**FREE NCERT SOLUTIONS**

CLASS - 10

PROBABILITY

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**EXERCISE 15.1 - Question No. 1**

Complete the following statements: (i) Probability of an event E + Probability of the event 'not E' =__. (ii) The probability of an event that cannot happen is___ Such an event is called__ (iii) The probability of an event that is certain to happen is__. Such an event is called__. (iv) The sum of the probabilities of all the elementary events of an experiment is (v) The probability of an event is greater than or equal to __ and less than or equal to__

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**EXERCISE 15.1 - Question No. 2**

Which of the following experiments have equally likely outcomes? Explain. (i) A driver attempts to start a car. The car starts or does not start. (ii) A player attempts to shoot a basketball. She/he shoots or misses the shot. (iii) A trial is made to answer a true-false question. The answer is right or wrong. (iv) A baby is born. It is a boy or a girl.

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**EXERCISE 15.1 - Question No. 3**

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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**EXERCISE 15.1 - Question No. 4**

Winch of the following cannot be the probability of an event? (A) $\frac{2}{3}$ (B)1.5 (C) 15% (D) 0.7

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**EXERCISE 15.1 - Question No. 5**

If $P(E) = 0.05$, what is the probability of not E?

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**EXERCISE 15.1 - Question No. 6**

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 (i) an orange flavoured candy? (ii) a lemon flavoured candy?

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**EXERCISE 15.1 - Question No. 7**

It is given that in a group of 3 students, 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?

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**EXERCISE 15.1 - Question No. 8**

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?

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**EXERCISE 15.1 - Question No. 9**

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?

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**EXERCISE 15.1 - Question No. 10**

A piggy bank contains hundred 50p coins, fifty Rs. 1 coins, twenty ? 2 coins and ten Rs. 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 Rs. 5 coin?

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**EXERCISE 15.1 - Question No. 11**

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 (see Figure). What is the probability that the fish taken out is a male fish?

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**EXERCISE 15.1 - Question No. 12**

A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1,2,3,4,5,6,1,8 (see Figure), and these are equally likely outcomes. What is the probability that it

will point at (i) 8? (ii) an odd number? (iii) a number greater than 2? (iv) a number less than 9?

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**EXERCISE 15.1 - Question No. 13**

A die is thrown once. Find the probability of getting (i) a prime number; (ii) a number lying between 2 and 6; (iii) an odd number.

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**EXERCISE 15.1 - Question No. 14**

One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting (i) a king of red colour (ii) a face card (iii) a

red face card (iv) the jack of hearts (v) a spade (vi) the queen of diamonds

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**EXERCISE 15.1 - Question No. 15**

Five cardsthe ten, jack, queen, king and ace of diamonds, are well shuffled with their face downwards. One card is then picked up at random. (i) What is the probability that the card is the queen? (ii) 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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**EXERCISE 15.1 - Question No. 16**

12 defective pens are accidentally mixed 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.

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**EXERCISE 15.1 - Question No. 17**

(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. What is the probability that this bulb is not defective ?

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**EXERCISE 15.1 - Question No. 18**

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 (i) a two-digit number (ii) a perfect square number (iii) a number divisible by 5.

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**EXERCISE 15.1 - Question No. 19**

A child has a die whose six faces show the letters as given below: A,B,C,D,E,A. The die is thrown once. What is the probability of getting (i) A? and nbsp; (ii) D?

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**EXERCISE 15.1 - Question No. 20**

Suppose you drop a die at random on the rectangular region shown in Figure. What is the probability that it will land inside the circle with diameter 1m?

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**EXERCISE 15.1 - Question No. 21**

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 ?

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**EXERCISE 15.1 - Question No. 22**

Refer to Example 13. (i) Complete the following table (ii) 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 $\frac{1}{11}$. Do you agree with this argument? Justify

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**EXERCISE 15.1 - Question No. 23**

A game consists of tossing a one rupee coin 3 times and noting its outcome 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.

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**EXERCISE 15.1 - Question No. 24**

A die is thrown twice. What is the probability that (i) 5 will not come up either time? (ii) 5 will come up at least once? [Hint:

Throwing a die twice and throwing two dice simultaneously are treated as the same experiment]

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**EXERCISE 15.1 - Question No. 25**

Which of the following arguments are correct and which are not correct? Give reasons for your answer. (i) 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 1/3 (ii)if a die is thrown, there are two possible outcomes, an odd no. or an even no. Therefore ,the probability of getting an odd no. is 1/2.

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**EXERCISE 15.2 - Question No. 1**

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 (i) the same day? (ii) consecutive days? (iii) different days?

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**EXERCISE 15.2 - Question No. 2**

A die is numbered in such a way that its faces show the numbers 1, 2, 2, 3, 3, 6. It is thrown two times and the total score in two throws is noted. Complete the following table which gives a few values of the total score on the two throws: What is the probability that the total score is (i) even? (ii) 6? (iii) at least 6?

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**EXERCISE 15.2 - Question No. 3**

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, determine the number of blue balls in the bag.

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**EXERCISE 15.2 - Question No. 4**

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 black balls are put in the box, the probability of drawing a black ball is now double of what it was before. Find x.

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**EXERCISE 15.2 - Question No. 5**

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 $\frac{2}{3}$. Find the number of blue balls in the jar.

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**SOLVED EXAMPLES - Question No. 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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**SOLVED EXAMPLES - Question No. 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 (i) yellow ball? (ii) red ball? (iii) blue ball?

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**SOLVED EXAMPLES - Question No. 3**

Suppose we throw a die once, (i) What is the probability of getting a number greater than 4? (ii) What is the probability of getting a number less than or equal to 4 ?

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**SOLVED EXAMPLES - Question No. 4**

One card is drawn from a well-shuffled deck of 52 cards. Calculate the probability that the card will (i) be an ace. (ii) not be an ace.

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**SOLVED EXAMPLES - Question No. 5**

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?

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**SOLVED EXAMPLES - Question No. 6**

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

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**SOLVED EXAMPLES - Question No. 7**

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?

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**SOLVED EXAMPLES - Question No. 8**

A box contains 3 blue, 2 white, and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it will be (i) white? and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; (ii) blue? and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; and nbsp; (iii) red?

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**SOLVED EXAMPLES - Question No. 9**

Haipreet tosses two different coins simultaneously (say. one is of Re 1 and other of Rs 2). What is the probability that she gets at least one head?

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**SOLVED EXAMPLES - Question No. 10**

In a musical chair game, the person playing the music has been advised to stop playing the music at any time within 2 minutes after

she starts playing. What is the probability that the music will stop within the first half-minute after starting?

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**SOLVED EXAMPLES - Question No. 11**

A missing helicopter is reported to have crashed somewhere in the rectangular region shown in Fig. 15.2. What is the probability that it crashed inside the lake shown in the figure?

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**SOLVED EXAMPLES - Question No. 12**

A carton 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 (i) it is acceptable to Jimmy? (ii) it is acceptable to Sujatha?

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**SOLVED EXAMPLES - Question No. 13**

Two dice, one blue and one grey, are 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 (ii) 13? (iii) less than or equal to 12?

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