

Sets & Venn Diagrams

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You **can** 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.

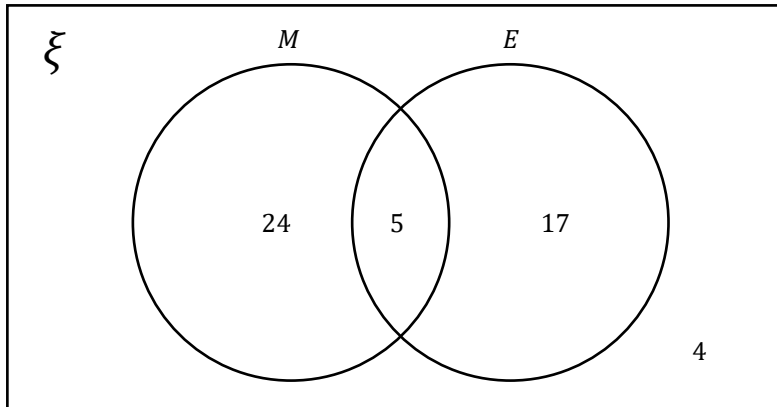
Information

- 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.



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

[1 mark]

Answer _____

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

[1 mark]

Answer _____

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

[1 mark]

Answer _____

Turn over for next question

2

A survey of 36 pet owners was undertaken.

Two thirds of people said they have a dog.

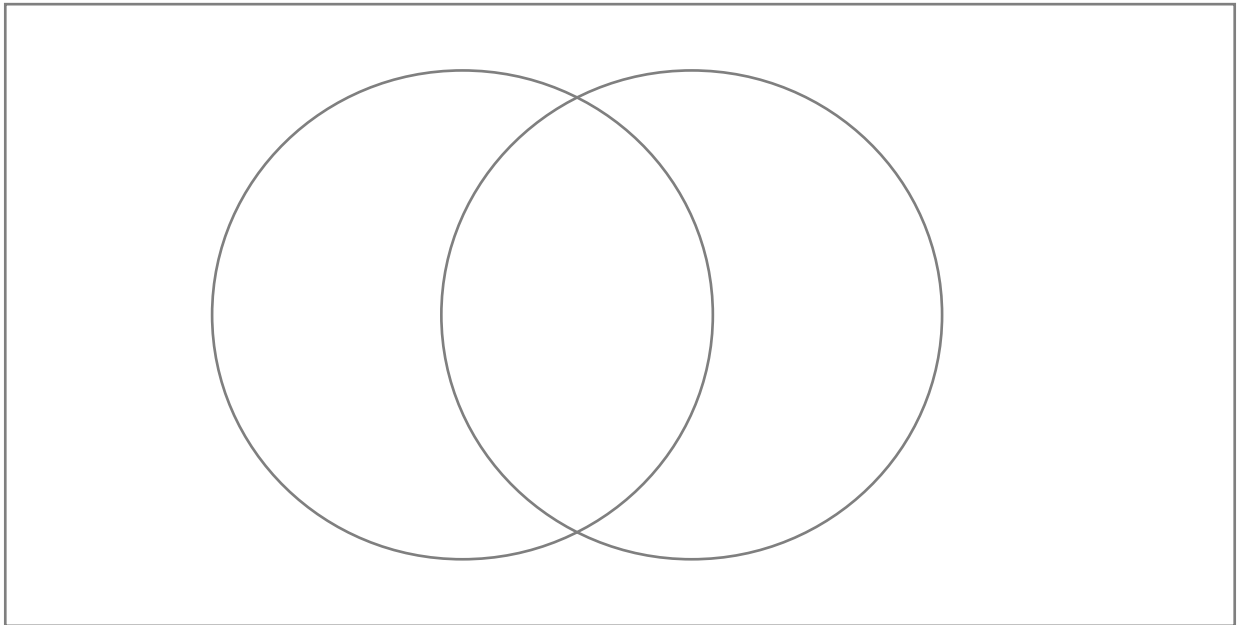
8 have a dog and a cat

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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Turn over ►

3 Complete the following Venn diagram, given the information below.

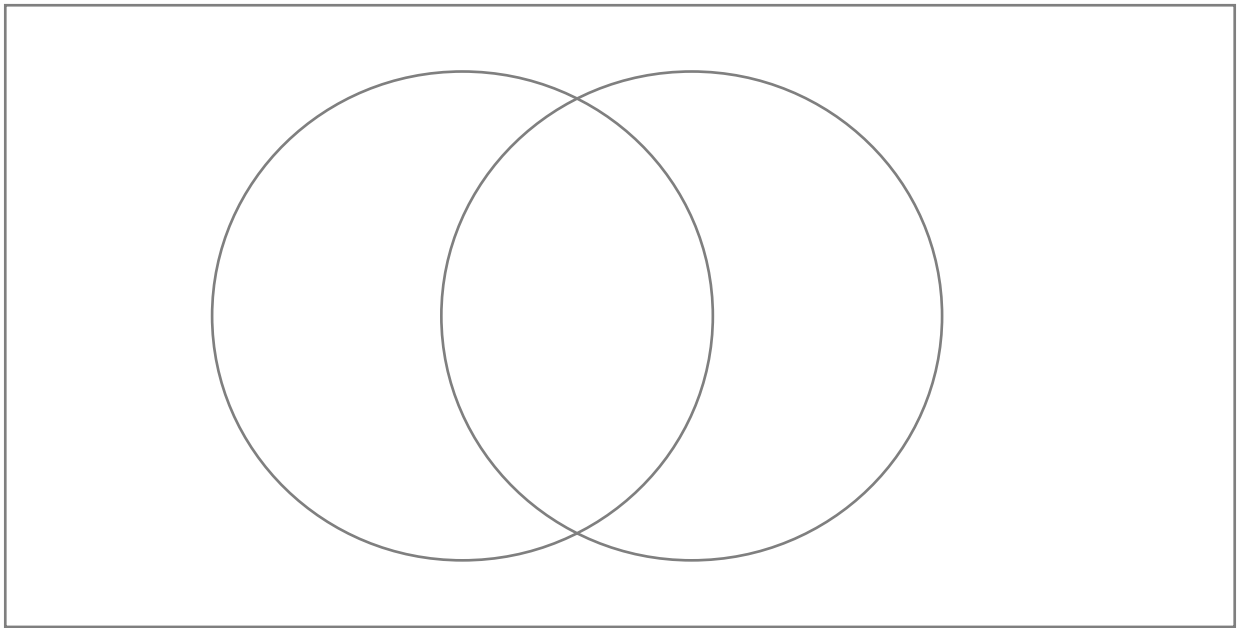
A travel company looks to record data on holidays taken.

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]



4 Complete the following Venn diagram, given the information below.

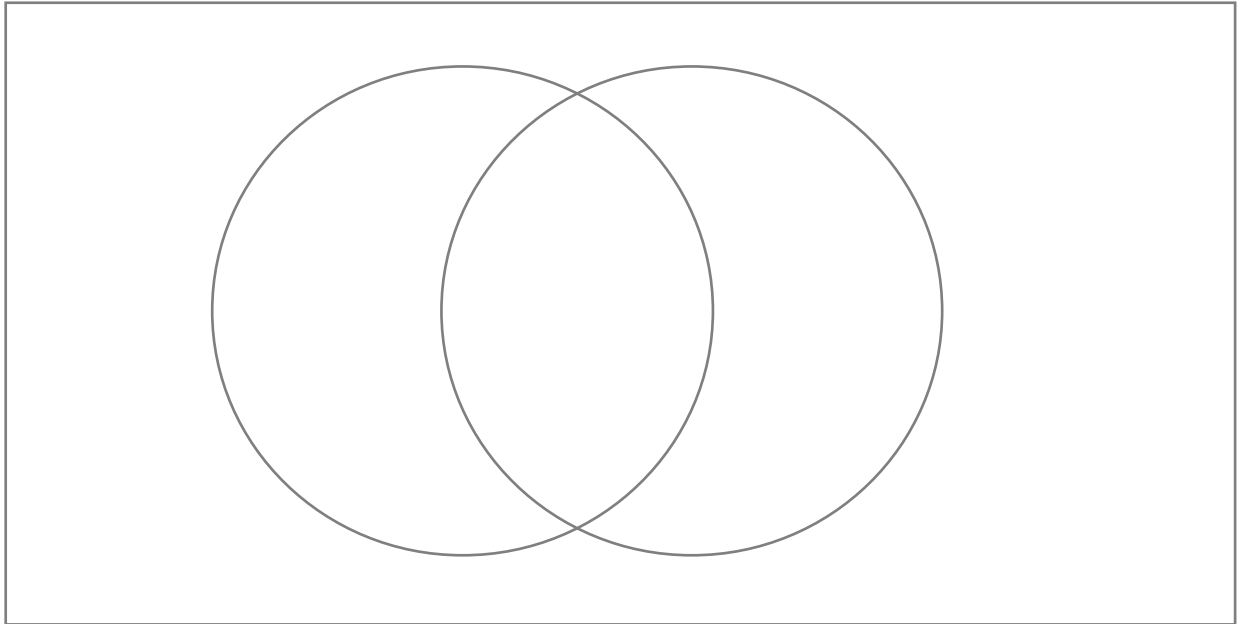
A group of 102 parents were asked questions on a survey.

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

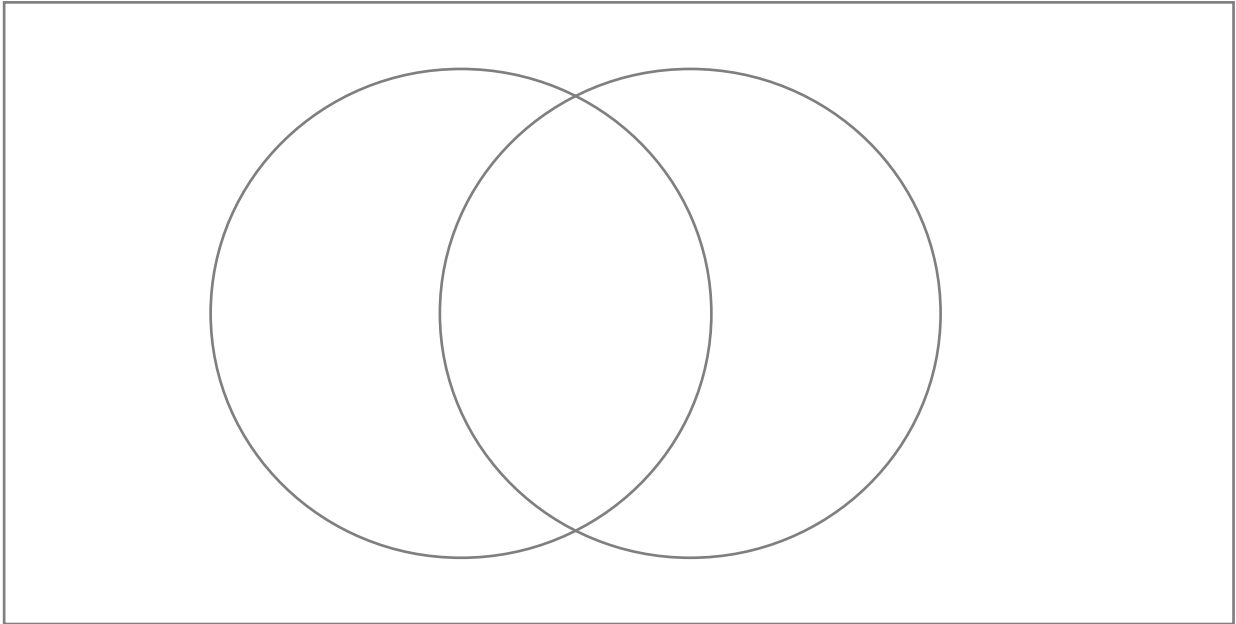
5 Complete the following Venn diagram using the information provided.

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

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.

6 students liked all three sports

24 students liked Hockey and Tennis

29 students liked Football and Hockey

20 students liked Football and Tennis

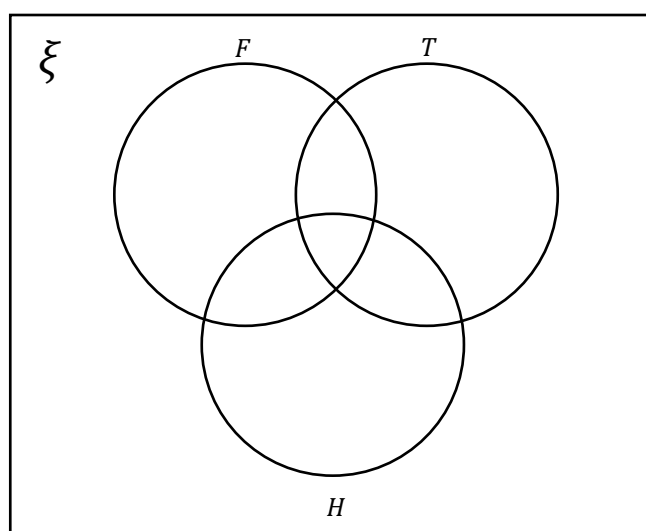
59 students like Hockey

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 _____

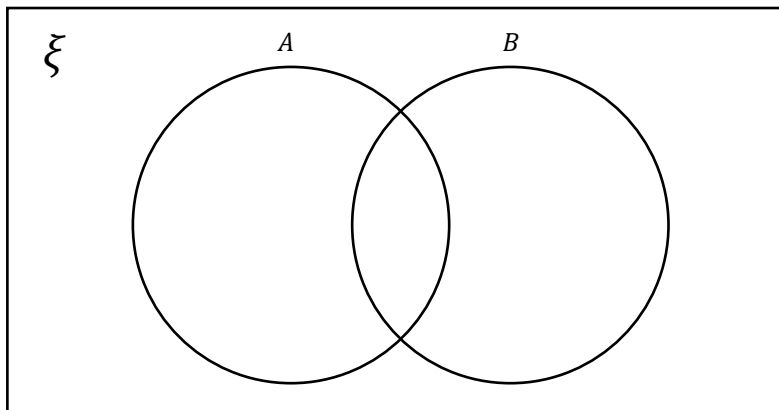
7 Represent the following sets in the Venn diagram below.

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

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

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

[4 marks]



Turn over for next question

8 Given the information below

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

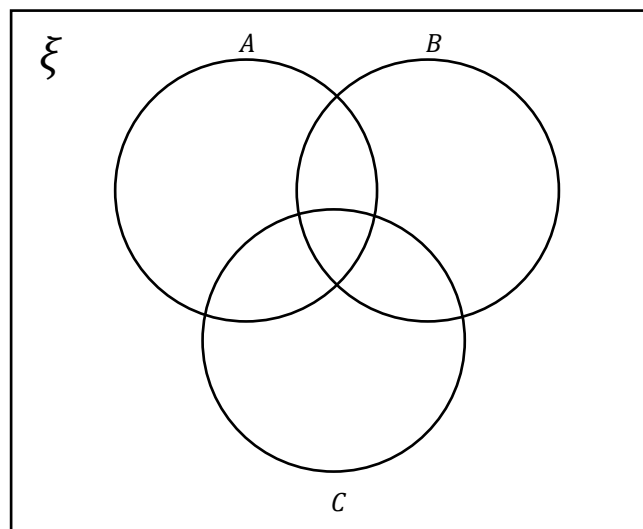
$$A = \{\text{Square numbers}\}$$

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

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

8(a) Complete the Venn diagram

[3 marks]



8(b) What proportion of numbers in ε are not square numbers?

[1 marks]

Answer _____

End of questions