

Probability

Expected number of successes = p (success) \times number of trials

Example



If a dice is rolled 300 times, how many times would you expect to roll a number greater than 4?

$$P(\text{number} > 4) = \frac{2}{6} = \frac{1}{3}$$

Expected number of successes = p (success) \times number of trials

so

$$\text{Expected number of scores greater than 4} = \frac{1}{3} \times 300 = 100$$

Exercise 1

1. A dice is rolled 510 times - how many times would you expect to roll
 - a) an even number
 - b) a 4
 - c) a number less than 4?

2. About $\frac{1}{6}$ of people have red hair. How many red haired people would you expect to find in a school of 1230?

3. The probability that Cardiff City F.C win a match is $\frac{3}{8}$. If they play 24 matches, how many would you expect them to win?

4. One in seven sweets in a bag are strawberry flavoured. If there are 490 bags of sweets, how many times would you expect the first sweet chosen to be strawberry flavoured?

5. A pack of playing cards are spilt into two piles. Pile A has all the picture cards and the aces. All the other cards are in Pile B.
 - a) If you pick a card at random from pile A what is the probability that it is the ace of diamonds?

- b) How many times would you expect to pick a picture card first from Pile A if you picked a card at random 400 times and replaced the card each time?
- c) How many times would you expect to pick a heart first from Pile B, if you picked a card at random 240 times?

6. If you remove all the picture cards and the hearts from a deck of cards you are left with a pile of cards. If you pick one card at random...

- a) What is the probability that you choose the two of spades?
- b) What is the probability that the card is a club?
- c) If you were to repeat this 390 times, how many times would you expect to pick a red card?

7. About one in twelve people have allergies to cats. If you asked 900 people in the street, how many would you expect to suffer from this allergy?

8. Thomas forgets his homework diary one day a week (Monday-Friday). Over a period of 30 weeks in school, how many days in total would you expect Thomas to forget his homework diary?