

1MA1 Foundation themed papers: Sets and Venn Diagrams

Write your name here			
Surname	Other names		
Centre Number		Candidate Number	
Pearson Edexcel Level 1/Level 2 GCSE (9–1)			
Mathematics			
Sets and Venn diagrams			
		Paper Reference 1MA1	
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.			Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is **37**. There are **8** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

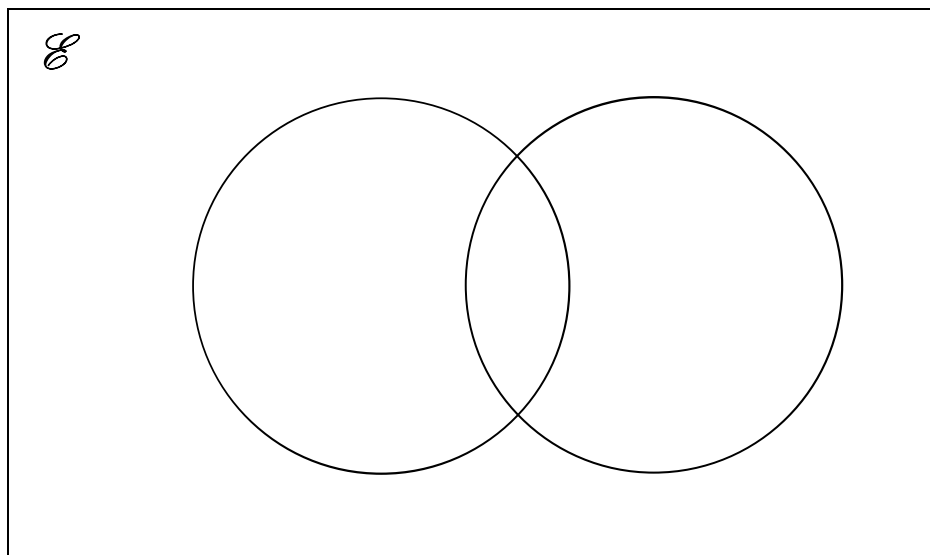
1MA1 Foundation themed papers: Sets and Venn Diagrams

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

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

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

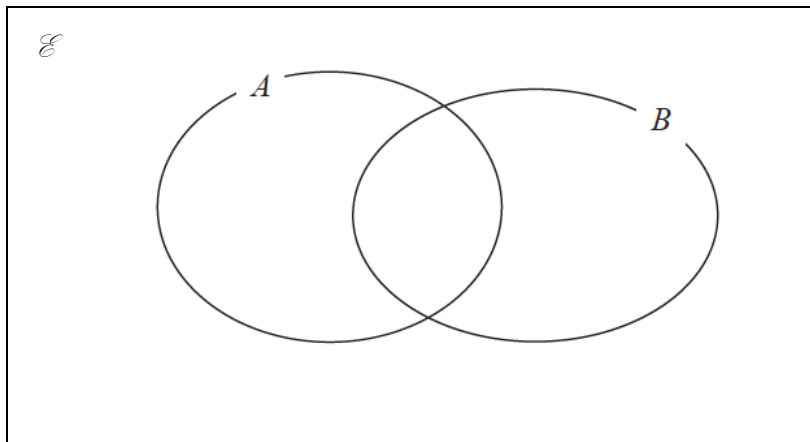
Complete the Venn diagram for this information.



(Total for Question 1 is 4 marks)

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



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

(3)

A number is chosen at random from the universal set \mathcal{E} .

(b) Find the probability that the number is in the set $A \setminus B$

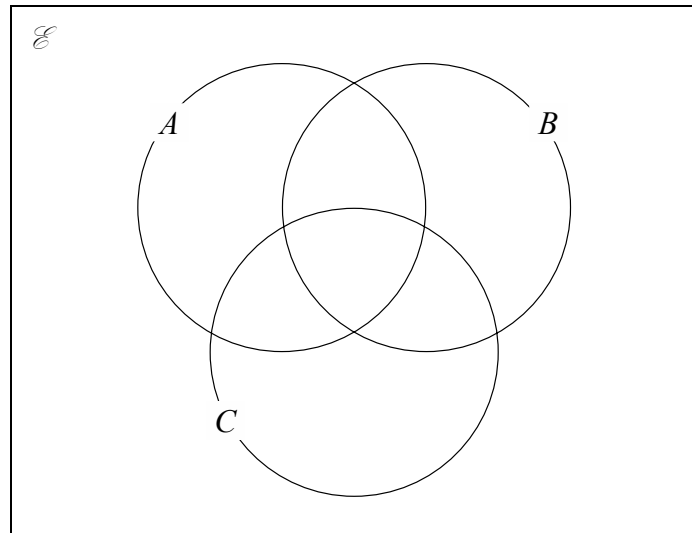
.....
(2)

(Total for Question 2 is 5 marks)

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- 3** $\mathcal{E} = \{\text{even numbers between 1 and 25}\}$
 $A = \{2, 8, 10, 14\}$
 $B = \{6, 8, 20\}$
 $C = \{8, 18, 20, 22\}$

(a) Complete the Venn diagram for this information.



(4)

A number is chosen at random from \mathcal{E} .

(b) Find the probability that the number is a member of $A \cap B$.

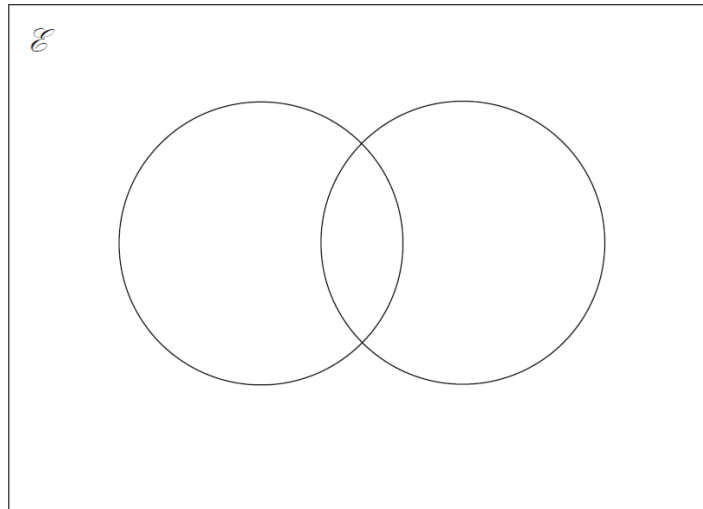
.....
(2)

(Total for Question 3 is 6 marks)

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- 4 $\mathcal{E} = \{\text{odd numbers less than } 30\}$
 $A = \{3, 9, 15, 21, 27\}$
 $B = \{5, 15, 25\}$

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



(4)

A number is chosen at random from the universal set, \mathcal{E} .

(b) What is the probability that the number is in the set $A \cap B$?

.....
(2)

(Total for Question 4 is 6 marks)

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5

$A = \{\text{multiples of 5 between 14 and 26}\}$

$B = \{\text{odd numbers between 14 and 26}\}$

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

.....
(2)

(b) Describe the members of $A \cap B$

.....
(1)

(Total for Question 5 is 3 marks)

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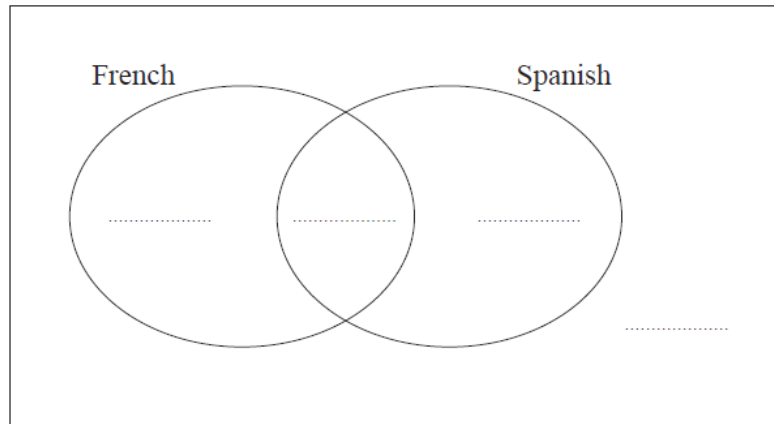
6 There are 60 students at a college.

20 students study both French and Spanish.

13 students study French but not Spanish.

A total of 43 students study Spanish.

(a) Complete the Venn diagram for this information.



(3)

One of the students at the college is to be selected at random.

(b) Write down the probability that this student studies neither French nor Spanish.

.....

(1)

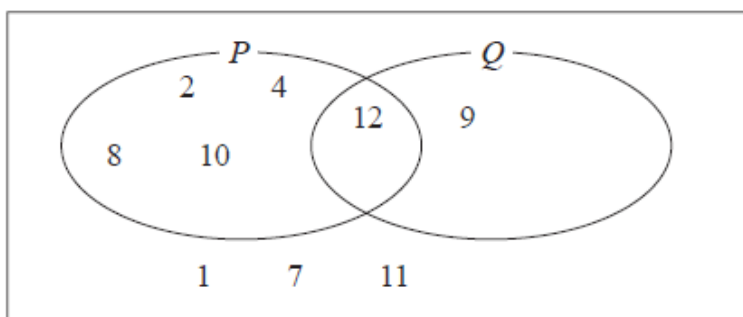
(Total for Question 6 is 4 marks)

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7

The numbers 1, 2, 4, 7, 8, 9, 10, 11 and 12 are put into a Venn diagram.



The number 3 is in set Q but not in set P .

The number 6 is in both set P and set Q .

(a) Complete the Venn diagram.

(2)

A student chooses at random a number in the completed Venn diagram.

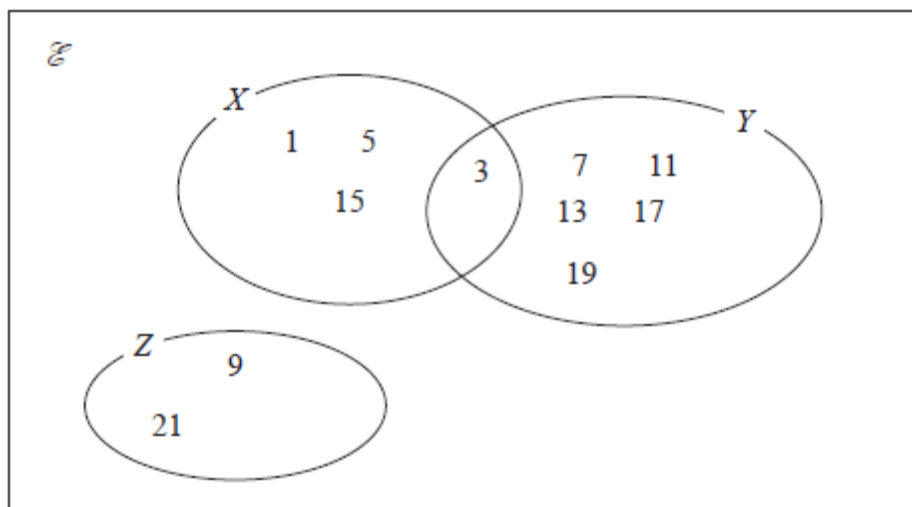
(b) Write down the probability that this number is **not** in Set Q .

.....
(2)

(Total for Question 7 is 4 marks)

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8 Here is a Venn diagram.



(a) List the members of

(i) X

.....
(1)

(ii) $X \cap Y$

.....
(1)

(iii) $X \cup Z$

.....
(1)

A number is chosen at random from E .

(b) Find the probability that this number is in $Y \cup Z$.

.....
(2)

(Total for Question 8 is 5 marks)

TOTAL MARKS FOR PAPER: 37