Q1.

Bag X contains 9 blue balls and 18 red balls.

Bag Y contains 7 blue balls and 14 red balls.

Liz picks a ball at random from bag X.

She puts the ball into bag Y.

Mike now picks a ball at random from bag Y.

Show that

P (Liz picks a blue ball) = P (Mike picks a blue ball)

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(Total 4 marks)

Q2.

A bag contains 10 counters.
The counters are blue or red.

A counter is taken out of the bag at random and **not** replaced.
A second counter is taken out at random.

The probability that at least one of the counters is blue is $\frac{48}{90}$

How many of the 10 counters are red?

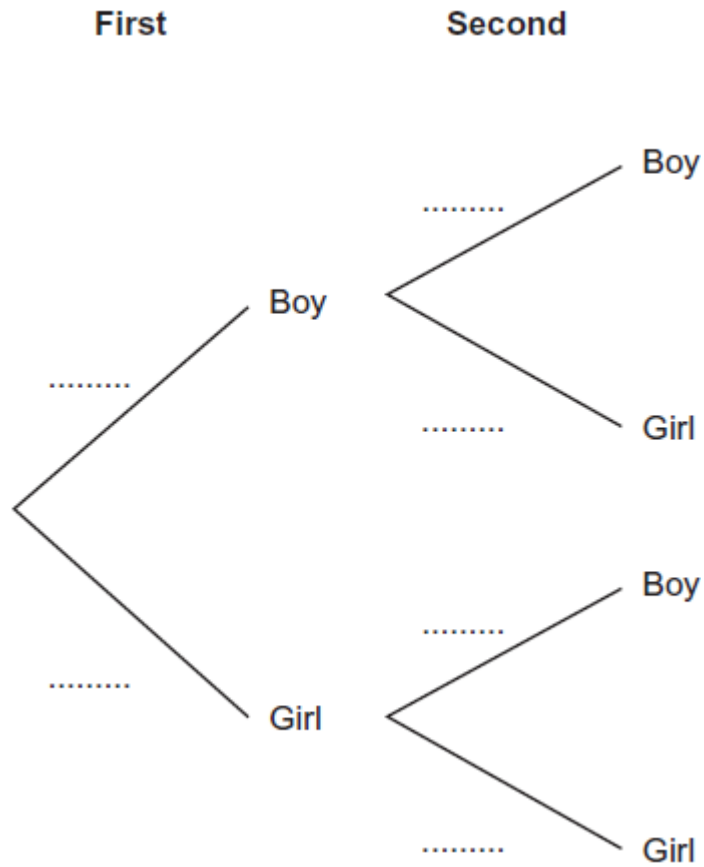...

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Answer ....

(Total 3 marks)

Q3. A team has 7 boys and 3 girls.
Stevie chooses two of the team at random.

(a)   Complete the probability tree diagram.

First   **Second**

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                                    Boy
                          ........ /
                          /
                  Boy ◁
                 /        ........ \
        ........ /                  Girl
               /
              ◁
        ........ \                  Boy
               \          ........ /
                  Girl ◁
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                                    Girl
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(3)

(b)   Work out the probability that he chooses one boy and one girl.

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Answer ....

(3)
(Total 6 marks)

Q4.
Two bags, A and B, contain beads.

Bag A contains 7 red beads and 2 yellow beads.
Bag B contains 1 red bead and 4 yellow beads.

One bead is taken at random from bag A and put into bag B.
One bead is then taken at random from bag B and put into Bag A.

Work out the probability that bag A still contains exactly 7 red beads.

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Answer ....

(Total 4 marks)

Q5.(a)   What is a stratified sample?

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(1)

(b)   Here is some information about the age groups of people in a sports club.

Junior	Adult	Senior
35	220	45

A sample of size 60, stratified by age group, is taken.
Two people are chosen at random from the **sample**.

Work out the probability that they are both juniors.

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Answer ....

(4)
(Total 5 marks)

Q6.

A bag contains 7 red balls and 4 blue balls.
Two balls are chosen at random without replacement.

What is the probability that the two balls are the same colour?

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Answer ....

(Total 4 marks)

Q7. A bag contains 12 counters.
Five of the counters are white.

A counter is taken out of the bag at random and **not** replaced.
A second counter is taken out of the bag at random.

Calculate the probability that **only one** of the two counters is white.

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Answer ....

(Total 3 marks)

Q8.

Ten socks are in a drawer.
Four of the socks are black.

Two socks are chosen at random.

What is the probability of choosing two black socks?

Answer ....

(Total 3 marks)

Q9. Robin is firing arrows at a target.

The probability that he hits the target on his x^{th} attempt is $\dfrac{x+2}{x+3}$

For example   Probability (hit on his 5th attempt) = $\dfrac{7}{8}$

(a)   Work out the probability that he hits the target with both his 1ˢᵗ and 2ⁿᵈ attempts.

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Answer ....

(3)

(b)   Work out the probability that he hits the target **exactly** once on his first two attempts.

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Answer ....

(4)
(Total 7 marks)

Q10. Ten different names are put into a computer.
One of the names is Jaspal.

(a)   On Monday, the computer chooses two names at random.
The computer is set so that the same name **can** be chosen twice.

Show that the probability that Jaspal is chosen at least once is $\dfrac{19}{100}$

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(3)

(b)　On Tuesday, the computer chooses two names at random.
The computer is set so that the same name **cannot** be chosen twice.

Work out the probability that Jaspal is chosen now.

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Answer ....

(3)
(Total 6 marks)

Q11. A bag contains 4 blue, 4 red and 4 white counters.
Two counters are chosen at random without replacement.

What is the probability that the counters are different colours?

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Answer ....

(Total 4 marks)

Q12. Ella has these coins.

Jayden has these coins.

Ella takes one of her coins at random and gives it to Jayden.
Jayden adds it to his coins.

Then Jayden takes one of his coins at random and gives it to Ella.

What is the probability that Ella and Jayden now have the same amount of money as each other?
You **must** show your working.

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Answer ....

(Total 4 marks)