



Name: _____ Date: _____ Score: _____ / 52

- 1 A bag contains $2x$ green counters and $(x + 4)$ yellow counters. A counter is taken at random.

The probability that it is green is $\frac{2}{5}$.

Work out the value of x .

(3 marks)

Answer _____

- 2 A bag contains n counters. 3 of the counters are red.
A counter is taken at random, replaced, and then a second counter is taken at random.
Write down an expression, in terms of n , for the probability that both counters are red.

(2 marks)

Answer _____

- 3 A box contains n counters. 5 of the counters are green.
A counter is taken at random and **not** replaced. A second counter is then taken at random.
Write down an expression, in terms of n , for the probability that both counters are green.

(2 marks)

Answer _____

- 4 A biased coin is flipped twice. The flips are independent.
The probability of getting heads on both flips is 0.64.
Work out the probability of getting heads on one flip of the coin.

(2 marks)

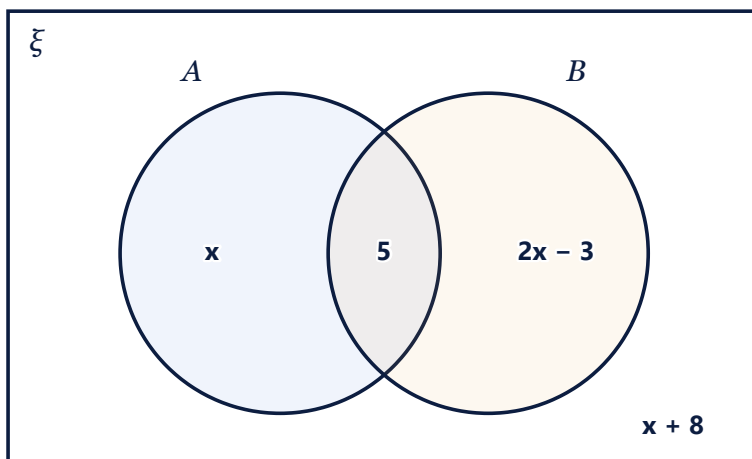
Answer _____

- 5 50 people were asked whether they read fiction (A) or non-fiction (B).

The Venn diagram regions contain these numbers of people:

A only: x $A \cap B$: 5 B only: $2x - 3$ neither: $x + 8$

- Work out the value of x .
- One of the 50 people is chosen at random. Work out the probability that this person reads non-fiction.



(4 marks)

Answer _____

- 6 Two independent events A and B are such that

$$P(B) = 2 \times P(A)$$

$$P(A \text{ and } B) = \frac{1}{8}$$

Find $P(A)$.

(4 marks)

Answer _____

7 A jar contains n sweets. 6 of the sweets are orange. The rest are lemon.

Hana takes two sweets at random, without replacement.

The probability that both sweets are orange is $\frac{1}{3}$.

a. Show that $n^2 - n - 90 = 0$.

b. Find the value of n .

(5 marks)

Answer _____

8 A bag contains x green counters and 8 white counters.

Two counters are taken at random, without replacement.

The probability that both counters are white is $\frac{14}{33}$.

Work out the value of x .

(5 marks)

Answer _____

9 A bag contains only red counters and green counters.

The probability of taking a red counter at random is $\frac{2}{5}$.

10 red counters are then removed from the bag.

The probability of taking a red counter at random is now $\frac{1}{4}$.

Work out the number of counters that were in the bag originally.

(5 marks)

Answer _____

10

A bag contains 4 red counters and x blue counters. Two counters are taken at random without replacement.

a. Show that the probability of taking one red counter and one blue counter is

$$\frac{8x}{(x+4)(x+3)}.$$

b. The probability of taking one counter of each colour is $\frac{8}{15}$. Show that $x^2 - 8x + 12 = 0$.

c. Solve $x^2 - 8x + 12 = 0$ to find the possible values of x .

(6 marks)

Answer _____

11

A bag contains x black counters and 6 white counters.

Two counters are taken at random, without replacement.

The probability that the two counters are different colours is $\frac{1}{2}$.

Find the possible values of x .

(6 marks)

Answer _____

12 There are n counters in a box. 8 of the counters are orange. The rest are brown.

Meg takes two counters at random, without replacement.

The probability that both counters are orange is $\frac{4}{15}$.

a. Show that $n^2 - n - 210 = 0$.

b. Find the value of n .

c. Work out the probability that both counters Meg takes are brown.

(8 marks)

Answer

End of questions | Total 52 marks