

- 1 There are some red counters and some blue counters in a bag.
The ratio of red counters to blue counters is 3:1
Two counters are removed at random.
The probability that both the counters taken are blue is $\frac{1}{20}$
Work how many counters were in the bag before any counters were removed.
(5 marks)

- 2 There are some red counters and some blue counters in a bag.
The ratio of red counters to blue counters is 4:1
Two counters are removed at random.
The probability that both the counters taken are red is $\frac{22}{35}$
Work how many blue counters are in the bag.
(5 marks)

- 3 There are 5 red counters and y blue counters in a bag.
Imogen takes a counter from the bag at random.
She puts the counter back into the bag.
Imogen then takes another counter at random from the bag.
The probability that the first counter Imogen takes is red and the second counter Imogen takes is red is $\frac{1}{9}$
Work how many blue counters are in the bag.
(5 marks)

- 4 There are 4 red counters and x blue counters in a bag.
2 counters are removed from the bag at random.
The probability that both the counters taken are blue is $\frac{1}{3}$
Work out the value of x .
(6 marks)

- 5 There are 5 red counters and x blue counters in a bag.
2 counters are removed from the bag at random.
The probability that both the counters taken are red is $\frac{5}{33}$
Work out the value of x .
(7 marks)

- 6 There are n counters in a bag.
4 of the counters are red and the rest are blue.
Ross takes a counter from the bag at random and does not replace it.
He then takes another counter at random from the bag.
The probability that Ross takes two blue counters is $\frac{1}{3}$
(a) Show that $n^2 - 13n + 30 = 0$ (5)
(b) Find the value of n . (2)
(7 marks)

- 7 There are n counters in a bag.
8 of the counters are red and the rest are blue.
Adam takes a counter from the bag at random and does not replace it.
He then takes another counter at random from the bag.
The probability that Adam takes two blue counters is $\frac{1}{5}$
(a) Show that $n^2 - 21n + 90 = 0$ (5)
(b) Find the value of n . (2)
(7 marks)