



MATHS

BOOKS - MARVEL MATHS (HINGLISH)

PROBABILITY

Mcqs

1. If the function $P(X=x) = kx, \dots, x=1,2,3,4,5=0$...otherwise is a probability mass function (p.m.f.) ,then : $k=...$

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

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

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

D. none of these

Answer: B



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2. Determine k such that the following function is a p.m.f

$$P(X = x) = k \left(\frac{2^x}{x!} \right), x = 0, 1, 2, 3$$

=0 otherwise .

A. $\frac{1}{19}$

B. $\frac{2}{19}$

C. $\frac{3}{19}$

D. none of these

Answer: C



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3. Find k , such that the function

$$P(x) = \left\{ \left(k \binom{4}{x} \right), x = 0, 1, 2, 3, 4, k > 0 \right\}, (0, \text{ otherwise.})$$

is a probability mass function (p.m.f.)

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

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

C. $\frac{1}{64}$

D. none of these

Answer: B



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4. The p.m.f. of a r.v. X is as follows :

$$P(X = 0) = 3k^3, P(X = 1) = 4k - 10k^2, P(X = 2) = 5k - 1,$$

$$P(X = x) = 0 \text{ for any other values of } x, \text{ then } k =$$

A. 1

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

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

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

Answer: C



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5. If the p.d.f. of a c.r.v. X is

$$f(x) = \begin{cases} kx^2(1 - x^3), & 0 \leq x \leq 1 \\ 0, & \textit{elsewhere} \end{cases}$$

then :k...

A. 6

B. 5

C. 4

D. 3

Answer: A



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6. The p.d.f. of a c.r.v. X is

$$f(x) = \begin{cases} k \cdot \sin\left(\frac{\pi x}{5}\right), & 0 \leq x \leq 5 \\ 0, & \text{elsewhere} \end{cases}$$

then :k=.....

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

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

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

D. none of these

Answer: C



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7. The p.m.f. of a r.v. X is $P(x) = \begin{cases} kx, & x = 1, 2, 3 \\ 0, & \text{otherwise} \end{cases}$, then $k =$

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

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

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

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

Answer: A



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8. The p.d.f. of a.c.r. X is

$$f(x) = \begin{cases} \frac{1}{2}, & 0 < x < 2 \\ 0, & \textit{otherwise} \end{cases}$$

Then $P(X < 1.5)$ and $P(X > 1)$ are

A. 0.25, 0.50

B. 0.75, 0.5

C. 0.6, 0.27

D. none of these

Answer: B



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9. If the p.d.f. of a c.r.v. X is

$$f(x) = \begin{cases} \frac{1}{4}, & -1 < x < 3 \\ 0, & \textit{otherwise} \end{cases}$$

then : $P(X > 0) = .$

A. 0.25

B. 0.50

C. 0.75

D. 1

Answer: C



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10. if the p.d.f of a a.c.r.v X is

$$f(x) = \begin{cases} \frac{x}{8}, & 0 < x < 4 \\ 0, & \textit{otherwise} \end{cases}$$

then $P(X < 1)$ and $(P(X \geq 2))$ are

A. $\frac{1}{16}, \frac{3}{4}$

B. $\frac{1}{4}, \frac{3}{8}$

C. $\frac{5}{8}, \frac{7}{16}$

D. none of these

Answer: A



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11. If a curve X has probability density function (pdf)

$$f(x) = \begin{cases} ax, & 0 \leq x \leq 1 \\ a, & 1 \leq x \leq 2 \\ 3a - ax, & 2 \leq x \leq 3 \\ 0, & \text{otherwise} \end{cases}$$

Then, a is equal to

A. 1

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

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

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

Answer: C



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12. The p.m.f. of a r.v. X is $P(x) = \begin{cases} \frac{1}{15}, x = 1, 2, \dots, 15 \\ 0, \text{ otherwise} \end{cases}$, then $\text{Var}(X) =$

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

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

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

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

Answer: D



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13. P.d.f. of a c.r.v X is

$$f(x) = \begin{cases} 6x(1-x), & 0 \leq x \leq 1 \\ 0, & \text{elsewhere} \end{cases}$$

If $P(X < a) = P(X > a)$ then : a =..

A. 1

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

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

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

Answer: B



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14. A c.r.v X has the p.d.f

$$f(x) = \begin{cases} 3x^2, & 0 \leq x \leq 1 \\ 0, & \text{elsewhere} \end{cases}$$

If $P(X \leq a) = P(X > a)$, then : a = ..

A. $\frac{1}{2^{\frac{1}{3}}}$

B. 1

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

D. $\frac{1}{4^{\frac{1}{3}}}$

Answer: A



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15. The life in hours of a radio tube is continuous random variable with pdf

$$f(x) = \begin{cases} \frac{100}{x^2}, & x \geq 100 \\ 0, & \text{else where} \end{cases}$$

Then, the probability that the life of tube will than 200 h if it is known that the tube is still functioning after 150 h of services is

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

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

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

D. none of these

Answer: A



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16. The amount of bread x (in hundreds of pounds) that a bakery sells in a day has a P.d.f :

$$f(x) = \begin{cases} kx, & 0 \leq x < 5 \\ k(10 - x), & 5 \leq x < 10 \\ 0, & \text{otherwise} \end{cases}$$

Then the probability that the amount of bread that will be sold tomorrow will be less than 500 pound is ..

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

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

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

D. none of these

Answer: C



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17. The p.m.f. of a r.v. X is $P(x) = \begin{cases} \frac{c}{x^3}, x = 1, 2, 3 \\ 0, \text{ otherwise} \end{cases}$, then $E(X) =$

A. $\frac{343}{297}$

B. $\frac{294}{251}$

C. $\frac{297}{294}$

D. none of these

Answer: B



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18. The p.m.f. of a r.v. X is $P(x) = \begin{cases} kx^2, x = 1, 2, 3, 4 \\ 0, \text{ otherwise} \end{cases}$, then $E(X) =$

A. 1.6111

B. 0.49

C. 0.59

D. 0.69

Answer: D

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19. A fair coin is tossed 3 times. A person receives Rs. X^2 if he gets X number of heads in all. His expected gain is

- A. 1
- B. 2
- C. 3
- D. 4

Answer: C

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20. The p.d.f. of X is $f(x) = \begin{cases} \frac{x^2}{18}, & -3 < x < 3 \\ 0, & \text{otherwise} \end{cases}$, then $P(|X| < 1) =$

A. $\frac{1}{27}$

B. $\frac{1}{28}$

C. $\frac{1}{29}$

D. none of these

Answer: A



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21. The p.d.f. of X is $f(x) = \begin{cases} \frac{x+2}{18}, & -2 < x < 4 \\ 0, & \text{otherwise} \end{cases}$, then $P(|X| < 1) =$

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

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

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

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

Answer: B



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22. Given : $f(x) = \begin{cases} \frac{1}{x^2}, & 1 < x < \infty \\ 0, & \text{elsewhere} \end{cases}$ is p.d.f. of c.r.v X

If $A: 1 < x < 2$ and $B: 4 < x < 5$, then: $P(A \cup B) = \dots$

A. 0.33

B. 0.44

C. 0.55

D. 0.66

Answer: C



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23. The p.d.f. of a r.v. X is $f(x) = \begin{cases} \frac{1}{x^2}, & 1 < x < \infty \\ 0, & \text{otherwise} \end{cases}$, then F(x) =

A. $\frac{1}{x} - 1$

B. $1 - \frac{1}{x}$

C. $x + \frac{1}{x}$

D. $x - \frac{1}{x}$

Answer: B



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24. The p.d.f of a random variable X is given by

$$f(x) = 3(1 - 2x^2), 0 < x < 1$$

= 0, otherwise

Find $P\left(\frac{1}{4} < X < \frac{1}{3}\right)$

A. $\frac{216}{864}$

B. $\frac{179}{864}$

C. $\frac{179}{216}$

D. none of these

Answer: B



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25. Given the p.d.f of a continuous r.v. X was $f(x) = \frac{x^2}{3}, -1 < x < 2$
=0, Otherwise

Determine the c.d.f of X and hence find .

$P(X < 1), P(X \leq -2), P(X > 0), P(1 < X < 2)$

A. $2x - 3x^2$

B. $3x - 4x^3$

C. $3x - 2x^3$

D. none of these

Answer: C

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26. The p.m.f. of a r.v. is

$$P(X = x) = \begin{cases} \frac{1}{2^5} {}^5C_x, x = 0, 1, \dots, 5 \\ 0, \text{ otherwise} \end{cases}, \text{ then}$$

A. $a < b$

B. $a >$

C. $a=b$

D. none of these

Answer: C



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27. The p.m.f. of a r.v. X is $P(x) = \begin{cases} \frac{2x}{n(n+1)} & x = 1, 2, \dots, n \\ 0 & \text{otherwise} \end{cases}$

Then $E(X) =$

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

B. $\frac{n}{3} + \frac{1}{6}$

C. $\frac{n}{2} + \frac{1}{5}$

D. none of these

Answer: B



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28. The pdf of a curve X is

$$f(x) = \begin{cases} \frac{k}{\sqrt{x}}, & 0 < x < 4 \\ 0, & x \leq 0 \text{ or } x \geq 4 \end{cases}$$

Then, $P(X \geq 1)$ is equal to

A. 0.2

B. 0.3

C. 0.4

D. 0.5

Answer: D



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29. If the p.d.f of a c.r.v X is

$$f(x) = \frac{3 + 2x}{18}, 2 \leq x \leq 4 = 0 \text{ .. Otherwise ,}$$

then the Mathematical Expectation of X is

A. $\frac{83}{27}$

B. $\frac{27}{83}$

C. $\frac{87}{23}$

D. $\frac{38}{72}$

Answer: A



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30. If the p.d.f. of a r.v. X is

$$f(x) = K \cdot e^{-\theta x}, \theta > 0, 0 \leq x < \infty$$

= 0, otherwise

Then, K =

A. 1

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

C. θ

D. 2θ

Answer: C



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31. If p.d.f. of a c.r.v. X is

$$f(x) = ae^{-ax}, x \geq 0, a > 0$$

= 0, otherwise.

If $P(0 < X < K) = 0.5$, then $K =$

A. $\frac{1}{2} \cdot \log a$

B. $\frac{1}{a} \cdot \log 2$

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

D. $\frac{1}{a} \cdot \log a$

Answer: B



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32. The time (X) one has to wait for a bus at a downtown bus -stop has the following P.d.f .

$$f(x) = \begin{cases} 0, & x < 0 \\ \frac{1}{9}(x + 1), & 0 \leq x < 1 \\ \frac{4}{9}\left(x - \frac{1}{2}\right), & 1 \leq x < \frac{3}{2} \\ \frac{4}{9}\left(\frac{5}{2} - x\right), & \frac{3}{2} \leq x < 2 \\ \frac{1}{9}(4 - x), & 2 \leq x < 3 \\ \frac{1}{9}, & 3 \leq x < 6 \\ 0, & x \geq 6 \end{cases}$$

If $A: 0 \leq x \leq 2$, $B: 1 \leq x \leq 3$

then the values of $P(B|A)$ and $P(A' \cap B')$ are ..

A. $\frac{1}{4}, \frac{3}{4}$

B. $\frac{2}{3}, \frac{1}{3}$

C. $\frac{1}{6}, \frac{5}{6}$

D. none of these

Answer: B



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33. A random variable X takes the values $0, 1, 2, 3, \dots$, with probability

$$P(X = x) = k(x + 1) \left(\frac{1}{5}\right)^x, \text{ where } k \text{ is a constant, then } P(X = 0) \text{ is.}$$

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

B. $\frac{16}{25}$

C. $\frac{18}{25}$

D. $\frac{19}{25}$

Answer: B



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34. A random variate X takes the values $0, 1, 2, 3$ and its mean is 1.3 . If

$$P(X = 3) = 2P(X = 1) \text{ and } P(X = 2) = 0.3, \text{ then } P(X = 0) \text{ is equal}$$

to

A. 0.1

B. 0.2

C. 0.3

D. 0.4

Answer: D



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35. If in a distribution each x is replaced by corresponding value of $f(x)$, then the probability of getting $f(x)$, when the probability of getting x_i is p_i , is.

A. p_i

B. $f(p_i)$

C. $f\left(\frac{1}{p_i}\right)$

D. none of these

Answer: A



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36. If the range of a random variable X is $0, 1, 2, 3$, at

$P(X = K) = \left(\frac{K+1}{3^k}\right)$ for $k \geq 0$, then a equals

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

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

C. $\frac{8}{27}$

D. $\frac{16}{81}$

Answer: B



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37. If X follows a binomial distribution with parameters $n = 6$ and p . If

$4(P(X = 4)) = P(X = 2)$, then $P =$

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

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

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

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

Answer: D



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38. Seven chits are numbered 1 to 7. Four chits are drawn one by one with replacment. The probability that the least number appearing on any selected chit is 5 is :

A. $\left(\frac{3}{7}\right)^4$

B. $\left(\frac{6}{7}\right)^3$

C. $\frac{5 \times 4 \times 3}{7^3}$

D. $\left(\frac{3}{4}\right)^4$

Answer: A



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39. An unbiased die is thrown . X dentes the number on the face of the die . Then $E(x)$ where $x \geq 1$ is :

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

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

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

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

Answer: C



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40. Three numbers are chosen from 1 to 20. Find the probability that they are consecutive.

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

B. $\frac{3}{190}$

C. $\frac{1}{57}$

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

Answer: B



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41. Two cards are drawn from a well shuffled pack of 52 cards. The probability that one is heart card and the other is a king is p , then the value of $104p$ is ____.

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

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

C. $\frac{2}{51}$

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

Answer: D



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42. A and B are two events such that $P(A \cup B) = 0.5, P(A \cap B) = 0.3, P(B) = 0.4$ then $P(A' | B') =$

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

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

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

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

Answer: D



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43. Given $P(A \cup B) = 0.6, P(A \cap B) = 0.2$, then probability of exactly one of the event occurs is

A. 0.3

B. 0.2

C. 0.4

D. 0.8

Answer: C



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44. From a group of 8 boys and 3 girls, a committee of 5 members to be formed. Find the probability that 2 particular girls are included in the committee.

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

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

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

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

Answer: A



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45. If $P(A) = 0.8$, $P(B) = 0.6$, $P(A \cap B) = 0.5$, then $P(B'|A) =$

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

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

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

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

Answer: B



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46. If two dice are thrown together. Then, the probability that the sum of the numbers appearing on them is a prime number, is

A. $1/2$

B. $3/7$

C. $5/12$

Answer: C



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47. A four digit number is to be formed using the digits 1,2,3, 4, 5,6,7 (no digit is being repeated in any number) . Then , the probability that it is > 4000 , is

A. $3/2$

B. $1/2$

C. $4/7$

D. $3/7$

Answer: C



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48. Two coins are tossed simultaneously. Then, the value of $E(X)$, where X denotes the number of heads is

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

B. 2

C. 1

D. 1.05

Answer: C



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49. If $P(A) = 0.4, P(B) = 0.8$ and $P(A \cap B) = 0.3$ then the probability that exactly one of them occurs is

A. 0.2

B. 0.4

C. 0.6

D. 0.1

Answer: C



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50. An urn contains 4 black and 6 red balls. If two balls are drawn at random from the urn without replacement ,then the probability that both are black is

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

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

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

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

Answer: C



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51. Two fair coins are tossed .if X represents the number of tails obtained then $V(X)=$

A. 2

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

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

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

Answer: D



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Illustrative Examples

1. If a fair coin is tossed twice, find the probability that both outcomes are the same.



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2. Three unbiased coins are tossed simultaneously. State the sample space and mention the events A and B , where A is said to have occurred when an outcome is 2 heads and 1 tail, B is said to have occurred when an outcome is 2 or more heads. Find the probability of $A \cup B$.

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3. If two unbiased dice are rolled, find the probability that the total score is a prime number.

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4. If two perfect dice are cast, find the probability that they show consecutive numbers.

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5. If a card is drawn at random from a full pack of playing cards, find the probability that it is a queen or a heart.

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6. Two cards are drawn at random from a well-shuffled pack of 52 playing cards. Find the probability that one is a spade and the other is a heart.

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7. Three cards are drawn at random from a well-shuffled pack of 52 cards. Find the probability that the cards contain at least 2 red cards.

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8. From a bag containing 5 white, 3 black and 2 red balls, two balls are drawn at random. Find the probability that both are white.



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9. An urn contains 6 black and an unknown number of x of yellow balls. When two balls are drawn at random, the probability of both being black is $5/26$. Find x .

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10. From a group of 5 men and 3 women, a committee of 4 persons is to be selected randomly. Find the probability that there is a majority of (i) men (ii) women.

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11. A team of 5 is to be selected from 8 boys and 3 girls. Find the probability that it includes two particular girls.

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12. If 9 boys and 5 girls are to be seated in a row, find the probability that 4 particular persons never sit together (not even two of them.)

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13. If 8 boys and 2 girls are to be seated in a row for a photograph, find the probability that the girls sit together.

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14. If two fair dice are thrown, find the probability that the total score is a one-digit number.

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15. A room has 4 sockets for electric lamps. From a collection of 11 light bulbs of which 6 are good, 4 bulbs are selected at random and put in the

sockets. Find the probability that the room does not suffer from a complete black-out.

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16. If A and B are any two events of a sample space S that $P(A) = \frac{2}{5}$, $P(B) = \frac{1}{3}$ and $P(A \cap B) = \frac{2}{15}$, find $P(A' \cap B')$.

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17. If A and B are any two events of a sample space S such that $P(A) = \frac{2}{3}$, $P(B) = \frac{1}{3}$ and $P(A \cup B) = \frac{5}{8}$, find $P(A' \cup B')$

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18. If A and B are any two events of a sample space S such that $P(A) = 0.698$, $P(B) = 0.439$ and $P(A \cap B) = 0.327$, find $P(A \cap B')$

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19. The probability that a person will get an electric contract is $\frac{2}{5}$ and the probability that he will not get plumbing contract is $\frac{4}{7}$. If the probability of getting at least one contract is $\frac{2}{3}$, what is the probability that he will get both.

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20. A ticket is drawn at random from 30 tickets numbered from 1 to 30. Find the probability that the number on the ticket drawn is divisible by 5 or 6.

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21. If A and B are any two events of a sample space S such that $P(A) = 0.8$, $P(B) = 0.6$ and $P(A \cap B) = 0.5$, find $P(A \cup B)$ and $P(\dots)$.

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22. If A and B are any two events in a sample space S such that $P(A) = \frac{2}{3}$, $P(B) = \frac{3}{5}$ and $P(A \cap B) = \frac{2}{5}$, find $P(A' \cap B')$

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23. If A and B are independent events of a sample space S such that $P(A \cup B) = 0.7$ and $P(A \cap B) = 0.2$, find $P(A)$ and $P(B)$

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24. If A, B, C are three independent events such that $P(A \cap B) = \frac{1}{2}$, $P(B \cap C) = \frac{1}{3}$ and $P(C \cap A) = \frac{1}{6}$, find $P(A)$, $P(B)$

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25. Three purses respectively contain 1 silver and 3 copper, 2 silver and 4 copper, 3 silver and 1 copper coin respectively. If a coin is taken from one

of the three purses selected at random, find the probability that it is a silver coin.

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26. A box contains 8 tickets bearing numbers 1,2,3,5,7,8,9,10. A ticket is drawn at random and kept aside. Then a second ticket is drawn from the box. Find the probability that both the tickets drawn show odd numbers.

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27. Bag - A contains 3 green and 5 red balls, and Bag - B contains 2 green and 7 red balls. A ball is selected at random from Bag - A and transferred to Bag - B. Then a ball is drawn at random from Bag - B. Find the probability that it is a green ball.

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28. The probability of A winning a race is $\frac{1}{2}$, and that for B is $\frac{1}{3}$. Find the probability that both win



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29. The probability of A winning a race is $\frac{1}{2}$, and that for B is $\frac{1}{3}$. Find the probability that only A wins



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30. The probability of A winning a race is $\frac{1}{2}$, and that for B is $\frac{1}{3}$. Find the probability that only B wins



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31. The probability of A winning a race is $\frac{1}{2}$, and that for B is $\frac{1}{3}$. Find the probability that only one of them wins

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32. The probability of A winning a race is $\frac{1}{2}$, and that for B is $\frac{1}{3}$. Find the probability that none of them wins

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33. The probability of A winning a race is $\frac{1}{2}$, and that for B is $\frac{1}{3}$. Find the probability that at least one of them wins.

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34. A speaks truth in 80% of the cases while B speaks truth in 60% of the cases. Find the probability that they will contradict each other while stating the same fact.



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35. Three urns respectively contain 3 white and 2 black, 2 white and 3 black, and 1 white and 4 black balls. One ball is drawn from each urn. Find the probability that the selection contains 1 black and 2 white balls.



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36. A bag contains 3 white and 4 black balls. One ball is drawn and kept aside. Then one white and one black balls are added to the bag. Now, one ball is drawn again. Find the probability that the second ball drawn is white.



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37. Two urns respectively contain 3 white, 7 red, 15 black balls and 10 white, 6 red, 9 black balls. One ball is taken from each urn. Find the probability that both be of the same colour.



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38. A company produces steel pipes in three plants with daily production volumes of 500, 1000 and 2000 units respectively. It is known that the fractions of defective outputs produced by the three plants are 0.005, 0.008 and 0.010 respectively. If a pipe selected from a day's total production is found to be defective, find the probability that it came from the first plant.



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39. A class contains 10 men and 20 women, among which half the men and half of the women have brown-eyes. Find the probability that a person, chosen at random, is a man or has brown eyes.



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40. If a die rolled 3 times, what is the probability of number 5 coming up at least once.



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41. A speaks truth in 60% cases and 'B' in 70% cases. In what percentages of cases are they likely to contradict each other in stating the same fact?



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42. Three groups of workers contain 3 men and one woman, 2 men and 2 women and 1 man and 3 women respectively. One worker is selected at random from each group. What is the probability that the group selected consists of 1 man and 2 women?



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43. A point is chosen at random inside a circle. Find the probability that the point is closer to the centre of the circle than to its circumference.



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44. v31



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45. There are two bage. One bag contains 4 white and 2 black balls. Second bag contains 5 white and 4 black balls. Two balls are transferred from first bag to second bag. Then one ball is taken from the second bag. Find the probability that it is a white ball.



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46. A bag contains 8 red and 5 white balls. Two successive drawings of 3 balls are made such that (i) balls are replaced before the second draw, (ii) the balls are not replaced before the second draw. Find the probability that the first drawing will give 3 white and second 3 red balls.

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47. Three machines A, B, C produce respectively 50%, 30%, and 20% of the total no. of items of a factory. The % of defective outputs of these machines is 3%, 4%, 5% respectively. If an item is selected at random, (i) what is the probability that it is defective?

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48. Four digits 1, 2, 4, and 6, are selected at random to form four digit number. What is the probability that the number so formed, would be divisible by 4? (Repetition is allowed.)

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49. Anita and Binita stand in a line with 7 other people. What is the probability that there are 4 persons between them?



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50. The odds in favour of one student passing at a test are 3:7. The odds against another student passing at are 3:5. What are the odds that (i) both pass, (ii) only the first student passes, (iii) at least one of them will pass.



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51. Out of 1000 persons born only 800 reach that age of 10, and out of every 1000 who reach the age of 10, 850 reach the age 40, out of every thousand who reach the age of 40, 25 die in one year. What is the probability that a person would attain the age of 41?



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Multiple Choice Questions

1. Set of all possible outcomes of an experiment is called its

- A. universal set
- B. sample space
- C. partition
- D. domain

Answer: B



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2. If S is the sample space of an experiment, than S must contain

- A. only a finite number of elements

B. infinitely many elements

C. at least 2 elements

D. 36 elements

Answer: C



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3. If S_1, S_2 are the sample spaces of an experiment at the first two trials, then

A. $S_1 = S_2$

B. $S_1 \subset S_2$

C. $S_2 \subset S_1$

D. $S_1 < S_2$

Answer: A



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4. If A an event in a sample space S , then

A. $A \leq S$

B. $A \supseteq S$

C. $A \subseteq S$

D. $A = \phi$

Answer: C



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5. If $P(A)$ denotes the probability of an event, then

A. $-1 \leq P(A) \leq 1$

B. $0 \leq P(A) \leq 1$

C. $-1 \leq P(A) \leq 0$

D. $-\infty < P(A) < \infty$

Answer: B



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6. Which of the following subsets of a sample space S represents an impossible event?

A. $\{0\}$

B. ϕ'

C. ϕ

D. S

Answer: C



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7. Probability of an impossible event

A. $-\infty$

B. -1

C. 1

D. 0

Answer: D



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8. Which of the following subsets of a sample space S represents a certain (sure) event?

A. N

B. S'

C. ϕ

D. S

Answer: D

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9. The probability of a certain event is 0 (b) 1 (c) greater than 1 (d) less than 0

A. ∞

B. -1

C. 1

D. 0

Answer: C

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10. A coin is tossed once. Write its sample space.

A. $\{H, H\}$

B. $\{T, T\}$

C. $\{1, 2, 3, 4, 5, 6\}$

D. $\{H, T\}$

Answer: D



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11. If one coin is tossed twice (or two coins tossed once), then the sample space is

A. $\{HH, TT\}$

B. $\{HT, TH\}$

C. $\{HH, HT, TH, TT\}$

D. $\{2H, 2T\}$

Answer: C



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12. If a coin is tossed three times (or three coins are tossed together), then describe the sample space for this experiment.

A. $\{HHH, TTT\}$

B. $\{HHH, TTT, HTH, THT\}$

C. $\{HHH, HHT, HTH, THH, TTH, THT, HTT, TTT\}$

D. $\{3H, 3T\}$

Answer: C



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13. If one coin is tossed n times (or n coins tossed once), then the number of elements in the sample space is

A. n^2

B. 2^n

C. $2n$

D. 2^{2n}

Answer: B



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14. If one die is rolled once, then the sample space is

A. $\{H, T\}$

B. $\{H, 1, T, 2\}$

C. $\{1, 2, 3, 4, 5, 6\}$

D. $\{a, b, c\}$

Answer: C



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15. If one die is rolled n times (or n dice rolled once), then the number of elements in the sample space is

A. 6^n

B. $6n$

C. n^6

D. 36

Answer: A



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16. If s is the total score when two dice are thrown once then

A. $1 \leq s \leq 6$

B. $1 \leq s \leq 12$

C. $2 \leq s \leq 6$

D. $2 \leq s \leq 12$

Answer: D



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17. Indicate the probability of the following events

an even number, in one throw of one die.

A. 0

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

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

D. 1

Answer: B



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18. If one die is rolled then find the probability of each of the following events

Getting an odd number .

A. 0

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

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

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

Answer: D



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19. Indicate the probability of the following events

a prime number, in one throw of one die.

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

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

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

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

Answer: A



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20. Indicate the probability of the following events

a number which is both even and odd, in one throw of one die.

A. 0

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

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

D. 1

Answer: A



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21. Indicate the probability of the following events

a natural number, in one throw of one die.

A. 0

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

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

D. 1

Answer: D



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22. Indicate the probability of the following events

a score greater than 2, in one throw of one die.

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

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

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

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

Answer: C

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23. Indicate the probability of the following events

a multiple of 3, in one throw of one die.

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

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

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

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

Answer: B

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24. If 1 coin is tossed three times, Indicate the probability of the following

events

two or more heads.

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

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

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

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

Answer: A



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25. If 1 coin is tossed three times, Indicate the probability of the following events

second is not a head.

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

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

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

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

Answer: A



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26. If 1 coin is tossed three times, Indicate the probability of the following events

at least one head.

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

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

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

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

Answer: C



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27. If 1 coin is tossed three times, Indicate the probability of the following events

at least one tail.

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

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

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

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

Answer: B



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28. If 1 coin is tossed three times, Indicate the probability of the following events

at least two heads / tails.

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

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

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

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

Answer: C



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29. If 1 coin is tossed three times, Indicate the probability of the following events

all three heads .

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

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

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

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

Answer: A



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30. If 2 dice are thrown once, Indicate the probability of the following events

total score is minimum.

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

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

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

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

Answer: D



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31. If 2 dice are thrown once, Indicate the probability of the following events

total score is maximum.

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

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

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

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

Answer: A



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32. If 2 dice are thrown once, Indicate the probability of the following events

total score is 9 or 11.

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

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

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

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

Answer: C



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33. If 2 dice are thrown once, Indicate the probability of the following events

total score is at least 11.

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

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

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

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

Answer: B



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34. If 2 dice are thrown once, Indicate the probability of the following events

total score is 7 or 10.

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

B. $\frac{6}{36}$

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

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

Answer: D



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35. If 2 dice are thrown once, Indicate the probability of the following events

total score is a prime number.

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

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

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

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

Answer: B



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36. If 2 dice are thrown once, Indicate the probability of the following events

total score is a perfect square.

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

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

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

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

Answer: A



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37. If 2 dice are thrown once, Indicate the probability of the following events

total score is a multiple of 3.

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

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

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

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

Answer: D



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38. If 2 dice are thrown once, Indicate the probability of the following events

total score is either a perfect square or an even number.

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

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

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

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

Answer: D



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39. If 2 dice are thrown once, Indicate the probability of the following events

a perfect square or a prime number.

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

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

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

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

Answer: A



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40. If 2 dice are thrown once, Indicate the probability of the following events

a perfect square or a multiple of 3.

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

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

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

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

Answer: B



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41. If 2 dice are thrown once, Indicate the probability of the following events

total score is greater than 9 or an even number.

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

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

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

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

Answer: B



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42. If 2 dice are thrown once, Indicate the probability of the following events

total score is 7 or product of scores is 12.

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

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

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

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

Answer: D



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43. Two dice are thrown . Find the probability of the following events

The number on the upper face of the second die is greater than the number on the upper face of the first die

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

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

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

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

Answer: A



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44. If 1 card is drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

card is a king / queen / jack / an ace

A. $\frac{1}{11}$

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

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

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

Answer: C



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45. If 1 card is drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

card is a diamond / heart / spade / club.

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

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

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

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

Answer: A



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46. If 1 card is drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

card is a diamond or a king

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

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

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

D. $\frac{9}{13}$

Answer: C



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47. If 1 card is drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

card is an ace or a queen.

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

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

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

D. $\frac{11}{13}$

Answer: B



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48. A card is drawn at random from a well shuffled pack of 52 playing cards. Find the probability of the events that the card drawn is

A face card .

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

B. $\frac{1}{17}$

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

D. $\frac{16}{17}$

Answer: A



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49. If 2 cards are drawn at random from a full deck of 52 playing cards,

Indicate the probability of the following events

both are hearts / diamonds / clubs / spades.

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

B. $\frac{1}{17}$

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

D. $\frac{12}{13}$

Answer: B



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50. If 2 cards are drawn at random from a full deck of 52 playing cards,

Indicate the probability of the following events

both are from the same suit.

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

B. $\frac{2}{17}$

C. $\frac{4}{17}$

D. $\frac{13}{17}$

Answer: A



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51. If 2 cards are drawn at random from a full deck of 52 playing cards,

Indicate the probability of the following events

both are kings / queens / jacks / aces.

A. $\frac{1}{122}$

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

C. $\frac{1}{212}$

D. $\frac{120}{221}$

Answer: B



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52. If 2 cards are drawn at random from a full deck of 52 playing cards,

Indicate the probability of the following events

one is a king and the other a queen.

A. $\frac{8}{366}$

B. $\frac{7}{636}$

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

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

Answer: D



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53. If 2 cards are drawn at random from a full deck of 52 playing cards,

Indicate the probability of the following events

they are king and queen of the same suit.

A. $\frac{2}{663}$

B. $\frac{1}{663}$

C. $\frac{2}{636}$

D. $\frac{661}{636}$

Answer: A



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54. If 3 cards are drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

all are hearts / diamonds / spades / clubs.

A. $\frac{11}{580}$

B. $\frac{11}{85}$

C. $\frac{11}{850}$

D. $\frac{13}{85}$

Answer: C



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55. If 3 cards are drawn at random from a full pack of 52 playing cards, indicate the probability of the following events all are from the same suit.

A. $\frac{4}{850}$

B. $\frac{22}{425}$

C. $\frac{22}{85}$

D. $\frac{63}{85}$

Answer: B



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56. If 3 cards are drawn at random from a full pack of 52 playing cards, indicate the probability of the following events two kings and one ace.

A. $\frac{6}{5525}$

B. $\frac{6}{5255}$

C. $\frac{6}{2555}$

D. $\frac{6}{555}$

Answer: A



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57. If 3 cards are drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

a king, a queen and a jack.

A. $\frac{6}{5525}$

B. $\frac{61}{5525}$

C. $\frac{16}{5525}$

D. $\frac{66}{5525}$

Answer: C



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58. If 3 cards are drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

King, queen and jack, all from the same suit.

A. $\frac{4}{5525}$

B. $\frac{1}{5525}$

C. $\frac{2}{5525}$

D. $\frac{3}{5525}$

Answer: B



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59. If 3 cards are drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

all are red / black.

A. $\frac{2}{17}$

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

C. $\frac{3}{17}$

D. $\frac{14}{17}$

Answer: A



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60. If 3 cards are drawn at random from a full pack of 52 playing cards,

Indicate the probability of the following events

all of the same colour.

A. $\frac{2}{17}$

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

C. $\frac{4}{17}$

D. $\frac{15}{17}$

Answer: C



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61. If 1 ball is drawn (at random) from 5 red, 11 white and 7 black balls, then probability that it is white is

A. $\frac{12}{13}$

B. $\frac{11}{23}$

C. $\frac{13}{21}$

D. $\frac{10}{23}$

Answer: B



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62. If a ball is drawn from 6 red, 5 blue, 3 white and 4 black balls, then probability that it is red or black is

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

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

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

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

Answer: D



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63. If 1 ball is taken from 6 black, 4 white and 3 yellow balls, then probability that it is yellow or white is

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

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

C. $\frac{3}{17}$

D. $\frac{20}{21}$

Answer: A

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64. If 1 ball is taken from 7 red, 5 blue, 4 white and 4 black balls, then probability that it is blue or black is

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

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

C. $\frac{11}{20}$

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

Answer: B

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65. If 1 ball is drawn from 7 red, 5 white and 8 green balls, then probability that it is not white is

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

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

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

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

Answer: C



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66. If 2 balls are drawn at random from 4 white, 2 black and 3 red balls, then probability that one is white and the other black, is

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

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

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

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

Answer: B



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67. If 2 balls are drawn from 4 white and 6 black balls, then probability that both are of the same colour is

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

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

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

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

Answer: A



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68. If 3 balls are drawn from 6 white and 9 black balls, the probability that all of them are black is

A. $\frac{5}{42}$

B. $\frac{12}{65}$

C. $\frac{12}{75}$

D. $\frac{14}{65}$

Answer: B



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69. If 2 gloves are drawn from 4 pairs of gloves, then probability that both are for the same hand is

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

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

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

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

Answer: C



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70. If 5 boys and 3 girls are to be seated on chairs arranged in a row, then probability that no two girls sit on adjacent chairs is

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

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

C. $\frac{5}{14}$

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

Answer: C



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71. If 8 boys and 6 girls sit in a row, then probability that all girls are together is

A. $\frac{3}{999}$

B. $\frac{3}{1000}$

C. $\frac{3}{1001}$

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

Answer: C



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72. What is the probability that a leap year selected at random contains 53 Sundays is

A. $\frac{7}{365}$

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

C. $\frac{2}{365}$

D. $\frac{363}{365}$

Answer: B



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

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

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

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

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

Answer: C



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74. A committee of 4 boys and 3 girls is chosen from 8 boys and 5 girls. One of the boys is a brother of one of the girls. Probability that both are in the committee is

A. 0.3

B. 0.4

C. 0.5

D. 0.8

Answer: A



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75. A committee of 3 persons is chosen from 4 men and 2 women.

Probability that it includes at least one person of either sex is

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

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

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

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

Answer: D



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76. If $P(A) = \frac{2}{7}$ and $P(B') = \frac{1}{3}$, then $P(A') + P(B) =$

A. $\frac{21}{29}$

B. $\frac{8}{29}$

C. $\frac{29}{21}$

D. $\frac{29}{8}$

Answer: C



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77. If 2 dice are thrown, then probability that total score is greater than 4 is

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

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

C. $\frac{17}{36}$

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

Answer: B



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78. If 2 dice are thrown, then probability that total score is at most 10 is

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

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

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

D. $\frac{11}{20}$

Answer: A



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79. Three electric bulbs are chosen at random from 15 bulbs of which 5 are defective. The probability that atleast one is defective is

A. $\frac{45}{91}$

B. $\frac{24}{91}$

C. $\frac{67}{91}$

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

Answer: C



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80. If 3 bulbs are selected from 12 bulbs of which 6 are good, then probability that at least one of them is good is

A. $\frac{1}{11}$

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

C. $\frac{9}{11}$

D. $\frac{7}{11}$

Answer: B



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81.

If

$$P(A \cup B) = \frac{5}{6}, P(A \cap B) = \frac{1}{3} \text{ and } P(B') = \frac{1}{3}, \text{ then } P(A) =$$

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

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

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

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

Answer: D



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82.

If

$$P(A \cup B) = \frac{23}{60}, P(A \cap B) = \frac{1}{5} \text{ and } P(A') = \frac{2}{3} \text{ then } P(B) =$$

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

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

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

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

Answer: A



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83.

If

$P(A) = \frac{1}{3}, P(B) = \frac{2}{5}$ and $P(A \cup B) = \frac{8}{15}$, then $P(A' \cup B') =$

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

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

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

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

Answer: B



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84.

If

$$P(A) = \frac{1}{6}, P(B) = \frac{6}{7} \text{ and } P(A \cup B) = \frac{25}{168}, \text{ then } P(A' \cup B') =$$

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

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

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

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

Answer: C



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85.

If

$$P(A) = \frac{1}{2}, P(B) = \frac{1}{3} \text{ and } P(A \cap B) = \frac{7}{12}, \text{ then } P(A' \cap B') =$$

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

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

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

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

Answer: B



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86.

if

$P(A') = \frac{1}{3}$, $P(B) = \frac{3}{4}$ and $P(A \cap B) = \frac{1}{2}$, then $P(A' \cap B') =$

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

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

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

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

Answer: A



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87.

If

$P(A) = 0.5$, $P(B) = 0.4$ and $P(A \cap B) = 0.2$, then $P(A \cap B')$ and $P(A' \cap B)$ are respectively

A. 0.1, 0.2

B. 0.2, 0.1

C. 0.2, 0.3

D. 0.3, 0.2

Answer: D



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88. If $P(A) = \frac{1}{2}$ and $P(B') = P(A \cup B) = \frac{2}{3}$, then $P(A' \cap B)$

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

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

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

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

Answer: D



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89. If A, B are mutually exclusive events such that $P(A \cup B) = \frac{3}{4}$ and $P(A') = \frac{1}{2}$, then $P(B') =$

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

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

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

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

Answer: C



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90. If A, B are mutually exclusive events such that $P(A \cup B) = \frac{5}{6}$ and $P(B) = \frac{1}{3}$, then $P(A') =$

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

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

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

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

Answer: A



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91. If A, B are mutually exclusive events such that $P(A) = \frac{1}{3}$ and $P(B) = \frac{1}{2}$, then $P(A' \cap B') =$

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

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

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

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

Answer: B



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92. If A, B are mutually exclusive events such that $P(A) = \frac{2}{3}$ and $P(B) = \frac{1}{3}$, then $P(A' \cup B') =$

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

B. 0

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

D. 1

Answer: D



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93. One ticket is drawn from 100 tickets, numbered from 1 to 100.

Probability that the number on it is a multiple of 5 or 7 is

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

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

C. $\frac{8}{25}$

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

Answer: C



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94. If 2 dice are thrown, then probability that total score is neither 7 nor

11 is

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

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

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

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

Answer: B



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95.

If

$P(A) = 0.3$, $P(B) = 0.4$ and $P(A/B) = 0.32$, then $P(A \cup B)$ and $P(E$

are respectively

A. 0.572, 0.427

B. 0.427, 0.572

C. 0.5, 0.6

D. 0.275, 0.742

Answer: A



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$P(A) = 0.8$, $P(B) = 0.6$ and $P(A \cup B) = 0.9$, then $P(A/B)$ and $P(B/A)$ are respectively

A. $\frac{1}{2}, \frac{5}{6}$

B. $\frac{5}{8}, \frac{1}{2}$

C. $\frac{5}{6}, \frac{5}{8}$

D. $\frac{3}{5}, \frac{2}{7}$

Answer: C



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97. If $P(A) = \frac{1}{2}$ and $P(B) = \frac{1}{3}$, where A, B are mutually exclusive, then $P(A \cup B) =$

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

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

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

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

Answer: A

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98. If $P(A) = \frac{1}{2}$ and $P(B) = \frac{1}{3}$, where A, B are independent, then $P(A \cup B) =$

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

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

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

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

Answer: B

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99. If A' , B' are complementary events of two independent events A , B , then $P(A \cup B) =$

A. $1 - P(A)P(B')$

B. $1 - P(A')P(B)$

C. $1 - P(A')P(B')$

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

Answer: C



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100. A die is rolled. If the outcome is an odd number, what is the probability that it is prime?

A. 1

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

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

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

Answer: B



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101. Two fair dice are thrown. If the two numbers turned up are different, then probability that their sum is even is

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

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

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

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

Answer: D



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102. Probability of A winning a race is $\frac{1}{5}$ and that for B is $\frac{1}{4}$ Probability that neither should win is

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

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

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

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

Answer: B



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103. A problem on mathematics is given to three students whose chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$, respectively, find the probability that the problem will be solved.

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

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

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

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

Answer: C



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104. If A and B are mutually exclusive events, then

A. exhaustive

B. dependent

C. independent

D. impossible

Answer: B



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105. A person is known to speak the truth 4 times out of 5. He throws a die and reports that it is an ace. The probability that it is actually an ace, is

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

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

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

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

Answer: D



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106. A bag A contains 2 white and 3 black balls. Another identical bag B contains 3 white and 4 black balls. First a bag, and then a ball from it, are selected at random. If the ball drawn is black, then probability that it is drawn from bag B is

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

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

C. $\frac{20}{41}$

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

Answer: C



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107. There are three boxes containing respectively 1 white 2 red and 3 black balls, 2 white, 3 red and 1 black ball, 3 white, 1 red and 2 black balls. A box is chosen and from it two balls are drawn at random. They happen to be one red and one white. Find the probabilities that these come from
(i) The first box (ii) The second box and (iii) The third box

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

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

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

D. $\frac{7}{19}$

Answer: B



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108. If A and B are two independent events in a sample space S, then :

$$P(A/B') =$$

A. $1 - P(A)$

B. $1 - P(B)$

C. $1 - P(A' / B')$

D. $1 - P(A' / B)$

Answer: C::D



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109. A bag contains 5 balls of unknown colours. There are equal chances that 0, 1, 2, 3, 4 or 5 balls out of these five are red. A ball is taken out of the bag at random and found to be red. Then probability that it is the only red ball in the bag is

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

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

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

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

Answer: D



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110. A letter is known to have come from either "TATANAGAR" or "CALCUTTA". On the envelope just two consecutive letters are visible. If the visible letters are TA, then the probability that the letter has come from "CALCUTTA" is (A) $\frac{4}{11}$ (B) $\frac{1}{3}$ (C) $\frac{5}{12}$ (D) $\frac{1}{7}$

A. $\frac{7}{11}$

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

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

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

Answer: D



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111. Natural numbers $1, 2, 3, \dots, 2n$ are written down on $2n$ cards, One card is selected at random from these cards. If the probability of drawing a number i is proportional to i , then the probability of drawing an odd number in one draw is

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

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

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

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

Answer: C



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112. A random variable X is defined by

$$X = \begin{cases} 3 \text{ with probability} = \frac{1}{3} \\ 4 \text{ with probability} = \frac{1}{4} \\ 12 \text{ with probability} = \frac{5}{12} \end{cases}$$

Then, $E(X)$ is

A. 6

B. 7

C. 5

D. 8

Answer: B



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113. A random variate X takes the values 0, 1, 2, 3 and its mean is 1.3. If $P(X = 3) = 2P(X = 1)$ and $P(X = 2) = 0.3$, then $P(X = 0)$ is equal to

A. 0.1

B. 0.2

C. 0.3

D. 0.4

Answer: D



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114. . Two dice are thrown together. Find the probability of the same number on both dice

A. 1

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

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

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

Answer: D



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115. If 2 dice are thrown, then probability that first die shows an even number, and second an odd number, is

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

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

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

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

Answer: C



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116. If 2 dice are thrown, then probability that product of the numbers on them is 12 (or that they are factors of 12) is

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

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

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

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

Answer: C



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117. If 6 dice are thrown, then probability that all show different numbers is

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

B. $\frac{1}{216}$

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

D. $\frac{1}{6^2}$

Answer: C



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118. If 2 cards are drawn from a pack of 52, then probability that they are from the same suit is

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

B. $\frac{4}{17}$

C. $\frac{3}{17}$

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

Answer: B



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

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

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

D. $\frac{1}{3}, \frac{2}{3}, \frac{4}{3}$

Answer: A



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120. If 1 ticket is drawn from 50 tickets, numbered from 1 to 50 then probability that the number on the ticket is divisible by 6 or 5 is

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

B. $\frac{17}{50}$

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

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

Answer: B



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121. If 1 pen is selected from a batch of 500 pens of which 50 are defective, then probability that it is non-defective is

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

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

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

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

Answer: A



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122. If A, B, C are pair-wise mutually exclusive, and exhaustive, events of a sample space S, then $P(A) + P(B) + P(C) =$

A. 0

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

C. 1

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

Answer: C



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123. If A, B, C are independent events such that $P(A \cap B) = \frac{1}{2}$, $P(B \cap C) = \frac{1}{3}$ and $P(C \cap A) = \frac{1}{6}$, then respective values of $P(A)$, $P(B)$ and $P(C)$ are

A. $\frac{1}{2}, \frac{1}{3}, 1$

B. $\frac{1}{2}, 1, \frac{1}{3}$

C. $\frac{1}{3}, 1, \frac{1}{2}$

D. $1, \frac{1}{2}, \frac{1}{3}$

Answer: B



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124. If
 $P(A) = 0.8, P(B) = 0.6$ and $P(A \cap B) = 0.5$, then $P(B' / A') =$

A. 1

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

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

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

Answer: D



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125. A ticket is drawn from 20 tickets, numbered from 1 to 20, and kept aside. Then another ticket is drawn. Probability that both tickets show even numbers is

A. $\frac{9}{38}$

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

C. $\frac{19}{37}$

D. $\frac{9}{35}$

Answer: A



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126. Probability of throwing 15 in one throw with 3 dice is

A. $\frac{5}{108}$

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

C. $\frac{5}{216}$

D. $\frac{8}{105}$

Answer: A



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127. Probability of throwing neither 9 nor 11 in one throw with 2 dice is

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

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

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

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

Answer: C



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128. In a single throw with 3 dice, probability of getting a total of at least 5 is

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

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

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

D. $\frac{18}{53}$

Answer: B



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129. If one card is taken from 17 cards, numbered 1, 2, 3, ..., 17, then probability that number on it is divisible by 3 or 7 is

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

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

C. $\frac{9}{17}$

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

Answer: B



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130. If a pair of dice is rolled, then probability that total score is divisible by either 3 or 4 is

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

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

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

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

Answer: A



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131. A box contains 50 bolts and 150 nuts. Half of the bolts and half of the nuts are rusted. If one item is chosen at random, then probability that it is rusted, or is a bolt, is

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

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

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

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

Answer: C



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132. If

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

A. 1.8

B. 0.6

C. 1.1

D. 1.4

Answer: C



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133. If 2 dice are thrown, the probability that product of scores is a perfect square is

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

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

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

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

Answer: A



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134. If A, B, C are mutually exclusive, and exhaustive, events of a sample space S such that

$$P(B) = \frac{3}{2}P(A) \text{ and } P(C) = \frac{1}{2}P(B), \text{ then } P(A) =$$

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

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

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

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

Answer: A



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135. A card is drawn from a deck of 52 cards. Find the probability of getting a king or a heart or a red card.

A. $\frac{9}{13}$

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

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

D. $\frac{3}{17}$

Answer: B



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136. A class consists of 100 students, 25 of them are girls and 75 boys, 20 of them are rich and remaining poor, and 40 of them are fair-complexioned. Probability of selecting a fair-complexioned rich girl from this class is

A. 0.02

B. 0.04

C. 0.05

D. 0.08

Answer: A



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137. A speaks truth in 60% of the cases and B in 90%. Percentage of cases in which they are likely to contradict each other, while stating the same fact, is

- A. 36 %
- B. 48 %
- C. 42 %
- D. 150 %

Answer: C



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138. Two dice are thrown. If the second die is so biased that it always shows 4, then probability that the total score is 8 is

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

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

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

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

Answer: B



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

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

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

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

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

Answer: C



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140. 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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141. The probability that Krishna will be alive 10 years hence is $7/15$ and that Hari will be alive is $7/10$. What is the probability that both Krishna and Hari will be dead 10 years hence?

A. $\frac{21}{150}$

B. $\frac{24}{150}$

C. $\frac{49}{150}$

D. $\frac{56}{150}$

Answer: B



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142. If 2 cards are drawn from a pack of 52 playing cards, probability that at least one of them is ace is

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

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

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

D. $\frac{33}{221}$

Answer: D

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143. A man is known to speak truth 3 out of 4 times. He throws a die and reports that it is a six. Find the probability that it is actually a six.

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

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

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

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

Answer: A

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144. A bag contains 10 mangoes out of which 4 are rotten. Two mangoes are taken out together. If one of them is found to be good, the probability that other is also good is (a) $\frac{1}{3}$ (b) $\frac{8}{15}$ (c) $\frac{5}{18}$ (d) $\frac{2}{3}$

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

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

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

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

Answer: C



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145. Two events A and B have probabilities 0.25 and 0.050, 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. 0.28

B. 0.39

C. 0.61

D. 0.72

Answer: B



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

Answer: B



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147. If A , B are independent events such that

$P(A \cap B) = \frac{1}{6}$ and $P(A' \cap B') = \frac{1}{3}$, then $P(A) =$

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

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

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

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

Answer: C



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148. If A , B are independent events such that

$$P(A') = \frac{7}{10} \text{ and } P(A \cup B) = \frac{8}{10}, \text{ then } P(B') =$$

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

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

C. 1

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

Answer: A



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149. If $P(A \cap B) = P(A' \cap B') = \frac{1}{2}$ and $2P(A) = P(B) = p$, then

$p =$

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

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

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

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

Answer: B



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150. If A and B are independent events such that $P(A) = 0.30$ and $P(B) = 0.60$. then probability of getting neither A nor B is

A. 0.28

B. 0.13

C. 0.12

D. 0.42

Answer: A



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151. A die is tossed twice. The probability of having a number greater than 4 on each toss is

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

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

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

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

Answer: B

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152. If $P(A) = \frac{1}{4}$, $P(B') = \frac{1}{2}$ and $P(A \cup B) = \frac{5}{9}$ then $P(A/B) =$

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

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

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

D. $\frac{7}{72}$

Answer: C

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153. Two dice are thrown together. Find the probability that a multiple of 2 occurs on one dice and a multiple of 3 occurs on the other.

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

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

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

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

Answer: B



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154. If

$P(A \cup B) = 0.6$ and $P(A \cap B) = 0.2$, then $P(A') + P(B') =$

A. 1.2

B. 1.4

C. 0.8

D. 0.4

Answer: A



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155. A bag contains 5 white and 4 black balls, and another bag contains 4 white and 6 black balls. One ball is taken at random from the first bag and put in the second. If a ball is taken at random now from the second bag, probability that it is black is

A. $\frac{48}{99}$

B. $\frac{58}{99}$

C. $\frac{68}{99}$

D. $\frac{32}{99}$

Answer: B



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156. Probabilities that A, B, C can hit a target are $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ respectively. If they all fire simultaneously, the probability that exactly two of them hit the target is

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

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

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

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

Answer: C



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157. An urn contains 5 blue and an unknown number x of red balls. Two balls are drawn at random. If the probability of both of them being blue is $\frac{5}{14}$ find x .

A. 1

B. 2

C. 3

D. 4

Answer: C

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158. If 9 boys and 5 girls sit in a row, then probability that 4 particular persons never sit together (not even two of them) is

A. $\frac{13}{91}$

B. $\frac{30}{91}$

C. $\frac{13}{19}$

D. $\frac{14}{91}$

Answer: B

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159. A determinant is chosen at random from the set of all determinants of order two with elements 0 or 1 only. Probability that the determinant chosen has positive value is

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

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

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

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

Answer: D



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160. If E and F are independent events such that

$P(E \cap F) = \frac{1}{12}$ and $P(E' \cap F') = \frac{1}{2}$, then

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

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

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

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

Answer: A::D

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161. A student appears for tests I, II and III. The student is successful if the passes either in tests I and II or tests I and III. The probabilities of the student passing in tests I, II and III are p, q and $\frac{1}{2}$, respectively. If the probability that the student is successful, is $\frac{1}{2}$, then

A. $p = q = 1$

B. $p = q = \frac{1}{2}$

C. $p = 1, q = 0$

D. $p = 1, q = \frac{1}{2}$

Answer: C

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162. Let A and B be two events such that $P(A \cap B') = 0.20, P(A' \cap B) = 0.15, P(A' \cap B') = 0.1$, then

$p(A/B)$ is equal to ,

A. $\frac{11}{14}$

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

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

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

Answer: A



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163. Suppose $n (\geq 3)$ persons are sitting in a row. Two of them are selected at random. The probability that they are not together is (A)

$1 - \frac{2}{n}$ (B) $\frac{2}{n-1}$ (C) $1 - \frac{1}{n}$ (D) none of these

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

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

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

D. $\frac{n-3}{n}$

Answer: A



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164. If A and B are any two events in a sample space S, then $P(A \cap B') + P(A' \cap B) + p(A' \cap B')$ is the probability of occurrence of

- A. neither A nor B or both
- B. at least one of A and B
- C. At most one of A, B
- D. exactly one of A, B

Answer: C



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165. A six-faced dice is so biased that it is twice as likely to show an even number as an odd number when thrown. It is thrown twice, the probability that the sum of two numbers thrown is even is $\frac{1}{12}$ b. $\frac{1}{6}$ c. $\frac{1}{3}$ d. $\frac{5}{9}$

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

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

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

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

Answer: A



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166. A die is thrown and the number turned up is taken as the value of 'c' in the quadratic equation $x^2 + 2x + c = 0$. Then probability that its roots are not real is

A. 0

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

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

D. 1

Answer: C

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167. Probability that a card, drawn at random from a full pack of 52 playing cards, is a heart or a face card is

A. $\frac{17}{52}$

B. $\frac{11}{52}$

C. $\frac{11}{26}$

D. $\frac{16}{51}$

Answer: C

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168. A and B are two independent witnesses in a case. The probability that A will speak the truth is x and the probability that B will speak the truth is y . A and B agree on a certain statement. The probability that the statement is true is

A. $\frac{x(1 - y) + y(1 - x)}{1 - x - y + xy}$

B. $\frac{xy}{1 - x - y + xy}$

C. $\frac{xy}{x + y}$

D. $\frac{2xy}{x + y}$

Answer: B



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169. A bag contains 3 white balls and 2 black balls, another contains 5 white and 3 black balls, if a bag is chosen at random and a ball is drawn from it. What is the probability that it is white ?

A. $\frac{31}{80}$

B. $\frac{39}{80}$

C. $\frac{49}{80}$

D. $\frac{51}{80}$

Answer: C



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170. If 2 fair dice are thrown, then probability of getting a total score s where $2 \leq s \leq 7$, is

A. $\frac{21}{36}$

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

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

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

Answer: B



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171. If 2 fair dice are thrown, then probability of getting a total score s where $8 \leq s \leq 12$, is

A. $\frac{15}{36}$

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

C. $\frac{(s-1)(s-2)}{72}$

D. $\frac{13-s}{36}$

Answer: D



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172. Three numbers are chosen from 1 to 20. Find the probability that they are consecutive.

A. $\frac{3}{190}$

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

C. $\frac{1}{57}$

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

Answer: A



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173. If A and B toss 3 coins each, The probability that both get equal number of heads is

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

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

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

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

Answer: C



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174. If 1 glove is selected from each of 4 pairs of gloves, then probability that all selected gloves are for the same hand is

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

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

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

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

Answer: C



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175. A specially made die has number 3 on three faces, 2 on two faces and 1 on sixth face. If it is thrown twice, then probability that both throws result in even sum is

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

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

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

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

Answer: D



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176. One ticket is drawn from a box containing 100 tickets numbered from 1 to 100. If the number on the selected ticket is x then probability that

$$x + \frac{1}{x} > 2 \text{ is}$$

A. 0

B. $\frac{99}{100}$

C. 1

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

Answer: B

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177. If $A_1, A_2, A_3, \dots, A_8$ are independent events such that $P(A_i) = \frac{1}{1+i}$ where $1 \leq i \leq 8$, then probability that none of them will occur is

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

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

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

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

Answer: D

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178. What is the probability that the 13th days of a randomly chosen months is Friday?

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

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

C. $\frac{1}{84}$

D. $\frac{19}{84}$

Answer: C



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179. A and B are two independent events such that

$$P(\bar{A} \cap B) = \frac{8}{25} \text{ and } P(A \cap \bar{B}) = \frac{3}{25}, \text{ then } P(A) =$$

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

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

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

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

Answer: A

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180. If A and B are independent events such that $P(A) = 0.3$ and $P(A \cup B') = 0.8$, then $P(B) =$

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

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

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

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

Answer: C

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181. Probabilities that A , B , C pass a test are $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ respectively.

Probability that at least two of them will pass in a test is

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

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

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

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

Answer: B



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182. The probability that a leap year selected at random will contain either 53 Thursday or 53 Friday is

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

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

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

D. $\frac{106}{366}$

Answer: A



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183. If a die is thrown 4 times, then probability that minimum score at any throw is not less than 3 is

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

B. $\frac{16}{81}$

C. $\frac{17}{81}$

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

Answer: B



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184. Two dice are thrown together. Find the probability that a multiple of 2 occurs on one dice and a multiple of 3 occurs on the other.

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

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

C. $\frac{11}{36}$

D. $\frac{3}{17}$

Answer: C



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185. 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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186. Probability of throwing a 5 only on the first of two successive throws of an ordinary die is

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

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

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

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

Answer: B



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187. A card is drawn at random from a pack of 100 cards numbered 1 to 100. The probability of drawing a number which is a square is a. $\frac{1}{5}$ b. $\frac{2}{5}$ c. $\frac{1}{10}$ d. none of these

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

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

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

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

Answer: C



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188. A box contains 5 red, 4 blue and an unknown number ' n ' of green balls. If probability of both balls being green, when 2 balls are selected from the box, is $\frac{1}{7}$, then $n =$

A. 1

B. 6

C. 10

D. 12

Answer: B

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189. If A and B are mutually exclusive events such that $P(A) = 0.45$ and $P(B) = 0.35$, then $P(A \cap B) =$

A. $\frac{63}{400}$

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

C. 0

D. $\frac{63}{200}$

Answer: C

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190. A and B throw a dice. The probability that A's throw is not greater than B's, is

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

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

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

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

Answer: B



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191. A committee of five is to be chosen from a group of 9 people. The probability that a certain married couple will either serve together or not at all is

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

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

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

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

Answer: C



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192. A five digit number is formed by the digits 1,2,3,4,5,6 and 8. The probability that the number has even digit at both ends is

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

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

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

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

Answer: B



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193. The probabilities of a student getting I, II and III division in an examination are $\frac{1}{10}$, $\frac{3}{5}$ and $\frac{1}{4}$ respectively. The probability that the student fails in the examination is $\frac{197}{200}$ b. $\frac{27}{100}$ c. $\frac{83}{100}$ d. none of these

A. $\frac{197}{200}$

B. $\frac{27}{100}$

C. $\frac{83}{100}$

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

Answer: B



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194. A five digit number is formed but the digits 1,2,3,4,5 without repetition. Find the probability that the number is divisible by 4.

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

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

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

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

Answer: A

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195. In a single throw with 3 dice, probability of getting a total of at least 5 is

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

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

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

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

Answer: B

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196. If two unbiased dice are rolled, find the probability that the total score is a prime number.

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

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

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

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

Answer: C



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197. A coin and a die are thrown. If A denotes the event: head and an even face, and B denotes the event : tail and a multiple of three, then $P(A)$ and $P(B)$ are respectively

A. $\frac{1}{3}, \frac{1}{5}$

B. $\frac{1}{4}, \frac{1}{6}$

C. $\frac{1}{5}, \frac{1}{4}$

D. $\frac{1}{2}, \frac{1}{3}$

Answer: B

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198. There are 100 students in a class of which 36 are boys studying science and 13 are girls not studying science. If there are 55 girls in all, probability that a boy picked up at random is not studying science is

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

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

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

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

Answer: C

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199. If an integer is chosen at random from the first two hundred, then probability that it is divisible by 6 or 8 is

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

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

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

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

Answer: B



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200. 100 students appeared for two tests, 60 passed the first, 50 passed the second and 30 passed both. Probability that a student selected at random has failed in both tests is

A. 0.4

B. 0.2

C. 0.3

D. 0.5

Answer: B



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201. Probability that a man will get tea is $\frac{2}{3}$, and that he will not get coffee is $\frac{5}{9}$. If the probability of getting at least one during is $\frac{4}{5}$, then probability that he will get both is

A. $\frac{14}{45}$

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

C. $\frac{13}{45}$

D. $\frac{11}{45}$

Answer: A



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202. A bag contains 3 red and 7 black balls. Two balls are selected at random one by one without replacement. If the second ball happens to be red, what is the probability that the first selected ball is also red?

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

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

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

D. $\frac{3}{100}$

Answer: C



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203. 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. $\frac{13}{25}$

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

C. $\frac{17}{25}$

D. $\frac{8}{25}$

Answer: A



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204. 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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205. There are 4 envelopes corresponding to 4 letters. If the letters are placed in the envelopes at random, probability that all the letters are not placed in the right envelopes is

A. $\frac{18}{24}$

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

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

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

Answer: B

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206. If A and B are mutually exclusive events in a sample space 'S', then

A. $P(A) < P(B)$

B. $P(A) > P(B')$

C. $P(A) \leq P(B')$

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

Answer: C



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207. If A and B are two independent events such that

$P(\bar{A}) = \frac{7}{10}$, $P(\bar{B}) = \alpha$ and $P(A \cup B) = \frac{8}{10}$, then α , is

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

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

C. 1

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

Answer: A



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208. If A and B are independent events such that $P(A) = 0.30$ and $P(B) = 0.60$. then probability of getting neither A nor B is

A. 0.28

B. 0.13

C. 0.12

D. 0.42

Answer: A



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209. 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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210. A fair coin is tossed repeatedly. If tail appears on first four tosses, then the probability of head appearing that 2 white and 1 black balls will be drawn, is

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

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

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

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

Answer: A



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211. Five horses are in race. Mr. X selected two of horses at random and bets on them. The probability that Mr. X selected the winning horse is

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

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

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

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

Answer: D



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212. Two dice are rolled once. Find the probability of getting such numbers on two dice whose product is a perfect square.

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

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

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

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

Answer: A



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213. If A and B are independent events such that

$$P(A \cap B) = \frac{3}{25} \text{ and } P(A' \cap B) = \frac{8}{25}, \text{ then : } P(A) =$$

A. $\frac{11}{25}$

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

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

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

Answer: C



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214. Out of 30 consecutive integers 2 are chosen at random. Find the probability so that their sum is odd.

A. $\frac{14}{29}$

B. $\frac{16}{29}$

C. $\frac{15}{29}$

D. $\frac{10}{29}$

Answer: C



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215. Three integers are chosen at random from the first 20 integers. The probability that their product is even is a. $\frac{2}{19}$ b. $\frac{3}{29}$ c. $\frac{17}{19}$ d. $\frac{4}{19}$

A. $\frac{2}{19}$

B. $\frac{3}{29}$

C. $\frac{17}{19}$

D. $\frac{4}{19}$

Answer: C



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216. A bag contains 16 coins of which two are counterfeit with heads on both sides. The rest are fair coins. One is selected at random from the bag and tossed. The probability of getting a head is

A. $\frac{9}{16}$

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

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

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

Answer: A



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217. Conditional probability $P(B/A)$ is defined only when a

- A. A is a sure event
- B. B is a sure event
- C. A is not an impossibility
- D. B is an impossibility

Answer: C



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218. Conditional probability $P(A/B')$ is defined only when

- A. B is not a sure event
- B. B is a sure event
- C. B is an impossible event
- D. B is not an impossible event

Answer: A



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219. Following are the wages of 8 workers in rupees: 50, 62, 40, 70, 45, 56, 32, 45. If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage?

A. 0.625

B. 0.500

C. 0.375

D. 0.450

Answer: B



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220. For two events A and B, $P(B) = 0.3$, $P(A \text{ but not } B) = 0.4$ and $P(\text{not } A) = 0.6$. The events A and B are

- A. exhaustive
- B. independent
- C. equally likely
- D. mutually exclusive

Answer: D



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221. If

$P(\bar{A} \cup B) = \frac{5}{6}$, $P(A) = \frac{1}{2}$ and $P(\bar{B}) = \frac{2}{3}$, then: $P(A \cup B) =$

- A. $\frac{1}{3}$
- B. $\frac{5}{6}$
- C. $\frac{2}{3}$

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

Answer: C



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222.

If

$P(A) = a, P(B) = b$ and $P(A \cap B) = c$, then: $P(\overline{A} \cap \overline{B}) =$

A. $1 - a - b - c$

B. $a + b - c$

C. $1 + a - b - c$

D. $1 - a - b + c$

Answer: D



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223. For three events A, B, C the probability that only A occur is (A) $P(A)$ (B) $P(A \cup B \cup C)$ (C) $P(A' \cap B' \cap C')$ (D) $P(A \cap B' \cap C')$

A. $P(A)$

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

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

D. $P(A \cap B' \cap C')$

Answer: D



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224. If 2 coins are tossed, probability that the second coin would show a tail given that the first coin had shown a head, is

A. 0.50

B. 0.25

C. 0.75

D. 0.125

Answer: A



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225. What is the probability that 4 children selected at random would have different birthdays?

A. $\frac{364 \times 363 \times 362}{(365)^3}$

B. $\frac{6 \times 5 \times 4}{7^3}$

C. $\frac{4}{365}$

D. $\left(\frac{1}{7}\right)^3$

Answer: A



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226. In the above example, probability that his wages are above Rs. 200 is

A. $\frac{43}{100}$

B. $\frac{35}{100}$

C. $\frac{53}{100}$

D. $\frac{61}{100}$

Answer: D



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227. In Ex. 230, probability that his wages are between Rs. 160 and Rs. 220

is

A. $\frac{30}{100}$

B. $\frac{10}{100}$

C. $\frac{38}{100}$

D. $\frac{18}{100}$

Answer: D



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228. A card is drawn from each of two well-shuffled packs of cards.
Probability that at least one of them is an ace is

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

B. $\frac{25}{169}$

C. $\frac{2}{169}$

D. $\frac{4}{169}$

Answer: B



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229. If 2 dice are thrown, probability that the two numbers turned up differ by 1 is

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

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

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

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

Answer: B



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230. If 2 dice are thrown, probability that the two numbers turned up differ by 2 is

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

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

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

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

Answer: A

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231. A player has 7 cards in hand of which 5 are red and of these five 2 are kings. A card is drawn at random. The probability that it is a king, it being known that it is red is

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

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

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

D. 1

Answer: A

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232. Probability that A speaks truth is $\frac{3}{5}$, and that for B is $\frac{7}{10}$. If they agree on a statement, then probability that this statement is true is

A. $\frac{21}{27}$

B. $\frac{22}{27}$

C. $\frac{23}{27}$

D. $\frac{24}{27}$

Answer: A



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233. Probabilities of A, B and C becoming managers are $\frac{4}{9}$, $\frac{2}{9}$ and $\frac{1}{3}$ respectively. Probabilities that the Bonus Scheme will be introduced if A, B and C become managers are $\frac{3}{10}$, $\frac{1}{2}$ and $\frac{4}{5}$ respectively. If the bonus scheme has been introduced, then probability that the manager appointed was A is

A. $\frac{4}{23}$

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

C. $\frac{6}{23}$

D. $\frac{7}{23}$

Answer: C



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234.

If

$P(A) = P(B) = x$ and $P(A \cap B) = P(A' \cap B')$, then: $x =$

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

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

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

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

Answer: A



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235. If A and B are two events such that $P(B) = \frac{2}{5}$ and $P(A \cap B) = \frac{1}{5}$, then: $P(A \cup B') =$

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

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

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

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

Answer: C



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236. A dice is rolled three times, find the probability of getting a larger number than the previous number each time.

A. $15/216$

B. $5/54$

C. $13/216$

D. $1/18$

Answer: B



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237. A number of 3 different digits is formed from the digits 0, 1, 2, 3, 4, 5, 6. Probability that the number formed is '340' is

A. $1/180$

B. $7/180$

C. $111/180$

D. $113/180$

Answer: A



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238.

If

$P(A) = 1/3$, $P(B) = 1/4$ and $P(A \cap B) = 1/5$, then: $P(B' / A') =$

A. $37/40$

B. $37/45$

C. $23/40$

D. $23/45$

Answer: A



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239. If $4 P(A) = 6 P(B) = 10 P(A \cap B) = 1$ then $P\left(\frac{B}{A}\right) =$

A. $2/15$

B. $3/5$

C. $2/5$

D. 7/10

Answer: C



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