40 and the remaining four digits were two 3s, one 6 and one 8 . He is not certain about the order of the digits . Mr. B dials 403638. The probability that he will get A ' s house is

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

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

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

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

Answer: D



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

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

B. $\frac{1}{36}$

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

D. $\frac{3}{28}$

Answer: B



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29. All the letters of the word HAMSANANDI are placed at random in a row. The probability that the word ANAND occurs without getting split is

A. $\frac{1}{42}$

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

C. $\frac{1}{420}$

D. $\frac{1}{329}$

Answer: C

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30. A car is parked by an owner amongst 25 cars in a row, not at either end. On his return he finds that exactly 15 places are still occupied. The probability that both the neighboring places are empty is

A. $\frac{15}{99}$

B. $\frac{15}{92}$

C. $\frac{15}{184}$

D. $\frac{15}{25}$

Answer: B

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31. Three different numbers are selected at random from the set $A = (1, 2, 3, \dots, 10)$. The probability that the product of two of the numbers is equal to the third is

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

B. $\frac{1}{40}$

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

D. $\frac{39}{40}$

Answer: B



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32. In shuffling a pack of 52 playing cards, four are accidentally dropped; find the chance that the missing cards should be one from each suit.

A. $\frac{1}{256}$

B. $\frac{4}{20825}$

C. $\frac{2197}{20825}$

D. $\frac{4}{52}$

Answer: C

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Critical Thinking Addition Theorem And Conditional Probability

1. If $P(A) = 0.4$, $P(B) = x$, $P(A \cup B) = 0.7$ and the events A and B are independent, then $x =$

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

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

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

D. None of these

Answer: B

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2. If A and B are two events such that $P(A \cup B) + P(A \cap B) = \frac{7}{8}$ and $P(A) = 2P(B)$, then $P(A) =$

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

B. $\frac{7}{24}$

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

D. $\frac{17}{24}$

Answer: A



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3. If A and B are two mutually exclusive events such that $P(B) = 2P(A)$ and

$A \cup B = S$, then $P(B)$ is

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

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

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

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

Answer: C

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4. The probability that in a throw of two dice we get, an even sum or sum less than 5 is

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

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

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

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

Answer: D

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5. A die is thrown. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then $P(A \cup B)$ is

A. 1

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

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

D. 0

Answer: A



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6. If A is an independent event it self then $P(A) =$

A. 0

B. 1

C. 0,1

D. 1,1

Answer: C



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7. If A and B are two events such that $P(A \cup B) = \frac{5}{6}$, $P(A \cap B) = \frac{1}{3}$ and $P(\bar{B}) = \frac{1}{2}$ then the events A and B are

- A. Independent
- B. Mutually exclusive
- C. Mutually exclusive and independent
- D. None of these

Answer: A



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8. The chances to fail in Physics are 20% and the chances to fail in Mathematics are 10%. What are the chances to fail in atleast one subject ?

- A. 0.28

B. 0.38

C. 0.72

D. 0.82

Answer: A



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9. Find the probability that a leap year will have 53 Friday or 53 Saturdays.

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

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

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

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

Answer: B



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10. Three athletes A, B and C participate in a race competition. The probability of winning for A and B is twice of winning for C. Then. the probability that the race is won by A or B, is

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

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

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

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

Answer: C



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11. There are two childrens in a family. The probability that both of them are boys is

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

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

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

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

Answer: C



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12. There are 20 cards. Ten of these cards have the letter I printed on them and the other 10 have the letter T printed on them. If three cards are picked up at random and kept in the same order, the probability of making word IIT is $\frac{1}{9}$, $\frac{1}{3}$ b. $\frac{1}{16}$, $\frac{1}{4}$ c. $\frac{1}{4}$, $\frac{1}{2}$ d. none of these

A. $\frac{9}{80}$

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

C. $\frac{4}{27}$

D. $\frac{4}{58}$

Answer: D



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13. A letter is taken from the word MULTIPLE and another letter is taken from the word CHOICE, the probability that both letters chosen are vowels is

A. $5 \cdot \frac{5}{10}$

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

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

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

Answer: D



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14. In a single throw of two dice, the probability of getting a total of 7 or 9 is

A. $\frac{4}{18}$

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

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

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

Answer: C



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15. There are two boxes. One box contains 3 white balls and 2 black balls. The other box contains 7 yellow balls and 3 black balls. If a box is selected at random and from it, a ball is drawn, the probability that the ball is black is

A. $\frac{7}{20}$

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

C. $\frac{3}{20}$

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

Answer: A



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16. A class consists of 80 students 25 of them are girls and 55 boys . If 10 are rich and remaining poor and also 20 of them are intelligent, then the probability of selecting intelligent rich girls is ,

A. $\frac{5}{128}$

B. $\frac{25}{128}$

C. $\frac{5}{512}$

D. $\frac{5}{64}$

Answer: C



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17. If A and B are two events and $P(A) = \frac{3}{8}$.
 $P(B) = \frac{1}{2}$, $P(A \cap B) = \frac{1}{4}$ then $P(A \cup B) =$

A. $\frac{3}{9}$

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

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

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

Answer: B



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18. If $P(A \cap B) = \frac{1}{2}$, $P(A \cap B) = \frac{1}{3}$, $P(A) = p$, $P(B) = 2p$, then
find the value of p .

A. $\frac{7}{18}$

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

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

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

Answer: A



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19. If M and N are any two events, then the probability that exactly one of them occurs is

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

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

C. $p_1 + p_2 - p_1p_2$

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

Answer: A



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20. Two events A and B have probabilities 0.25 and 0.05, respectively. The probability that both A and B occur simultaneously is 0.14. Then the probability that neither A nor B occurs is a. 0.39 b. 0.25 c. 0.11 d. none of these

A. 0.39

B. 0.375

C. 0.49

D. 0.59

Answer: A

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21. Out of 80 students in a class, 30 passed in Mathematics, 20 in Electronics and 10 in both. If one student is selected at random. The probability that the student has passed in none of the subjects is

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

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

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

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

Answer: D



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22. If $P(E_1) = p_1$ and $P(E_2) = p_2$ and E_1 and E_2 are independent then

$P(\text{neither } E_1 \text{ nor } E_2) =$

A. $(1 - p_1)(1 - p_2)$

B. $1 - (p_1 + p_2)$

C. $p_1 + p_2 + p_1p_2$

D. $p_1 - p_2$

Answer: A

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23. The probability that a man will live 10 more years is $\frac{1}{4}$ and the probability that his wife will live 10 more years is $\frac{1}{3}$. Then the probability that neither will be alive in 10 years, is

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

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

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

D. $\frac{11}{12}$

Answer: B

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24. If the probability that A and B will die within a year are p and q respectively, then the probability that only one of them will be alive at the end of the year, is

A. $p + q$

B. $p + q - 2pq$

C. $p + q - pq$

D. $p + q + pq$

Answer: B



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25. A speaks truth in 60% of cases, while B in 90% of the cases. In what percent of cases are they likely to contradict each other in stating the same fact?

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

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

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

D. $\frac{11}{12}$

Answer: C



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26. Let E and F be two independent events . The probability that neither happens is $\frac{1}{2}$. Then

A. $P(E) = \frac{1}{13}, P(F) = \frac{1}{4}$

B. $P(E) = \frac{1}{2}, P(F) = \frac{1}{6}$

C. $P(E) = \frac{1}{6}, P(F) = \frac{1}{12}$

D. $P(E) = \frac{1}{4}, P(F) = \frac{1}{3}$

Answer: D



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27. If A and B are two independent events then $P\left(\frac{A}{B}\right) =$

A. 0

B. 1

C. $P(A)$

D. $P(B)$

Answer: C



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28. If A and B are two events such that $A \subset B$ then $P\left(\frac{B}{A}\right) =$

A. 0

B. 1

C. $1/2$

D. $1/3$

Answer: B



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29.

If

$P(A) = \frac{1}{5}$, $P(B) = \frac{1}{3}$ and $P(A \cap B) = \frac{1}{5}$ then $P(\overline{B} / \overline{A}) = ?$

A. $\frac{37}{40}$

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

C. $\frac{23}{40}$

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

Answer: A



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30. In a certain town, 40% of the people have brown hair, 25% have brown eyes, and 15% have both brown hair and brown eyes. If a person selected at random from the town has brown hair, the probability that he also has brown eyes is $\frac{1}{5}$ b. $\frac{3}{8}$ c. $\frac{1}{3}$ d. $\frac{2}{3}$

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

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

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

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

Answer: B



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31. If A and B are two events with

$$P(A) = \frac{1}{4}, P(A/B) = \frac{1}{4} \text{ and } P(B/A) = \frac{1}{2} \text{ then}$$

A. A and B are mutually exclusive

B. A and B are independent

C. A is sub event of B

D. B is sub - events A

Answer: B

Critical Thinking Bayes Theorem And Odds

1. Bag A contains 4 green and 3 red balls and bag B contains 4 red and 3 green balls. One bag is taken at random and a ball is drawn and noted it is green. The probability that it comes from bag B is

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

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

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

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

Answer: C

2. There are 3 bags which are known to contain 2 white and 3 black, 4 white and 1 black, and 3 white and 7 black ball, respectively. A ball is drawn at random from one of the bags and found to be black ball. Then the probability that it was drawn from the bag containing the most black ball is $\frac{7}{15}$ b. $\frac{5}{19}$ c. $\frac{3}{4}$ d. none of these

A. $\frac{7}{15}$

B. $\frac{5}{19}$

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

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

Answer: A



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3. एक व्यक्ति के बारे में ज्ञात है कि वह 4 में से 3 बार सत्य बोलता है। वह एक पासे को उछालता है और बतलाता है कि उस पर आने वाली संख्या 6 है। इस की प्रायिकता ज्ञात कीजिए कि पासे आने वाली संख्या वास्तव में 6 है।

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

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

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

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

Answer: A



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4. In an entrance test, there are multiple choice questions. There are four possible answers to each question, of which one is correct. The probability that a student knows the answer to a question is 90%. If he gets the correct answer to a question, then find the probability that he was guessing.

A. $\frac{37}{40}$

B. $\frac{1}{37}$

C. $\frac{36}{37}$

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

Answer: B



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5. A letter is known to have come either from LONDON or CLIFTON, on the postmark only the two consecutive letters ON are eligible. The probability that it come from LONDON is

A. $\frac{5}{17}$

B. $\frac{12}{17}$

C. $\frac{17}{30}$

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

Answer: B



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6. The odds in favour of the occurrence of an event are 3:5. Find the probability of the non-occurrence of the event.

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

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

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

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

Answer: D



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7. An event has odds in favour 4 : 5, then the probability that event occurs, is

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

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

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

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

Answer: C



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8. One of the two events must occur. If the chance of one is $\frac{2}{3}$ of the other, then odds in favour of the other are

A. 1 : 3

B. 3 : 1

C. 2 : 3

D. 3 : 2

Answer: D



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9. In a horse race the odds in favour of these horse are 1:2, 1:3 and 1:4. The probability that one of the horse will win the race is

A. $\frac{37}{60}$

B. $\frac{47}{60}$

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

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

Answer: B



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10. A purse contains 4 copper coins, 3 silver coins and the second purse contains 6 copper coins and 2 silver coins. If a coins is taken out of any purse then what is the probability that it is a copper coin.

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

B. $\frac{37}{56}$

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

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

Answer: B



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11. A card

A. 17: 52

B. 52: 17

C. 9: 4

D. 4: 9

Answer: C



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12. Three ships A , B , and C sail from England to India. If the ratio of their arriving safely are 2:5, 3:7, and 6:11, respectively, then the probability of all the ships for arriving safely is $\frac{18}{595}$ b. $\frac{6}{17}$ c. $\frac{3}{10}$ d. $\frac{2}{7}$

A. $\frac{18}{595}$

B. $\frac{6}{17}$

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

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

Answer: A



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13. The odds against a certain event is 5 : 2 and the odds in favour of another event is 6 : 5. If the both the events are independent, then the probability that at least one of the events will happen is

A. $\frac{50}{77}$

B. $\frac{52}{77}$

C. $\frac{25}{88}$

D. $\frac{63}{88}$

Answer: B



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Competitive Thinking Algebra Of Events Concept Of Probabilitiy

1. Two dice are thrown simultaneously. the probability of obtaining a total score of 5 is a. $\frac{1}{18}$ b. $\frac{1}{12}$ c. $\frac{1}{9}$ d. none of these

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

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

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

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

Answer: A



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2. If two dice are thrown simultaneously, then the probability that the sum of the numbers which come upon the dice to be more than 5 is

A. $\frac{5}{18}$

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

C. $\frac{13}{18}$

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

Answer: C



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3. If two balanced dice are tossed once, the probability of the event the sum of the integers coming on the upper sides of the two dice is 9 is .

A. $\frac{7}{18}$

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

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

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

Answer: C



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4. Find the probability of getting total of 5 or 6 in a single throw of two dice.

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

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

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

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

Answer: B

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

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

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

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

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

Answer: C

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6. Two dice are rolled. What is the Probability that the score is a prime number?

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

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

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

D. None of these

Answer: B



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7. Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is even? $\frac{1}{2}$ (b) $\frac{3}{4}$ (c) $\frac{3}{8}$ (d) $\frac{5}{16}$

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

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

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

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

Answer: A



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8. The chance of the throwing at least 9 in a single throw with two dice is

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

B. $\frac{5}{18}$

C. $\frac{7}{18}$

D. $\frac{11}{18}$

Answer: B



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9. Form the word POSSESSIVE ,a letter is chosen at random. The probability of it to be S is

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

B. $\frac{4}{10}$

C. $\frac{3}{6}$

D. $\frac{4}{6}$

Answer: B



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10. A single letter is selected form the word TRICKS.The probability that it is either T or R is .

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

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

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

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

Answer: D



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11. A coin is tossed n times. The probability that head will turn up an odd number of times, is

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

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

C. $\frac{1}{2^{n-1}}$

D. None of these

Answer: A



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12. If a die is rolled three times then the probability of getting a larger number on its face the

A. $\frac{15}{216}$

B. $\frac{5}{54}$

C. $\frac{13}{216}$

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

Answer: B



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13. If 3 coins were tossed , then probability of getting 2 heads is

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

B. $\frac{2}{8}$

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

D. none of these

Answer: A



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14. Three unbiased coins are tossed. The probability of getting at least 2 tails is

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

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

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

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

Answer: C



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15. Three dice are thrown simulatenously what is the probability of obtaining a total of 17 or 18

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

B. $\frac{1}{72}$

C. $\frac{1}{54}$

D. None of these

Answer: C



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16. The corners of regular tetrahedrons are numbered 1,2,3,4. Three tetrahedrons are tossed. The probability that the sum of upward corners will be 5 is .

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

B. $\frac{5}{64}$

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

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

Answer: C



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17. A box contains 6 red marbles numbers form 1 through 6 and 4 white marbles 12 through 15. Find the probability that a marble drawn at random is white odd numbered.

A. 5

B. 5

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

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

Answer: D



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18. Two balls are selected from two black and two red balls. The probability that the two balls will have no black balls is

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

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

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

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

Answer: D



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19. A Flashlight has 10 batteries out of which 4 are dead. If 3 batteries are selected without replacement and tested, then the probability that all 3 are dead is

A. $\frac{1}{30}$

B. $\frac{2}{8}$

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

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

Answer: A



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20. From 4 red balls, 2 white balls and 4 black balls, four balls are selected. The probability of getting 2 red balls is

A. $\frac{7}{21}$

B. $\frac{8}{21}$

C. $\frac{9}{21}$

D. $\frac{10}{21}$

Answer: C



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21. A letter is taken out at random from 'ASSISTANT' and another is taken out from 'STATISTICS'. The probability that they are the same letters, is

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

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

C. $\frac{19}{90}$

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

Answer: C



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22. A bag contains 5 red balls, 3 black balls and 4 white balls. 3 balls are drawn at random . The probability that they are not of same colour is

A. $\frac{37}{44}$

B. $\frac{31}{44}$

C. $\frac{21}{44}$

D. $\frac{41}{44}$

Answer: D



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23. A box contains 6 nails and 10 nuts. Half of the nails and half of the nuts are rusted. If one item is chosen at random, then find the probability that it is rusted or is a nail.

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

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

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

D. $\frac{14}{16}$

Answer: C



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24. Two integers are chosen at random and multiplied. Find the probability that the product is an even integer.

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

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

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

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

Answer: B



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25. Write the probability that a number selected at random from the set of first 100 natural numbers is a cube.

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

B. $\frac{2}{25}$

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

D. $\frac{4}{25}$

Answer: A



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26. An integer is chosen from $\{2k / -9k \leq k \leq 10\}$. The probability that it is divisible by both 4 and 6 is

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

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

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

D. $\frac{3}{20}$

Answer: D



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27. The probability that a non-leap year selected at random will contain 53 Sunday is

A. 0

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

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

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

Answer: B



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28. Two dice, one black and one white are rolled. The probability that sum of two no is 7 and no. of black greater than the no. of white is

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

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

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

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

Answer: A



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29. Two cards are drawn at random from a pack of 52 cards. Find the probability that they are both Aces if the first card is not replaced

A. $\frac{1}{169}$

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

C. $\frac{4}{13}$

D. $\frac{3}{13}$

Answer: B



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30. A bag contains 17 tickets, numbered from 1 to 17. A ticket is drawn and another ticket is drawn without replacing the first one. Find the probability that both the ticket may show even numbers.

A. $\frac{7}{34}$

B. $\frac{8}{17}$

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

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

Answer: A



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31. If the letters of the word PROBABILITY are written down at random in a row, the probability that two B-s are retogether is

A. $\frac{2}{11}$

B. $\frac{10}{11}$

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

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

Answer: A



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32. Letters in the word HULULULU are rearranged. The probability of all three L being together is

A. $\frac{3}{20}$

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

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

D. $\frac{5}{23}$

Answer: C



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33. 26 cards numbered from 1 to 26. One card is chosen. Probability that it is not divisible by 4

A. $\frac{3}{13}$

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

C. $\frac{2}{10}$

D. $\frac{10}{13}$

Answer: D



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34. A coin is tossed four times. The probability that atleast one heads turns up is

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

B. $\frac{2}{16}$

C. $\frac{14}{16}$

D. $\frac{15}{16}$

Answer: D



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35. In a throw of three dice, the probability that at least one die shows up 1, is

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

B. $\frac{91}{216}$

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

D. $\frac{125}{216}$

Answer: B



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36. The probability that an event will fail to happen is 0.05. The probability that the event will take place on 4 consecutive occasions is

A. 0.00000625

B. 0.18543125

C. 0.00001875

D. 0.81450625

Answer: D



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37. Probability of solving of sum correctly by A ,B and C is $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{5}$ respectively. The probability that at least one of them solves it correctly is

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

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

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

D. $\frac{19}{20}$

Answer: A



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38. Three players A, B and C play a game. The probability that A, B, and C will finish the game are respectively $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$. The probability that the game is not finished is

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

B. 1

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

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

Answer: D



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39. There are 5 red balls and x black balls. If two balls are drawn at random, probability that the balls drawn are red is $\frac{5}{14}$, find the value of x ?

A. 9

B. 12

C. 3

D. 6

Answer: C



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40. There are four machines and it is known that exactly two of them are faulty. They are tested , one by one , in a random order till both the faulty machines are identified. Then the probability that only two tests are needed is

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

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

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

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

Answer: B



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41. In four schools B_1, B_2, B_3, B_4 the percentage of girls students is 12,20,13,17 respectively. From a school selected at random, one student is picked up at random and it is found that the student is a girl. The probability that the school selected is B_2 , is

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

B. $\frac{10}{31}$

C. $\frac{13}{62}$

D. $\frac{17}{62}$

Answer: B



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42. 7 white balls and 3 black balls are kept randomly in order. Find the probability that no two adjacent balls are black.

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

B. $\frac{7}{15}$

C. $\frac{2}{15}$

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

Answer: B



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Competitive Thinking Addition Theorem And Conditional Probability

1. If A and B are two events such that

$P(A) = 0.4$, $P(A \cup B) = 0.7$ and $P(A \cap B) = 0.2$ then $P(B) =$

A. 0.1

B. 0.3

C. 0.5

D. None of these

Answer: C



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2. Let A and B be two events such that $P(A) = 0.3$ and $P(A \cup B) = 0.8$.

If A and B are independent events, then $P(B) =$

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

B. $\frac{5}{7}$

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

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

Answer: B



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3. If $P(A) = 0.4P(B) = x$, $P(A \cup B) = 0.7$ and the events A and B are mutually exclusive, then $x =$

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

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

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

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

Answer: A



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4. The probabilities of three mutually exclusive events are $\frac{2}{3}$, $\frac{1}{4}$, and $\frac{1}{6}$.

Is this statement correct?

A. True

B. Wrong

C. Could be either

D. Do not know

Answer: B



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5. For two given events A and B $P(A \cap B) =$

A. Not less than $P(A) + P(B) - 1$

B. Not greater than $P(A) + P(B)$

C. Equal to $P(A) + P(B) - P(A \cup B)$

D. All of the above

Answer: D



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6. $P(A \cup B) = P(A \cap B)$ if and only if the relation between $P(A)$ and $P(B)$ is

A. $P(A) = P(\bar{A})$

B. $P(A \cup B) = P(A' \cap B')$

C. $P(A) = P(B)$

D. None of these

Answer: C



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7. In a class, 60% of the students know lesson I, 40% know lesson II and 20% know lesson I and II. A student is selected at random. The probability that the student does not know lesson I and lesson II is .

A. 0

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

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

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

Answer: C



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8. A dice is tossed once and even number has come up. The probability that it is either 2 or 4 is

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

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

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

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

Answer: B



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9. A die is thrown. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then

$P(A \cup B)$ is (1) $\frac{3}{5}$ (2) 0 (3) 1 (4) $\frac{2}{5}$

A. 1

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

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

D. 0

Answer:



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10. Three numbers are chosen at random without replacement from $\{1,2,3,\dots,10\}$. The probability that the minimum of the chosen number is 3 or their maximum is 7, is:

A. $\frac{1}{40}$

B. $\frac{3}{40}$

C. $\frac{5}{40}$

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

Answer: D



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11. A bag contains 4 red and 6 black balls. A ball is drawn at random from the bag, its colour is observed and this ball along with two additional balls of the same colour are returned to the bag, then the probability that the drawn ball is red, is

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

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

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

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

Answer: A



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12. The Probability that at least one of the events E_1 and E_2 will occur is 0.6. If the probability of their occurrence simultaneously is 0.2, then find

$$P(\overline{E_1}) + P(\overline{E_2})$$

A. 0.4

B. 0.8

C. 1.2

D. 1.4

Answer: C



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13. The probability that at least one of the events A and B occurs is $\frac{3}{5}$. If A and B occur simultaneously with probability $\frac{1}{5}$, then $P(A') + P(B')$ is

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

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

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

D. $\frac{7}{5}$

Answer: C



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14. If $P(A) = \frac{4}{5}$, $P(B) = \frac{2}{5}$, $P(A \cap B) = \frac{1}{2}$ then $P(A \cup B)$ is equal to .

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

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

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

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

Answer: A



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15. If $P(A) = 0.7$, $P(B) = 0.4$, $P(A \cap B) = 0.3$, then $P(A \cap B') =$

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

B. 1

C. 0.7

D. 0.42

Answer: A



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16. Let A and B be events for which $P(A) = x$, $P(B) = y$, $P(A \cap B) = z$, then $P(A \cup B)$ equals

A. $(1 - x)y$

B. $1 - x + y$

C. $x + y - z$

D. $1 - x + y$

Answer: C



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17. If $P(A) = 0.25$, $P(B) = 0.50$, $P(A \cap B) = 0.14$ then $P(\bar{A} \cap \bar{B})$

A. 0.38

B. 0.39

C. 0.40

D. None of these

Answer: B



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18. If $P(A) = P(B) = x$ and $P(A \cap B) = 0.14$, then $P(A' \cap B') = \frac{1}{3}$, then find the value of x

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

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

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

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

Answer: A



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19. Given $P(A) = \frac{3}{5}$ and $P(B) = \frac{1}{5}$. Find $P(A \text{ or } B)$, if A and B are mutually exclusive events.

A. 0.8

B. 0.6

C. 0.4

D. 0.2

Answer: A



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20. A coin is tossed and a die is rolled. The probability that the coin shows head and the die shows 3 is

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

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

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

D. $\frac{11}{12}$

Answer: B

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21. Two dice are thrown and two coins are tossed simultaneously. The probability of getting prime numbers on both the dice along with a head and a tail on the two coin is

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

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

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

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

Answer: A

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22. The probability of happening of an event A is 0.5 and that of B is 0.3. If A and B are mutually exclusive events, then the probability of neither A nor B is.....

A. 0.4

B. 0.5

C. 0.2

D. 0.9

Answer: C



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23. Two events A and B will be independent, if (A) A and B are mutually exclusive (B) $P(A' B') = [1 - P(A)][1 - P(B)]$ (C) $P(A) = P(B)$ (D) $P(A) + P(B) = 1$

A. A and B are mutually exclusive.

B. $P(A \cap B) = (1 - P(A))(1 - P(B))$

C. $P(A) = P(B)$

D. $P(A) + P(B) = 1$

Answer: B



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24. If A and B are two independent events such that $P(A) = 0.40$, $P(B) = 0.50$. Find $P(\text{neither } A \text{ nor } B)$.

A. 0.90

B. 0.10

C. 0.2

D. 0.3

Answer: D



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25. If A and B are events having probabilities $P(A) = 0.6$, $P(B) = 0.4$ and $P(A \cap B) = 0$ then the probability that

neither A nor B occurs is

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

B. 1

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

D. 0

Answer: D



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26. If the probabilities for A to fail in an examination is 0.2 and that for B is 0.3, then the probability that either A or B fails is

A. 0.5

B. 0.6

C. 0.6

D. None of these

Answer: B



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27. The probability that a man will live 10 more years is $\frac{1}{4}$ and the probability that his wife will live 10 more years is $\frac{1}{3}$. Then the probability that neither will be alive in 10 years, is

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

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

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

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

Answer: B



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28. A coin is tossed three times.

Event A: two heads appear

Event B: last should be head

Then identify whether events A and B are independent or not.

A. independent

B. dependent

C. both

D. none of these

Answer: B



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29. If the events A and B are independent if $P(\bar{A}) = \frac{2}{3}$ and $P(\bar{B}) = \frac{2}{7}$, then $P(A \cap B)$ is equal to

A. $\frac{4}{21}$

B. $\frac{5}{21}$

C. $\frac{1}{21}$

D. $\frac{3}{21}$

Answer: B



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30. If A and B are two independent events such that $P(B) = \frac{2}{7}$, $P(A \cup B) = 0.8$ then $P(A) =$

A. 0.1

B. 0.2

C. 0.3

D. 0.4

Answer: C



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31. For any two independent events E_1 and E_2

$P\{(E_1 \cup E_2) \cap (\overline{E_1} \cap \overline{E_2})\}$ is

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

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

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

D. None of these

Answer: A



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32. Let A and B be two events such that

$P(\overline{A \cup B}) = \frac{1}{6}$, $P(A \cap B) = \frac{1}{4}$ and $P\overline{A} = \frac{1}{4}$, where \overline{A} stands for

complement of event A. then, events A and B are

A. mutually exclusive and independent

- B. independent but not equally likely
- C. equally likely but not independent
- D. equally likely and mutually exclusive

Answer: B



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33. IF A and B are independent events of a random experiment such that

$P(A \cap B) = \frac{1}{6}$ and $P(\bar{A} \cap \bar{B}) = \frac{1}{3}$, then P(A) is equal to

- A. $\frac{1}{4}$
- B. $\frac{1}{3}$
- C. $\frac{1}{6}$
- D. $\frac{2}{3}$

Answer: B



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34. Two aeroplanes I and II bomb a target in succession. The probabilities of I and II scoring a hit correctly are 0.3 and 0.2 respectively. The second plane will bomb only if the first misses the target. The probability that the target is hit by the second plane is

- A. 0.2
- B. 0.7
- C. 0.06
- D. 0.14

Answer: D



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35. A company produces 10,000 items per day. On a particular day 2500 items were produced on machine A, 3500 on machine B and 4000 on machine C. The probability that an item produced by the machines. A, B, C

to be defective is respectively 2%, 3% and 5 %. If one item is selected at random from the output and is found to be defective, then the probability that it was produced by machine C, is

A. $\frac{10}{71}$

B. $\frac{16}{71}$

C. $\frac{40}{71}$

D. $\frac{21}{71}$

Answer: C



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36. A, B, C are any three events. If $P(S)$ denotes the probability of S happening, then $P(A \cap (B \cup C)) =$

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

B. $P(B) + P(B) + P(C) - P(B)P(C)$

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

D. None of these

Answer: C



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37. If $P(B) = \frac{3}{4}$, $P(A \cap B \cap \bar{C}) = \frac{1}{3}$ and $P(\bar{A} \cap B\bar{C}) = \frac{1}{3}$ then

$P(B \cap C) =$

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

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

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

D. $\frac{23}{60}$

Answer: A



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38. A student appears for tests 1, 2 and 3. The student is successful if he passes either in tests 1 and 2 or tests 1 and 3. The probabilities of the student passing in tests 1, 2 and 3 are p , q and $\frac{1}{2}$, respectively. If the probability that the student is successful is $\frac{1}{2}$, then

A. $p(1 + q) = 1$

B. $q(1 + p) = 1$

C. $pq = 1$

D. $\frac{1}{p} + \frac{1}{q} = 1$

Answer: A

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39. From a pack of 52 cards, two are drawn one by one without replacement. Find the probability that both of them are kings.

A. $\frac{2}{13}$

B. $\frac{1}{169}$

C. $\frac{1}{221}$

D. $\frac{30}{221}$

Answer: C



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40. 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. $\frac{1}{26}$

B. $\frac{17}{2704}$

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

D. None of these

Answer: C

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41. A bag contains 3 black and 4 white balls. Two balls are drawn one by one at random without replacement. The probability that the second drawn ball is white, is

A. $\frac{4}{49}$

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

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

D. $\frac{12}{49}$

Answer: C

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42. The probability of India winning a test match against West Indies is $\frac{1}{2}$. Assuming independence from match to match, find the probability that in a match series Indias second win occurs at the third test.

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

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

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

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

Answer: C



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43. The probability that A speaks truth is $\frac{4}{5}$, while this probability for B is $\frac{3}{4}$. The probability that they contradict each other when asked to speak on a fact is

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

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

C. $\frac{7}{20}$

D. $\frac{3}{20}$

Answer: C



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44. The probability that A speaks truth is $\frac{4}{5}$ while this probability for B is $\frac{3}{5}$. The probability of at least one of them is true when asked to speak on an event is

A. $\frac{4}{25}$

B. $\frac{2}{25}$

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

D. $\frac{23}{25}$

Answer: D



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45. X speaks truth in 60% and Y in 50% of the cases. Find the probability that they contradict each other narrating the same incident.

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

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

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

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

Answer: C



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46. A speaks the truth in 70% cases and B in 80% cases. The probability that they will contradict each other in describing a single event is

A. 0.56

B. 0.42

C. 0.4

D. 0.38

Answer: D

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47. In a certain town, 60% of the families own a car, 30% own a house and 20% own both car and house. If a family is randomly chosen, then what is the probability that this family owns a car or a house but not both?

A. 0.5

B. 0.7

C. 0.1

D. 0.9

Answer: A

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48. A husband and wife appear in an interview for two vacancies for the same post. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is the probability that Both of them will be selected? Only one of them will be selected? None of them will be selected?

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

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

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

D. None of these

Answer: B



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49. A problem is given to 3 students. Their chances of solving it individually are $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$. The probability that the problem will be solved is (A) $\frac{2}{5}$ (B) $\frac{3}{5}$ (C) $\frac{4}{5}$ (D) $\frac{1}{5}$

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

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

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

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

Answer: D



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50. The probabilities of solving a question by three students are $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{6}$ respectively. The probability of the equation being solved will be $\frac{33}{48}$ (b) $\frac{35}{48}$ (c) $\frac{31}{48}$ (d) $\frac{37}{48}$

A. $\frac{33}{48}$

B. $\frac{35}{48}$

C. $\frac{31}{48}$

D. $\frac{37}{40}$

Answer: A

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51. If $4P(A) = 6P(B) = 10P(A \cap B) = 1$ then $P\left(\frac{B}{A}\right) =$

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

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

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

D. $\frac{19}{10}$

Answer: A

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52. If $P(S) = 0.3$, $P(T) = 0.4$, S and T are independent events, then $P(S/T)$

A. 0.2

B. 0.3

C. 0.12

D. 0.4

Answer: B



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53. If $P(A \cap B) = \frac{7}{10}$ and $P(B) = \frac{17}{20}$, then $P(A/B)$ equals to

A. $\frac{17}{20}$

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

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

D. $\frac{14}{17}$

Answer: D



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54. it is given that the events A and B are such that

$$P(A) = \frac{1}{4}, P\left(\frac{A}{B}\right) = \frac{1}{2} \text{ and } P\left(\frac{B}{A}\right) = \frac{2}{3} \text{ then } P(B) =$$

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

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

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

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

Answer: D



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55. If two events A and B are such that

$P(A^c) = 0.3$, $P(B) = 0.4$, and $P(A \cap B^c) = 0.5$, then find the value of $P[B/(A \cup B^c)]$.

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

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

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

D. None of these

Answer: C



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56. A coin is tossed three times in succession. If E is the event that there are at least two heads and F is the event in which first throw is a head, then $P(E/F)$ is equal to:

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

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

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

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

Answer: A



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57. Ram is visiting a friend. Ram knows that his friend has 2 children and 1 of them is a boy. Assuming that a child is equally likely to be a boy or a girl, then the probability that the other child is a girl is

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

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

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

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

Answer: A



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58. One ticket is selected at random from 50 tickets numbered 00, 01, 02, ... , 49. Then the probability that the sum of the digits on the selected ticket is 8, given that the product of these digits is zero, equals (1) $\frac{1}{14}$ (2) $\frac{1}{7}$ (3) $\frac{5}{14}$ (4) $\frac{1}{50}$

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

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

C. $\frac{5}{14}$

D. $\frac{1}{50}$

Answer: A



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59. In a class, 40% of students study maths and science and 60 % of student study maths. What is the probability of a student studying science given the student is already studying maths?

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

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

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

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

Answer: C



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60. If A and B are two events such that $P(A \cup B) = P(A \cap B)$ then the true relation is

A. $P(A) + P(B) = 0$

B. $P(A) + P(B) = P(A)P\left(\frac{B}{A}\right)$

C. $P(A) + P(B) = 2P(A)P\left(\frac{B}{A}\right)$

D. None of these

Answer: C



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61. For any two events A and B in a sample space

A. $P\left(\frac{A}{B}\right) \geq \frac{P(A) + P(B) - 1}{P(B)}$, $P(B) \neq 0$ is always true

B. $P(A \cap \bar{B}) = P(A) - P(A \cap B)$ does not hold

C. $P(A \cup B) = 1 - P(\bar{A})P(\bar{B})$, if A and B are a disjoint

D. None of these

Answer: A



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62. If E and F are independent events such that $0 < P(E) < 1$ and $0 < P(F) < 1$, then

A. E and F^c (the complement of the event F) are independent

B. E^c and F^c are independent

C. $P\left(\frac{E}{F}\right) + P\left(\frac{E^c}{F^c}\right) = 1$

D. All of the above

Answer: D

63. Consider two events A and B such that $P(A) = \frac{1}{4}$, $P\left(\frac{B}{A}\right) = \frac{1}{2}$, $P\left(\frac{A}{B}\right) = \frac{1}{4}$. For each of the following statement, which is true.

I. $P(A/B) = \frac{3}{4}$

II. The events A and B are mutually exclusive.

III. $P(A/B) + P(A/B) = 1$

A. I only

B. I and II

C. I and III

D. II and III

Answer: A

64. A survey of people in a given region showed that 20% were smokers. The probability of death due to lung cancer, given that a person smoked, was 10 times the probability of death due to lung cancer, given that a person did not smoke. If the probability of death due to lung cancer in the region is 0.006, what is the probability of death due to lung cancer given that a person is a smoker?

A. $\frac{1}{140}$

B. $\frac{1}{70}$

C. $\frac{3}{140}$

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

Answer: C



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65. A man is known to speak the truth 2 out of 3 times. He throws a die and reports that it is six. Then the probability that it is actually '5'

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

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

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

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

Answer: C



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66. A bag 'A' contains 2 white and 3 red balls and bag 'B' contains 4 white and 5 red balls. One ball is drawn at random from a randomly chosen bag and is found to be red. The probability that it was drawn from bag 'B' was

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

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

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

D. $\frac{25}{52}$

Answer: D



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67. A bag X contains 2 white and 3 black balls and another bag Y contains 4 white and 2 black balls. One bag is selected at random and a ball is drawn from it. Then the probability for the ball chosen be white is -

A. $\frac{2}{15}$

B. $\frac{7}{15}$

C. $\frac{8}{15}$

D. $\frac{14}{15}$

Answer: C



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68. A student answers a multiple choice question with 5 alternatives, of which exactly one is correct. The probability that he knows the correct answer is p , $0 < p < 1$. If he does not know the correct answer, he randomly ticks one answer. Given that he has answered the question correctly, the probability that he did not tick the answer randomly, is

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

B. $\frac{5p}{3p + 2}$

C. $\frac{5p}{4p + 1}$

D. $\frac{4p}{3p + 1}$

Answer: C



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69. In an entrance test, there are multiple choice questions. There are four possible answers to each question, of which one is correct. The probability that a student knows the answer to a question is 90%. If the

gets the correct answer to a question, then find the probability that he was guessing.

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

B. $\frac{36}{37}$

C. $\frac{1}{37}$

D. $\frac{37}{40}$

Answer: C



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70. A person goes to office either by car, scooter, bus or train probability of which being $\frac{1}{7}$, $\frac{3}{7}$, $\frac{2}{7}$ and $\frac{1}{7}$ respectively. Probability that he reaches office late, if he takes car, scooter, bus or train is $\frac{2}{9}$, $\frac{1}{9}$, $\frac{4}{9}$ and $\frac{1}{9}$ respectively. Given that he reached office in time, then what is the probability that he travelled by a car?

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

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

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

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

Answer: A



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71. In a party 23 persons take their seats at a round table. The odds against two particular persons sitting together are :

A. 10: 1

B. 1: 11

C. 9: 10

D. None of these

Answer: A



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72. Odds 9 to 5 against a person who is 40 years old living till he is 70 and 4 to 3 against another person now 50 till he will be living 80. Probability that one of them will be alive next 30 years .

A. $\frac{59}{91}$

B. $\frac{44}{91}$

C. $\frac{51}{91}$

D. $\frac{32}{91}$

Answer: B



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73. If odds against solving a question by three students are 2:1, 5:2, and 5:3, respectively, then probability that the question is solved only by one student is $\frac{31}{56}$ b. $\frac{24}{56}$ c. $\frac{25}{56}$ d. none of these

A. $\frac{31}{56}$

B. $\frac{24}{56}$

C. $\frac{25}{56}$

D. None of these

Answer: C



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Competitive Thinking Miscellaneous

1. A quadratic $ax^2 + bx + c = 0$ distinct coefficient is formed . If a , b, c are chosen form the number 2,3,5 them the probability that the equation has real roots is

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

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

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

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

Answer: A



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2. Given that $x \in [0, 1]$ and $y \in [0, 1]$. Let A be the event of (x, y) satisfying $y^2 \leq x$ and B be the events of (x, y) satisfying $x^2 \leq y$. Then .

A. $P(A \cap B) = \frac{1}{2}$

B. A, B are exhaustive

C. A, B are mutually exclusive

D. A, B are independent

Answer: A



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3. An ellipse of eccentricity $\frac{2\sqrt{2}}{3}$ is inscribed in a circle. A point is chosen inside the circle at random. The probability that the point lies outside the ellipse is

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

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

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

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

Answer: B



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Evaluation Test

1. Three numbers are chosen from 1 to 30. The probability that they are not consecutive is

A. $\frac{142}{145}$

B. $\frac{144}{145}$

C. $\frac{142}{145}$

D. $\frac{1}{145}$

Answer: B



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2. Let E and F be two independent events. The probability that exactly one of them occurs is $11/25$ and the probability if none of them occurring is $2/25$. If $P(T)$ denotes the probability of occurrence of the event T ,

then $P(E) = \frac{4}{5}, P(F) = \frac{3}{5}$ $P(E) = \frac{1}{5}, P(F) = \frac{2}{5}$

$$P(E) = \frac{2}{5}, P(F) = \frac{1}{5} \quad P(E) = \frac{3}{5}, P(F) = \frac{4}{5}$$

A. $P(E) = \frac{4}{5}, P(F) = \frac{3}{5}$

B. $P(E) = \frac{1}{5}, P(F) = \frac{2}{5}$

C. $P(E) = \frac{2}{5}, P(F) = \frac{1}{5}$

$$D. P(E) = \frac{6}{5}, P(F) = \frac{1}{5}$$

Answer: A



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3. One Indian and four American men and their wives are to be seated randomly around a circular table. The conditional probability that the given that each American man is seated adjacent to his wife is ,

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

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

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

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

Answer: C



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4. Four cards are drawn from a pack of 52 playing cards. Find the probability (correct upto two places of decimals) of drawing exactly one pair.

A. 0.4

B. 0.5

C. 0.8

D. None of these

Answer: D



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5. Three numbers are chosen at random without replacement from $\{1,2,3,\dots,10\}$. The probability that the minimum of the chosen number is 3 or their maximum is 7, is:

A. $\frac{7}{40}$

B. $\frac{5}{40}$

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

D. None of these

Answer: C



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6. The probability that in a year of *22nd* century chosen at random, there will be 53 Sundays is

A. $\frac{3}{28}$

B. $\frac{2}{28}$

C. $\frac{7}{28}$

D. $\frac{5}{28}$

Answer: D



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7. Let A , B and C be three events such that $P(A) = 0.3$, $P(B) = 0.4$, $P(C) = 0.8$, $P(A \cap B) = 0.08$, $P(A \cap C) = 0.2$. If $P(A \cup B \cup C) \geq 0.75$, then show that $P(B \cap C)$ satisfies

- A. $P(B \cap C) \leq 0.23$
- B. $P(B \cap C) \leq 0.48$
- C. $0.23 \leq P(B \cap C) \leq 0.48$
- D. $0.23 \leq P(B \cap C) \geq 0.48$

Answer: C



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8. A signal which can be green or red with probability $\frac{4}{5}$ and $\frac{1}{5}$ respectively, is received by station A and then transmitted to station B. The probability of each station receiving the signal correctly is $\frac{3}{4}$. If the signal received at station B is green, then the probability that the original signal was green is (a) $\frac{3}{5}$ (b) $\frac{6}{7}$ (c) $\frac{20}{23}$ (d) $\frac{9}{20}$

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

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

C. $\frac{20}{23}$

D. $\frac{9}{20}$

Answer: C



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