Probability-Exercise Questions updated on Dec 2024

1. If a number is chosen at random from the set {1, 2, 3…, 100}, then the probability that the chosen number is a perfect cube is

a. 1/25 b. 1/2 c. 4/13 d. 1/10

2. What is the probability of getting at least one six in a single throw of three unbiased dice?

a. 1/6 b. 125/216 c. 1/36 d. 81/216 e. 91/216

3. In a simultaneous throw of two dice, what is the probability of getting a doublet?

a. 1/6 b. 1/4 c. 2/3 d. 3/7

4. A bag contains 4 red balls, 5 green balls and 6 white balls. A ball is drawn at random from the box. What is the probability that the ball drawn is either red or green?

a. 2/5 b. 3/5 c. 1/5 d. 7/15

5. When 4 dice are thrown, what is the probability that the same number appears on each of them?

a. 1/36 b. 1/18 c. 1/216 d. 1/5

6. The probability that it is Friday and that a student is absent is 0.03. Since there are 5 school days in a week, the probability that it is Friday is 0.2. What is the probability that a student is absent given that today is Friday?

a. 10% b. 15% c. 12% d. 13%

7. Two dice are rolled. The probability of getting a sum of at least 9 is

a. 13/36 b. 5/18 c. 35/36 d. 11/36

8. If four cards are drawn at random from a well shuffled pack of cards, what is the probability that each card is an ace?

a. $6/{}^{52}C_4$ b. $4/{}^{52}C_4$ c. $1/{}^{52}C_4$ d. $3/{}^{52}C_4$

9. A person tosses an unbiased coin. When head turns up, he gets Rs.8 and tail turns up he loses Rs.4. If 3 coins are tossed, what is probability that the gets a profit of Rs.12?

a. 3/8 b. 5/8 c. 3/4 d. 1/8

10. A number n is chosen from {2, 4, 6 … 48}. The probability that 'n' satisfies the equation (2x – 6) (3x + 12) (x – 6) (x – 10) = 0 is

a. 1/24 b. 1/12 c. 1/8 d. 1/6

Directions for questions: 11 to 13: These questions are based on the following data.

A box contains 12 mangoes out of which 4 are spoilt. If four mangoes are chosen at random, find the probability that

11. All the four mangoes are spoiled.

a. 1/495 b. 494/495 c. 1/395 d. 394/395

12. Not all the mangoes are spoiled.

a. 1/495 b. 394/395 c. 494/495 d. 1/395

13. Exactly three are not spoiled.

a. 116/495 b. 224/495 c. 129/495 d. 187/495

14. A number is selected at random from first thirty natural numbers. What is the chance that it is a multiple of either 3 or 13?

a.17/30 b. 2/5 c. 11/30 d. 4/15

Directions for questions: 15 to 17: These questions are based on the following data.

If the numbers 1 to 100 are written on 100 pieces of paper, (one on each) and one piece is picked at random, then

15. What is the probability that the number drawn is neither prime nor composite?

a. 1/50 b. 1/25 c. 1/100 d. 1

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16. Find the probability that the number drawn is a multiple of 6 and 8.

a. 3/50 b. 2/25 c. 1/50 d. 1/25

17. Find the probability that the number drawn is a factor of 50.

a. 1/25 b. 1/50 c. 3/25 d. 3/50

18. Out of 7 fruits in a basket, 2 are rotten. If two fruits are drawn at random from the basket, the probability of both being rotten is

a. 1/21 b. 10/21 c. 20/21 d. 11/21

19. The probability that a number selected at random from first 50 natural numbers is a composite number is

a. 21/25 b. 17/25 c. 4/25 d. 8/25

20. If six persons sit around a table, the probability that some specified three of them are always together is

a. 1/20 b. 3/10 c. 1/5 d. 4/5

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Answer & Explanations

1. Exp: We have 1, 8, 27 and 64 as perfect cubes from 1 to 100. Thus, the probability of picking a perfect cube is 4/100 = 1/25

2. Exp: Find the number of cases in which none of the digits show a '6'.

i.e. all three dice show a number other than '6', 5 * 5 *5 = 125 cases.

Total possible outcomes when three dice are thrown = 216.

The number of outcomes in which at least one die shows a '6' = Total possible outcomes when three dice are thrown - Number of outcomes in which none of them show '6'.

= 216 - 125 = 91.

The required probability = 91/216.

3. Exp: In a simultaneous throw of two dice, n(S) = (6 x 6)= 36.

Let E = event of getting a doublet = {(1,1),(2,2),(3,3),(4,4),(5,5),(6,6)}.

Therefore, P(E) = n (E)/ n(S) = 6/36 = 1/6.

4. Exp: Total number of balls = (4 + 5 + 6) = 15.

Therefore, n(S) = 15.

Let E_1 = event of drawing a red ball.

and E_2 = event of drawing a green ball.

Then, $E_1 \cap E_2 = f$.

$P(E_1 \cap E_2) = P(E_1) + P(E_2) = (4/15 + 5/15) = 9/15 = 3/5$.

5. Exp: Sample space (Denominator): When 4 dice are thrown simultaneously, then the total number of possible outcomes is 64 = 1296.

Event (Numerator): The chances that all the dice show same number (1,1,1,1), (2,2,2,2),(3,3,3,3),(4,4,4,4),(5,5,5,5),(6,6,6,6)}is 6.

Probability = Event/ Sample space = 6/64 = 1/63 = 1/216.

6. Exp: $P(\text{Absent} \mid \text{Friday}) = \frac{P(\text{Friday and abscent})}{P(\text{Friday})} = 0.03/0.2 = 15\%$

7. Exp: Sum of 9 = {(3,6) (6,3)}= 2ways.

Sum of 10 = {(5,5) (6,4) (4,6) (5,5)}= 4 ways.

Sum of 11 = {(6,5) (5,6)}= 2 ways.

Sum of 12 = {(6,6) (6,6)}= 2 ways.

Therefore, Favourable cases = 10

Total cases = 6 x 6 = 36.

Therefore, Probability = 10/36 = 5/18.

8. Exp: Four cards can be drawn from a pack in $^{52}C_4$ ways.

Let E be the event of each card being an ace.

This can be done in $^4C_4$ i.e, 1 way.

So P(E) = $1/^{52}C_4$

9. Exp: When a person tosses two heads and one tail, he will get Rs.12. When three coins are tossed, total outcomes = $2^3 = 8$. Favourable out comes i.e, two heads and one tail is = {HHT, HTH, THH}= 3ways. Therefore, required probability = 3/8.

10. Exp: Given, set is {2, 4, 6 … 48}

n(s) = 24

The roots of given equations are 3,4,4,10. The number of chosen from the set are 4, 10, which are the roots of given equation.

n(E) = 2

Therefore, required probability = 2/24 = 1/12.

11. Exp: Out of 12,8 are good and 4 are spoiled.

Required probability = $^4C_4/^{12}C_4$ = 1/495.

12. Exp: Required probability = 1 – 1/495 = 494/495.

13. Exp: Required probability = $\frac{^8C_3 \cdot ^4C_1}{^{12}C_4} = \frac{56 \times 4}{495}$ = 224/495.

14. Exp: The probability that the number is a multiple of 3 is 10/30. (Since 3*10 = 30).

Similarly the probability that the number is a multiple of 13 is 2/30. {Since 13*2 = 26).

Neither 3 nor 13 has common multiple from 1 to 30. Hence these events are mutually exclusive events. Therefore chance that the selected number is a multiple of 3 or 13 is (10+2)/30 = 2/5.

15. Exp: There are 25 primes, 74 composite numbers from 1 to 100. The number which is neither prime nor composite is 1.

Therefore, required probability = 1/100.

16. Exp: From 1 to 100 there are 4 numbers which are multiples of 6 and 8. (i.e, multiples of 24)

Therefore, required probability = 4 /100 = 1/25

17. Exp: The factors of 50 are 1, 2, 5, 10, 25, 50

Therefore, required probability = 6/100 = 3/50.

18. Exp: The number of exhaustive events = $^{7}C_{2}$ = 21.

Let E be event of the 2 fruits being rotten. The number of favourable cases are $^{2}C_{2}$ = 1 way. \ Required probability = 1/21.

19. Exp: The number of exhaustive events = $^{50}C_{1}$ = 50. We have 15 primes from 1 to 50.

Number of favourable cases are 34.

Therefore, Required probability = 34/50 = 17/25.

20. Exp: There are six persons and three of them are grouped together. Since it is a circle, this can be done in 3! 3! ways. Therefore, P = 3!3!/5 = 3/10

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