



ACHIEVE ACADEMY

GCSE Maths — Foundation Tier

Venn Diagrams & Set Notation · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Venn Diagrams & Set Notation

Total marks available: 64

● Venn Diagrams & Set Notation

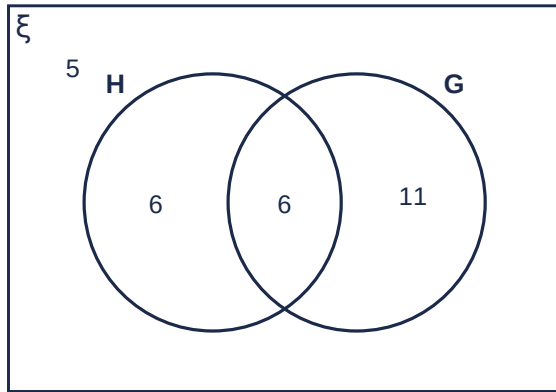
Q1

[1 mark]

The Venn diagram shows information about 28 students.

H = students who study History G = students who study Geography

How many of the students study History but not Geography?



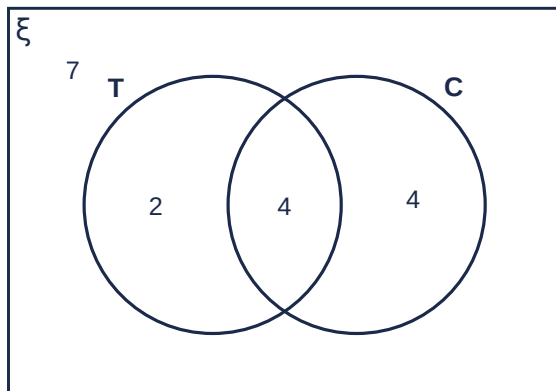
Q2

[1 mark]

The Venn diagram shows information about 17 office workers.

T = office workers who drink tea C = office workers who drink coffee

How many of the office workers drink coffee but not tea?

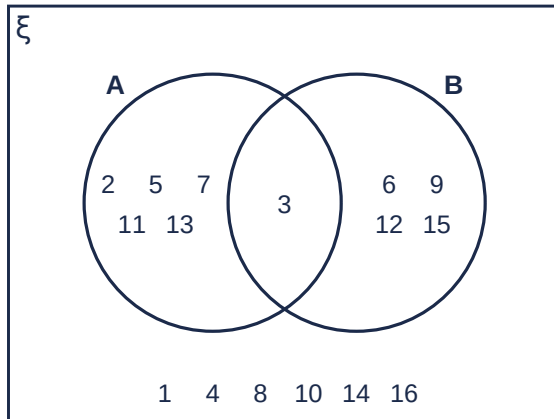


Q3

[2 marks]

$\xi = \{\text{whole numbers from 1 to 16}\}$. A = prime numbers, B = multiples of 3.

The Venn diagram shows this information. Write down all the numbers that are in set A.

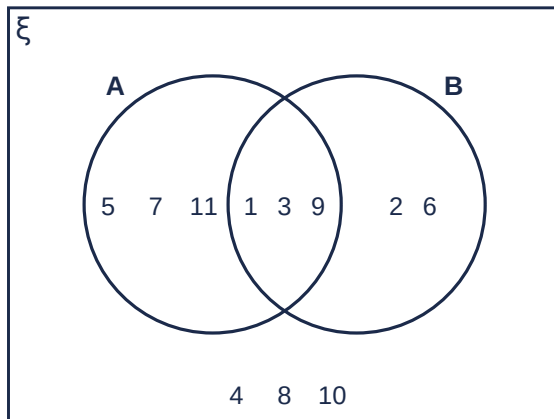


Q4

[2 marks]

$\xi = \{\text{whole numbers from 1 to 11}\}$. A = odd numbers, B = factors of 18.

The Venn diagram shows this information. Write down all the numbers that are in set A but not in set B.



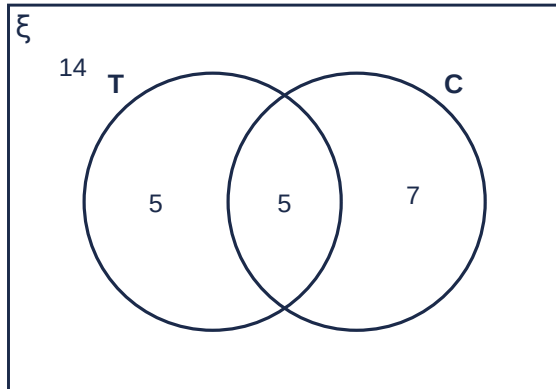
Q5

[1 mark]

The Venn diagram shows information about 31 office workers.

T = office workers who drink tea C = office workers who drink coffee

How many of the office workers drink neither tea nor coffee?

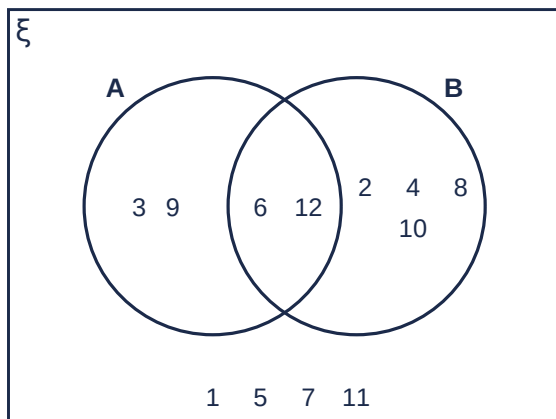


Q6

[2 marks]

$\xi = \{\text{whole numbers from 1 to 12}\}$. A = multiples of 3, B = even numbers.

The Venn diagram shows this information. Write down all the numbers that are in set B.

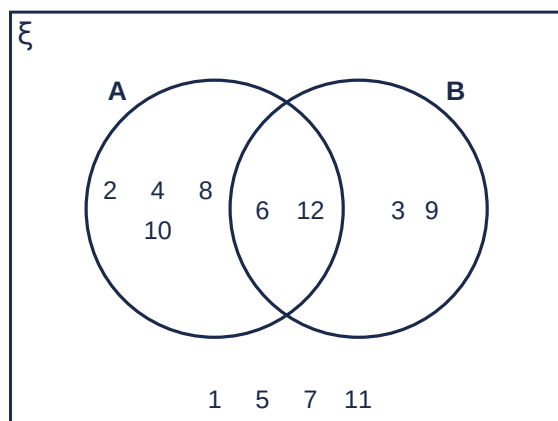


Q7

[2 marks]

$\xi = \{\text{whole numbers from 1 to 12}\}$. A = even numbers, B = multiples of 3.

The Venn diagram shows this information. Write down all the numbers that are not in set A and not in set B.



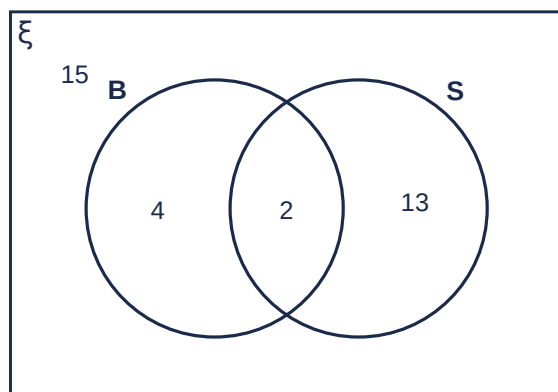
Q8

[1 mark]

The Venn diagram shows information about 34 children.

B = children who own a bike S = children who own a scooter

How many of the children own a bike and a scooter?

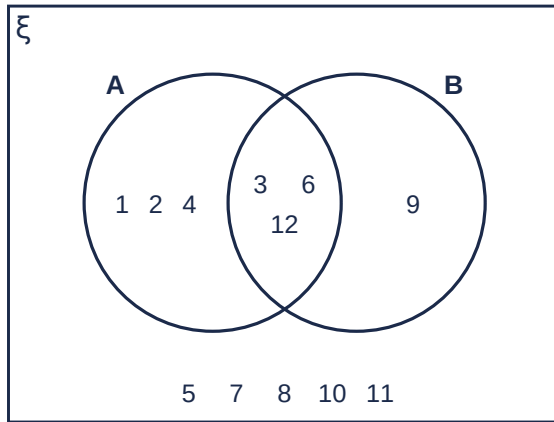


Q9

[2 marks]

$\xi = \{\text{whole numbers from 1 to 12}\}$. A = factors of 12, B = multiples of 3.

The Venn diagram shows this information. Write down all the numbers that are in set B.



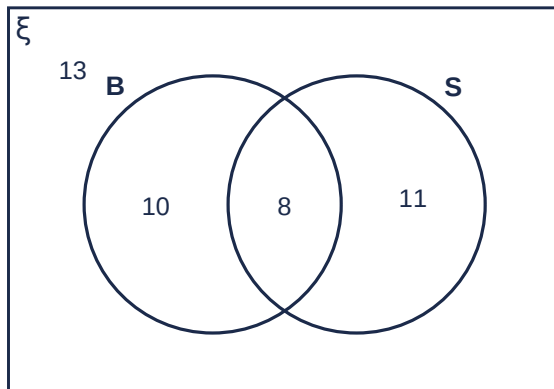
Q10

[1 mark]

The Venn diagram shows information about 42 children.

B = children who own a bike S = children who own a scooter

How many of the children own neither a bike nor a scooter?

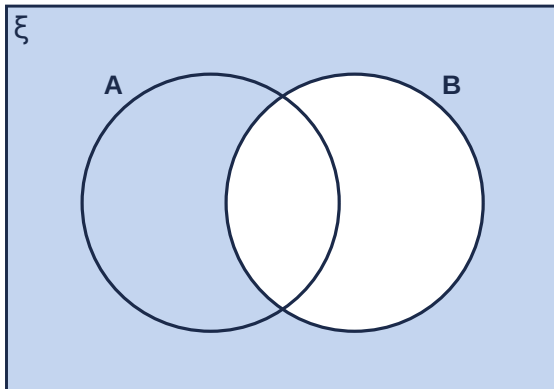


Q11

[1 mark]

Which of these describes the shaded region of the Venn diagram?

A' $A' \cap B$ $A \cup B$ B'



Q12

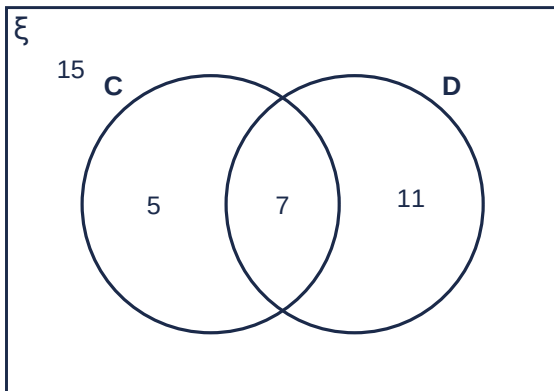
[2 marks]

The Venn diagram shows information about 38 people.

C = people who have a cat D = people who have a dog

One of the people is chosen at random. Work out the probability that they have a cat but not a dog.

Give your answer as a fraction in its simplest form.

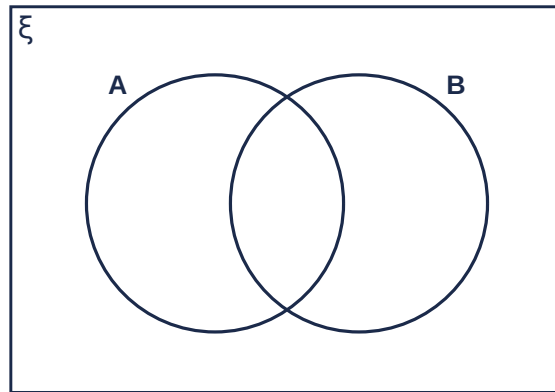


Q13

[3 marks]

 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$ $A = \{1, 2, 3, 4, 6\}$ $B = \{2, 4, 6, 8, 10\}$

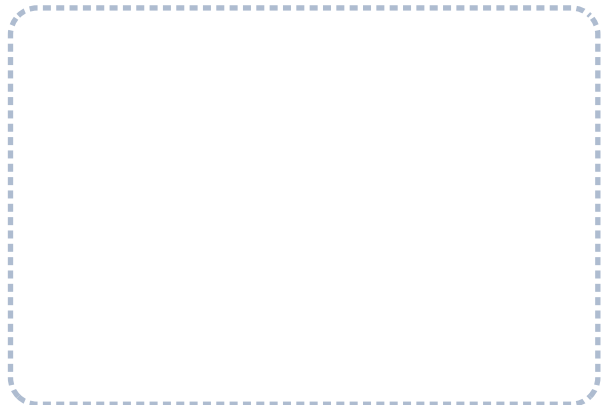
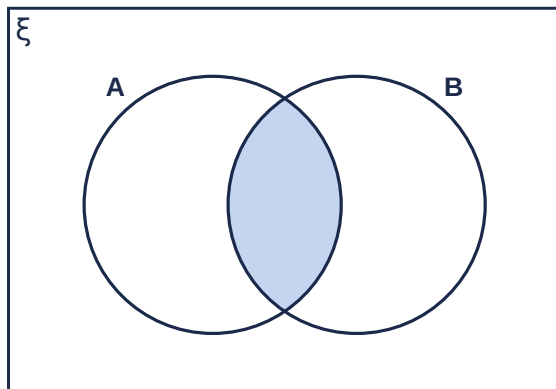
Complete the Venn diagram.



Q14

[1 mark]

Which of these describes the shaded region of the Venn diagram?

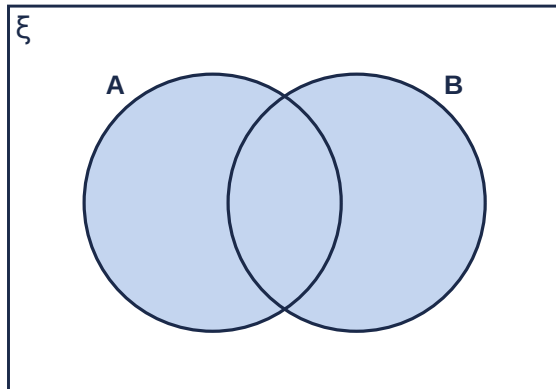
 $A' \cap B$ $A \cap B$ $A \cap B'$ B' 

Q15

[1 mark]

Which of these describes the shaded region of the Venn diagram?

$A \cup B$ $A \cap B$ B' $A \cap B'$



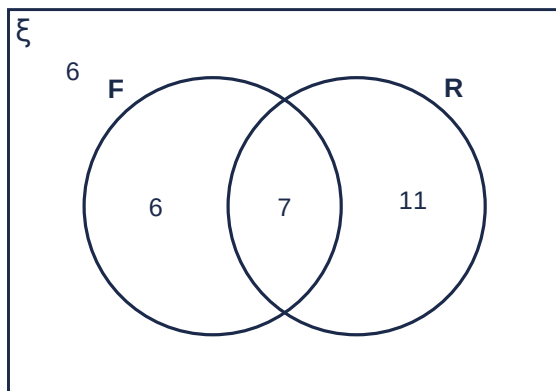
Q16

[2 marks]

The Venn diagram shows information about 30 students.

F = students who play football R = students who play rugby

One of the students is chosen at random. Work out the probability that they play football and rugby.
Give your answer as a fraction in its simplest form.



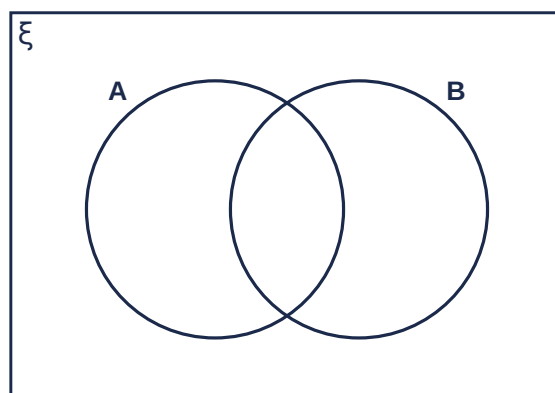
Q17

[3 marks]

$$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$$

$$A = \{1, 4, 9\} \quad B = \{1, 2, 3, 4, 6, 12\}$$

Complete the Venn diagram.



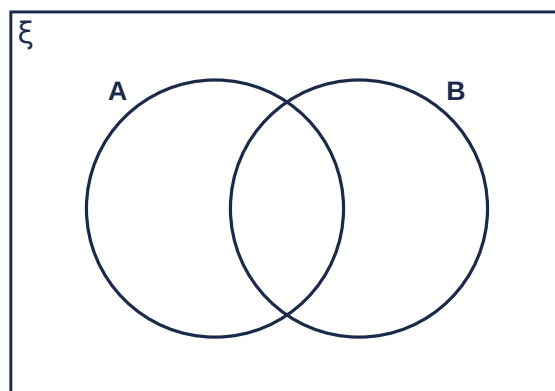
Q18

[3 marks]

$$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

$$A = \{1, 2, 3, 6, 9\} \quad B = \{1, 2, 3, 4, 6\}$$

Complete the Venn diagram.



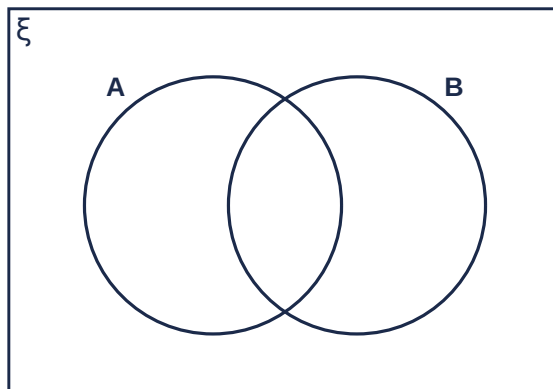
Q19

[3 marks]

$$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$$

$$A = \{1, 2, 3, 4, 6\} \quad B = \{1, 2, 3, 6, 9\}$$

Complete the Venn diagram.



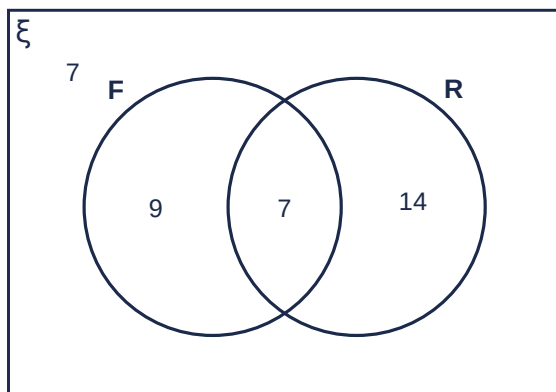
Q20

[2 marks]

The Venn diagram shows information about 37 students.

F = students who play football R = students who play rugby

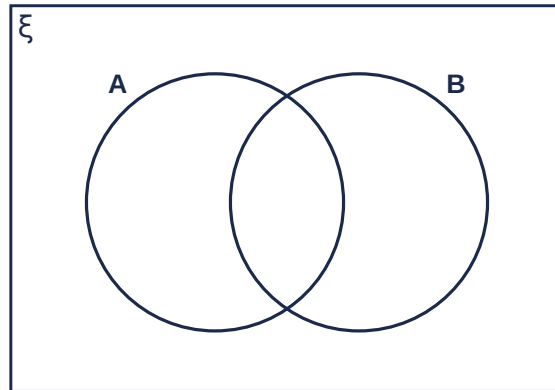
One of the students is chosen at random. Work out the probability that they play rugby but not football. Give your answer as a fraction in its simplest form.



Q21

[1 mark]

On the Venn diagram, shade the region A' .



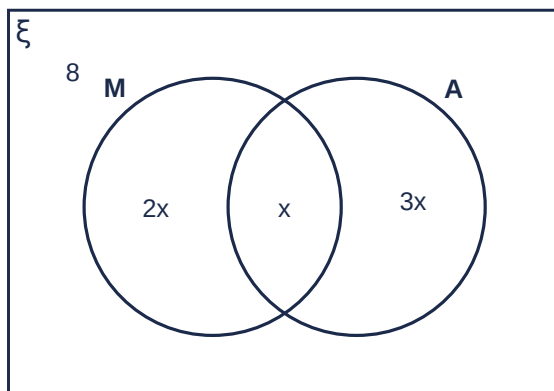
Q22

[3 marks]

The Venn diagram shows information about 20 students.

M = students who study Music A = students who study Art

Work out the value of x .



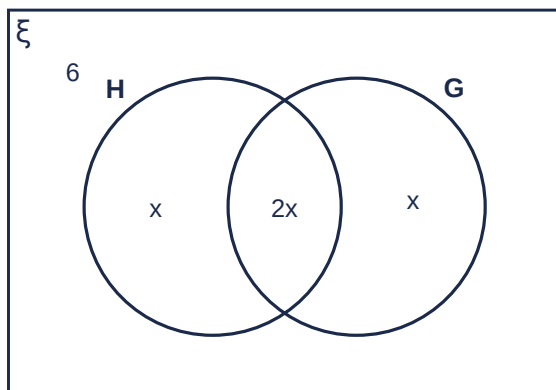
Q23

[3 marks]

The Venn diagram shows information about 14 students.

H = students who study History G = students who study Geography

Work out the value of x .



Q24

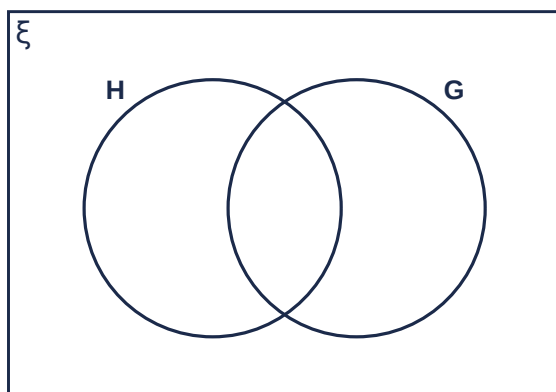
[4 marks]

There are 27 students in a group.

13 of them study History. 15 of them study Geography. 8 of them study History and Geography.

(a) Complete the Venn diagram, where H = students who study History and G = students who study Geography.

(b) One of the students is chosen at random. Work out the probability that they study neither History nor Geography.



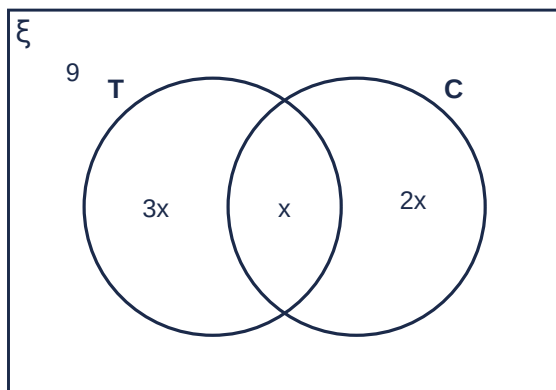
Q25

[3 marks]

The Venn diagram shows information about 27 office workers.

T = office workers who drink tea C = office workers who drink coffee

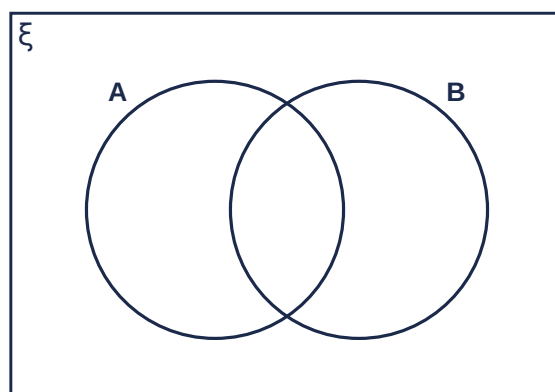
Work out the value of x .



Q26

[1 mark]

On the Venn diagram, shade the region $A \cup B$.



Q27

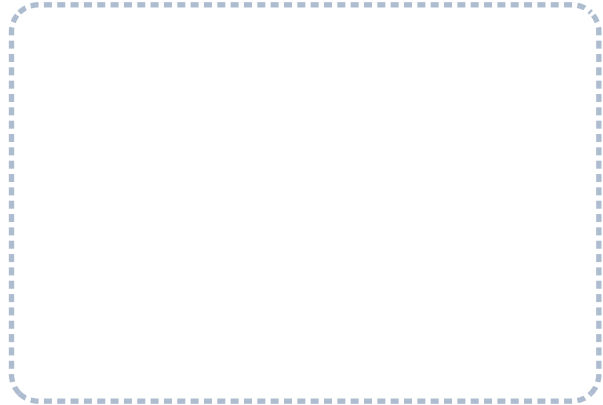
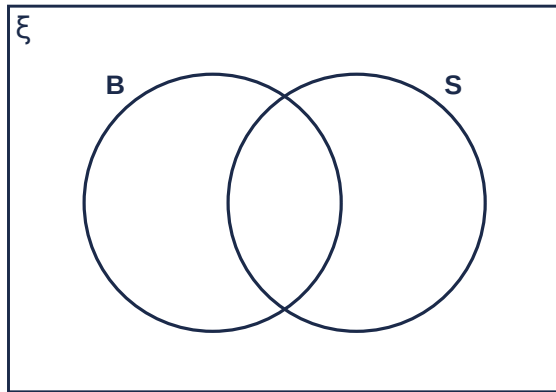
[4 marks]

There are 27 children in a group.

13 of them own a bike. 9 of them own a scooter. 3 of them own a bike and a scooter.

(a) Complete the Venn diagram, where B = children who own a bike and S = children who own a scooter.

(b) One of the children is chosen at random. Work out the probability that they own a bike but not a scooter.



Q28

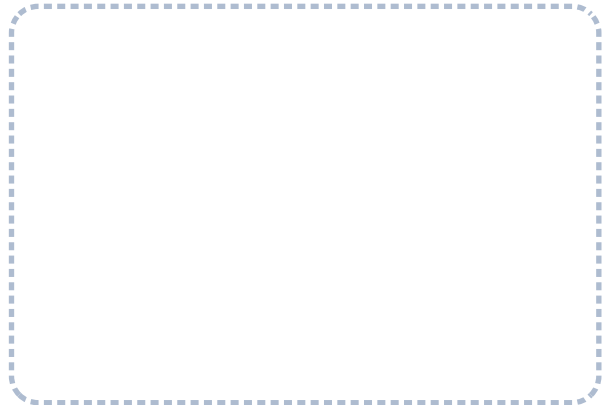
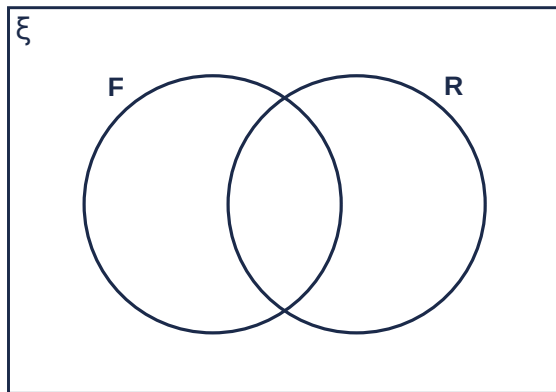
[4 marks]

There are 32 students in a group.

13 of them play football. 17 of them play rugby. 6 of them play football and rugby.

(a) Complete the Venn diagram, where F = students who play football and R = students who play rugby.

(b) One of the students is chosen at random. Work out the probability that they play neither football nor rugby.



Q29

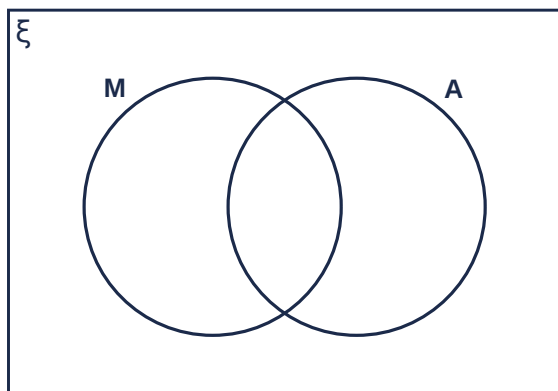
[4 marks]

There are 32 students in a group.

13 of them study Music. 19 of them study Art. 8 of them study Music and Art.

(a) Complete the Venn diagram, where M = students who study Music and A = students who study Art.

(b) One of the students is chosen at random. Work out the probability that they study Music but not Art.



Q30

[1 mark]

On the Venn diagram, shade the region $A' \cap B$.

