

WORKSHEET (STANDARD)

CLASS:-XII

1. If the letters of the word ALGORITHM are arranged at random in a row, what is the probability that the letter G, O and R must remain together.
2. In a single throw of two dice, what is the probability of getting a total of 8 on the face of the dice.
3. An unbiased dice is rolled twice in succession. Find the probability of obtaining a total of 5 or an odd number on each dice.
4. The probability of happening of an event A is 0.5 and that of B is 0.3. If A and B are mutually exclusive events then find the probability of neither A nor B.
5. What is the probability that a randomly chosen two digit positive integer is a multiple of 3
6. Events E and F are such that $P(E' \cup F') = 0.25$. Find whether E and F are mutually exclusive
7. A sports teacher wants to select a team of 3 chess players from 2 girls and 3 boys. What is the probability that team will have 1 girl and 2 boys.
8. If E and F are two events such that $P(E) = \frac{1}{4}$, $P(F) = \frac{1}{2}$ and $P(E \cap F) = \frac{1}{8}$, find
(i) $P(\text{not } E \text{ and not } F)$ (ii) $P(E \text{ but not } F)$
9. A box contains 9 red, 7 white and 4 black balls. If two balls are drawn at random find the probability that both the balls are red.
10. In a relay race there are five teams A, B, C, D and E. What is the probability that A, B and C are first three to finish (in any order). Assume that all finishing orders are equally likely.
11. A bag contains 9 balls of which 4 are red, 3 are blue and 2 are yellow. The balls are similar in shape and size. A ball is drawn at random from the bag. Calculate the probability that it will be: (i) red (ii) not blue (iii) either red or blue.
12. Two cards are drawn from a well shuffled pack of 52 cards. Find the probability
(i) one is black, other is red (ii) both are king (iii) both are face cards.
13. Two dice are thrown simultaneously. Let E_1 denote getting a doublet, E_2 denote getting sum of the numbers appearing on the dice to be at least 10. Find
(i) $P(E_1 \text{ or } E_2)$ (ii) Are E_1 and E_2 mutually exclusive

14. A box contains 10 bulbs of which 3 are defective. If a random sample of 5 bulbs is drawn, find the probabilities that the sample contains
- exactly two defective bulbs
 - at the most one defective bulb
15. Three squares of a chess board are selected at random. Find the probability of selecting two squares of one colour and the other of a different colour.
16. In a class of 60 students, 30 opted for NCC, 32 opted for NSS and 24 opted for both. If one student is selected at random, find the probability that (i) the student opted for NCC and NSS (ii) the student has opted neither NCC nor NSS.
17. A die has two faces each with number "1", three faces each with number "2" and one face with number 3. If die is rolled once, determine
- $P(2)$
 - $P(1 \text{ or } 3)$
 - $P(\text{not } 3)$.
18. The probability that a student will pass the final examination in both English and Hindi is 0.5 and the probability of passing neither is 0.1. If the probability of passing the English examination is 0.75, what is the probability of passing the Hindi examination.
19. A young man visits a hospital for medical checkup. The probability that he has lungs problem is 0.45, heart problem is 0.29 and either lungs or heart problem is 0.47. What is the probability that he has both types of problems: lungs as well as heart. Out of 1000 persons, how many are expected to have both types of problem.
20. Two die are thrown together. What is the probability that sum of the numbers are neither divisible by 3 nor 4?

5. Two students Anil and Ashima appeared in an examination. The probability that Anil will qualify the examination is 0.05 and that Ashima will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02. Find the probability that:
 - (i) both Anil and Ashima will not qualify the examination
 - (ii) at least one of them will not qualify the examination
 - (iii) only one of them will qualify the examination .
6. Three coins are tossed once .Find the probability of getting
 - (i) at most two heads
 - (ii) at least two heads
 - (iii) exactly two heads ..
7. If A,B and C are three events associated with a random experiment, Prove that $P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(A \cap C) + P(A \cap B \cap C)$
8. In an essay competition, the odds in favour of competitors P,Q,R and S are 1:2, 1:3, 1:4 and 1:5 respectively. Find the probability that one of them wins the competition.
9. Four cards are drawn at a time from a pack of 52 cards .find the probability of getting all the four cards of the same suit.
10. An integer is chosen at random from the numbers ranging from 1 to 50. what is the probability that the integer chosen is a multiple of 2 or 3 or 10 ?