Sets & Venn Diagrams
Difficulty: Hard
Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Number
Sub-Topic	Sets & Venn Diagrams
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 2

Time allowed: **45 minutes**

Score: **/35**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

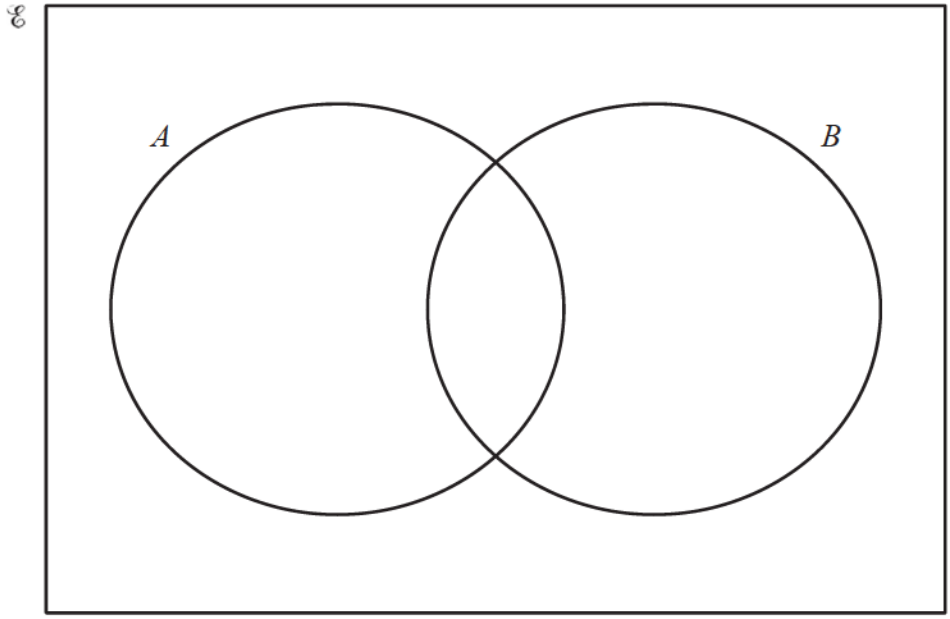
Question 1

$\mathscr{E} = \{x : 1 \leqslant x \leqslant 10, \text{ where } x \text{ is an integer}\}$

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

$B = \{1, 2, 3, 4, 5, 6\}$

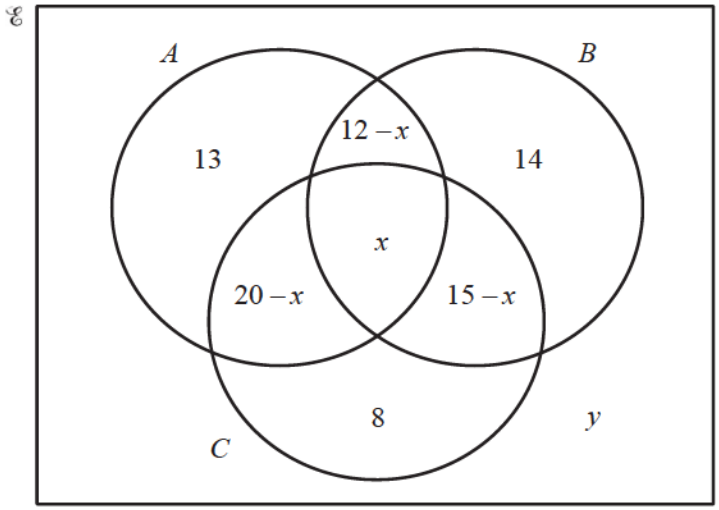
(a) Write all the elements of $\mathscr{E}$ in their correct place in the Venn diagram. [2]



(b) List the elements of $(A \cup B)'$. [1]

(c) Find $n(A \cap B')$. [1]

Question 2



The Venn diagram shows the number of elements in sets A, B and C.

(a) $n(A \cup B \cup C) = 74$

Find x. [2]

(b) $n(\mathscr{E}) = 100$

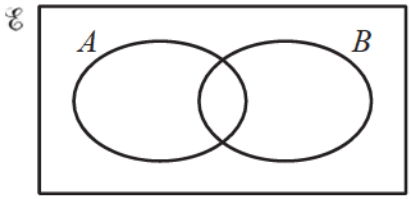
Find y. [1]

(c) Find the value of $n((A \cup B)' \cap C)$.

[1]

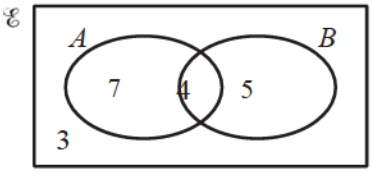
Question 3

(a)



Shade the region $A \cap B'$. [1]

(b)



This Venn diagram shows the number of elements in each region.

Write down the value of $n(A \cup B')$. [1]

Question 4

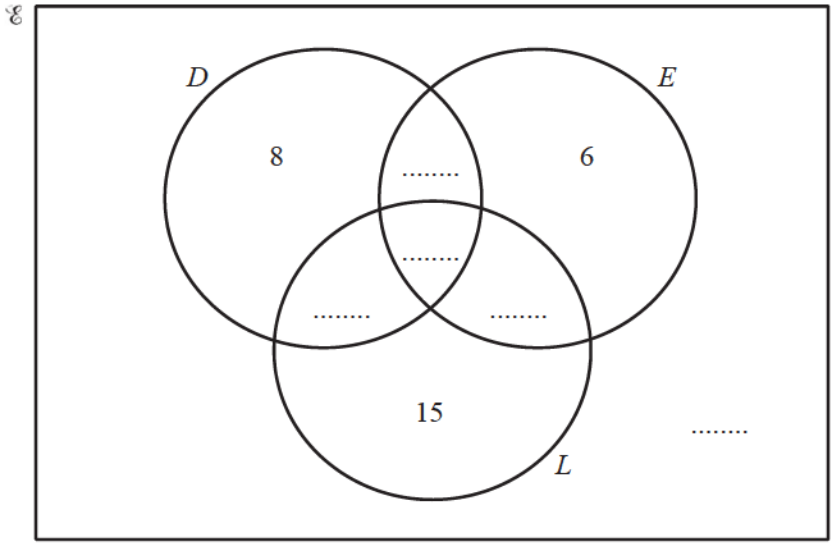
In a survey of 60 cars, 25 use diesel, 20 use liquid hydrogen and 22 use electricity.

No cars use all three fuels and 14 cars use both diesel and electricity.

There are 8 cars which use diesel only, 15 cars which use liquid hydrogen only and 6 cars which use electricity only.

In the Venn diagram below

$\mathscr{E}$ = {cars in the survey},
D = {cars which use diesel},
L = {cars which use liquid hydrogen},
E = {cars which use electricity}.



(a) Use the information above to fill in the five missing numbers in the Venn diagram. [4]

(b) Find the number of cars which use diesel but not electricity.

[1]

(c) Find $n(D' \cap (E \cup L))$.

[1]

Question 5

In a group of 30 students, 18 have visited Australia, 15 have visited Botswana and 5 have not visited either country.

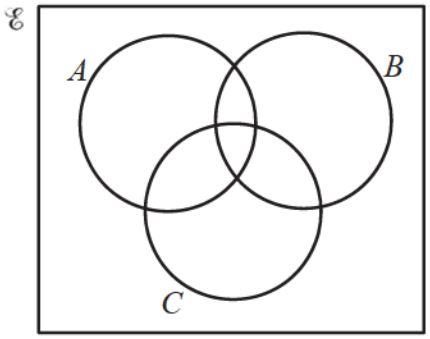
Work out the number of students who have visited Australia but not Botswana. [2]

Question 6

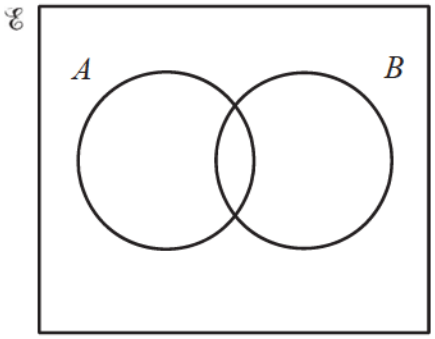
In a group of 24 students, 21 like football and 15 like swimming.
One student does **not** like football and does **not** like swimming.
Find the number of students who like **both** football and swimming. [2]

Question 7

Shade the region required in each Venn Diagram.



$A \cap B \cap C$



$A \cup B'$ [2]

Question 8

A and B are sets.
Write the following sets in their simplest form.

(a) $A \cap A'$. [1]

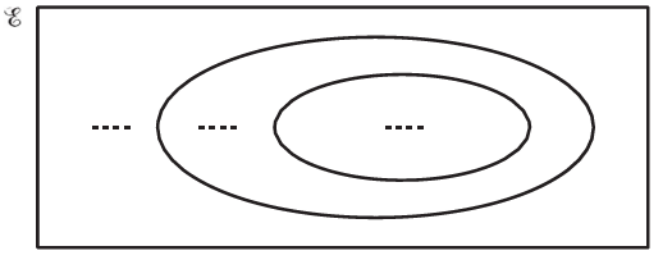
(b) $A \cup A'$. [1]

(c) $(A \cap B) \cup (A \cap B')$. [1]

Question 9

$n(A) = 18$, $n(B) = 11$ and $n(A \cup B)' = 0$.

(a) Label the Venn diagram to show the sets A and B where $n(A \cup B) = 18$.
Write down the number of elements in each region.



[2]

(b) Draw another Venn diagram to show the sets A and B where $n(A \cup B) = 29$.
Write down the number of elements in each region.

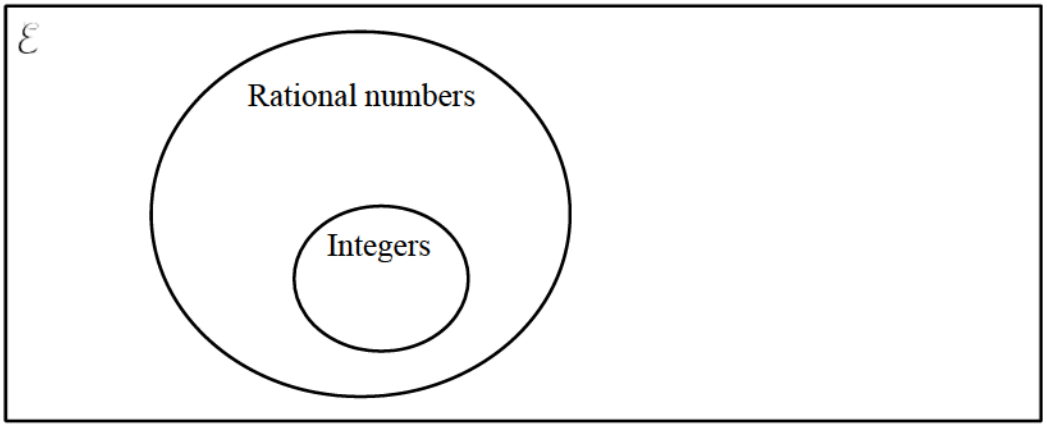
[2]

Question 10

Write each of these four numbers in the correct place in the Venn Diagram below.

$$2.6, \quad \frac{4}{17}, \quad \sqrt{12}, \quad \sqrt{\frac{112}{7}}$$

[4]



Question 11

Three sets A, B and K are such that $A \subset K$, $B \subset K$ and $A \cap B = \emptyset$.
Draw a Venn diagram to show this information.

[2]