

ASSIGNMENT CLASS XI PROBABILITY

1. A pair of dice is rolled. Consider the following events: A : the sum is greater than 8, B : 2 occurs on either die , C : the sum is atleast 7 and a multiple of 3. Which pair of events are mutually exclusive?
2. A card is drawn at random from a deck of 52 playing cards. Find the probability that it is:
 - (i) an ace (ii) a jack of hearts (iii) a three of clubs or a six of diamonds (iv) a heart
 - (v) any suit except heart (vi) a ten or a spade (vii) neither a four nor a club
 - (viii) an honours card (ix) a face card (x) a spade or a face card
3. Four cards are drawn at random from a pack of 52 cards. Find the probability of getting:
 - (i) all the four cards of the same suit (ii) all the four cards of the same number
 - (iii) one card from each suit (iv) all four face cards
 - (v) two red cards and two black cards (vi) all cards of the same color (vii) getting four aces
4. An urn contains 9 red, 7 white and 4 black balls. If two balls are drawn at random, find probability that:
 - (i) both the balls are red (ii) one ball is white
 - (iii) the balls are of the same color (iv) one is white and other is red
5. A five digit number is formed by the digits 1, 2, 3, 4, 5 without repetition. Find the probability that the number is divisible by 4.
6. One number is chosen from numbers 1 to 200. Find the probability that it is divisible by 4 or 6.
7. The letters of word "SOCIETY" are placed at random in a row. What is the probability that three vowels come together?
8. Find the probability that in a random arrangement of the letters of the word "UNIVERSITY" the two I's come together.
9. The letters of the word "MUMMY" are placed at random in a row. What is the chance that letters at the extreme are both M ?
10. A bag contains 50 tickets numbered 1, 2, 3, ..., 50 of which five are drawn at random and arranged in ascending order of magnitude $x_1 < x_2 < x_3 < x_4 < x_5$. Find the probability that $x_3 = 30$.

ANSWERS: 1. A, B; B, C are mutually exclusive; but A, C are not.

2. (i) $\frac{1}{13}$ (ii) $\frac{1}{52}$ (iii) $\frac{1}{26}$ (iv) $\frac{1}{4}$ (v) $\frac{3}{4}$ (vi) $\frac{4}{13}$ (vii) $\frac{9}{13}$ (viii) $\frac{4}{13}$ (ix) $\frac{3}{13}$ (x) $\frac{11}{26}$

3. (i) $\frac{44}{4165}$ (ii) $\frac{1}{20825}$ (iii) $\frac{2197}{20825}$ (iv) $\frac{99}{54145}$ (v) $\frac{325}{833}$ (vi) $\frac{92}{833}$ (vii) $\frac{1}{270725}$

4. (i) $\frac{18}{95}$ (ii) $\frac{91}{190}$ (iii) $\frac{63}{190}$ (iv) $\frac{63}{190}$ 5. $\frac{1}{5}$ 6. $\frac{67}{200}$ 7. $\frac{1}{7}$ 8. $\frac{1}{5}$ 9. $\frac{3}{10}$ 10. $\frac{551}{15134}$

ASSIGNMENT CLASS XI
PERMUTATION AND COMBINATION

- Find the total number of divisors of 36000.
- (a) Find r if $P(5, r) = 2P(6, r-1)$
(b) Find n if ${}^{n+2}C_8 : {}^{n-2}P_4 = 57:16$
- (a) Find n if ${}^nC_4, {}^nC_5$ and nC_6 are in A.P.
(b) Find n if ${}^{2n}C_1, {}^{2n}C_2$ and ${}^{2n}C_3$ are in A.P.
- (a) If ${}^nC_r : {}^nC_{r+1} = 1:2$ and ${}^nC_{r+1} : {}^nC_{r+2} = 2:3$, find n and r .
(b) If ${}^{n+1}C_{r+1} : {}^nC_r : {}^{n-1}C_{r-1} = 11:6:3$, find n and r .
- Find the total number of rectangles in the following figure:

- A polygon has 44 diagonals. Find the number of sides.
- 4 boys and 3 girls are to be seated in a row. In how many ways can it be done if they are seated alternately?
- Letters of the word ORIENTAL are arranged such that the vowels and consonants occur alternately. In how many ways it can be done?
- How many natural numbers less than 1000 can be formed using the digits 1, 2, 3, 4, 5 if:
(a) repetition of digits is not allowed (b) repetition of digits is allowed.
- Find the sum of all the numbers that can be formed with the digits 2, 3, 4, 5 taken all at a time.
- How many four digit numbers divisible by 4 can be made with the digits 1, 2, 3, 4, 5 if the repetition of digits is not allowed.
- The letters of the word 'RANDOM' are written in all possible orders, and these words are written out as in a dictionary, What is the rank of the word 'RANDOM'.
- A box contains 5 different red and 6 different white balls. In how many ways can 6 balls be selected so that there are at least two balls of each colour?
- If there are 12 persons in a party, and if each two of them shake hands with each other, how many handshakes happen in the party?

ANSWERS

1. 72 2. (a) 3 (b) 19 3. (a) 7 or 14 (b) $\frac{7}{2}$ 4. (a) $n=14, r=4$ (b) $n=10, r=5$
5. 150 6. 11 7. 144 8. 1152 9. (a) 85 (b) 155
10. 93324 11. 24 12. 614 13. 425 14. 66