# MATHS

# BOOKS - PSEB

# PROBABILITY

**Exercise**

1. Complete the following statement: Probability of an event E +Probability of the event 'not E' =_____.

**2.** Complete the following statements: The probability of an event that cannot happen is .......... . Such an event is called .......... .

**3.** Complete the following statement: The probability of an event that is certain to happen is_____.Such an event is called_____.

**4.** Complete the following statements: The sum of the probabilities of all the elementary events of an experiment is ......... .

**5.** Complete the following statement: The probability of an event is greater than or equal to_____and less than or equal to_____.

**6.** Which of the following experiments have equally likely outcomes? Explain: A driver attempts to start a car. The car starts or does not start.

**7.** Which of the following experiments have equally likely outcomes? Explain: A player

attempts to shoot a basketball. She/he shoots or misses the shot.

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**8.** In the following experiment have equally likely outcomes?Explain. A trial is made to answer a true-false question. The answer is right or wrong.

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**9.** Which of the following experiments have equally likely outcomes? Explain: A baby is born. It is a boy or a girl.

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**10.** Why is tossing a coin considered to be a fair way of deciding which team should get the ball at the beginning of a football game.

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**11.** Which of the following cannot be the probability of an event?

A. $\dfrac{2}{3}$

B. -1.5

C. 0.15

D. 0.7

**Answer:**

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**12.** If P(E) = 0.05, which is the probability of not E.

**13.** A bag contains lemon flavoured candies only. Malini takes out one candy without looking into the bag. What is the probability that she takes out : an orange flavoured candy?

**14.** It is given that in a group of 3 stundents, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday?

**15.** A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is (i) red ? (ii) not red?

**16.** A box contains 5 red marbles.8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be (i)red? (ii) white? (iii)not green?

**17.** A piggy bank contains hundred 50p coins, fifty ₹ 1 coins, twenty ₹ 2 coins and ten ₹ 5 coins. If it is equally likely that one of the coins will fall out when the bank is turned upside down, what is the probability that the coin (i) will be a 50 p coin? (ii) will not be a ₹ 5 coin?

**18.** Gopi buys a fish from a shop for his aquarium. The shopkeeper takes out one fish
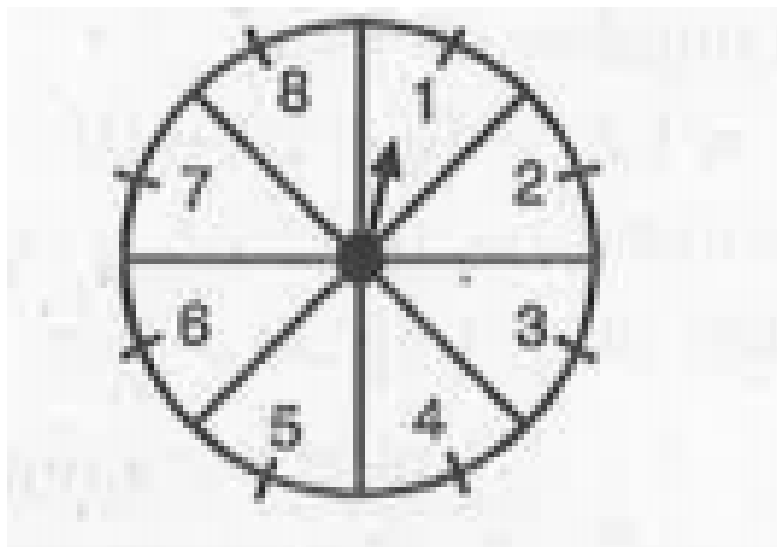
at random from a tank containing 5 male fish and 8 female fish. What is the probability that the fish taken out is a male fish?

**19.** A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are equally likely outcomes. What is the probability that it will point at : a number

greater than 2 ?

20. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are

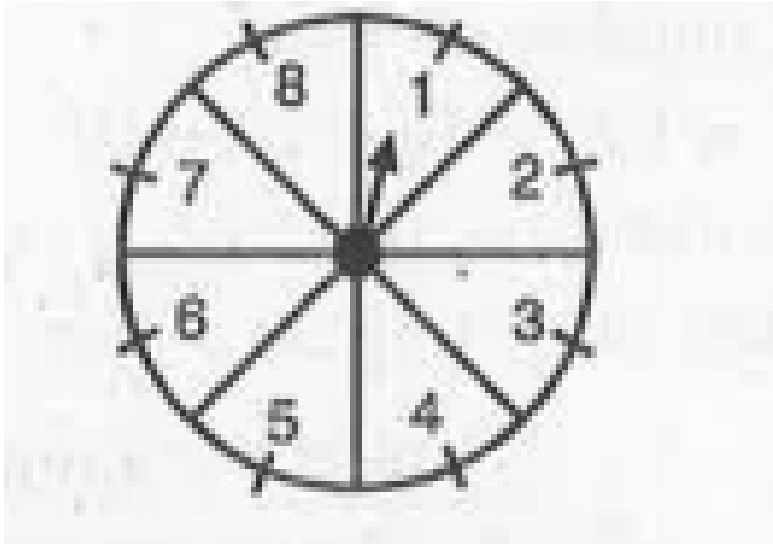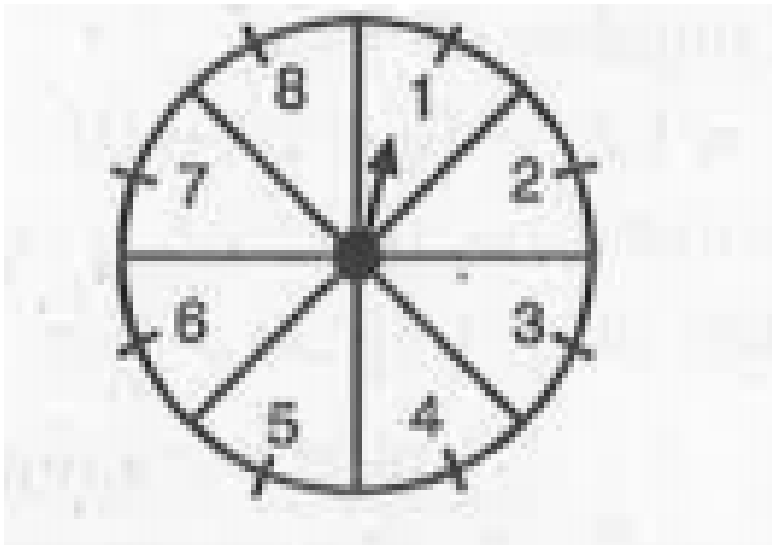equally likely outcomes. What is the probability that it will point at : a number greater than 2 ?

**21.** A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are equally likely outcomes. What is the probability that it will point at : a number greater than 2 ?

**22.** A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and these are equally likely outcomes. What is the probability that it will point at : a number greater than 2 ?
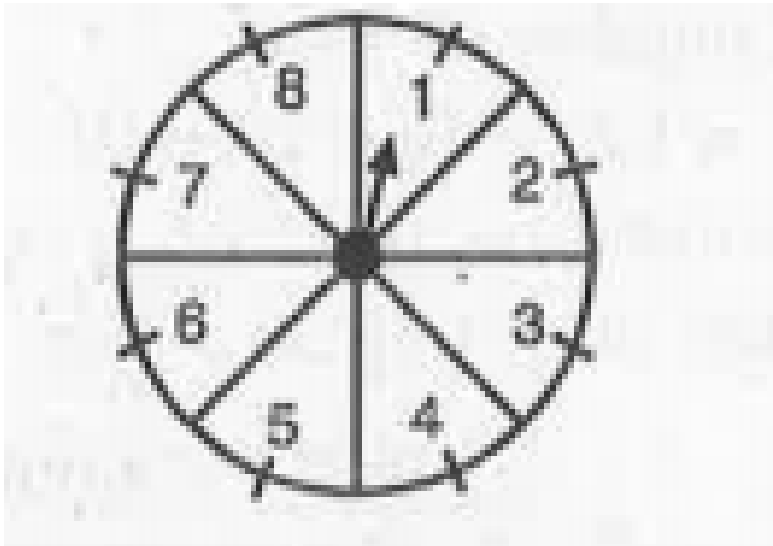
**23.** A die is thrown once. Find the probability of getting : a prime number

**24.** A die is thrown once. Find the probability of getting : a number lying between 2 and 6,

**25.** A die is thrown once. Find the probability of getting : an odd number.

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**26.** One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting : a king of red colour

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**27.** One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting : a face card

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**28.** One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting : a red face card

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**29.** One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting : the jack of hearts

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**30.** One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting : a spade

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**31.** One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting the queen of diamonds.

**32.** Five cards - the ten, jack, queen, king and ace of diamonds, are well-shuffled with their face downwards. One card is then picked up at random : What is the probability that the card is queen ?

**33.** Five cards- the ten, jack, queen, king and ace of diamonds, are well-shuffled with their face downwards. One card is then picked up at random. If the queen is drawn and put aside, what is the probability that the second card picked up is (a) an ace? (b) a queen?

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**34.** 12 defective pens are accidentally mixed up with 132 good ones. It is not possible to just

look at a pen and tell whether or not it is defective. One pen is taken out at random from this lot. Determine the probability that the pen taken out is a good one.

**35.** (i) A lot of 20 bulbs contain 4 defective ones. One bulb is drawn at random from the lot. What is the probability that this bulb is defective? (ii) Suppose the bulb drawn in (i) is not defective and is not replaced. Now one

bulb is drawn at random from the rest. Whal is the probability that this bulb is not defective ?

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**36.** A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears a two-digit number.

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**37.** A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears a perfect square number.

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**38.** A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears : a number divisible by 5.

**39.** A lot consists of 144 ball pens of which 20 are defective and the others are good. Nuri will buy a pen if it is good, but will not buy if it is defective. The shopkeeper draws one pen at random and gives it to her. What is the probability that (i) She will buy it ? (ii) She will not buy it ?

**40.** A student argues that there are 11 possible outcomes 2, 3, 4, 5,6,7,8, 9, 10, 11 and 12. Therefore, each of them has a probability 1/11. Do you agree with this argument? Justify your answer.

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**41.** A game consists of tossing a one rupee coin 3 times and noting its out come each time. Hanif wins if all the tosses give the same

result i.e. Three heads or three tails, and loses otherwise. Calculate the probability that Hanif will lose the game.

**42.** A die is thrown twice. What is the probability that : 5 will not come up either time ?

**43.** A die is thrown twice. What is the probability that : 5 will come up atleast once ?

**44.** Which of the following arguments are correct ? Give reasons for your answer : If two coins are tossed simultaneously there are three possible outcomes - two heads, two tails or one of each. Therefore, for each of these outcomes, the probability is $\frac{1}{3}$.

**45.** Which of the following arguments are correct ? Give reasons for your answer : If a die is thrown, there are two possible outcomes - an odd number or an even number. Therefore, the probability of getting an odd number is $\dfrac{1}{2}$ .

**46.** Two customers Shyam and Ekta are visiting a particular shop in the same week (Tuesday to Saturday). Each is equally likely to visit the shop on any day as on another day. What is the probability that both will visit the shop on : the same day ?

**47.** Two customers Shyam and Ekta are visiting a particular shop in the same week (Tuesday to

Saturday). Each is equally likely to visit the shop on any day as on another day. What is the probability that both will visit the shop on : consecutive days ?

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**48.** Two customers Shyam and Ekta are visiting a particular shop in the same week (Tuesday to Saturday). Each is equally likely to visit the shop on any day as on another day. What is

the probability that both will visit the shop on

: different days ?

**49.** A bag contains 5 red balls and some blue

balls. If the probability of drawing a blue ball is

double that of a red ball, find the number of

blue balls in the bag.

**50.** A box contains 12 balls out of which $x$ are black. If one ball is drawn at random from the box, what is the probability that it will be a black ball ? If 6 more balls are put in the box, the probability of drawing a black ball is now double of what it was before. Find $x$.

**51.** A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at

random from the jar, the probability that it is green is $\dfrac{2}{3}$. Find the number of blue marbles in the jar.

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1. Find the probability of getting a head when a coin is tossed once. Also find the probability of getting a tail.

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**2.** A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. Kritika takes out a ball from the bag without looking into it. What is the probability that she takes out the yellow ball?

**3.** A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. Kritika takes out a ball from the bag without

looking into it. What is the probability that she takes out the red ball?

**4.** A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. Kritika takes out a ball from the bag without looking into it. What is the probability that she takes out the blue ball?

**5.** Suppose we throw a die once. What is the probability of getting a number greater than 4 ?

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**6.** Suppose we throw a die once. What is the probability of getting a number less than or equal to 4 ?

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**7.** One card is drawn from a well shuffled deck of 52 cards. Calculate the probability that the card will be an ace.

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**8.** One card is drawn from a well shuffled deck of 53 cards. Calculate the probability that the card will not be an ace.

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**9.** Two players, Sangeeta and Reshma, play a tennis match. It is known that the probability of Sangeeta winning the match is 0.62. What is the probability of Reshma winning the match?

**10.** Savita and Hamida are friends. What is the probability that both will have (i) different birthdays? (ii) the same birthday? (ignoring a leap year).

**11.** There are 40 students in Class X of a school of whom 25 are girls and 15 are boys. The class teacher has to select one student as a class representative. She writes the name of each student on a separate card, the cards being identical. Then she puts cards in a bag and stirs them thoroughly. She then draws one card from the bag. What is the probability that the name written on the card is the name of (i) a girl? (ii) a boy?

**12.** A box contains 3 blue, 2 white and 4 red Marbles. If a marble is drawn at random from the box then what is the probability that it will be : white

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**13.** A box contains 3 blue, 2 white, and 5 red marbles. If a marble is drawn at random from

the box, what is die probability that it will be blue?

**14.** A box contains 3 blue, 2 white, and 6 red marbles. If a marble is drawn at random from the box, what is die probability that it will be red?

**15.** Harapreet tosses two different coins simultaneously. (say one is of Rs 1 and other of Rs 2). What is the probability that she gets at least one Head?

**16.** In a musical chair game, the person playing the music has been advised to stop playing the music at any time within 2 minutes aftershe starts playing, What is the probability

that the music will stop within the first half-minute after starting ?

17. A canon consists of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Jimmy, a trader, will only accept the shirts which are good, but Sujatha, another trader, will only reject the shirts which have major defects. One shirt is drawn at

random from the carton. What is the probability that it is acceptable to Jimmy?

**18.** A canon consists of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Jimmy, a trader, will only accept the shirts which are good, but Sujatha, another trader, will only reject the shirts which have major defects. One shirt is drawn at

random from the carton. What is the probability that it is acceptable to Sujatha?

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**19.** Two dice, one blue and one grey, arc thrown at the same time. Write down all the possible outcomes. What is the probability that the sum of the two numbers appearing on the top of the dice is 8?

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**20.** Two dice, one blue and one grey, arc thrown at the same time. Write down all the possible outcomes. What is the probability that the sum of the two numbers appearing on the top of the dice is 13?

**21.** Two dice, one blue and one grey, arc thrown at the same time. Write down all the possible outcomes. What is the probability that the

sum of the two numbers appearing on the top of the dice is less than or equal to 12?