

# Sets & Venn Diagrams

Please write clearly in block capitals

Forename:

Surname:

## Materials

For this paper you must have:

- mathematical instruments



You must **not** use a calculator.

## Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

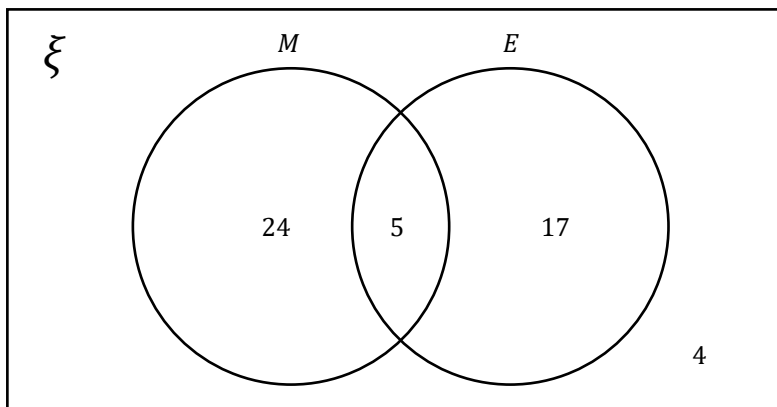
## Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

## Advice

- In all calculations, show clearly how you work out your answer.

- 1** Students were polled on whether they liked maths or English classes.  
The results are displayed in the Venn diagram below.

*(Level 4)*

- 1(a)** What is the probability that a student liked maths?

**[1 mark]**


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Answer \_\_\_\_\_

- 1(b)** What is the probability that a student did not like English?

**[1 mark]**


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Answer \_\_\_\_\_

- 1(c)** What is the probability that a student selected a single subject as their preference?

**[1 mark]**


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Answer \_\_\_\_\_

**Turn over for next question**

Turn over ►

2

A survey of 36 pet owners was undertaken.

(Level 5)

Two thirds of people said they have a dog.

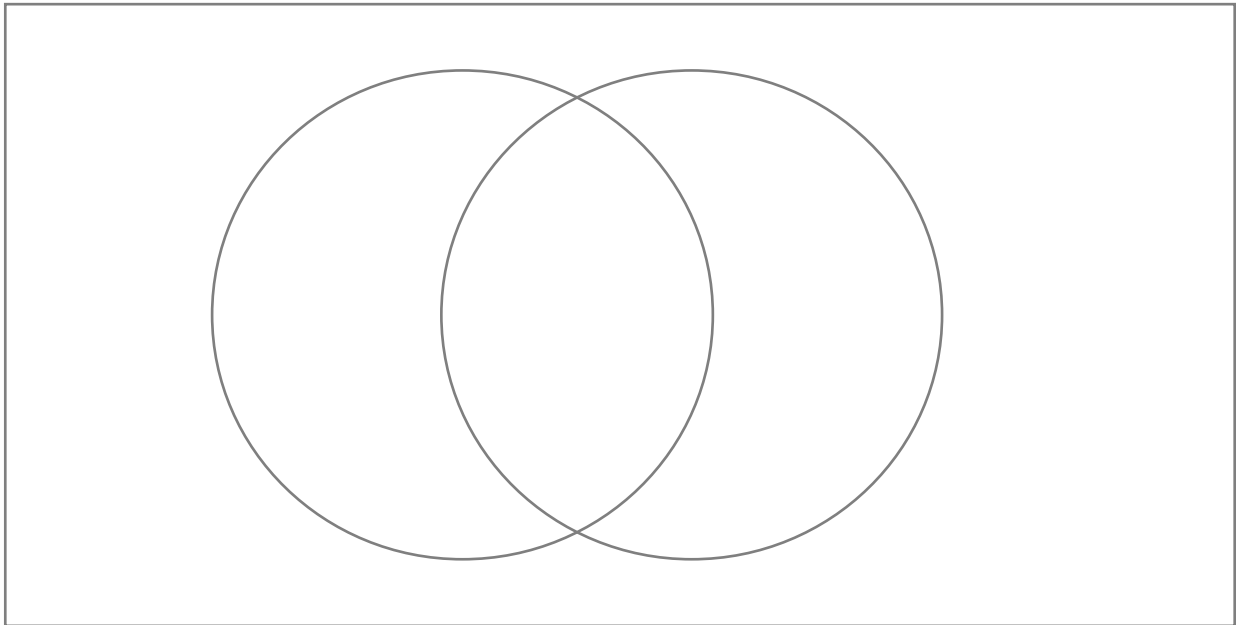
8 have a dog and a cat

10 people have only a cat

And two people have no pets.

Complete the Venn diagram using the information provided.

[3 marks]



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3 Complete the following Venn diagram, given the information below. (Level 6)

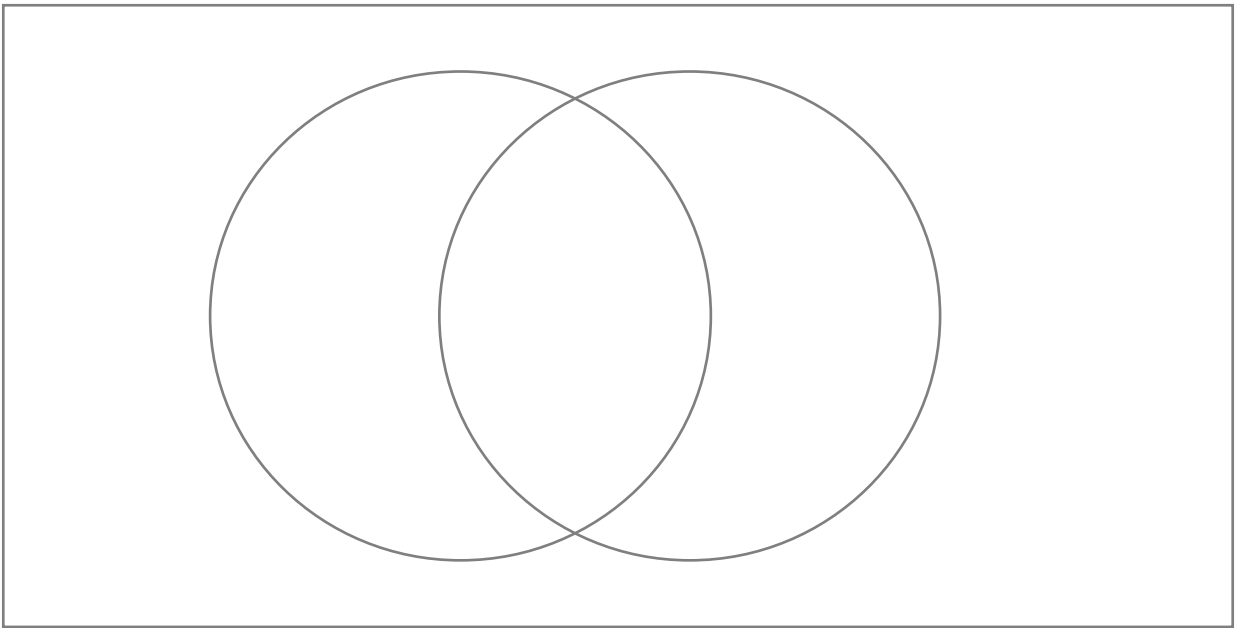
A travel company looks to record data on holidays taken.

Out of 200 people surveyed, 30% stayed in the UK for their holiday.

60% of people went abroad.

10% of people had two holidays, one abroad and one in the UK.

[3 marks]



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4 Complete the following Venn diagram, given the information below. (Level 6)

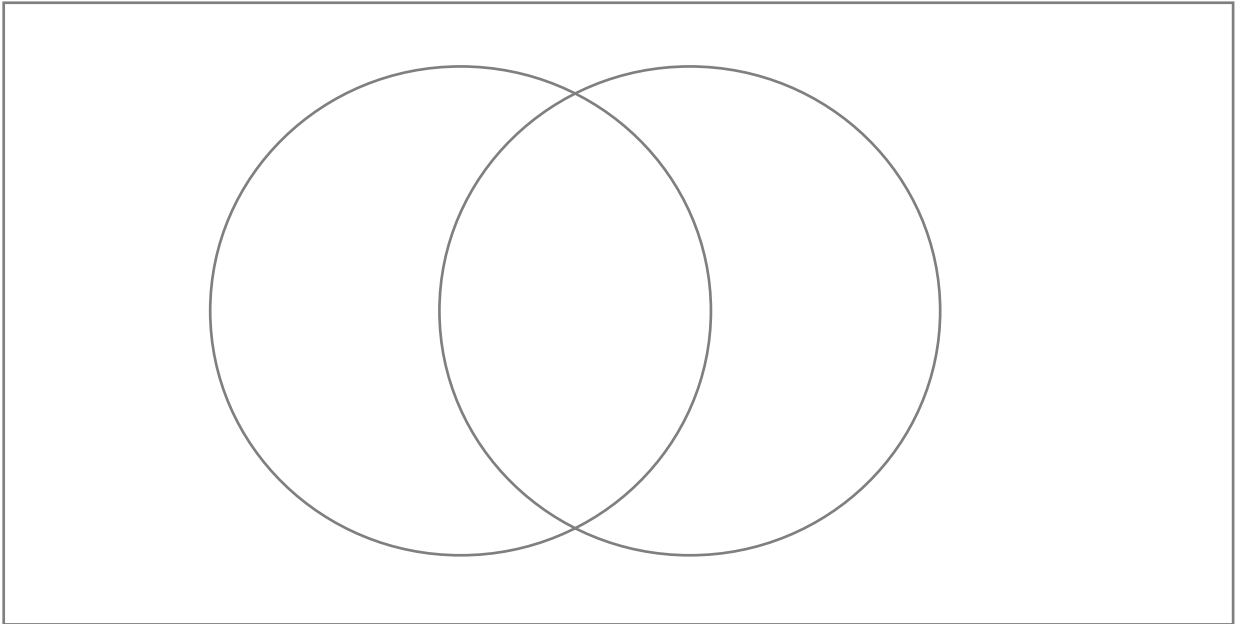
A group of 102 parents were asked questions on a survey.

40 went to university

58 did not attend university but have a job

24 went to university and have a job

**[3 marks]**



**Turn over for next question**

5 Complete the following Venn diagram using the information provided.

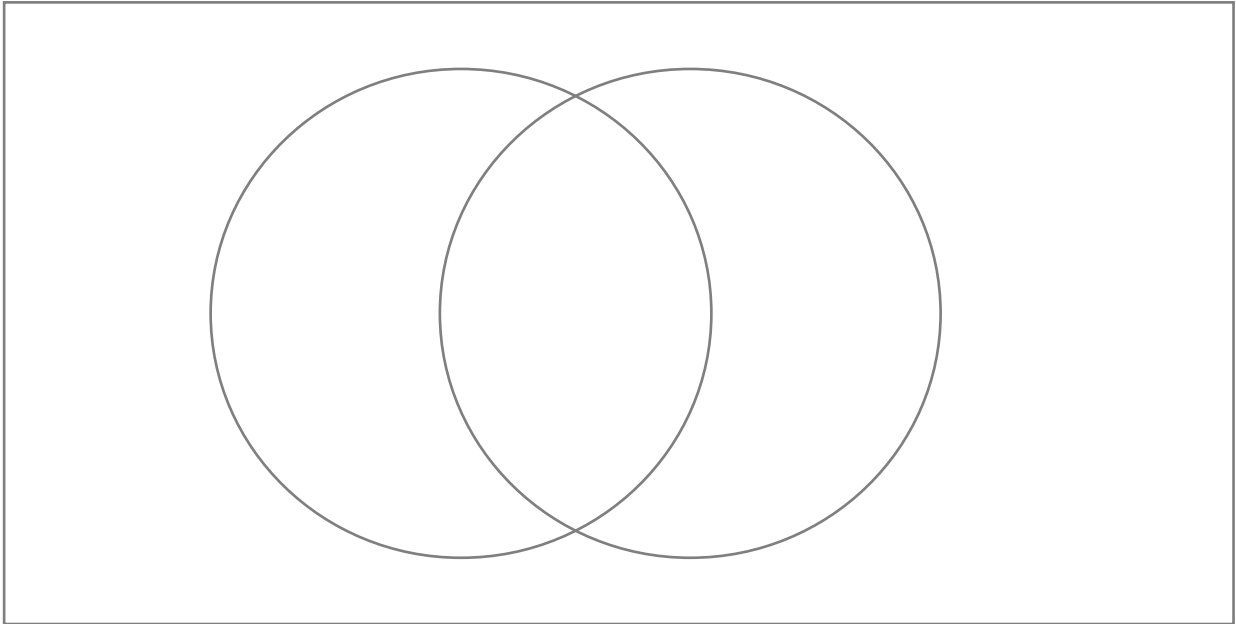
(Level 6)

$$\xi = \{43, 45, 58, 59, 62, 66, 68, 87\}$$

$P$  = Multiples of 3.

$$Q' = \{58, 62, 66, 68\}$$

[3 marks]



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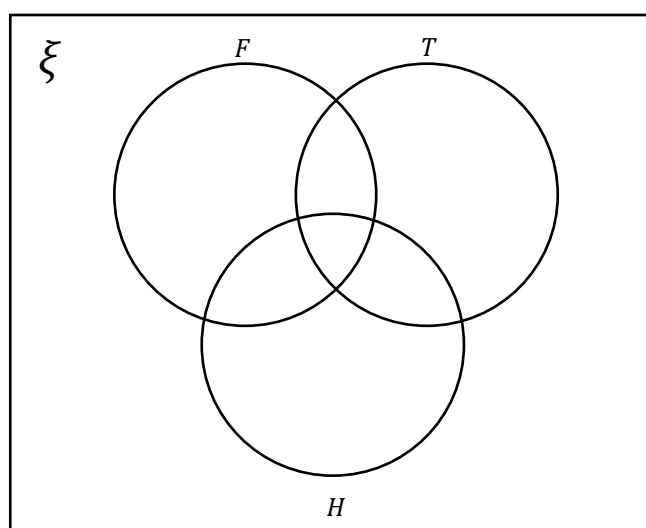
Turn over ►

6 100 students were asked what their favourite sport was. (Level 7)

- 6 students liked all three sports
- 24 students liked Hockey and Tennis
- 29 students liked Football and Hockey
- 20 students liked Football and Tennis
- 59 students like Hockey
- 17 students like only Football
- 4 students had no preference

6(a) Complete the Venn diagram below to represent this information.

[3 marks]



6(b) What is the probability that a student liked only Tennis?

[1 mark]

\_\_\_\_\_

Answer \_\_\_\_\_

6(c) What is the probability a student liked exactly two sports?

[1 mark]

\_\_\_\_\_

Answer \_\_\_\_\_

7 Represent the following sets in the Venn diagram below

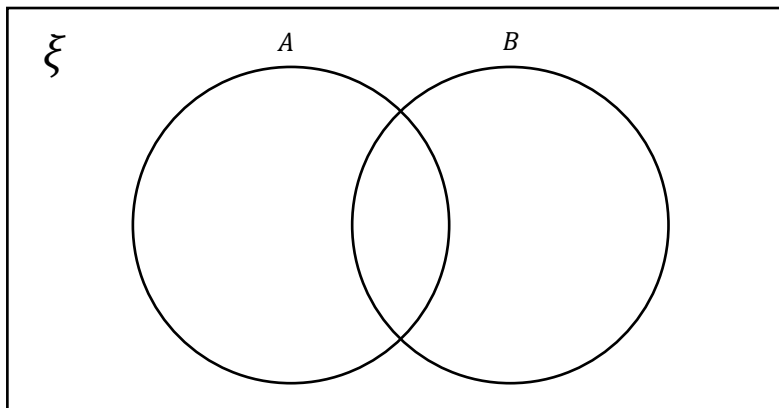
(Level 7)

$\varepsilon = \{\text{factors of 140}\}$

$A = \{\text{prime numbers}\}$

$B = \{\text{multiples of 5}\}$

[4 marks]



Turn over for next question

Turn over ►



**8** Given the information below

(Level 7)

$$\varepsilon = \{\text{Integers from 1 to 10}\}$$

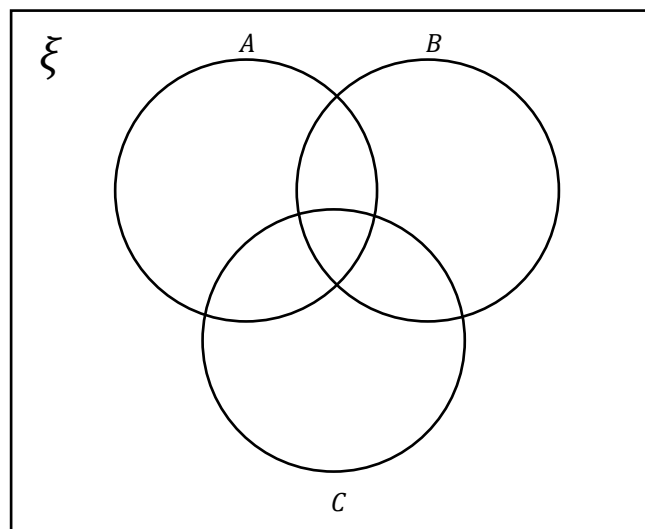
$$A = \{\text{Square numbers}\}$$

$$B = \{\text{Prime numbers}\}$$

$$C = \{1,2,3,5,8\}$$

**8(a)** Complete the Venn diagram

[3 marks]



**8(b)** What proportion of numbers in  $\varepsilon$  are not square numbers?

[1 marks]

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Answer \_\_\_\_\_

**End of questions**