

Probability - 1

Exercise A

- If one card is picked at random from a pack of 52 playing cards, what is the probability that it is:
 - a King,
 - the Ace of Clubs,
 - a Heart?
- Nine counters numbered 1, 2, 3, 4, 5, 6, 7, 8, 9 are placed in a bag. One is taken out at random. What is the probability that it is:
 - a '5',
 - divisible by 3,
 - less than 5,
 - divisible by 4?
- A bag contains 5 green balls, 2 red balls and 4 yellow balls. One ball is taken out at random. What is the probability that it is:
 - green,
 - red,
 - yellow?



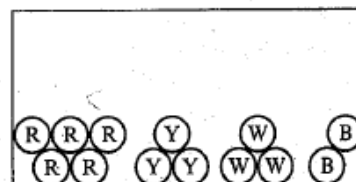
- A cash bag contains two 20p coins, four 10p coins, five 5p coins, three 2p coins and three 1p coins. Find the probability that one coin selected at random is:
 - a 10p coin,
 - a 2p coin,
 - a silver coin.

- One card is selected at random from those shown. Find the probability of selecting:
 - a Heart,
 - an Ace,
 - the 10 of Clubs,
 - a Spade,
 - a Heart or a Diamond.



- A pack of playing cards is well shuffled and a card is drawn. Find the probability that the card is:
 - a Jack.
 - a Queen or a Jack,
 - the ten of Hearts,
 - a Club higher than the 9 (count the Ace as high).

- One ball is selected at random from those opposite. Find the probability of selecting:
 - a white ball,
 - a yellow or a black ball,
 - a ball which is not red.



R = red
 Y = yellow
 W = white
 B = black

- A bag contains 5 red balls, 6 green balls and 2 black balls. Find the probability of selecting:
 - a red ball
 - a green ball.
 - One black ball is removed from the bag. Find the new probability of selecting:
 - a red ball
 - a black ball.

9. A pack of playing cards is split so that all the picture cards (Kings, Queens, Jacks) are in Pile A and all the other cards are in Pile B. Find the probability of selecting:
- the Queen of Clubs from pile A.
 - the seven of Spades from pile B.
 - any Heart from pile B.

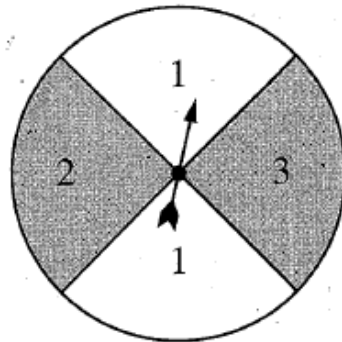


10. One ball is selected at random from a bag containing 12 balls of which x are white.
- What is the probability of selecting a white ball?
When a further 6 white balls are added the probability of selecting a white ball is doubled.
 - Find x .

Exercise B

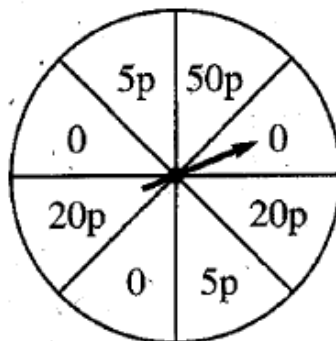
1. A fair dice is rolled 300 times. How many times would you expect to roll:
- an even number
 - a 'six'?

2. The spinner shown has four equal sectors. How many 3's would you expect in 100 spins?



3. About one in eight of the population is left-handed. How many left-handed people would you expect to find in a firm employing 400 people?
4. A bag contains a large number of marbles of which one in five is red. If I randomly select one marble on 200 occasions how many times would I expect to select a red marble?

5. The spinner shown is used for a simple game. A player pays 10p and then spins the pointer, winning the amount indicated.
- What is the probability of winning nothing?
 - If the game is played by 200 people how many times would you expect the 50p to be won?

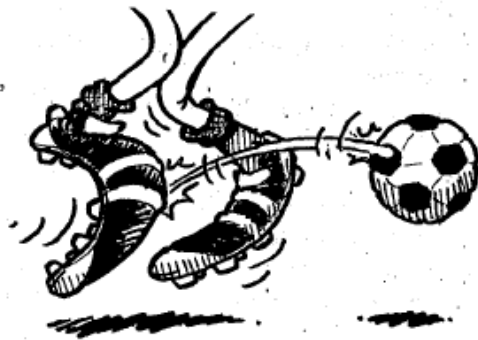


6. The numbered cards are shuffled and put into a pile.



One card is selected at random and not replaced. A second card is then selected.

- (a) If the first card was the '11' find the probability of selecting an even number with the second draw.
- (b) If the first card was an odd number, find the probability of selecting another odd number.
7. When the ball is passed to Vinnie, the probability that he kicks it is 0.2 and the probability that he heads it is 0.1. Otherwise he will miss the ball completely, fall over and claim a foul.
- In one game his ever-optimistic team mates pass the ball to Vinnie 150 times.
- (a) How often would you expect him to head the ball?
- (b) How often would you expect him to miss the ball?



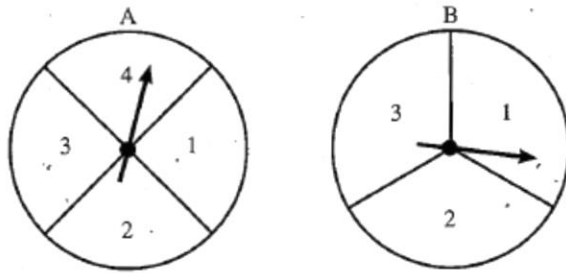
8. A small pack of 20 cards consists of the Ace, King, Queen, Jack and ten of all four suits. One card is selected and then replaced. This procedure is repeated 100 times.
- How many times would you expect to select:
- (a) an Ace,
- (b) the Queen of Spades,
- (c) a red card,
- (d) any King or Queen?

Exercise C

1. Three coins (10p, 20p, 50p) are tossed together.
- (a) List all the possible ways in which they could land.
- (b) What is the probability of getting three heads?
2. List all the possible outcomes when four coins are tossed together. How many are there altogether?
3. A black dice and a white dice are thrown together
- (a) Draw a grid to show all the possible outcomes.
[See the box above.]
- (b) How many ways can you get a total of nine on the two dice?
- (c) What is the probability that you get a total of nine?

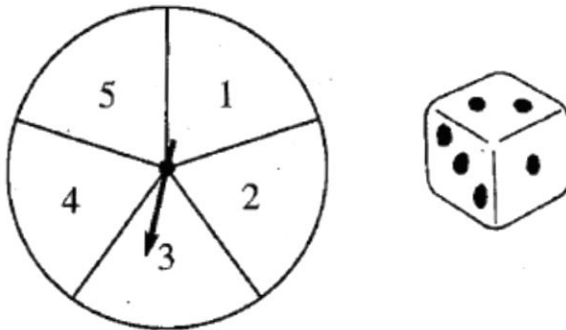


4. The two spinners shown are spun together.



List all the possible outcomes. Find the probability of obtaining:

- (a) a total of 4, (b) the same number on each spinner.
5. Four friends, Wayne, Xavier, Yves and Zara, each write their name on a card and the four cards are placed in a hat. Two cards are chosen to decide who does the maths homework that night. List all the possible combinations. What is the probability that the names drawn are Xavier and Yves?
6. The spinner is spun and the dice is thrown at the same time.



- (a) Draw a grid to show all the possible outcomes.
(b) A 'win' occurs when the number on the spinner is greater than or equal to the number on the dice. Find the probability of a 'win'.
7. A red dice and a blue dice are thrown at the same time. Show all the possible outcomes in a systematic way. Find the probability of obtaining:
- (a) a total of 10, (b) a total of 12,
(c) a total less than 6, (d) the same number on both dice.
8. A dice is thrown; when the result has been recorded, the dice is thrown a second time. Display all the possible outcomes of the two throws. Find the probability of obtaining:
- (a) a total of 4 from the two throws,
(b) a total of 8 from the two throws,
(c) a total between 5 and 9 inclusive from the two throws,
(d) a number on the second throw which is double the number on the first throw,
(e) a number on the second throw which is four times the number on the first throw.