

MATHEMATICS
WORKSHEET_110725
CHAPTER 14 PROBABILITY

SUBJECT: MATHEMATICS STANDARD

MAX. MARKS : 40

CLASS : X

DURATION : 1½ hrs

General Instructions:

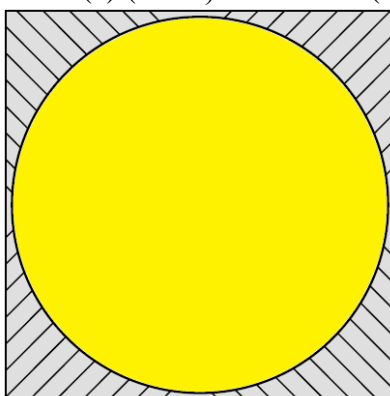
- (i). All questions are compulsory.
- (ii). This question paper contains 20 questions divided into five Sections A, B, C, D and E.
- (iii). **Section A** comprises of 10 MCQs of 1 mark each. **Section B** comprises of 4 questions of 2 marks each. **Section C** comprises of 3 questions of 3 marks each. **Section D** comprises of 1 question of 5 marks each and **Section E** comprises of 2 Case Study Based Questions of 4 marks each.
- (iv). There is no overall choice.
- (v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. There is a square board of side '2a' units circumscribing a yellow circle. Jayadev is asked to keep a dot on the above said board. The probability that he keeps the dot on the shaded region is:

- (a) $\pi/4$ (b) $(4 - \pi)/4$ (c) $(\pi - 4)/4$ (d) $4/\pi$



2. If a card is drawn from a deck of cards, what is the probability of a card drawn to be a red or a black card and what can we say about that event?
- (a) 1 and it is a sure event. (b) 0 and it is a sure event.
(c) 1 and it is an impossible event. (d) 0 and it is an impossible event.
3. In an MCQ test, a student guesses the correct answer x out of y times. If the probability that the student guesses the answer to be wrong is $\frac{2}{3}$ then what is the relation between x and y
- (a) $y = 3x$ (b) $x = 3y$ (c) $3x = 2y$ (d) $2x = 3y$
4. If a letter is chosen at random from the letters of English alphabets, then the probability that it is a letter of the word 'MATHEMATICS' is:
- (a) $\frac{4}{13}$ (b) $\frac{9}{26}$ (c) $\frac{5}{13}$ (d) $\frac{11}{26}$
5. Cards numbered 7 to 40 were put in a box. Anish selects a card at random. What is the probability that the selected card is a multiple of 7?
- (a) $\frac{7}{34}$ (b) $\frac{5}{34}$ (c) $\frac{6}{35}$ (d) $\frac{7}{35}$
6. A bowl contains 3 red and 2 blue marbles.
Roohi wants to pick a red marble. Which of the following changes could she make so that the probability of picking a red marble is greater than it was before?
- (i) Adding a red marble

(ii) Removing a blue marble

(iii) Adding 1 red and 1 blue marble

(a) Only (i) (b) Only (i) and (ii) (c) Only (i) and (iii) (d) All of the above

7. A dice is thrown twice. The probability of getting 4, 5 or 6 in the first throw and 1, 2, 3 or 4 in the second throw is:

(a) $1/3$ (b) $2/3$ (c) $1/2$ (d) $1/4$

8. A school has five houses A, B, C, D and E. A class has 23 students, 4 from house A, 8 from house B, 5 from house C, 2 from house D and the rest from house E. A single student is selected at random to be the class monitor. The probability that the selected student is not from houses A, B and C is:

(a) $4/23$ (b) $6/23$ (c) $8/23$ (d) $17/23$

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

9. **Assertion (A):** The probability that a leap year has 53 Sundays is $2/7$.

Reason (R): The probability that a non-leap year has 53 Sundays is $5/7$.

10. **Assertion (A):** The probability of getting a bad egg in a lot of 400 is 0.035. The number of good eggs in the lot is 386.

Reason (R): If the probability of an event is p , the probability of its complementary event will be $1 - p$.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Cards, marked with numbers 5 to 50, are placed in a box and mixed thoroughly. A card is drawn from the box at random. Find the probability that the number on the taken card is

(i) a prime number less than 10. (ii) a number which is a perfect square.

12. The king, queen and jack of diamonds are removed from a pack of 52 cards and then the pack is well shuffled. A card is drawn from the remaining cards. Find the probability of getting a card of (i) diamonds, (ii) a jack

13. Two different dice are tossed together. Find the probability

- (i) that the number on each dice is even
- (ii) that the sum of numbers appearing on two dice is 5.

14. Find the probability that a leap year should have exactly 52 tuesday.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. A bag contains 12 balls out of which x are white.

- (i) If one ball is drawn at random, what is the probability that it will be a white ball?
- (ii) If 6 more white balls are put in the bag, the probability of drawing a white ball will be double than that in (i). Find x .

16. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting

- (i) a face card or a black card (ii) neither an ace nor a king (iii) a jack and a black card

17. Two different dice are thrown together. Find the probability that the numbers obtained:
 (a) have a sum less than 7 (b) have a product less than 16 (c) is a doublet of odd numbers.

SECTION – D

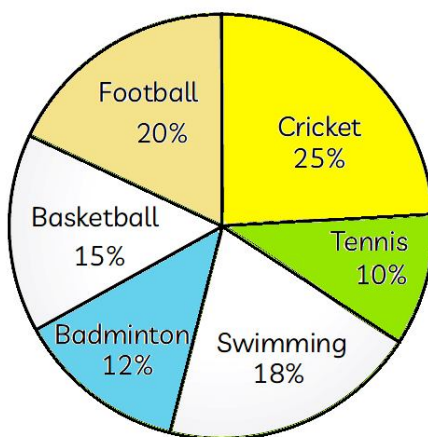
Questions 18 carry 5 marks.

18. From a pack of 52 playing cards, Jacks and Kings of red colour and Queens and Aces of black colour are removed. The remaining cards are mixed and a card is drawn at random. Find the probability that the drawn card is:
 (a) a black queen. (b) a card of red colour. (c) a Jack of black colour. (d) a face card.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. A school offers several sports to its students such as cricket, football, basketball, tennis, badminton and swimming. Based on past records, the sports teacher prepared a pie chart as shown below showing preference of students towards a particular sport.



- (a) Find the probability of favourite sport being either swimming or badminton.
 (b) Find the probability of favourite sport being neither football nor cricket.
 (c) Find the probability of favourite sport being basketball, tennis or cricket.
20. Two friends are travelling in a bus. They were feeling bored, so they started playing a game with a pair of dice that one of them had. Each of them started rolling the pair of dice one by one, stating one condition before rolling. If the person gets the numbers according to the condition stated by him, he wins and get a score.



Based on the above information, answer the following questions.

- (i) (a) First friend says, “a doublet”. What is the probability of his winning? (1)
 (b) Second friend says, “sum less than 9”. What is the probability of his winning? (1)
 (ii) (a) First one says, “6 will come up either time.” What is the probability of his winning? (1)
 (b) Second one says, “sum is an even number”. What is the probability of his losing? (1)