

## Non-Calculator

**Q1.**

There are 11 pens in a box.

8 are black and 3 are red.

Two pens are taken out at random **without** replacement.

Work out the probability that the two pens are the **same** colour.

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Answer \_\_\_\_\_

(Total 4 marks)

**Q2.**

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)**

**Q3.**

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)**

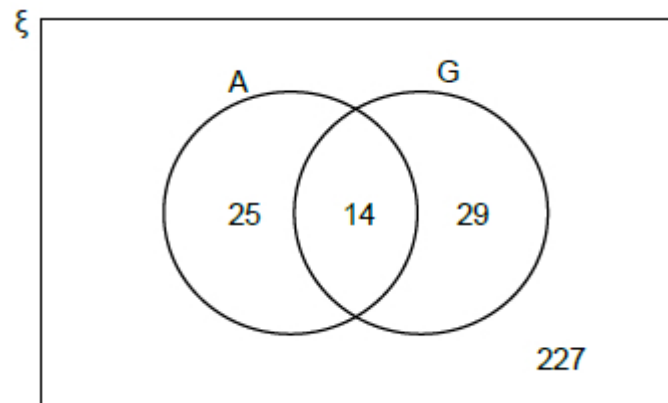
**Q4.**

In the Venn diagram

$\xi$  = 295 students in a college

A = students who take Art

G = students who take Geography



- (a) One student is chosen at random.

Work out the probability the student takes Art.

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Answer \_\_\_\_\_

(1)

(b) One student who takes Geography is chosen at random.

Work out the probability the student **also** takes Art.

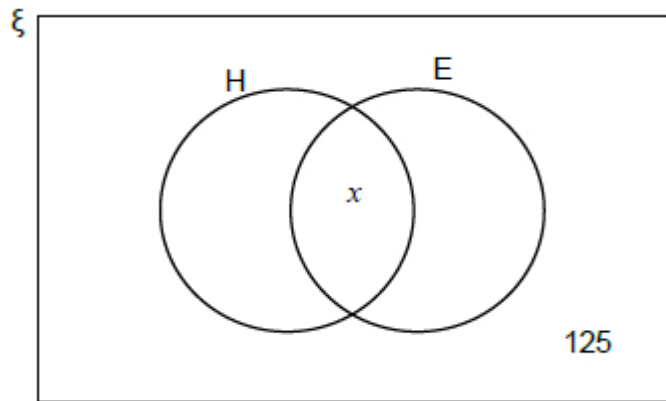
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Answer \_\_\_\_\_

(1)

In this Venn diagram

$\xi$  = 295 students in the college  
H = students who take History  
E = students who take English



One-half of the students who take History also take English.  
The number who take English is twice the number who take History.

Work out the value of  $x$

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Answer \_\_\_\_\_

(3)

(Total 5 marks)

## Calculator

### Q5.

The probability that Gina goes to the gym on Saturday is 0.9  
The probability that Dave goes to the gym on Saturday is 0.6  
These probabilities are **independent**.

- (a) Calculate the probability that **both** Gina and Dave go to the gym on Saturday.

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Answer \_\_\_\_\_

(1)

- (b) If Gina goes to the gym on Saturday the probability that she goes on Sunday is 0.2  
If Gina does **not** go to the gym on Saturday the probability that she goes on Sunday is 0.7

Calculate the probability that Gina goes to the gym on exactly **one** of the two days.

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Answer \_\_\_\_\_

(4)

(Total 5 marks)

**Q6.**

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)**

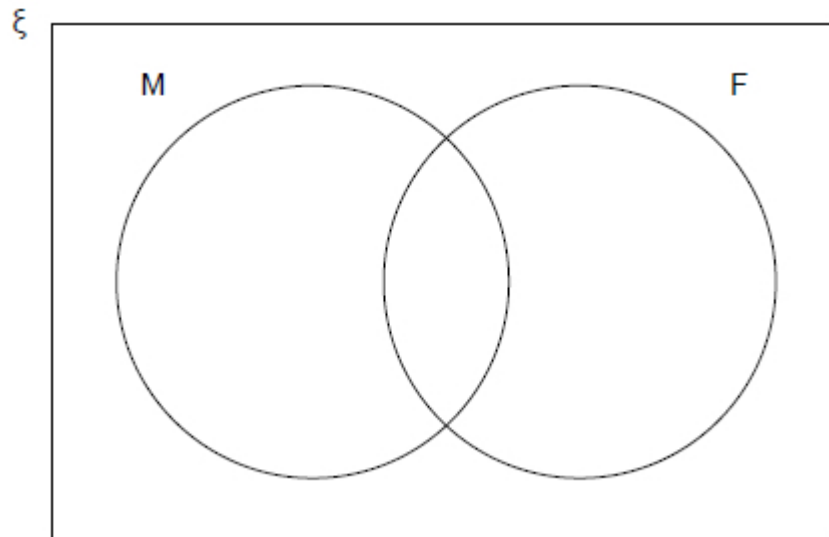
**Q7.**

A whole number from 1 to 15 inclusive is picked at random.

$\xi$  = Whole numbers from 1 to 15 inclusive

M = Multiples of 3

F = Factors of 24



Using the Venn diagram, work out which of these probabilities is greater

P (the number is a multiple of 3 given it is a factor of 24)

or

P (the number is a factor of 24 given it is a multiple of 3)

You **must** show your working.

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Answer \_\_\_\_\_

**(Total 5 marks)**

**Q8.**

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  $\frac{19}{100}$

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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)



**Q9.**

A school has 86 teachers.

42 are male and 44 are female.

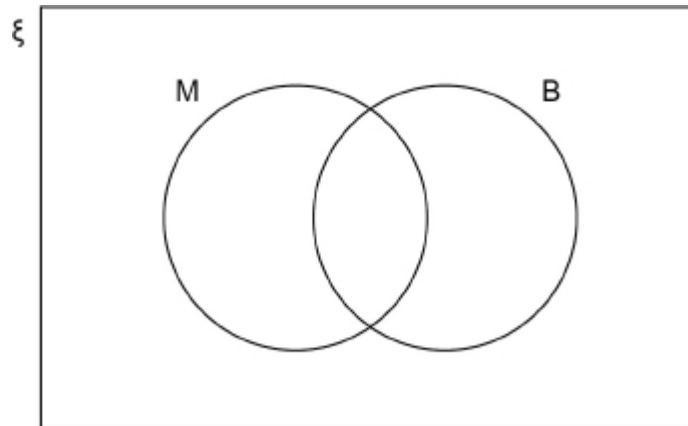
$\frac{1}{3}$  of the male teachers have blue eyes.

$\frac{1}{4}$  of the female teachers have blue eyes.

(a)  $\xi$  = teachers in the school

M = male teachers

B = teachers who have blue eyes



Complete the Venn diagram.

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(3)

(b) One teacher who has blue eyes is chosen at random.

Work out the probability that the teacher is male.

Answer \_\_\_\_\_

(1)

(Total 4 marks)

**Q10.**

A bag contains 10 counters.  
4 of the counters are black and 6 are white.

Two counters are picked at random.

Work out the probability that they are both black.

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Answer \_\_\_\_\_

**(Total 3 marks)**

**Q11.**

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)**