MATHS

BOOKS - NAGEEN PRAKASHAN ENGLISH

PROBABILITY

Solved Example Type

1. Find the probability of getting head in a toss of one coin:

▶ **Watch Video Solution**

2. If two coins are tossed simultaneously, find the probabilities of the following events:

(i) two heads

(ii) at least one head

(iii) at most one head.

3. If three coins are tossed simultaneously, find the probability of getting:

(i) two heads

(ii) one head and two tails

(iii) at least one head

4. In a throw of a dice, find the probability of:

(i) getting a multiple of 3

(ii) getting a number which is not a multiple of 3.

5. A card is drawn at random from a well shuffled pack of 52 cards. Find the probability that card drawn is:

(i) an ace

(ii) a heart

(iii) black

(iv) either an ace or black.

6. There are 30 tickets numbered from 1 to 30. A ticket is drawn at random, find the probability of getting a ticket whose number is:

(i) multiple of 3

(ii) multiple of 7

(iii) multiple of 3 or 7

▶ **Watch Video Solution**

7. There are 5 red and 3 black balls in a bag. A red ball is drawn at random. Find its probability.

▶ **Watch Video Solution**

8. There are 5 black and 4 red balls ina bag. Two balls are drawn at random. Find the probability that both balls are red.

▶ **Watch Video Solution**

9. Find the probability of getting the same number of two dice in a single throw of two dice.

▶ **Watch Video Solution**

10. The probability of the occurrence of an event is $\dfrac{3}{7}$. Find the probability of the non occurrence of the event.

▶ **Watch Video Solution**

11. The odds in favour of an event are $3:2$. Find the probability of the occurrence of the event.

▶ **Watch Video Solution**

12. The odds against of an event are $3:4$. Find the probability of the occurrence of the event.

▶ **Watch Video Solution**

13. Find the probability of 53 Sundays in an ordinary year.

▶ **Watch Video Solution**

14. In a horse -race, the probabilities to win the race for three horses A,B and C are $\frac{1}{4}, \frac{1}{5}$ and $\frac{1}{6}$ respectively. Find the probability to win the race of any one horse.

▶ **Watch Video Solution**

15. Find the probability of getting a sum of 9 or 10 in a throw of two dice.

▶ Watch Video Solution

16. The probability of appointment of A at a post is $\frac{1}{2}$ and probability of appointment of B is $\frac{1}{3}$. If only one can be appointment, then find its probability.

▶ Watch Video Solution

17. Find the probability of getting two heads in two tosses of a coin.

▶ Watch Video Solution

18. The probability of solving a problem of mathematic for A and B are $\dfrac{1}{3}$ and $\dfrac{1}{5}$ respectively. If both try the problem, find the probability that the problem will be solved.

19. There are 4 red and 5 white balls in a bag. A ball is drawn at random and then again a ball is drawn from the remaining balls. Find the probability that both drawn balls are red.

20. Four cards are drawn from a pack of 52 cards without replacement. Find the probability that all of them are jack.

21. Find the probability of getting 5 at least once in there throws of a dice.

▶ **Watch Video Solution**

22. There are 8 white and 7 black balls in first bag and 9 white and 6 black balls are in second bag. One ball is drawn from each bag. Find the probability that both are of the same colour.

▶ **Watch Video Solution**

23. There are 6 red and 4 white balls in a bag. Two-Two balls are drawn two times from this bag such that before drawing the balls second time the balls replaced in the bag which were

drawing first time. Find the probability of getting 2 red balls in first time and 2 white in second time.

24. There are 5 red and 3 black balls in first bag and 4 red and 5 black balls i second bag. A ball is drawn from one of the bags. Find the probability that the ball drawn is red.

25. The probabilities of hitting a target by A, B and C are $\frac{3}{5}, \frac{3}{4}$ and $\frac{1}{3}$ respectively.

If all three hits the target simultaneously then find the probability of hitting the target by the least two of them.

26. Two coins are tosses simultaneously. Find the probability of getting:

(i) one head

(ii) at least one head

(iii) no tail

▶ **Watch Video Solution**

27. A dice a thrown once. Find the probability of getting

(i) 5

(ii) a number greater than 2

(iii) 7

(iv) an odd number

▶ **Watch Video Solution**

28. Find the probability of getting the sum of numbers on two dice (i) 9 (ii) at least 9, in one throw of a pair of dice.

▶ Watch Video Solution

29. There are 6 red and 4 black balls in a bag. A ball is drawn at random. Find the probability that the ball drawn is red.

▶ Watch Video Solution

30. There are 5 white and 4 red balls in a bag. Two balls are drawn at random. Find the probability that both balls are white.

▶ Watch Video Solution

31. A card is drawn a from a well shuffled pack of 52 cards. Find the probability that card drawn is:

(i) black

(ii) black jack

(iii) black or a king

▶ **Watch Video Solution**

32. The probability of happening of an event is $\dfrac{3}{5}$. Find the probability of not happening the event.

▶ **Watch Video Solution**

33. The odds in favour of an event are $2:3$. Fin the probability of the occurrence of the event.

34. Two dice are thrown simultaneously find:

(i) Odds in favour of getting the sum of numbers

9 on two dice,

(ii) odds against of getting the sum of numbers 8 on two dice.

35. Find the probability of getting a sum at least 5 on three dice

in one throw three dice.

36. There are 25 tickets numbered from 1 to 25. A ticket is drawn

at random. Find the probability that the number of that ticket is

either a multiple of 2 or multiple of 3.

37. For two events E_1 and E_2, $P(E_1) = \dfrac{1}{2}$, $P(E_2) = \dfrac{1}{3}$ and $P(E_1 \cap E_2) = \dfrac{1}{10}$. Find:

(i) $P(E_1 \text{ or } E_2)$

(ii) $P(E_1 \text{ but not } E_2)$

(iii) $P(E_2 \text{ but not } E_1)$

38. The probabilities of the occurrence of two events E_1 and E_2 are 0.25 and 0.50 respectively. The probability of their occurrence simultaneously is 0.15, find the probability that neither E_1 nor E_2 will occur.

39. The Probability that at least one of the events E_1 and E_2 will occur is 0.6. If the probability of their occurrence simultaneously is 0.2, then find $P(\overline{E}_1) + P(\overline{E}_2)$

40. If E_1 and E_2 be two events such that $P(E_1) = 0.3$, $P(E_2) = 0.2$ and $P(E_1 \cap E_2) = 0.1,$ then find:

(i) $P(\overline{E}_1 \cap E_2)$ (ii) $P(E_1 \cap \overline{E}_2)$

41. A card is drawn from a well shuffled pack of 52 cards. Find the probability that it is heart or a king .

42. A pair of dice is thrown once. Find the probability that neither a doublet nor a total of 10 will appear.

43. In a town of 6000 people 1200 are over 50 years old and 2000 are female. It is known hat 30% of the females are over 50 years. What is the probability that a random chosen individual from the town either female or over 50 year?

44. If A and B are two mutually exclusive and exhaustive events and $P(B) = \dfrac{3}{2}P(A)$, then find $P(A)$.

45. A and B are two events such that $P(A) = 0.54$, $P(B) = 0.69$ and $P(A \cap B) = 0.35$.Find (i) $P(A \cup B)$ (ii) $P(A' \cap B')$ (iii) $P(A \cap B')$ (iv) $P(B \cap A')$

Exercise

1. In a throw of a single dice, find the probability of getting:

(i) a multiple of 2

(ii) an odd number

(iii) a number greater than 3.

2. In two throw of a dice find the probability of getting:

a sum of 9

3. Find the probability of getting one head and one tail in one toss of two coins.

4. Find the probability of 53 Mondays in a leap year.

5. Find the probability of 53 Sundays and 53 Mondays in a leap year.

6. Find the probability of drawing a king from a well shuffled pack of 52 cards.

7. A card is drawn from a sell shuffled pack of 52 cards. Find the probability of getting:

(i) a red card

(ii) a diamond

(iii) a red card or a jack.

8. There are 20 tickets numbered 1 to 20. A ticket is drawn. Find the probability of drawing a ticket whose number is:

(i) a multiple of 3

(ii) a multiple of 5

(iii) a multiple of 3 or 5.

9. There a 9 red and 5 black balls in a bag. A black ball is drawn at random. Find its probability.

10. There are 5 red, 4 black and 3 blue balls in bag. A ball is drawn at random. Find the probability that the ball drawn is:

(i) black

(ii) red or black.

▶ **Watch Video Solution**

11. There are 4 white and 6 black balls in a bag. Two balls are drawn at random. Find the probability that both balls drawn are black.

▶ **Watch Video Solution**

12. There are 5 black and 6 red balls in a bag. If 3 balls are drawn at random, find the probability that these balls are black.

13. The odds in favour of occurrence of an event are $2:5$. Find the probability of the occurrence of the event.

14. The odds in favour of the occurrence of an event are $3:5$. Find the probability of the non-occurrence of the event.

15. The odds against of the occurrence of an event are $4:5$. Find the probability of the occurrence of the event.

16. The odds against of the occurrence of an event are $6:7$. Find the probability of the non-occurrence of the event.

▶ **Watch Video Solution**

17. In a class of 50 students, 20 are boys and rest are girls. A student is selected at random. Find the probability of selecting a boy.

▶ **Watch Video Solution**

18. The probability of the occurrence of an event is $\dfrac{3}{10}$. Find the probability of non-occurrence of the event.

▶ **Watch Video Solution**

19. The probability of the non-occurrence of an event is $\frac{2}{7}$. Find the probability of the occurrence of the event.

> ▶ Watch Video Solution

20. In a horse race, the probability that horse A can win is $\frac{2}{5}$ and the probability that horse B can win is $\frac{1}{4}$. Find the probability that any one can win the race.

> ▶ Watch Video Solution

21. The probabilities that three children can win a race are $\frac{1}{3}, \frac{1}{4}$ and $\frac{1}{5}$. Find the probability that any one can win the race.

> ▶ Watch Video Solution

22. In an essay competition, the odds in favour of competitors P, Q, R S are 1:2, 1:3, 1:4, and 1:5 respectively. Find the probability that one then win the competitions.

23. In two independent events the probability of happening one event is $\dfrac{2}{7}$ and probability of happening of second event is $\dfrac{1}{5}$. Find the probability of happening of both events.

24. Find the probability of getting tail each time in three tosses of a coin.

25. Find the probability of getting 3 each time in three throws a dice.

▶ **Watch Video Solution**

26. Find the probability of getting at least one head in three throws of a coin.

▶ **Watch Video Solution**

27. Find the probability of getting 5 at most 3 times in four throws of a dice.

▶ **Watch Video Solution**

28. The probability of happening of an event is 0.6 for one experiment. In three such experiments, find the probability of happening the event at least one time.

▶ **Watch Video Solution**

29. A can hit a target 4 times out of 5 trial. B can hit 3 times of 4 trials and C can hit 2 times out of 3 trials. If all three hit the target sumultaneously, find the probability of hitting the target.

▶ **Watch Video Solution**

30. 'A' can hit the target 3 times out of 5 times, 'B' can hit 2 times out of 5 and 'C' can hit 3 times our of 4. They aim at each other simultaneously. What is the probability that 2 out of 'A','B' and 'C' will hit the target?

31. The probability to pass in an examination of mathematics for three students are $\dfrac{1}{4}, \dfrac{1}{5}, \dfrac{1}{6}$. Find the probability that at least two students will pass in this examination.

32. The probability of solving a problem by three students are $\dfrac{1}{3}, \dfrac{1}{4}, \dfrac{1}{5}$. Find the probability that the problem will be solved if all three students try the problem simultaneously.

33. There are 5 red and 7 white balls in one bag and 3 red and 8 white balls in second bg. If a ball is drawn at random from one the bags, find the probability that it is red.

▶ **Watch Video Solution**

34. There are 5 red and 5 black balls in first bag and 6 red and 4 black balls is second bag. One -one ball is drawn from each bag. Find the probability that:

(i)both balls are of the same colour,

(ii) one ball is red and other is black.

▶ **Watch Video Solution**

35. There are 4 white and 3 black balls in a bag. Find the probability of drawing 2 white ball one by one without replacement.

36. There are 8 white and 7 black balls in a bag . Three balls are drawn twice from the bag and balls drawn first time are not being replaced when the balls are drawn second time. Find the probability that first three balls drawn are white and second three balls drawn are black.

37. Two cards drawn without replacement from a well shuffled pack of 52 cards. Find the probability that cards drawn are aces.

▶ **Watch Video Solution**

38. (i) There are 100 bulbs in a box, out of which 10 are defective. In a sample of 5 bulbs, what is the probability than no bulb is defective?

(ii) It is known that 5% of the bulbs manufactured in a factored are defective. Find the probability that out of 10 randomly selected bulbs, not more than two are defective.

▶ **Watch Video Solution**

39. In one toss of a coin, find the probability of getting:

(i) head (ii) tail

▶ **Watch Video Solution**

40. In one toss of two coins together find the probability of getting:

(i) two tails

(ii) one head and one tail

▶ **Watch Video Solution**

41. In one toss of three coins together, find the probability of getting:

(i) two heads and one tail

(ii) at least two tails

42. In one throw of a dice, find the probability of getting:

(i) an even number

(ii) a multile of 3

(iii) a number greater than 4

43. In one throw of two dice together, find the probability of getting:

(i) a sum of 5

(ii) same number on two dice

44. In one throw of three dice together, find the probability of getting:

(i) same number on three dice

(ii) a sum less than 6

(iii) a sum at least 6

45. A card is drawn from a well shuffled pack of cards.

Find the probability of getting:

(i) a card of heart

(ii) a king

46. There are two children in a family. Find the probability that at most one boy is there in the family.

47. There are 7 red, 5 black and 3 white balls in a bag. A ball is drawn at random. Find the probability that ball drawn is:

(i) white

(ii) not white

(iii) either red or white.

48. There are 12 tickets numbered 1 to 12. A ticket is drawn at random. Find the probability that the number on this ticket is

either a multiple of 3 or 4.

49. The probability of the occurrence of an event is $\dfrac{3}{8}$. Find the probability of the non-occurrence of the event.

50. The probability of non-occurrence of an event is $\dfrac{5}{12}$. Find the probability of the occurrence of the event.

51. The odds in favour of an event are $3:4$. Find the probability of the non occurrence of the event.

52. The odds against of an event $5:3$. Find the probability of the occurrence of the event.

53. There are 15 prizes and 25 blaks in a lottery. Find the probability of getting a prize on one ticket.

54. Two dice are thrown. Find the odds in favour of getting the sum 4.

55. Two letters are drawn from the english alphabets.

Find the probability that both letters are vowels.

▶ **Watch Video Solution**

56. A and B are two events such that $P(A) = 0.5$, $P(B) = 0.4$ and $(A \text{ or } B) = 0.6$, then find $P(A \text{ and } B)$.

▶ **Watch Video Solution**

57. A and B are two events such that $P(A) = 0.60$, $P(A \text{ or } B) = 0.85$ and P (A and B $= 0.42$, then find $P(B)$.

▶ **Watch Video Solution**

58. (i) A and B are two events in a random experiment such that $P(A \cup B) = 0.7$, $P(A \cap B) = 0.3$ and $P(\overline{A}) = 0.4$, find $P(\overline{B})$

(ii) If $P(A) = \frac{2}{3}P(B) = \frac{4}{9}$ and $P(A \cap B) = \frac{14}{45}$, then find the value of $P(A \cup B)$ and $P(A' \cap B')$

> ▶ Watch Video Solution

59. For two mutually exclusive events A and B , $P(A) = \frac{1}{3}$ and $P(B) = \frac{1}{4}$, find $(A \cup B)$.

> ▶ Watch Video Solution

60. A, B, C are three mutually exclusive and exhaustive events associated with a random experiment. Find $P(A)$, it being

given that $P(B) = \dfrac{3}{2}P(A)$ and $P(C) = \dfrac{1}{2}P(B)$·

61. A number is selected at random from first 200 natural numbers. Find the probability that it is divisible by either 6 or 8.

62. A card is drawn at random from a well shuffled pack of 52 cards. Find the probability that it is either an ace or spade.

63. A card is drawn at random from a well shuffled pack of 52 cards. Find the probability that it is either red or a king.

64. Two cards are drawn at random from a well shuffled pack of 52 cards. Find the probability that the cards drawn are either red or aces.

65. A pair of dice is thrown once. Find the probability of getting an even number on the first side.

66. A dice is thrown twice. Find the probability of getting 3 at least one time.

67. A card is drawn from a well shuffled pack of 52 cards. What is the probability that neither a spade nor a king will drawn?

68. The probability of the occurrence of event A is $\frac{1}{3}$ and the probability of the occurrence of event B is $\frac{1}{4}$. Find the probability that neigher A nor B will occur, it is given that A and B are mutually exclusive events.

69. There are 60% students in Maths and 30% in Biology. If 10% students are in both subjects. Find the probability that a

randomly selected student has Maths or Biology.

70. There are 100 bolts and 50 nuts in a box, out of which 50% bolts and 50% nuts are defective. Two items are drawn at random from the box, find the probability that both are either bolts or defective.

71. Two dice are thrown together. What is the probability that the sum of the numbers on the two faces si neither divisible by 3 nor by 4?

72. If A,B and C are three events, such that P(A)=0.3, P(B)=0.4, P(C)=0.8, P(AB)=0.08, P(AC)=0.28, P(ABC)=0.09. If $P(A \cup B \cup C) \geq 0.75$, then show that P(BC) kies in the interval $0.23 \leq x \leq 0.48$

▶ **Watch Video Solution**

Mcq Type

1. The one throw of two dice, the probability of getting an even number of first or a tota of 8 is:

A. $\dfrac{2}{9}$

B. $\dfrac{4}{9}$

C. $\dfrac{5}{9}$

D. $\dfrac{7}{9}$

Answer: C

2. Three coins are tossed together. Find the probability of getting: (i)exactly two heads   (ii) at least two heads (iii) at least one head and one tail   (iv) no tails

A. $\dfrac{1}{2}$

B. $\dfrac{1}{3}$

C. $\dfrac{1}{4}$

D. $\dfrac{1}{6}$

Answer: A

3. The probability of the occurrence of an event is $\dfrac{3}{7}$

The probability of non-occurrence of the event is:

A. $\dfrac{3}{7}$

B. $\dfrac{4}{7}$

C. $\dfrac{2}{7}$

D. None of these

Answer: B

4. What is the probability that a leap year selected at random contains 53 Sunday?

A. $\dfrac{2}{7}$

B. $\dfrac{3}{7}$

C. $\dfrac{4}{7}$

D. $\dfrac{5}{7}$

Answer: A

▶ **Watch Video Solution**

5. A problem in mathematics is given to 3 students whose chances of solving it are $\dfrac{1}{2}, \dfrac{1}{3}, \dfrac{1}{4}$. What is the probability that he problem is solved?

A. $\dfrac{3}{4}$

B. $\dfrac{1}{2}$

C. $\dfrac{1}{3}$

D. $\dfrac{1}{4}$

Answer: A

6. There are 5 red and 4 black balls in a bag. The probability of drawing a red ball is:

A. $\dfrac{4}{9}$

B. $\dfrac{5}{9}$

C. $\dfrac{5}{11}$

D. $\dfrac{6}{11}$

Answer: B

7. A card is drawn at random from a pack of cards. The probability that the card drawn is not diamond, is:

A. $\dfrac{1}{4}$

B. $\dfrac{3}{4}$

C. $\dfrac{1}{13}$

D. $\dfrac{12}{13}$

Answer: B

▶ **Watch Video Solution**

8. The favourable chance of drawing a card of diamond from a pack of 52 cards is:

A. $1:3$

B. $3:1$

C. $1:4$

D. $4:1$

Answer: A

9. The probability of getting a sum of 9 from two throws of a

dice?

A. $\dfrac{1}{3}$

B. $\dfrac{11}{36}$

C. $\dfrac{1}{9}$

D. $\dfrac{13}{18}$

Answer: C

---

10. In a single throw of three dice, determine the probability of getting i. total of 5 ii. total of at most 5 ii. a total of at least 5.

A. $\dfrac{1}{36}$

B. $\dfrac{1}{18}$

C. $\dfrac{1}{12}$

D. $\dfrac{1}{9}$

Answer: A

11. The probability that at least one of the events A and B occurs is 0.6. If A and B occur simultaneously with probability 0.2, then find $P(\overline{A}) + P(\overline{B})$.

    A. 0.2

    B. 0.4

    C. 0.8

    D. None of these

Answer: D

▶ **Watch Video Solution**

---

12. If there are 6 girls and 5 boys who sit in a row, then the probability that no two boys sit together is :

A. $\dfrac{\lfloor 6 \lfloor 6}{\lfloor 2 \lfloor 11}$

B. $\dfrac{\lfloor 7 \lfloor 5}{\lfloor 11}$

C. $\dfrac{\lfloor 6 \lfloor 7}{2 \lfloor 11}$

D. None of these

Answer: C

▶ **Watch Video Solution**

13. A four digit number is formed using the digits 1, 2, 3, 5 with no repetitions. Write the probability that the number is divisible by 5.

A. $\dfrac{1}{4}$

B. $\dfrac{1}{8}$

C. $\dfrac{3}{4}$

D. $\dfrac{5}{8}$

Answer: A

14. For two events A and B $P(A) = \dfrac{3}{4}$ and $P(B) = \dfrac{5}{8}$. The false statement is:

A. $P(A \cup B) \geq \dfrac{3}{4}$

B. $\dfrac{1}{8} \leq P(A \cap B') \leq \dfrac{3}{8}$

C. $\dfrac{3}{8} \leq P(A \cap B) \leq \dfrac{5}{8}$

D. $P(A \cup B) \leq \dfrac{1}{2}$

Answer: D

15. Twelve balls are distribute among three boxes. The probability that the first box contains three balls is $\dfrac{110}{9}\left(\dfrac{2}{3}\right)^{10}$

b. $\dfrac{110}{9}\left(\dfrac{2}{3}\right)^{10}$ c. $\dfrac{^{\wedge}(12)C_3}{12^3}\times 2^9$ d. $\dfrac{^{\wedge}(12)C_3}{3^{12}}$

A. $\dfrac{110}{9}\left(\dfrac{2}{3}\right)^{10}$

B. $\dfrac{110}{9}\left(\dfrac{3}{2}\right)^{10}$

C. $\dfrac{.^{12}C_3}{3^{12}}$

D. $\dfrac{.^{12}C_3}{12^3}$

Answer: A

16. In one throw of two dice, the probability of getting a number on first dice smaller than number on second dice, is,

A. $\dfrac{1}{2}$

B. $\dfrac{5}{12}$

C. $\dfrac{1}{3}$

D. $\dfrac{7}{12}$

Answer: B

▶ **Watch Video Solution**

17. Two numbers are selected from first 40 natural numbers. The probability that the sum of two number is odd is:

A. $\dfrac{16}{39}$

B. $\dfrac{19}{39}$

C. $\dfrac{20}{39}$

D. None of these

Answer: C

18. In a single throw of three dice, find the probability of getting

the same number on all the three dice.

A. $\dfrac{5}{12}$

B. $\dfrac{17}{72}$

C. $\dfrac{55}{72}$

D. None of these

Answer: A

19. Cards are drawn one by one without replacement from a pack of 52 cards. The probability of the 10th card drawn is first ace,is:

A. $\dfrac{451}{884}$

B. $\dfrac{373}{884}$

C. $\dfrac{164}{4165}$

D. None of these

Answer: C

> ▶ **Watch Video Solution**

20. Three integers are chosen at random from the first 20 integers. The probability that their product is even is:

A. $\dfrac{4}{19}$

B. $\dfrac{17}{19}$

C. $\dfrac{16}{19}$

D. $\dfrac{5}{19}$

Answer: B

▶ **Watch Video Solution**

Ncert Questions

1. Describe the sample space for the indicated experiment : A coin is tossed three times.

▶ **Watch Video Solution**

2. A dice is thrown two times.describe sample space

▶ **Watch Video Solution**

3. Find the number of possible outcomes of tossing a coin four

times.

▶ **Watch Video Solution**

4. Describe the sample space for the indicated experiment : A

coin is tossed and a die is thrown.

▶ **Watch Video Solution**

5. A coin is tossed and then a die is rolled only in case a head is

shown on the coin.

6. 2 boys and 2 girls are in room P and 1 boy 3 girls are in room Q. write the sample space for the experiment in which a room is selected and then a person.

7. Describe the sample space for the indicated experiment : One die of red colour, one of white colour and one of blue colour are placed in a bag. One die is selected at random and rolled, its colour and the number on its uppermost face is noted

8. An experiment consists of boy girl composition of families with 2 children. i. What is the sample space if we are interested in knowing whether it is a boy or girl in the order of their births? ii. What is the sample space if we are interested in the number of boys in a family?

▶ **Watch Video Solution**

9. A box contains 1 red and 3 identical white balls. Two balls are drawn at random in succession without replacement. Write the sample space for this experiment.

▶ **Watch Video Solution**

10. An experiment consists of tossing a com and then throwing it second tune if a head occurs. If a tail occurs on the first toss, then a die is rolled once. Find the sample space.

▶ **Watch Video Solution**

11. Suppose 3 bulbs are selected at random from a lot. Each bulb is tested and classified as defective (D) or non defective (N). Write the sample space of this experiment.

▶ **Watch Video Solution**

12. A com is tossed. If the outcome is a head, a die is thrown. If the die shows up an even number, the die is thrown again. What is the sample space for the experiment?

13. The numbers 1, 2, 3 and 4 are written separately on four slips of paper. The slips are put in a box and mixed thoroughly. A person draws two slips from the box, one after the other, without replacement. Describe the sample space for the experimen

14. An experiment consists of rolling a die and then tossing a coin once if the number on the die is even. If the number on the die is odd, the coin is tossed twice. Write the sample space for this experiment.

15. A com is tossed. If it shows a tail, we draw a ball from a box which contains 2 red and 3 black balls. If it shows head, we throw a die. Find the sample space for this experiment.

▶ **Watch Video Solution**

16. A die is thrown repeatedly untill a six comes up. What is the sample space for this experiment?

▶ **Watch Video Solution**

17. A die is rolled. Let E be the event die shows 4 and F be the event die shows even number. Are E and F mutually exclusive?

▶ **Watch Video Solution**

18. A die is thrown. Describe the following events:

(i) A : a number less than 7

(ii) B : a number greater than 7

(iii) C : a multiple of 3

(iv) D : a number less than 4

(v) E : a even number greater than 4

(vi) F : a number not less than 3

Also find

$A \cup B, A \cap B, B \cup C, E \cap F, D \cap E, A - C, D - E, E \cap F', F'$

> ▶ **Watch Video Solution**

19. An experiment involves rolling a pair of dice and recording the numbers that come up. Describe the following events: A: the sum is greater than 8, B: 2 occurs on either die C: the sum is at least 7 and a multiple of 3. Which pairs of these events

20. Three coins are tossed once. Let A denote the event "three heads snow", B denote the event "two heads and one tail show", C denote the event three tails show and D denote the event "a head shows on the first coin". Which events are (i) mutually e

21. Three coins are tossed. Describe (i) Two events which are mutually exclusive. (ii) Three events which are mutually exclusive and exhaustive. (iii) Two events, which are not mutually exclusive. (iv) Two events which are mutually exclusive but not exhaustiv

22. Two dice are thrown. The events A, B and C are as follows:A : getting an even number on the first die.B : getting an odd number on the first die.C : getting the sum of the numbers on the dice 5.Describe the events

23. Which of the following cannot be valid assignment of probabilities for outcomes of sample space $S = \{w_1, w_2, w_3, w_4, w_5, w_6, w_7\}$?

Assignment	w_1	w_2	w_3	w_4	w_5	w_6	w_7
(a)	0.1	0.01	0.05	0.03	0.01	0.2	0.6
(b)	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$
(c)	0.1	0.2	0.3	0.4	0.5	0.6	0.7
(d)	−0.1	0.2	0.3	0.4	−0.2	0.1	0.3
(e)	$\frac{1}{14}$	$\frac{2}{14}$	$\frac{3}{14}$	$\frac{4}{14}$	$\frac{5}{14}$	$\frac{6}{14}$	$\frac{15}{14}$

24. A coin a tossed twice, that is the probability that at least one tail occurs?

25. A die is thrown, find the probability of following events: (i) A prime number will appear, (ii) A number greater than or equal to 3 will appear, (iii) A number less than or equal to one will appear, (iv) A number more than 6 will appear, (v

26. A card is selected from a pack of 52 cards. (a) How many points are there in the sample space? (b) Calculate the

probability that the card is an ace of spades. (c) Calculate the probability that the card is (i) an ace (ii) black card.

27. A fair coin with 1 marked on one face and 6 on the other and a fair die are both tossed, find the probability that the sum of numbers that turn up is (i) 3 (ii) 12

28. There are four men and six women on the city council. If one council member is selected for a committee at random how likely is it that it is a woman?

29. A fair coin is tossed four times, and people win Re 1 for each head and lose Rs 1.50 for each tail that turns up. From the sample space calculate how many different amounts of money you can have after four tosses and the probability of having eac

30. Three coins are tossed once. Fmd the probability of getting (i) 3 heads (ii) 2 heads (iii) atleast 2 heads (iv) atmost 2 heads (v) no head (vi) 3 tails (vii) exactly two tails (vm) no tail (ix) atmost two tails

31. If $\dfrac{2}{11}$ is the probability of an event, what is the probability of the event not A

32. A letter is chosen at random from the word ASSASSINATION.

Find the probability that letter is (i) a vowel (ii) a consonant.

33. In a lottery, a person choses six different natural numbers at

random from 1 to 20, and if these six numbers match with the

six numbers already fixed by the lottery committee, he wins the

prize. What is the probability of Winning the prize in the

34. Check whether the following probabilities $P(A)$ and $P(B)$ are consistently defined

(i) $P(A) = 0.5$, $P(B) = 0.7$, $P(A \cap B) = 0.6$

(ii) $P(A) = 0.5$, $P(B) = 0.4$, $P(A \cup B) = 0.8$

▶ **Watch Video Solution**

---

35. Fill in the blanks in following table:

	$P(A)$	$P(B)$	$P(A \cap B)$	$P(A \cup B)$
(i)	$\dfrac{1}{3}$	$\dfrac{1}{5}$	$\dfrac{1}{15}$	...
(ii)	0.35	...	0.25	0.6
(iii)	0.5	0.35	...	0.7

▶ **Watch Video Solution**

36. Give $P(A) = \dfrac{3}{5}$ and $P(B) = \dfrac{1}{5}$. Find $P(A \text{ or } B)$, if A and B are mutually exclusive events.

37. If E and F are events such that $P(E) = \dfrac{1}{4}$, $P(F) = \dfrac{1}{2}$ and $P(E \text{ and } F) = \dfrac{1}{8}$, find (i) $P(E \text{ or } F)$ (ii) P (not E and not F).

38. Events E and F are such that $P(\neg E \text{ or } \neg F) = 0.25$, State whether E and F are mutually exclusive.

39. A and B are events such that $P(A) = 0.42$, $P(B) = 0.48$ and $P(A \text{ and } B) = 0.16$. Determine (i) P(not A), (ii) P(not B) and (iii) P(A or B)

40. In class XI of a school 40% of the students study Mathematics and 30% study Biology. 10% of the class study both mathematics and biology. If a student is selected at random from the class, find the probability that he will be studying Mathematics or Biology or both.

41. In an entrance test that is graded on the basis of two examinations, the probability of a randomly chosen student passing the first examination is 0.8 and the probability of passing the second examination is 0.7. The probability of passing atleas

42. The probability that a student will pass the final examination in both English and Hindi is 0.5 and the probability of passing neither is 0.1. If the probability of passing the English examination is 0.75. What is the probability of passing the Hindi examination?

43. In a class of 60 students, 30 opted for NCC, 32 opted for NSS and 24 opted for both NCC and NSS. If one of these students is selected at random. (i) Find the probability that student opted for NCC or NSS. (ii) Probability that the student has opted neither NCC nor NSS.

▶ **Watch Video Solution**

Miscellaneous Exercise

1. A box contains 10 red marbles, 20 blue marbles and 30 green marbles. 5 marbles are drawn from the box, what is the probability that (i) all will be blue (ii) atleast one will be green?

▶ **Watch Video Solution**

2. 4 cards are drawn from a well - shuffled deck of 52 cards. What is the probability of obtaining 3 diamonds and one spade?

3. A die has two faces each with number 1, three faces each with number 2 and one face with number 3. If die rolled once determine: i. P(2) ii. P(1 or 3) iii. P(not 3)

4. In a lottery 10,000 tickets are sold and ten equal prizes are awarded,. What is the probability of not getting a prove if you buy i. 1 ticket ii. two tickets iii. 10 tickets.

5. Out of 100 students, two sections of 40 and 60 are formed. If you and your friend are among the 100 students, what is the probability that (a) you both enter the same section? (b) you both enter the different sections?

▶ **Watch Video Solution**

6. Three letters are dictated to three persons and an envelope is addressed to each of them, the letters are inserted into the envelopes at random so that each envelope contains exactly one letter. Find the probability that at least one letter is in

▶ **Watch Video Solution**

7. A and B are two events such that $P(A) = 0.54$, $P(B) = 0.69$ and $P(A \cap B) = 0.35$.

(i) $P(A \cup B)$ (ii) $P(A' \cap B')$

(iii) $P(A \cap B')$ (iv) $P(B \cap A')$

▶ **Watch Video Solution**

8. From the employees of a company, 5 persons are selected to represent them in the managing committee of the company. Particulars of five persons are as follows:

No.	Name	Sex	Age in year
1.	Harish	M	30
2.	Rohan	M	33
3.	Sheetal	F	46
4.	Alis	F	28
5.	Salim	M	41

A person is selected at random from this group to act as a

spokeperson. What is the probability that the spokesperson wil be either male or over 35 years?

▶ Watch Video Solution

9. If 4-digit numbers greater than 5,000 are randomly formed from the digits 0, 1, 3, 5. and 7. what is the probability of forming a number divisible by 5 when, (i) the digits are repeated? (ii) the repetition of digits is not allowed?

▶ Watch Video Solution

10. The number lock of a suitcase has 4 wheels, each labelled with ten digits i.e., from 0 to 9. The lock opens with a sequence of four digits with no repeats. What is the probability of a person getting the right sequence to open the suitcase?