EXERCISE 26.1 PAGE NO: 26.14

1. The probability that it will rain tomorrow is 0.85. What is the probability that it will not rain tomorrow?

Solution:

Let event of raining tomorrow be P (A)

The probability of raining tomorrow is P (A) = 0.85

Probability of not raining is given by P (A) = 1 – P (A)

∴ Probability of not raining = P (A) = 1 – 0.85

= 0.15

2. A die thrown. Find the probability of getting:

(i) a prime number

(ii) 2 or 4

(iii) a multiple of 2 or 3

Solution:

(i) Outcomes of a die are: 1, 2, 3, 4, 5, 5 and 6

Total number of outcome = 6

Prime numbers are: 1, 3 and 5

Total number of prime numbers = 3

Probability of getting a prime number = Total prime numbers/Total number of outcomes

= 3/6

= 1/2

∴ Probability of getting a prime number = 1/2

(ii) Outcomes of a die are: 1, 2, 3, 4, 5, 5 and 6

Total number of outcome = 6

Probability of getting 2 and 4 is Total numbers/Total number of outcomes

= 2/6

= 1/3

∴ Probability of getting 2 and 4 is 1/3

(iii) Outcomes of a die are: 1, 2, 3, 4, 5, 5 and 6

Multiples of 2 and 3 are = 2, 3, 4 and 6

Total number of multiples are 4

Probability of getting a multiple of 2 or 3 is Total numbers/Total number of outcomes

= 4/6

= 2/3

∴ Probability of getting a multiple of 2 or 3 is 2/3

3. In a simultaneous throw of a pair of dice, find the probability of getting:
(i) 8 as the sum
(ii) a doublet
(iii) a doublet of prime numbers
(iv) a doublet of odd numbers
(v) a sum greater than 9
(vi) An even number on first
(vii) an even number on one and a multiple of 3 on the other
(viii) neither 9 nor 11 as the sum of the numbers on the faces
(ix) a sum less than 6
(x) a sum less than 7
(xi) a sum more than 7
(xii) at least once
(xiii) a number other than 5 on any dice.
Solution:
Let us construct a table.
Here the first number denotes the outcome of first die and second number denotes the outcome of second die.

First Die / Second die	1	2	3	4	5	6
1	1, 1	1, 2	1, 3	1, 4	1, 5	1, 6
2	2, 1	2, 2	2, 3	2, 4	2, 5	2, 6
3	3, 1	3, 2	3, 3	3, 4	3, 5	3, 6
4	4, 1	4, 2	4, 3	4, 4	4, 5	4, 6
5	5, 1	5, 2	5, 3	5, 4	5, 5	5, 6
6	6, 1	6, 2	6, 3	6, 4	6, 5	6, 6

(i) 8 as the sum
Total number of outcomes in the above table are 36
Number of outcomes having 8 as sum are: (6, 2), (5, 3), (4, 4), (3, 5) and (2, 6)
Therefore numbers of outcomes having 8 as sum are 5
Probability of getting numbers of outcomes having 8 as sum is = Total numbers/Total number of outcomes

= 5/36

∴ Probability of getting numbers of outcomes having 8 as sum is 5/36

(ii) a doublet
Total number of outcomes in the above table are 36
Number of outcomes as doublet are: (1, 1), (2, 2), (3, 3), (4, 4), (5, 5) and (6, 6)
Number of outcomes as doublet are 6
Probability of getting numbers of outcomes as doublet is = Total numbers/Total number of outcomes

= 6/36
= 1/6

∴ Probability of getting numbers of outcomes as doublet is 1/6

(iii) a doublet of prime numbers
Total number of outcomes in the above table are 36
Number of outcomes as doublet of prime numbers are: (1, 1), (3, 3), (5, 5)
Number of outcomes as doublet of prime numbers are 3
Probability of getting numbers of outcomes as doublet of prime numbers is = Total numbers/Total number of outcomes

= 3/36
= 1/12

∴ Probability of getting numbers of outcomes as doublet of prime numbers is 1/12

(iv) a doublet of odd numbers
Total number of outcomes in the above table are 36
Number of outcomes as doublet of odd numbers are: (1, 1), (3, 3), (5, 5)
Number of outcomes as doublet of odd numbers are 3
Probability of getting numbers of outcomes as doublet of odd numbers is = Total numbers/Total number of outcomes

= 3/36
= 1/12

∴ Probability of getting numbers of outcomes as doublet of odd numbers is 1/12

(v) a sum greater than 9
Total number of outcomes in the above table are 36
Number of outcomes having sum greater than 9 are: (4, 6), (5, 5), (5, 6), (6, 6), (6, 4), (6, 5)
Number of outcomes having sum greater than 9 are 6
Probability of getting numbers of outcomes having sum greater than 9 is = Total numbers/Total number of outcomes

= 6/36 = 1/6

∴ Probability of getting numbers of outcomes having sum greater than 9 is 1/6

(vi) An even number on first
Total number of outcomes in the above table are 36
Number of outcomes having an even number on first are: (2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6), (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6), (6, 1), (6, 2), (6, 3), (6, 4), (6, 5) and (6, 6)
Number of outcomes having an even number on first are 18
Probability of getting numbers of outcomes having an even number on first is = Total numbers/Total number of outcomes

= 18/36
= 1/2

∴ Probability of getting numbers of outcomes having an even number on first is 1/2

(vii) An even number on one and a multiple of 3 on the other
Total number of outcomes in the above table are 36
Number of outcomes having an even number on one and a multiple of 3 on the other are: (2, 3), (2, 6), (4, 3), (4, 6), (6, 3) and (6, 6)
Number of outcomes having an even number on one and a multiple of 3 on the other are 6
Probability of getting an even number on one and a multiple of 3 on the other is = Total numbers/Total number of outcomes

= 6/36
= 1/6

∴ Probability of getting an even number on one and a multiple of 3 on the other is 1/6

(viii) Neither 9 nor 11 as the sum of the numbers on the faces
Total number of outcomes in the above table are 36
Number of outcomes having 9 nor 11 as the sum of the numbers on the faces are: (3, 6), (4, 5), (5, 4), (5, 6), (6, 3) and (6, 5)
Number of outcomes having neither 9 nor 11 as the sum of the numbers on the faces are 6
Probability of getting 9 nor 11 as the sum of the numbers on the faces is = Total numbers/Total number of outcomes

= 6/36
= 1/6

Probability of outcomes having 9 nor 11 as the sum of the numbers on the faces P (E) = 1/6
∴Probability of getting neither 9 nor 11 as the sum of the numbers on the faces is 1/6

Probability of outcomes **not** having 9 nor 11 as the sum of the numbers on the faces is

given by P (E) = 1 – 1/6 = (6-1)/5 = 5/6
∴ Probability of outcomes **not** having 9 nor 11 as the sum of the numbers on the faces is 5/6

(ix) A sum less than 6
Total number of outcomes in the above table are 36
Number of outcomes having a sum less than 6 are: (1, 1), (1, 2), (1, 3), (1, 4), (2, 1), (2, 2), (2, 3), (3, 1), (3, 2), (4, 1)
Number of outcomes having a sum less than 6 are 10
Probability of getting a sum less than 6 is = Total numbers/Total number of outcomes
= 10/36
= 5/18
∴ Probability of getting sum less than 6 is 5/18

(x) A sum less than 7
Total number of outcomes in the above table are 36
Number of outcomes having a sum less than 7 are: (1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (2, 1), (2, 2), (2, 3), (2, 4), (3, 1), (3, 2), (3, 3), (4, 1), (4, 2), (5, 1)
Number of outcomes having a sum less than 7 are 15
Probability of getting a sum less than 7 is = Total numbers/Total number of outcomes
= 15/36
= 5/12
∴ Probability of getting sum less than 7 is 5/12

(xi) A sum more than 7
Total number of outcomes in the above table are 36
Number of outcomes having a sum more than 7 are: (2, 6), (3, 5), (3, 6), (4, 4), (4, 5), (4, 6), (5, 3), (5, 4), (5, 5), (5, 6), (6, 2), (6, 3), (6, 4), (6, 5), (6, 6)
Number of outcomes having a sum more than 7 are 15
Probability of getting a sum more than 7 is = Total numbers/Total number of outcomes
= 15/36
= 5/12
∴ Probability of getting sum more than 7 is 5/12

(xii) At least once
Total number of outcomes in the above table 1 are 36
Number of outcomes for at least once are 11
Probability of getting outcomes for at least once is = Total numbers/Total number of outcomes

= 11/36

∴ Probability of getting outcomes for at least once is 11/36

(xiii) A number other than 5 on any dice.
Total number of outcomes in the above table 1 are 36
Number of outcomes having 5 on any die are: (1, 5), (2, 5), (3, 5), (4, 5), (5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6), (6, 5)
Number of outcomes having outcomes having 5 on any die are 15
Probability of getting 5 on any die is = Total numbers/Total number of outcomes
= 11/36
∴ Probability of getting 5 on any die is 11/36
Probability of **not** getting 5 on any die P (E) = 1 – P (E)
= 1 – 11/36
= (36-11)/36
= 25/36

4. 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
Solution:
(i) Exactly two heads
Possible outcome of tossing three coins are: HTT, HHT, HHH, HTH, TTT, TTH, THT, THH
Number of outcomes of exactly two heads are: 3
Probability of getting exactly two heads is = Total numbers/Total number of outcomes
= 3/8
∴ Probability of getting exactly two heads is 3/8

(ii) At least two heads
Possible outcome of tossing three coins are: HTT, HHT, HHH, HTH, TTT, TTH, THT, THH
Number of outcomes of at least two heads are: 4
Probability of getting at least two heads is = Total numbers/Total number of outcomes
= 4/8
= 1/2
∴ Probability of getting at least two heads is 1/2

(iii) At least one head and one tail
Possible outcome of tossing three coins are: HTT, HHT, HHH, HTH, TTT, TTH, THT, THH
Number of outcomes of at least one head and one tail are: 6
Probability of getting at least one head and one tail is = Total numbers/Total number of outcomes

= 6/8
= 3/4

∴ Probability of getting at least one head and one tail is 3/4

(iv) No tails
Possible outcome of tossing three coins are: HTT, HHT, HHH, HTH, TTT, TTH, THT, THH
Number of outcomes of no tails are: 1
Probability of getting no tails is = Total numbers/Total number of outcomes

= 1/8

∴ Probability of getting no tails is 1/8

5. A card is drawn at random from a pack of 52 cards. Find the probability that the card drawn is:
(i) a black king
(ii) either a black card or a king
(iii) black and a king
(iv) a jack, queen or a king
(v) neither a heart nor a king
(vi) spade or an ace
(vii) neither an ace nor a king
(viii) neither a red card nor a queen
(ix) other than an ace
(x) a ten
(xi) a spade
(xii) a black card
(xiii) the seven of clubs
(xiv) jack
(xv) the ace of spades
(xvi) a queen
(xvii) a heart
(xviii) a red card
Solution:

(i) A black king
Total number of cards are 52
Number of black king cards = 2
Probability of getting black king cards is = Total number of black king cards/Total number of cards

= 2/52
= 1/26

∴ Probability of getting black king cards is 1/26

(ii) Either a black card or a king
Total number of cards are 52
Number of either a black card or a king = 28
Probability of getting either a black card or a king is = Total number of either black or king card/Total number of cards

= 28/52
= 7/13

∴ Probability of getting either a black card or a king is 7/13

(iii) Black and a king
Total number of cards are 52
Number of black and a king = 2
Probability of getting black and a king is = Total number of black and king card/Total number of cards

= 2/52
= 1/26

∴ Probability of getting black and a king is 1/26

(iv) a jack, queen or a king
Total number of cards are 52
Number of a jack, queen or a king = 12
Probability of getting a jack, queen or a king is = Total number of jack, queen or king card/Total number of cards

= 12/52
= 3/13

∴ Probability of getting a jack, queen or a king is 3/13

(v) Neither a heart nor a king
Total numbers of cards are 52
Total number of heart cards = 13
Probability of getting a heart is = Total number of hearts/Total number of cards
= 13/52
= 1/4

Total number of king cards = 4
Probability of getting a king is = Total number of king card/Total number of cards
= 4/52
= 1/13
Total probability of getting a heart and a king = 13/52 + 4/52 – 1/52
= (13+4-1)/52
= 16/52
= 4/13
∴ Probability of getting neither a heart nor a king = 1 – 4/13 = (13-4)/13 = 9/13

(vi) Spade or an ace
Total numbers of cards are 52
Number of spade cards = 13
Probability of getting spade cards is = Total number of spade card/Total number of cards
= 13/52

Number of ace cards = 4
Probability of getting ace cards is = Total number of ace card/Total number of cards
= 4/52
= 1/13
Probability of getting ace and spade cards is = Total number of ace and spade card/Total number of cards
= 1/52
Probability of getting an ace or spade cards is = 13/52 + 4/52 – 1/52
= (13+4-1)/52
= 16/52
= 4/13
∴ Probability of getting an ace or spade cards is = 4/13

(vii) Neither an ace nor a king
Total numbers of cards are 52
Number of king cards = 4

Number of ace cards = 4
Total number of cards = 4 + 4 = 8
Total number of neither an ace nor a king are = 52 – 8 = 44
Probability of getting neither an ace nor a king is = Total number of neither ace nor king card/Total number of cards

= 44/52
= 11/13

∴ Probability of getting neither an ace nor a king is 11/13

(viii) Neither a red card nor a queen
Total numbers of cards are 52
Red cards include hearts and diamonds
Number of hearts in a deck of 52 cards = 13
Number of diamonds in a deck of 52 cards = 13
Number of queen in a deck of 52 cards = 4
Total number of red card and queen = 13 + 13 + 2 = 28 [since queen of heart and queen of diamond are removed]
Number of card which is neither a red card nor a queen = 52 - 28 = 24
Probability of getting neither a king nor a queen is = Total number of neither red nor queen card/Total number of cards

= 24/52
= 6/13

∴ Probability of getting neither a king nor a queen is 6/13

(ix) Other than an ace
Total numbers of cards are 52
Total number of ace cards = 4
Total number of non-ace cards = 52-4 = 48
Probability of getting non-ace is = Total number of non-ace cards/Total number of cards

= 48/52
= 12/13

∴ Probability of getting non-ace card is 12/13

(x) A ten
Total numbers of cards are 52
Total number of ten cards = 4
Probability of getting ten cards is = Total number of ten cards/Total number of cards

= 4/52
= 1/13

∴ Probability of getting ten card is 1/13

(xi) A spade
Total numbers of cards are 52
Total number of spade cards = 13
Probability of getting spade is = Total number of spade cards/Total number of cards
= 13/52
= 1/4
∴ Probability of getting a spade is 1/4

(xii) A black card
Total numbers of cards are 52
Cards of spades and clubs are black cards.
Number of spades = 13
Number of clubs = 13
Total number of black card out of 52 cards = 13 + 13 = 26
Probability of getting black cards is = Total number of black cards/Total number of cards
= 26/52
= 1/2
∴ Probability of getting a black card is 1/2

(xiii) The seven of clubs
Total numbers of cards are 52
Total number of the seven of clubs cards = 1
Probability of getting the seven of clubs cards is = Total number of the seven of club cards/ Total numbers of cards
= 1/52
∴ Probability of the seven of club card is 1/52

(xiv) Jack
Total numbers of cards are 52
Total number of jack cards = 4
Probability of getting jack cards is = Total number of jack cards/ Total numbers of cards
= 4/52
= 1/13
∴ Probability of the jack card is 1/13

(xv) The ace of spades
Total numbers of cards are 52

Total number of the ace of spades cards = 1
Probability of getting ace of spade cards is = Total number of ace of spade cards/ Total numbers of cards

= 1/52

∴ Probability of the ace of spade card is 1/52

(xvi) A queen
Total numbers of cards are 52
Total number of queen cards = 4
Probability of getting queen cards is = Total number of queen cards/Total numbers of cards

= 4/52
= 1/13

∴ Probability of a queen card is 1/13

(xvii) A heart
Total numbers of cards are 52
Total number of heart cards = 13
Probability of getting queen cards is = Total number of heart cards/Total numbers of cards

= 13/52
= 1/4

∴ Probability of a heart card is 1/4

(xviii) A red card
Total numbers of cards are 52
Total number of red cards = 13+13 = 26
Probability of getting queen cards is = Total number of red cards/Total numbers of cards

= 26/52
= 1/2

∴ Probability of a red card is 1/2

6. An urn contains 10 red and 8 white balls. One ball is drawn at random. Find the probability that the ball drawn is white.
Solution:
Total number of red balls = 10
Total number of red white balls = 8
Total number of balls = 10 + 8 = 18
Probability of getting a white ball is = Total number of white balls/Total numbers of balls

= 8/18
= 4/9

∴ Probability of a white ball is 4/9

7. A bag contains 3 red balls, 5 black balls and 4 white balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is :
(i) White?
(ii) red?
(iii) black?
(iv) not red?
Solution:
(i) White?
Total numbers of red balls = 3
Number of black balls = 5
Number of white balls = 4
Total number of balls = 3 + 5 + 4 = 12
Probability of getting a white ball is = Total number of white balls/Total numbers of balls
= 4/12
= 1/3
∴ Probability of a white ball is 1/3

(ii) red?
Total numbers of red balls = 3
Number of black balls = 5
Number of white balls = 4
Total number of balls = 3 + 5 + 4 = 12
Probability of getting a red ball is = Total number of red balls/Total numbers of balls
= 3/12
= 1/4
∴ Probability of a red ball is 1/4

(iii) black?
Total numbers of red balls = 3
Number of black balls = 5
Number of white balls = 4
Total number of balls = 3 + 5 + 4 = 12
Probability of getting a black ball is = Total number of black balls/Total numbers of balls
= 5/12
∴ Probability of a black ball is 5/12

(iv) not red?
Total numbers of red balls = 3
Number of black balls = 5
Number of white balls = 4
Total number of Non red balls = 5 + 4 = 9
Probability of getting a not red ball is = Total number of not red balls/Total numbers of balls

= 9/12
= 3/4

∴ Probability of not a red ball is 3/4

8. What is the probability that a number selected from the numbers 1, 2, 3, …, 15 is a multiple of 4?
Solution:
Total numbers are 15
Multiples of 4 are = 4, 8, 12
Probability of getting a multiple of 4 is = Total number of multiples of 4/Total numbers

= 3/15
= 1/5

∴ Probability of getting multiples of 4 is 1/5

9. A bag contains 6 red, 8 black and 4 white balls. A ball is drawn at random. What is the probability that ball drawn is not black?
Solution:
Total numbers of red balls = 6
Number of black balls = 8
Number of white balls = 4
Total number of non-red balls = 6 + 8 + 4 = 18
Number of non-black balls are = 6 + 4 = 10
Probability of getting a non-black ball is = Total number of non-black balls/Total number of balls

= 10/18
= 5/9

∴ Probability of getting a non-black ball is 5/9

10. A bag contains 5 white and 7 red balls. One ball is drawn at random. What is the probability that ball drawn is white?
Solution:

Total numbers of red balls = 7
Number of white balls = 5
Total number of Non red balls = 7 + 5 = 12
Probability of getting a non-white ball is = Total number of non-white balls/Total number of balls
= 5/12
∴ Probability of getting a non-white ball is 5/12

11. A bag contains 4 red, 5 black and 6 white balls. One ball is drawn from the bag at random. Find the probability that the ball drawn is:
(i) white
(ii) red
(iii) not black
(iv) red or white
Solution:
(i) White
Total numbers of red balls = 4
Number of black balls = 5
Number of white balls = 6
Total number of balls = 4 + 5 + 6 = 15
Probability of getting a white ball is = Total number of white balls/Total number of balls
= 6/15
= 2/5
∴ Probability of getting a white ball is 2/5

(ii) Red
Total numbers of red balls = 4
Number of black balls = 5
Number of white balls = 6
Total number of balls = 4 + 5 + 6 = 15
Probability of getting a red ball is = Total number of red balls/Total number of balls
= 4/15
∴ Probability of getting a white ball is 4/15

(iii) Not black
Total numbers of red balls = 4
Number of black balls = 5
Number of white balls = 6
Total number of balls = 4 + 5 + 6 = 15

Number of non-black balls = 4 + 6 = 10
Probability of getting a non-black ball is = Total number of non-black balls/Total number of balls
= 10/15
= 2/3
∴ Probability of getting a non-black ball is 2/3

(iv) Red or white
Total numbers of red balls = 4
Number of black balls = 5
Number of white balls = 6
Total number of balls = 4 + 5 + 6 = 15
Number of red and white balls = 4 + 6 = 10
Probability of getting a red or white ball is = Total number of red or white balls/Total number of balls
= 10/15
= 2/3
∴ Probability of getting a red or white ball is 2/3

12. 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) black
Solution:
(i) Red
Total numbers of red balls = 3
Number of black balls = 5
Total number of balls = 3 + 5 = 8
Probability of getting a red ball is = Total number of red balls/Total number of balls
= 3/8
∴ Probability of getting a red ball is 3/8

(ii) Black
Total numbers of red balls = 3
Number of black balls = 5
Total number of balls = 3 + 5 = 8
Probability of getting a black ball is = Total number of black balls/Total number of balls
= 5/8
∴ Probability of getting a black ball is 5/8

13. A bag contains 5 red marbles, 8 white marbles, 4 green marbles. What is the probability that if one marble is taken out of the bag at random, it will be
(i) red
(ii) white
(iii) not green
Solution:
(i) Red
Total numbers of red marbles = 5
Number of white marbles = 8
Number of green marbles = 4
Total number of marbles = 5 + 8 + 4 = 17
Probability of getting a red marble is = Total number of red marbles/Total number of marbles

= 5/17

∴ Probability of getting a red marble is 5/17

(ii) White
Total numbers of red marbles = 5
Number of white marbles = 8
Number of green marbles = 4
Total number of marbles = 5 + 8 + 4 = 17
Probability of getting a white marble is = Total number of white marbles/Total number of marbles

= 8/17

∴ Probability of getting a white marble is 8/17

(iii) Not green
Total numbers of red marbles = 5
Number of white marbles = 8
Number of green marbles = 4
Total number of marbles = 5 + 8 + 4 = 17
Total number of non-green marbles = 5 + 8 = 13
Probability of getting a non-green marble is = Total number of non-green marbles/Total number of marbles

= 13/17

∴ Probability of getting a non-green marble is 13/17

14. If you put 21 consonants and 5 vowels in a bag. What would carry greater probability? Getting a consonant or a vowel? Find each probability?
Solution:
Total numbers of consonants = 21
Number of white vowels = 5
Total number of alphabets = 21 + 5 = 26
Probability of getting a consonant is = Total number of consonants/Total number of alphabets

= 21/26

Probability of getting a vowel is = Total number of vowels/Total number of alphabets

= 5/26

∴ The probability of getting a consonant is more.

15. If we have 15 boys and 5 girls in a class which carries a higher probability? Getting a copy belonging to a boy or a girl. Can you give it a value?
Solution:
Total numbers of boys in a class = 15
Number of girls in a class = 5
Total number of students = 15 + 5 = 20
Probability of getting a copy of a boy is = Total number of boys/Total number of students

= 15/20
= 3/4

Probability of getting a copy of a girl is = Total number of girls/Total number of students

= 5/20
= 1/4

∴ The probability of getting a copy of a boy is more.

16. It you have a collection of 6 pairs of white socks and 3 pairs of black socks. What is the probability that a pair you pick without looking is (i) white? (ii) black?
Solution:
Total numbers of white socks = 6 pairs
Total numbers of black socks = 3 pairs
Total number pairs of socks = 6 + 3 = 9
(i) Probability of getting a white sock is = Total number of white socks/Total number of socks

= 6/9
= 2/3

∴ The probability of white socks is 2/3.

(ii) Probability of getting a black sock is = Total number of black socks/Total number of socks

= 3/9

= 1/3

∴ The probability of black socks is 1/3.

17. If you have a spinning wheel with 3-green sectors, 1-blue sector and 1-red sector. What is the probability of getting a green sector? Is it the maximum?

Solution:

Total numbers of green sectors = 3

Total numbers of blue sector = 1

Total numbers of red sector = 1

Total number of sectors = 3 + 1 + 1 = 5

Probability of getting a green sector is = Total number of green sectors/Total number of sectors

= 3/5

Probability of getting a blue sector is = Total number of blue sectors/Total number of sectors

= 1/5

Probability of getting a red sector is = Total number of red sectors/Total number of sectors

= 1/5

Yes, the probability of getting a green sector is maximum.

18. When two dice are rolled:

(i) List the outcomes for the event that the total is odd.

(ii) Find probability of getting an odd total.

(iii) List the outcomes for the event that total is less than 5.

(iv) Find the probability of getting a total less than 5?

Solution:

(i) List the outcomes for the event that the total is odd.

Possible outcomes of two dice are:

First Die / Second die	1	2	3	4	5	6
1	1, 1	1, 2	1, 3	1, 4	1, 5	1, 6
2	2, 1	2, 2	2, 3	2, 4	2, 5	2, 6
3	3, 1	3, 2	3, 3	3, 4	3, 5	3, 6
4	4, 1	4, 2	4, 3	4, 4	4, 5	4, 6
5	5, 1	5, 2	5, 3	5, 4	5, 5	5, 6
6	6, 1	6, 2	6, 3	6, 4	6, 5	6, 6

Outcomes for the event that the total is odd are: (2, 1), (4, 1), (6, 1), (1, 2), (3, 2), (5, 2), (2, 3), (4, 3), (6, 3), (1, 4), (3, 4), (5, 4), (2, 5), (4, 5), (6, 5), (1, 6), (3, 6), (5, 6)

(ii) Find probability of getting an odd total.
Total numbers of outcomes from two dice are 36
From above table we get that the total number of outcomes for the event of getting an odd total is 18.
Probability of getting an event that the total is odd = Total number of events with odd total/Total number of events

= 18/36
= 1/2

∴ The probability of getting an odd total is 1/2

(iii) List the outcomes for the event that total is less than 5.
Total numbers of outcomes from two dice are 36
Total number of outcomes of the events that total is less than 5 are: (1, 1), (2, 1), (3, 1), (1, 2), (2, 2) and (1, 3)

(iv) Find the probability of getting a total less than 5?
Total numbers of outcomes from two dice are 36
Total number of events that total is less than 5 are: (1, 1), (2, 1), (3, 1), (1, 2), (2, 2) and (1, 3)
Probability of getting an event that total is less than 5 = Total number of events with total less than 5 /Total number of events

= 6/36
= 1/6

∴ The probability of getting an event that total is less than 5 is 1/6