GRADE X

Question Bank (MATHEMATICS)

Chapter-14 PROBABILITY

1 marks:

1. If the probability of the player winning a game is 0.79, then the probability of his losing the same game is **[BOARD 2024]**

   a) 1.79 b) 0.31 c) 0.21% d) 0.21

2. Two dice are rolled together. The probability of getting sum of numbers on two dice as 2, 3 or 5 is **[BOARD 2024]**

   a) $\frac{7}{36}$ b) $\frac{11}{36}$ c) $\frac{5}{36}$ d) $\frac{4}{9}$

3. Two dice are rolled together. The probability of getting sum of two numbers to be more than 10 is **[BOARD 2024]**

   a) $\frac{1}{9}$ b) $\frac{1}{6}$ c) $\frac{7}{12}$ d) $\frac{1}{12}$

4. Two dice are thrown together. The probability that they show different numbers is **[BOARD 2024]**

   a) $\frac{1}{6}$ b) $\frac{5}{6}$ c) $\frac{1}{3}$ d) $\frac{2}{3}$

5. Two dice are thrown together. The probability of getting the difference of numbers on their upper faces equals to 3 is **[BOARD 2023]**

   a) $\frac{1}{9}$ b) $\frac{2}{9}$ c) $\frac{1}{6}$ d) $\frac{1}{12}$

6. Two dice are tossed simultaneously. The probability of getting odd numbers on both the dice is **[BOARD 2024]**

   a) $\frac{6}{36}$ b) $\frac{3}{36}$ c) $\frac{12}{36}$ d) $\frac{9}{36}$

7. In a single throw of two dice, the probability of getting 12 as a product of two numbers obtained is: **[BOARD 2023]**

   a) $\frac{1}{9}$ b) $\frac{2}{9}$ c) $\frac{4}{9}$ d) $\frac{5}{9}$

8. Which of the following is not a probability of an event? **[BOARD 2024]**

   a) 0.89 b) 52% c) $\frac{1}{13}$% d) $\frac{1}{0.89}$

9. One card is drawn at random from a well shuffled deck of 52 cards. The probability that it is a red ace card is **[BOARD 2024]**

a) $\frac{1}{13}$ b) $\frac{1}{26}$ c) $\frac{1}{52}$ d) $\frac{1}{2}$

10. A card is drawn at random from a well-shuffled pack of 52 cards. The probability that the card drawn is not an ace is **[BOARD 2023]**

a) $\frac{1}{13}$ b) $\frac{9}{13}$ c) $\frac{4}{13}$ d) $\frac{12}{13}$

11. From the data 1, 4, 7, 9, 16, 21, 25 if all the even numbers are removed, then the probability of getting at random a prime number from the remaining is **[BOARD 2024]**

a) $\frac{2}{5}$ b) $\frac{1}{5}$ c) $\frac{1}{7}$ d) $\frac{2}{7}$

12. If a digit is chosen at random from the digits 1, 2, 3, 4, 5, 6, 7, 8, 9 then the probability that this digit is an odd prime number is **[BOARD 2024]**

a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) $\frac{4}{9}$ d) $\frac{5}{9}$

13. A box contains cards numbered 6 to 55. A card is drawn at random from the box. The probability that the drawn card has a number which is a perfect square is **[BOARD 2024]**

a) $\frac{7}{50}$ b) $\frac{7}{55}$ c) $\frac{1}{10}$ d) $\frac{5}{49}$

14. One ticket is drawn at random from a bag containing tickets numbered 1 to 40. The probability that the selected ticket has a number which is a multiple of 7 is **[BOARD 2024]**

a) $\frac{1}{7}$ b) $\frac{1}{8}$ c) $\frac{1}{5}$ d) $\frac{7}{40}$

15. A bag contains 3 red balls, 5 white balls and 7 black balls. The probability that a ball drawn from the bag at random will be neither red nor black is **[BOARD 2024]**

a) $\frac{1}{3}$ b) $\frac{1}{5}$ c) $\frac{7}{15}$ d) $\frac{8}{15}$

16. A bag contains 5 red balls and n green balls. If the probability of drawing a green ball is three times that of a red ball, then the value of n is **[BOARD 2023]**

a) 18 b) 15 c) 10 d) 20

17. The probability of guessing the correct answer to a certain test question is $\frac{x}{6}$. If the probability of not guessing the correct answer to this question is $\frac{2}{3}$ then the value of x is **[BOARD 2024]**

a) 2 b) 3 c) 4 d) 6

18. The probability of getting a bad egg in a lot of 400 eggs is 0.045. The number of good eggs in the lot is **[BOARD 2024]**

a) 18 b) 180 c) 382 d) 220

19. A girl calculates that the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, how many tickets has she bought? **[BOARD 2023]**

a) 40 b) 240 c) 480 d) 750

20. In a group of 20 people, 5 can't swim. If one person is selected at random then the probability that he/she can swim is **[BOARD 2023]**

a) $\frac{3}{4}$ b) $\frac{1}{3}$ c) $\frac{1}{4}$ d) 1

21. From the letters of the word "MOBILE", a letter is selected at random. The probability that the selected letter is vowel is **[BOARD 2024]**

a) $\frac{3}{7}$ b) $\frac{1}{6}$ c) $\frac{1}{2}$ d) $\frac{1}{3}$

22. For an event E, if $P(E) + P(\bar{E}) = q$, then the value of $q^2 - 4$ is **[BOARD 2024]**

a) -3 b) 3 c) 5 d) -5

23. Probability of happening of an event is denoted by p and probability of non-happening of the event is denoted by q. Relation between p and q is **[BOARD 2023]**

a) $p + q = 1$ b) $p = 1, q = 1$ c) $p = q - 1$ d) $p + q + 1 = 0$

24. In a lottery, there are 5 prizes and 20 blanks. The probability of getting a prize is **[BOARD 2023]**

a) $\frac{1}{4}$ b) $\frac{1}{20}$ c) $\frac{1}{25}$ d) $\frac{1}{5}$

Options for Assertion and Reasoning Questions:

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

a) Assertion (A) is false but reason (R) is true

25. ***Assertion (A):*** In a cricket match, a batsman hits a boundary 9 times out of 45 balls he plays. The probability that in a given ball, he does not hit the boundary is $\frac{4}{5}$.

Reason (R): $P(E) + P(\bar{E}) = 1$. **[BOARD 2024]**

26. ***Assertion (A):*** The probability that a leap year has 53 Sundays is $\frac{2}{7}$.

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

[BOARD 2023]

2 marks:

1. In a pack of 52 playing cards one card is lost. From the remaining cards, a card is drawn at random. Find the probability that the drawn card is queen of heart, if the lost card is a black card. **[BOARD 2024]**
2. One card is drawn at random from a well shuffled deck of 52 cards. Find the probability that the card drawn
   (i) is queen of hearts
   (ii) is not a jack. **[BOARD 2024]**
3. The king, queen and ace of clubs and diamonds are removed from a deck of 52 playing cards and the remaining cards are shuffled. A card is randomly drawn from the remaining cards. Find the probability of getting
   (i) A card of clubs
   (ii) A red coloured card. **[BOARD 2024]**
4. A carton consists of 60 shirts of which 48 are good, 8 have major defects and 4 have minor defects. Nigam, a trader will accept the shirts which are good but Anmol, another trader will only reject the shirts which have major defects. One shirt is drawn at random from the carton. Find the probability that it is acceptable to Anmol. **[BOARD 2024]**
5. A bag contains 4 red, 3 blue and 2 yellow balls. One ball is drawn at random from the bag. Find the probability that drawn ball is (i) red (ii) yellow. **[BOARD 2023]**
6. A fair coin tossed twice, find the probability of getting at most one head?

[BOARD 2023]

3 marks:

1. Three coins are tossed simultaneously. What is the probability of getting
   (i) At least one head?
   (ii) Exactly two tails?
   (iii) At most one tail? **[BOARD 2024]**
2. A box contains 90 discs which are numbered 1 to 90. If one disc is drawn at random from the box, find the probability that it bears a

(i) 2-digit number less than 40.

(ii) Number divisible by 5 and greater than 50.

(iii) A perfect square. **[BOARD 2024]**

3. Three unbiased coins are tossed simultaneously. Find the probability of getting

(i) At least one head

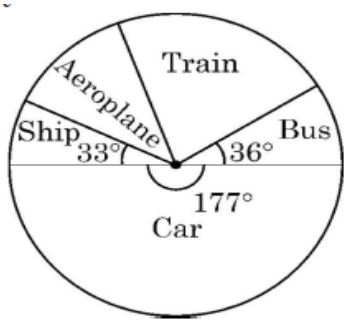
(ii) Exactly one tail

(iii) Two heads and one tail. **[BOARD 2024]**

4. A jar contains 54 marbles, each of which is blue, green or white. The probability of selecting a blue marble at random from the jar is $\frac{1}{3}$, and the probability of selecting a green marble at random is $\frac{4}{9}$. How many white marbles does this jar contain? **[BOARD 2024]**

Case Based Questions:

1. In a survey on holidays, 120 people were asked to state which type of transport they used on their last holiday. The following pie chart shows the results of the survey. **[BOARD 2024]**



Observe the pie chart and answer the following questions:

(i) If one person is selected at random, find the probability that he/she travelled by bus or ship. **1**

(ii) A person is selected at random. If the probability that he did not use train is $\frac{4}{5}$, find the number of people who used train. **2**

OR

The probability that randomly selected person used aeroplane is $\frac{7}{60}$. Find the revenue collected by air company at the rate of Rs 5,000 per person. **2**

(iii) Which is most favorite mode of transport and how many people used it? **1**

2. Computer-based learning (CBL) refers to any teaching methodology that makes use of computers for information transmission. At an elementary school level, computer applications can be used to display multimedia lesson plans. A survey was done on 1000 elementary and secondary schools of Assam and they were classified by the number of computers they had. **[BOARD 2023]**

Number of Computers	1 – 10	11 – 20	21 – 50	51 – 100	101 and more
Number of Schools	250	200	290	180	80

One school is chosen at random. Then:

(i) Find the probability that the school chosen at random has more than 100 computers. **1**

(ii) Find the probability that the school chosen at random has 50 or fewer computers. **2**

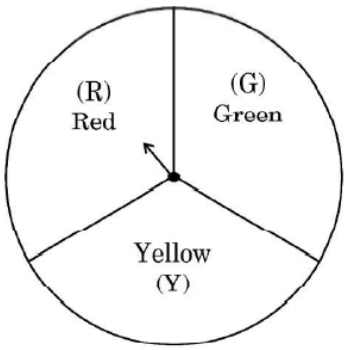
OR

Find the probability that the school chosen at random has no more than 20 computers. **2**

(iii) Find the probability that the school chosen at random has 10 or less than 10 computers. **1**

3. A middle school decided to run the following spinner game as a fund-raiser on Christmas carnival.

Making purple: Spin each spinner once. Blue and red make purple. So, if one spinner shows Red (R) and another Blue (B) then you 'win'. One such outcome is written as 'RB'. **[BOARD 2023]**



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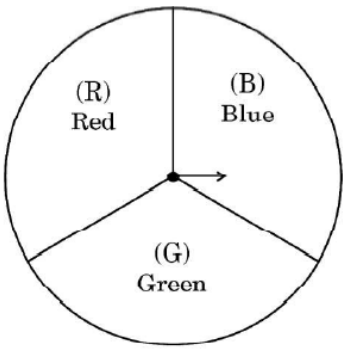


II

Based on the above information, answer for the following questions:

(i) List all possible outcomes of the game. **1**

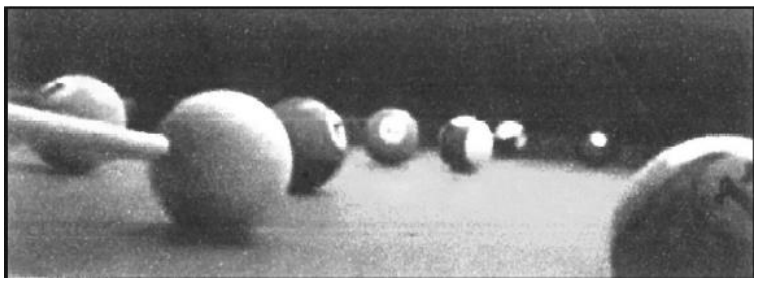
(ii) For each win, a particular gets Rs 10, but if he/she loses, he/she has to pay Rs 5 to the school. If 99 participants played calculate how much fund could the school have collected. **2**

OR

If the same amount of Rs 5 has been decided for winning or losing the game, then how much fund had been collected by school? (Number of participants=99). **2**

(iii) Find the probability of 'Making Purple'. **1**

4. "Eight Ball" is a game played on a pool table with 15 balls numbered 1 to 15 and a "cue ball" that is solid and white. Of the 15 numbered balls, eight are solid (non-white) coloured and numbered 1 to 8 and seven are stripped balls numbered 9 to 15. **[BOARD 2023]**



The 15 numbered pool balls (no cue ball) are placed in a large bowl and mixed, then one ball is drawn out at random.

Based on the above information answer the following questions:

(i) What is the probability that the drawn ball bears number 8? **1**

(ii) What is the probability that the drawn ball bears an even number? **2**

OR

What is the probability that the drawn ball bears a number, which is a multiple of 3? **2**

(iii) What is the probability that the drawn ball is a solid coloured and bears an even number? **1**