

Set Notation

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 For the following Set notations, circle the correct description. (Level 5)

1(a) $A \cap B$

[1 mark]

Belonging to both A and B

Belonging to A but not B

Belonging to A or B or both

Not belonging to A or B

1(b) $A' \cup B$

[1 mark]

Not a member of A but a member of B

Not belonging to B but belonging to A

Not belonging to A or B

Not belonging to A and B

1(c) If A = even numbers more than 0 and B = prime numbers, what would $A \cap B$ be?

[1 mark]

{0, 2}

{2, -2}

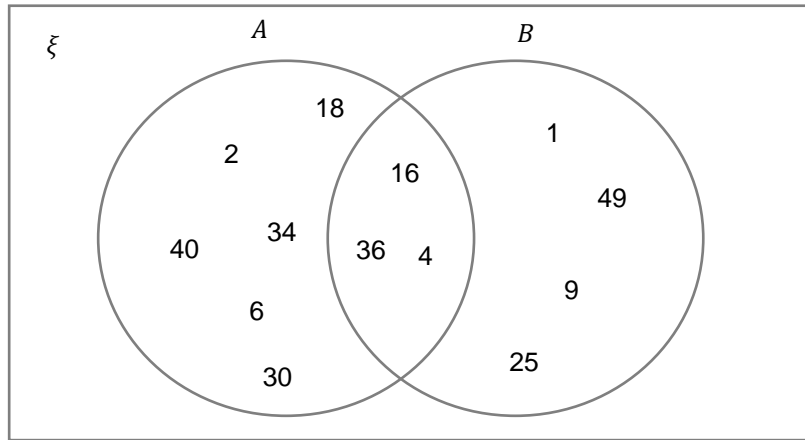
{2}

{-2, 0, 2}

Turn over for next question

2 Consider the following Venn diagram.

(Level 5)



2(a) Which values are described by A'

[1 mark]

Answer _____

2(b) Which values are described by $A \cap B$

[1 mark]

Answer _____

2(c) Which values are described by $A \cup B$

[1 mark]

Answer _____

Turn over for next question.

- 3** Students were asked about their subjects taken in Year 10. (Level 6)
The options in this case were Biology and Textiles.

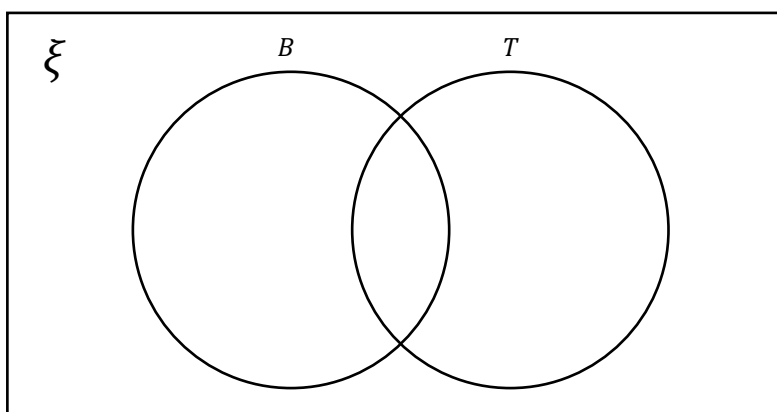
Originally, the probability that a student took Biology was $\frac{7}{20}$.

A new student joins the group and now the probability is $\frac{1}{3}$.

In both cases, 3 students took neither of the two subjects.

- 3(a)** Fill in the Venn diagram with all the information you know.

[2 marks]



- 3(b)** Which of the following probabilities would help you fill in the rest of the Venn diagram?
Circle all that apply.

[2 marks]

B

$B \cap T$

$B \cup T$

T'

B'

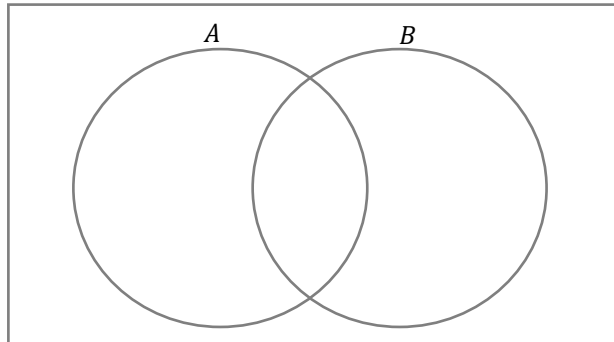
$T \cup B$

Turn over for next question

4(a) On the Venn diagram below shade the region represented by B'

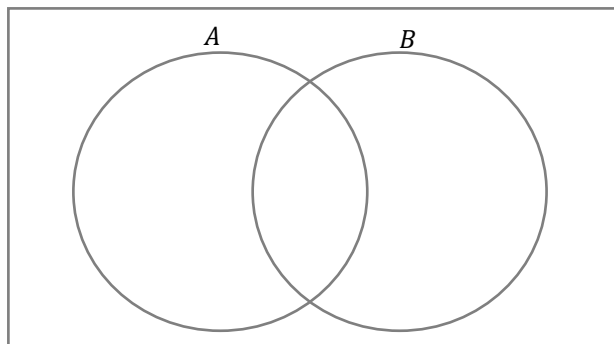
(Level 6)

[1 mark]



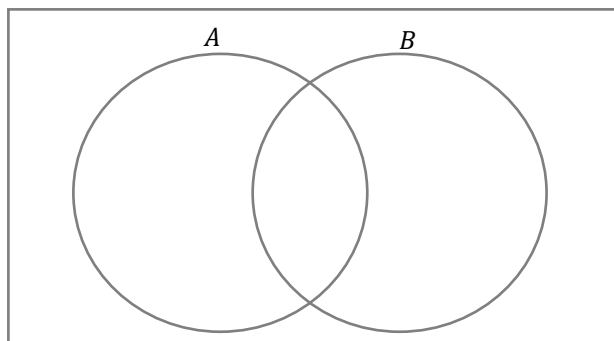
4(b) On the Venn diagram shade to represent $A \cap B'$

[1 mark]

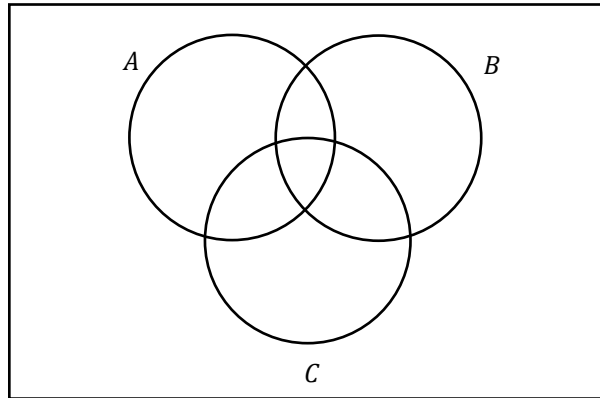


4(c) Shade the Venn diagram to represent $(A \cup B)'$

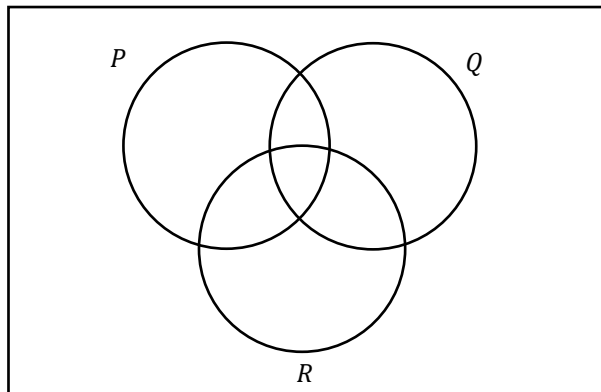
[1 mark]



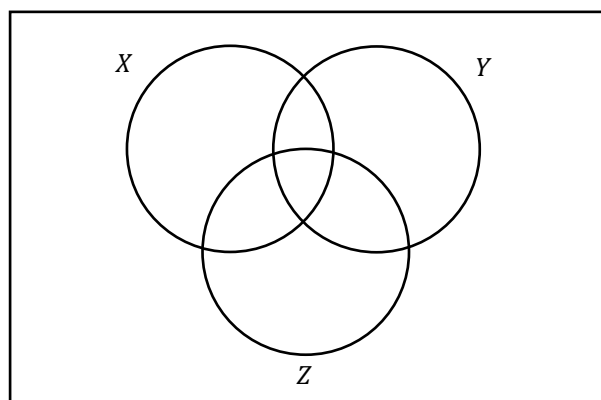
- 5(a)** Label the following Venn diagram with X's in each region to represent $A \cap (B \cup C)$ (Level 6) [1 mark]



- 5(b)** Label the following Venn diagram with X's in each region to represent $P' \cup Q \cup R$ [1 mark]



- 5(c)** Label the following Venn diagram with an X in the region that represents $X \cap Y' \cap Z$ [1 mark]

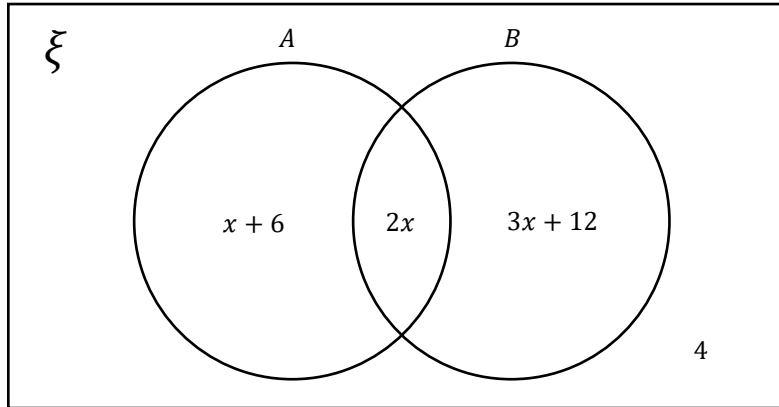


Turn over for next question.

6 There are two sets displayed in the Venn diagram below.

(Level 7)

There are 64 items in the universal set, ξ .



6(a) Find the value of x .

[2 marks]

Answer _____

6(b) Find $P(A)$

[1 mark]

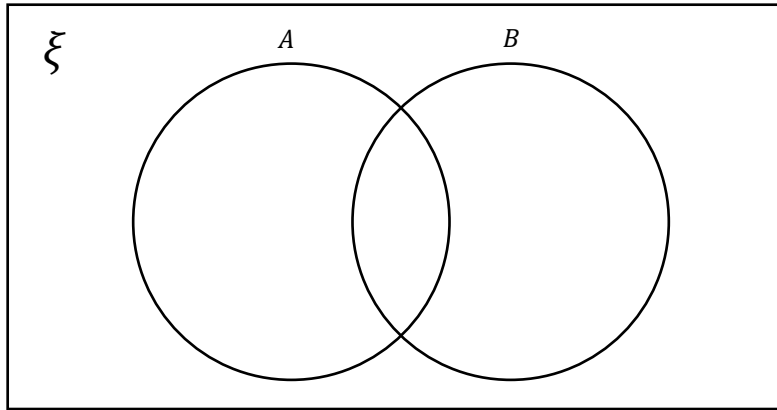
Answer _____

Turn over for next question

7(a) In the diagram below, shade the region that represents $A \cup B$

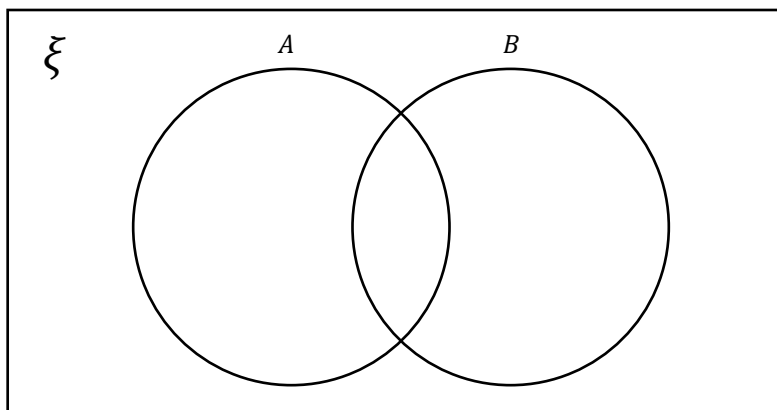
(Level 6)

[1 mark]



7(b) In the diagram below, shade the region that represents $A \cap B'$

[2 marks]



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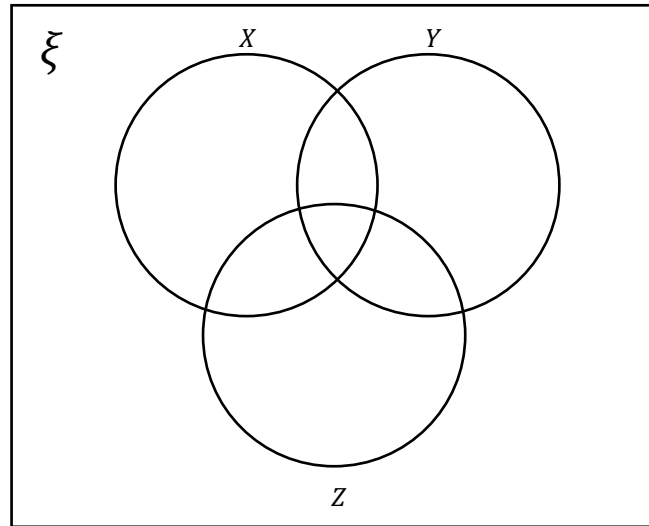
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8(a) On the diagram, mark with the letter A the region $X \cap Y \cap Z$

(Level 7)

[1 mark]



8(b) Shade in the region $Y \cap Z'$ and mark this with the letter B

[1 mark]

8(c) Shade in the region $X \cup Z \cap Y'$ and mark it with the letter C

[1 mark]



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