

Set language and notation

Question Paper 2

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Number and Algebra
Sub Topic	Set language and notation
Booklet	Question Paper 2

Time Allowed: 52 minutes

Score: /43

Percentage: /100

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

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- 1 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$
 $A = \{1, 3, 5, 7\}$
 $B = \{2, 4, 6, 8\}$

(a) Explain why $A \cap B = \emptyset$

.....
.....
(1)

$x \in \mathcal{E}$ and $x \notin A \cup B$

(b) Write down the value of x .

$x = \dots\dots\dots$
(1)

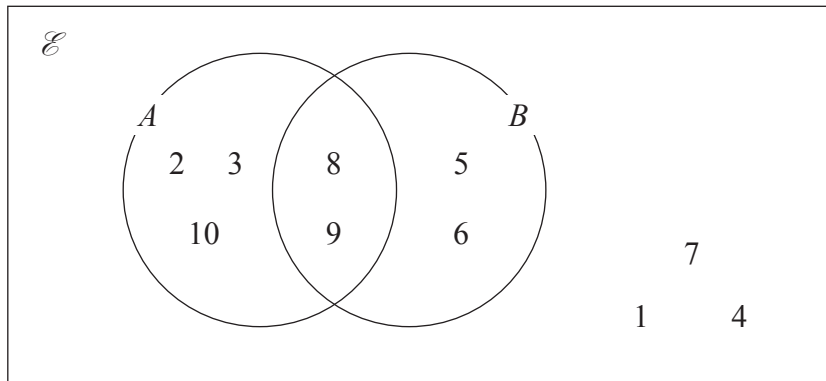
$A \cap C = \{3, 7\}$, $B \cap C = \{8\}$ and $A \cup B \cup C = \mathcal{E}$

(c) List all the members of C .

.....
(2)

(Total for Question 1 is 4 marks)

2



The Venn diagram shows all of the elements in sets A , B and \mathcal{E} .

(a) Write down the elements in A'

.....
(1)

(b) Find $n(A \cap B)'$

.....
(1)

(c) Find the elements in $(A \cap B) \cup (A \cup B)'$

.....
(1)

$A \cap C = \emptyset$
 $B \cup C = \{5, 6, 7, 8, 9\}$
 $n(C) = 3$

(d) Write down the elements in C .

.....
(1)

(Total for Question 2 is 4 marks)

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- 3 $\mathcal{E} = \{\text{positive whole numbers less than 19}\}$
 $A = \{\text{odd numbers}\}$
 $B = \{\text{multiples of 5}\}$
 $C = \{\text{multiples of 4}\}$

(a) List the members of the set

(i) $A \cap B$

(ii) $B \cup C$

.....
.....
.....

(2)

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

(b) Is it true that $B \cap D = \emptyset$?

Tick (✓) the appropriate box.

Yes

No

Explain your answer.

.....

(1)

(Total for Question 3 is 3 marks)

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

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

$B = \{\text{multiples of 3}\}$

(a) List the members of set B .

.....
(1)

(b) Find $A \cup B$

.....
(1)

(c) Find $A \cap B$

.....
(1)

x is a member of \mathcal{E}

$x \in B$

$x \notin A$

(d) What are the possible values of x ?

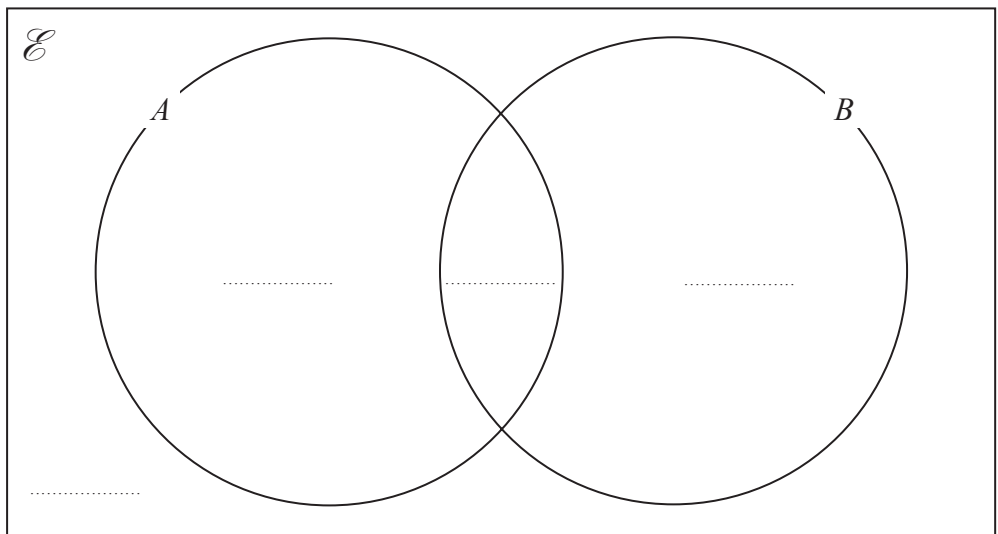
.....
(2)

(Total for Question 4 is 5 marks)

5 A and B are two sets.

$$\begin{aligned}n(\mathcal{E}) &= 36 \\n(B) &= 21 \\n(A \cap B) &= 8 \\n(A') &= 18\end{aligned}$$

(a) Complete the Venn diagram to show the **number of elements** in each region of the Venn diagram.



(3)

(b) Find $n(A \cup B)$

.....
(1)

(c) Find $n(A \cap B')$

.....
(1)

(Total for Question 5 is 5 marks)

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6 $S = \{c, h, i, n, a\}$ $V = \{i, t, a, l, y\}$

List the elements of the set

(i) $S \cap V$

.....

(ii) $S \cup V$

.....

(Total for Question 6 is 2 marks)

7 $\mathcal{E} = \{1,$
 $A = \{1, 2, 3, 4, 5, 6\}$
 $B = \{\text{odd numbers}\}$

(a) List the members of $A \cup B$

.....

(1)

C is a set such that $A \cap C = \{4, 5\}$
The set C has 4 members.

(b) List the members of one possible set C

.....

(2)

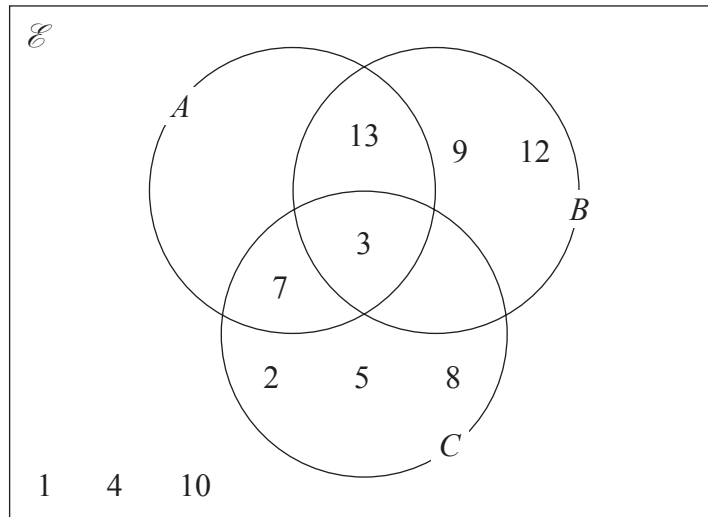
(Total for Question 7 is 3 marks)

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- 8 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$
 $A = \{3, 7, 11, 13\}$
 $B = \{3, 6, 9, 12, 13\}$
 $C = \{2, 3, 5, 6, 7, 8\}$

(a) Complete the Venn diagram.



(1)

(b) List the members of the set $B' \cap C$

.....
(1)

(c) List the members of the set $(A \cup C)' \cap B$

.....
(1)

(d) Find $n(A' \cap B')$

.....
(1)

(Total for Question 8 is 4 marks)

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- 9 $\mathcal{E} = \{\text{whole numbers}\}$
 $A = \{\text{factors of 100}\}$
 $B = \{\text{multiples of 5}\}$
List the members of the set $A \cap B$

(Total for Question 9 is 2 marks)

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10 $A = \{2, 4, 6, 8, 10, 12, 14\}$

$$B = \{1, 3, 5, 7, 9, 11, 13\}$$

$$C = \{3, 6, 9, 12\}$$

(a) List the members of the set

(i) $A \cap C$

.....

(ii) $A \cup C$

.....

(2)

(b) Explain why $A \cap B = \emptyset$

.....

(1)

(Total for Question 10 is 3

marks)

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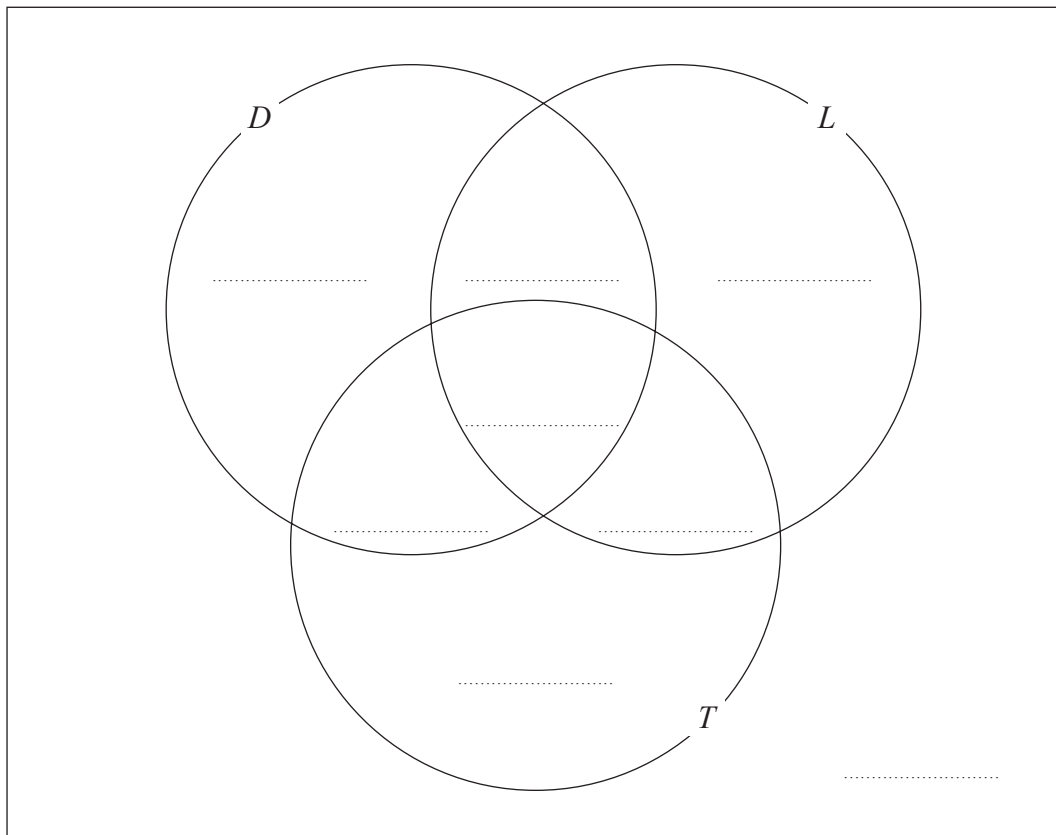
11 Each student in a group of 32 students was asked the following question.

“Do you have a desktop computer (D), a laptop (L) or a tablet (T)?”

Their answers showed that

- 19 students have a desktop computer
- 17 students have a laptop
- 16 students have a tablet
- 9 students have both a desktop computer and a laptop
- 11 students have both a desktop computer and a tablet
- 7 students have both a laptop and a tablet
- 5 students have all three.

(a) Using this information, complete the Venn diagram to show the number of students in each appropriate subset.



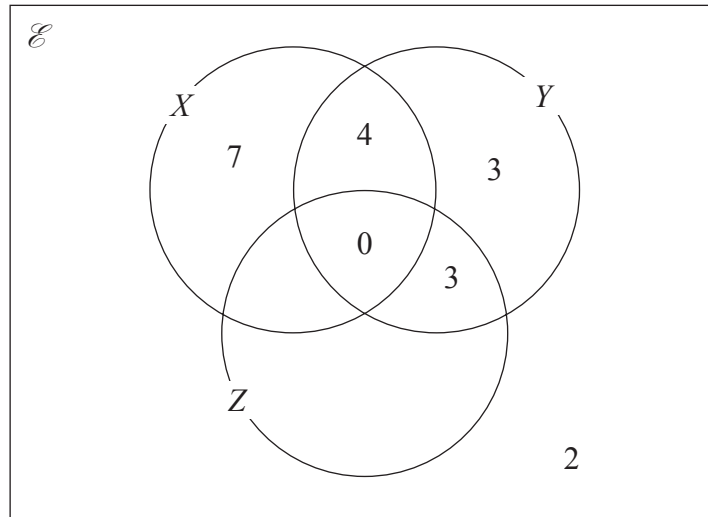
One of the students with both a desktop computer and a laptop is chosen at random.

(b) Find the probability that this student also has a tablet.

.....
(1)

(Total for Question 11 is 4 marks)

12 The Venn diagram shows a universal set \mathcal{E} and three sets X , Y and Z .



The numbers shown represent **numbers** of elements.

$$n(X') = 14$$

$$n(Z) = 14$$

(a) Complete the Venn diagram.

(2)

(b) Find the value of

(i) $n(X \cup Z)$

(ii) $n(X \cap Y')$

.....

.....

(2)

(Total for Question 12 is 4 marks)