MATHS

NCERT - NCERT MATHEMATICS (Bengali)

PROBABILITY

Example

1. Fird 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 containsa red ball a blue ball and an yellow ball, all the balls being of the same size. Manasa takes out a ball fromthe bag without looking into it. What is the probability that she takes a (i) yellow ball? (ii) red ball? (iii) blue ball?

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3. Suppose we throw a die once. (1) What is the probability of getting a number greater than 4? (in) What is the probability of getting a number less than or equal to 4?

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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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5. 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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6. Sarada and Hamida are friends. What is the probability that both will have (1) different birthdays? (ii) the same birthday? (ignoring a leap year).

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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 separate cards, the cards being identical. Then she puts cards in a box and stirs them thoroughly. She then draws one card from the box. 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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8. A box contains 3 blue, 2 white, and 4 red marbles. If a marble is selected at random from the box, what is the probability that it will be

(i) white? (ii) blue? (iii) red?

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9. Harpreet tosses two different coins simultaneously (say, one is of ₹ 1and other of

₹2.) What is the probability that she gets at least one heas?

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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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11. Find the probability of getting a digit 3 when a die is rolled.

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12. A carton consists of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Jhony, 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 selected at

random from the carton. What is the probability that

(i) it is acceptable to Jhony? (ii) it is acceptable to Sujatha?

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13. Two dice, one red and one yellow, 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 (1) 8 (ii) 13 (iii) less than or equal to 12?

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Exercise 13 1

1. Complete the following statement:

Probability of an event E + Probability of the event 'not E' = _____

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2. Complete the following statement:

The probability ofan event that cannot happen is _____.

Such an event is called _____

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3. Complete the following statement:

The probability of an event that is certain to happen is _____.

Such an event is called _____

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4. Complete the following statement:

The sum of the probabilities ofall the elementary events of an experiment is _____

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5. Complete the following statement:

The probability of an event is greater than or equal to _____ and less than or equal to _____

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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.

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7. Which of the following experiments have equally likely outcomes? Explain.

A player attempts to shoot a basketball. She/he shoots ormisses the shot.

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8. Which of the following experiments 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 bom. It is a boy or a girl.

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10. If P(E) = 0.05, what is the probability of 'not E"?

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11. 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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12. Rahim removes all the hearts from the cards. What is the probability of

i Getting an ace from the remaining pack.

ii Getting a diamonds.

iii Getting a card that is not a heart.

iv. Getting the Ace of hearts.

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13. 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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14. A die is rolled 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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15. What is the probability of selecting a red king from a deck of cards?

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16. Find the probability of getting a digit 1 when a die is rolled.

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Exercise 13 2

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

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2. 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 ? (ii) not green?

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3. A Kiddy bank contains hundred 50p coins, fifty ₹1 coins, twenty ₹2 coins and ten ₹5 coins.

Ifit 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?

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4. 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?

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5. 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 (See figure), and

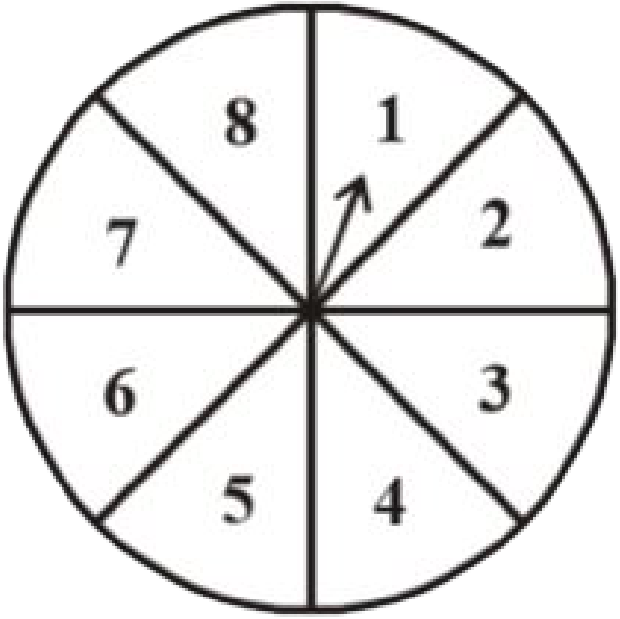
these are equally likely outcomes. What is the probability that it will point at

8?

(ii) an odd number?

(iii) a number less than 9?

(iv) a number greater than 2?



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6. One card is selected from a well-shuffled deck of 52 cards. Find the probability of getting

(i) a king ofred colour (ii) a face card (ii) a red face card (iv) the jack of hearts (v) a spade (vi) the queen of diamonds

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7. Five cards-the ten, jack, queen, king and ace of diamonds, are well-shuffled with their face downwards: One card is selected at random.

(i) What is the probability that the card is the queen?

(b) If the queen is selected and put aside (without replacement), what is the probability that the second card selected is (a) an ace? (b) a queen?

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8. 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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9. A lot of 20 bulbs contain 4 defective ones. One bulb is selected at random from the lot. What is the probability that this bulb is

defective? Suppose the bulb selected in previous case is not defective and is not replaced. Now one bulb is selected at random from the rest. What is the probability that this bulb is not defective?

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10. A box contains 90 discs which are numbered from 1 to 90. If one disc is selected at random from the box, find the probability that it bears (1) a two-digit number (ii) a

perfect square number (iii) a number divisible by 5.

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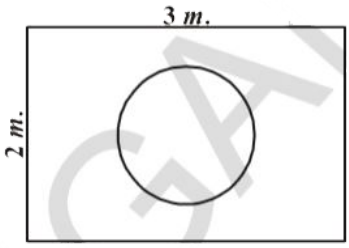
11. Suppose you drop a die at random on the rectangular region shown in figure. What is the probability that it will land inside the circle with diameter 1m?



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12. A lot consists of 144 ball pens of which 20 are defective and the others are good. The shopkeeper draws one pen at random and gives it to Sudha. What is the probability that (i) She will buy it? (ii) She will not buy it?

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13. Two dice are rolled simultaneously and counts are added (i) complete the table given

(ii) A student that 'there are 11 possible outcomes 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12. Therefor, each of the them has a probability $\frac{1}{11}$. Do you agree with this argument? Justify your answer.

Event : 'Sum on 2 dice'	2	3	4	5	6	7	8	9	10	11	12
Probability	$\frac{1}{36}$						$\frac{5}{36}$				$\frac{1}{36}$

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14. A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Deskhitha wins if all the tosses give the

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

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15. A dice 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 dice twice and throwing two dice simultaneously are treated as the same experiment].

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Optional Exercise

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? (ii) different days?

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2. 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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3. 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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4. 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 2/3 . Find the number of blue marbles in the jar.

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Do This

1. Find the probability of getting a digit 5 when a die is rolled.

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2. Are the outcomes of every experiment equally likely

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3. Give examples of 5 experiments that have equally likely outcomes and five more examples that do not have equally likely outcomes

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4. Think of 5 situations with equally likely events and find the sample space

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5. Is getting a head complementary to getting a tail? Give reasons.

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6. In case of a die is getting a 1 complementary to events getting 2, 3, 4, 5, 6? Give reasons for your answer

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7. Write of any five pair of events that are complementary.

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8. A childhas a die whose six faces show the letters A, B, C, D, E and F. The die is thrown once. What is the probability of getting (i) A? (ii) D

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9. Which of the following cannot be the probability of an event

A. 2.3

B. 1.5

C. $15\ \%$

D. 0.7

Answer:

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10. You have a single deck of well shuffled cards. Then,

What is the probability that the card drawn will be a queen?

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11. You have a single deck of well shuffled cards. Then,

What is the probability that it is a face card?

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12. You have a single deck of well shuffled cards. Then,

What is the probability it is a spade?

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13. You have a single deck of well shuffled cards. Then,

What is the probability that is the face card of spades?

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14. You have a single deck of well shuffled cards. Then,

What is the probability it is not a face card?

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Think And Discuss

1. Why is tossing a coin considered to be a fair way of deciding which team should get the

ball at the beginning of any game

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2. can $\frac{7}{2}$ be the probability of an event? Explain.

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3. Which of the following arguments are correct and which are not correct? Give reasons.

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 $\frac{1}{3}$

ii)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 $\frac{1}{2}$

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