



Venn Diagrams

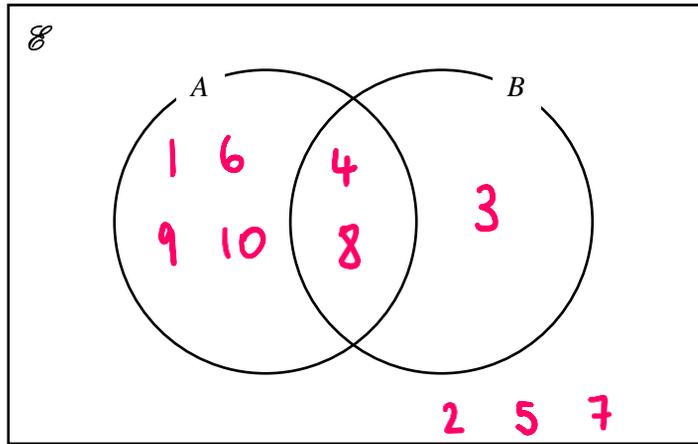


REVISE THIS TOPIC



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

(a) Complete the Venn diagram for this information.



(3)

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

(b) Find the probability that this number is in the set B

$$\frac{3}{10}$$

(2)

(c) Find the probability that this number is in the set $A \cap B$

$$\frac{2}{10}$$

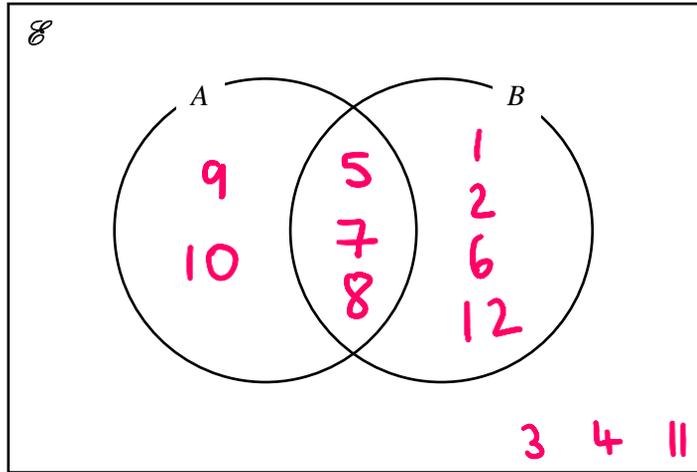
(2)

(Total for Question 1 is 7 marks)



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

(a) Complete the Venn diagram for this information.



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

(b) Find the probability that this number is in the set B'

$$\frac{5}{12}$$

(2)

(c) Find the probability that this number is in the set $A \cap B$

$$\frac{3}{12}$$

(2)

(d) Find the probability that this number is in the set $A \cup B$

$$\frac{9}{12}$$

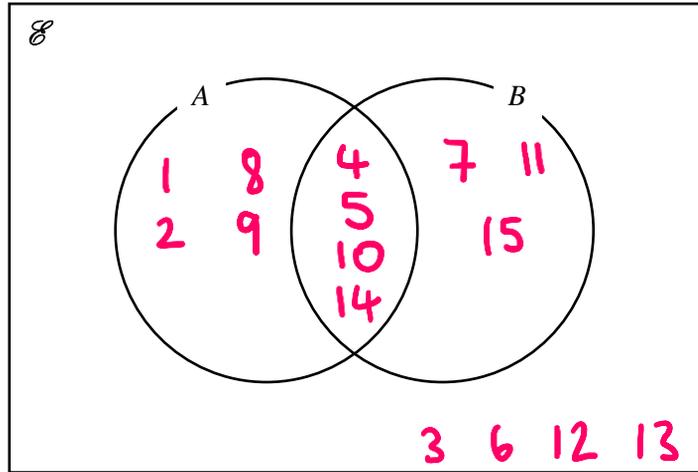
(2)

(Total for Question 2 is 9 marks)



- 3 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$
 $A = \{1, 2, 4, 5, 8, 9, 10, 14\}$
 $B = \{4, 5, 7, 10, 11, 14, 15\}$

(a) Complete the Venn diagram for this information.



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

(b) Find the probability that this number is in the set A'

$$\frac{7}{15}$$

(2)

(c) Find the probability that this number is in the set $A \cup B$

$$\frac{11}{15}$$

(2)

(d) Find the probability that this number is in the set $A \cap B$

$$\frac{4}{15}$$

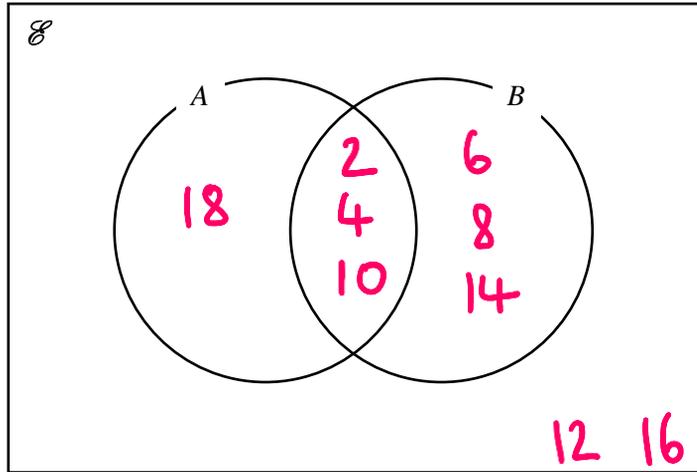
(2)

(Total for Question 3 is 9 marks)



- 4 $\mathcal{E} = \{\text{even numbers less than 20}\}$
 $A = \{2, 4, 10, 18\}$
 $B = \{2, 4, 6, 8, 10, 14\}$

(a) Complete the Venn diagram for this information.



(3)

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

(b) Find the probability that this number is in the set A

$$\frac{4}{9}$$

(2)

(c) Find the probability that this number is in the set $A \cap B$

$$\frac{3}{9}$$

(2)

(d) Find the probability that this number is in the set $A \cup B$

$$\frac{7}{9}$$

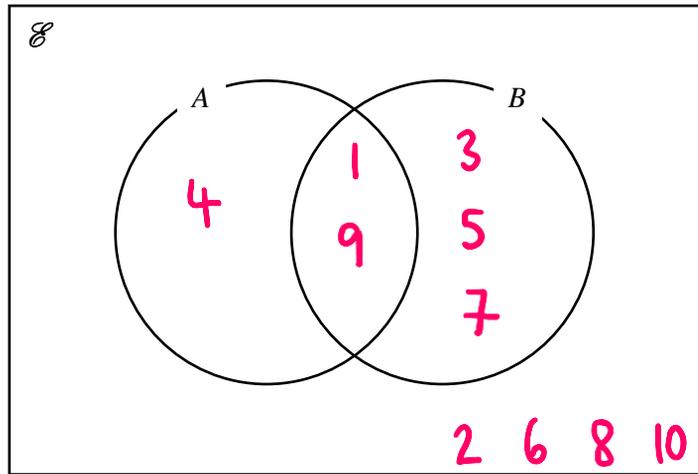
(2)

(Total for Question 4 is 9 marks)



- 5 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
 $A = \{\text{square numbers}\}$
 $B = \{\text{odd numbers}\}$

(a) Complete the Venn diagram for this information.



(3)

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

(b) Find the probability that this number is in the set \mathcal{E}

$$\frac{1}{10}$$

(1)

(c) Find the probability that this number is in the set $A \cap B$

$$\frac{2}{10}$$

(2)

(d) Find the probability that this number is in the set B'

$$\frac{5}{10}$$

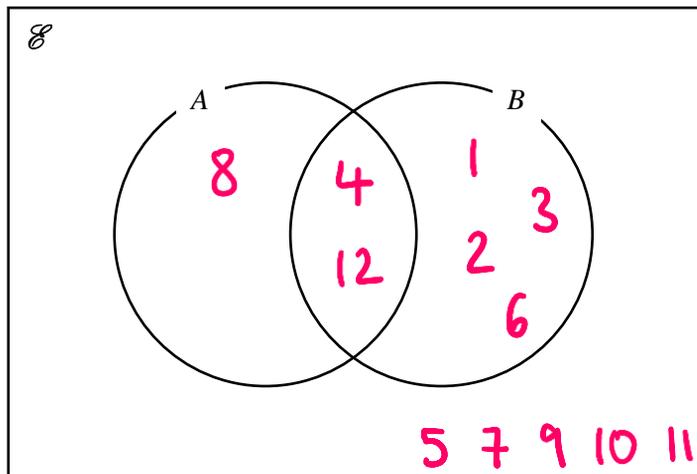
(2)

(Total for Question 5 is 8 marks)



- 6 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$
 $A = \{\text{multiples of } 4\}$
 $B = \{\text{factors of } 12\}$

(a) Complete the Venn diagram for this information.



(3)

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

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

$$\frac{2}{12}$$

(2)

(c) Find the probability that this number is in the set A'

$$\frac{9}{12}$$

(2)

(d) Find the probability that this number is in the set $A \cup B$

$$\frac{7}{12}$$

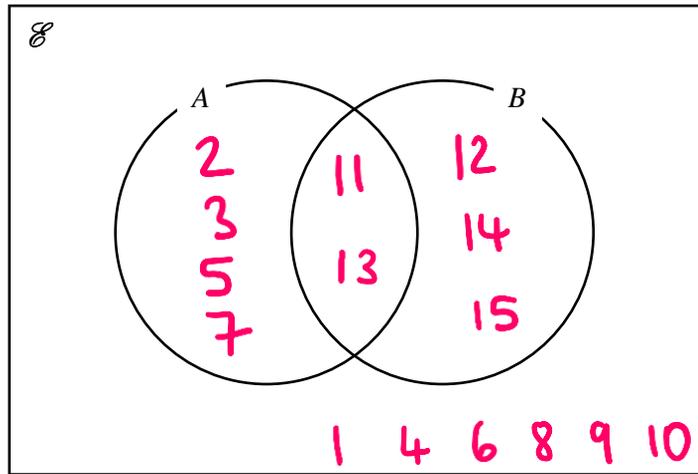
(2)

(Total for Question 6 is 9 marks)



- 7 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$
 $A = \{\text{prime numbers}\}$
 $B = \{\text{numbers greater than } 10\}$

(a) Complete the Venn diagram for this information.



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

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

$$\frac{9}{15}$$

(2)

(c) Find the probability that this number is in the set B'

$$\frac{10}{15}$$

(2)

(d) Find the probability that this number is in the set $A \cap B$

$$\frac{2}{15}$$

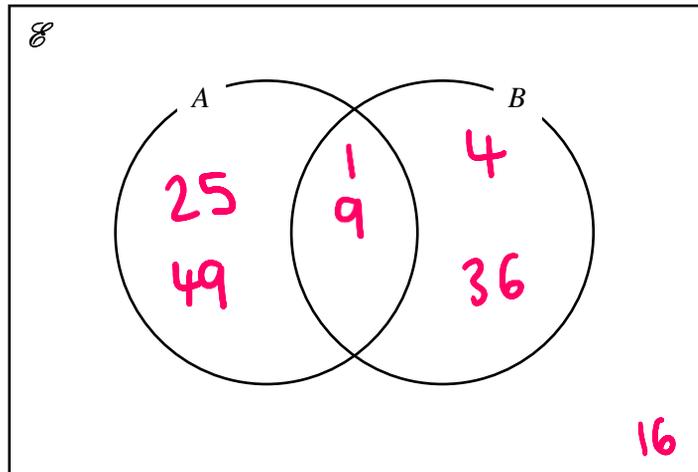
(2)

(Total for Question 7 is 9 marks)



- 8 $\mathcal{E} = \{\text{square numbers less than } 50\}$
 $A = \{\text{odd numbers}\}$
 $B = \{\text{factors of } 36\}$

(a) Complete the Venn diagram for this information.



(3)

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

(b) Find the probability that this number is in the set A

$$\frac{4}{7}$$

(2)

(c) Find the probability that this number is in the set $A \cup B$

$$\frac{6}{7}$$

(2)

(d) Find the probability that this number is in the set $A \cap B$

$$\frac{2}{7}$$

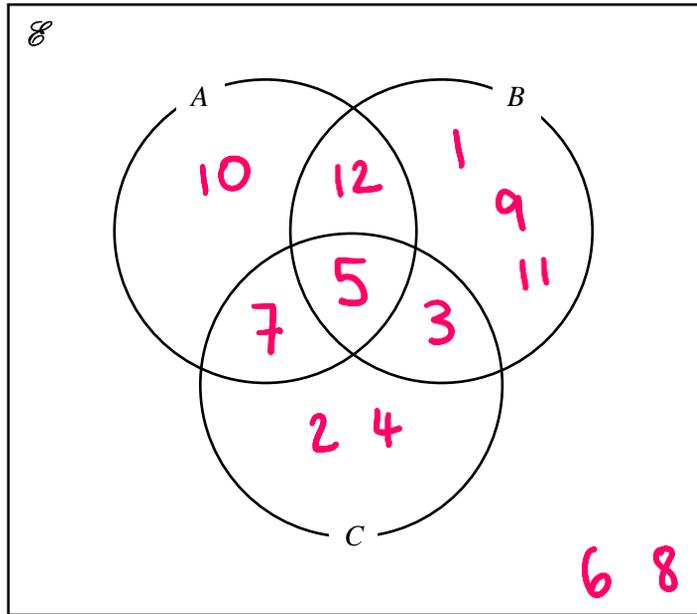
(2)

(Total for Question 8 is 9 marks)



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

(a) Complete the Venn diagram for this information.



(4)

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

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

$$\frac{8}{12}$$

(2)

(c) Find the probability that this number is in the set $B \cap C$

$$\frac{2}{12}$$

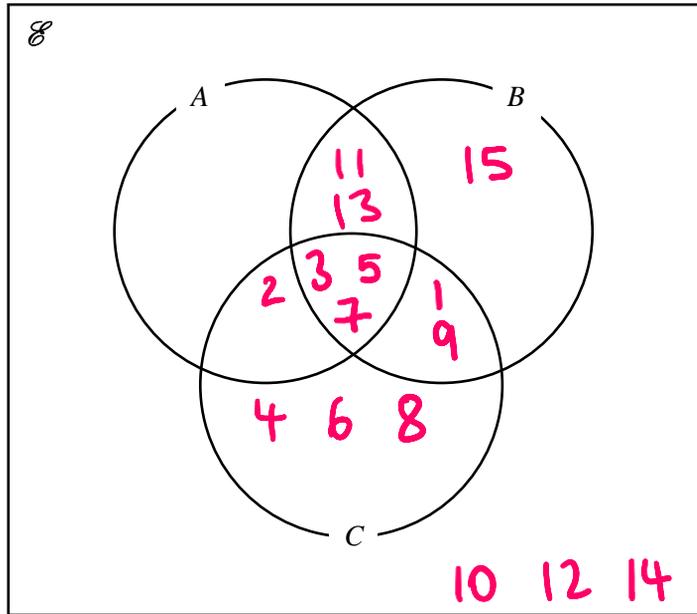
(2)

(Total for Question 9 is 8 marks)



- 10** $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$
 $A = \{\text{prime}\}$
 $B = \{\text{odd numbers}\}$
 $C = \{\text{numbers less than } 10\}$

(a) Complete the Venn diagram for this information.



(4)

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

(b) Find the probability that this number is in the set $A \cap B \cap C$

$$\frac{3}{15}$$

(2)

(c) Find the probability that this number is in the set $A \cup B \cup C$

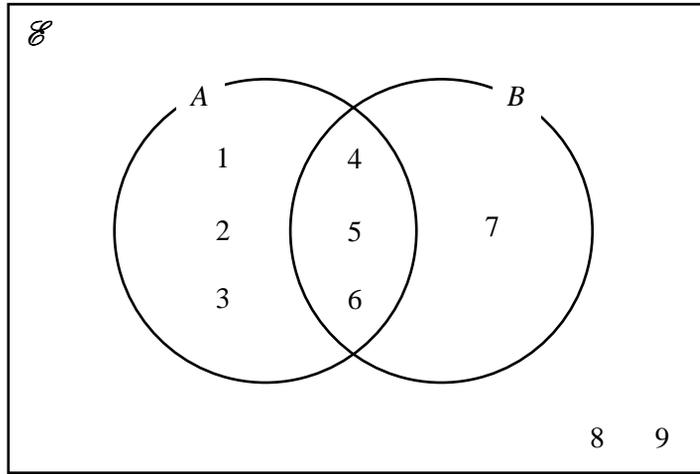
$$\frac{12}{15}$$

(2)

(Total for Question 10 is 8 marks)



11 Here is a Venn diagram.



(a) Write down the numbers that are in set A'

7, 8, 9

(1)

(b) Write down the numbers that are in set $A \cup B$

1, 2, 3, 4, 5, 6, 7

(1)

(c) Write down the numbers that are in set $A \cap B$

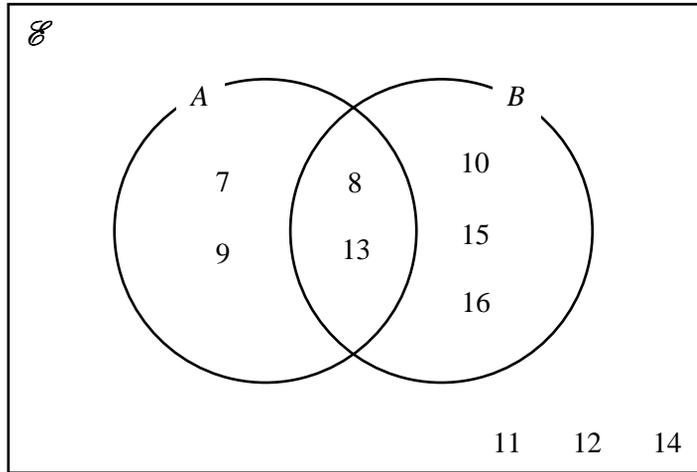
4, 5, 6

(1)

(Total for Question 11 is 3 marks)



12 Here is a Venn diagram.



(a) Write down the numbers that are in set B'

7, 9, 11, 12, 14 (1)

(b) Write down the numbers that are in set E

7, 8, 9, 10, 11, 12, 13, 14, 15, 16 (1)

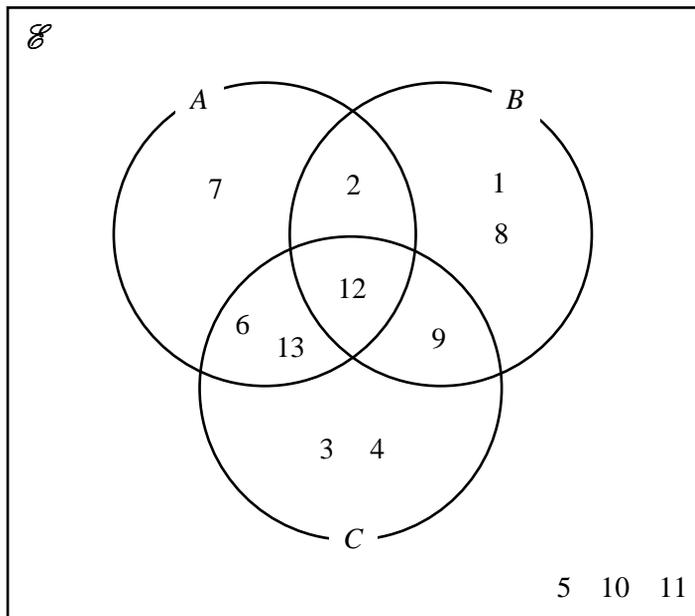
(c) Write down the numbers that are in set $A \cap B$

8, 13 (1)

(Total for Question 12 is 3 marks)



13 Here is a Venn diagram.



(a) Write down the numbers that are in set B'

3, 4, 5, 6, 7, 10, 11, 13
..... (1)

(b) Write down the numbers that are in set $A \cup C$

2, 3, 4, 6, 7, 9, 12, 13
..... (1)

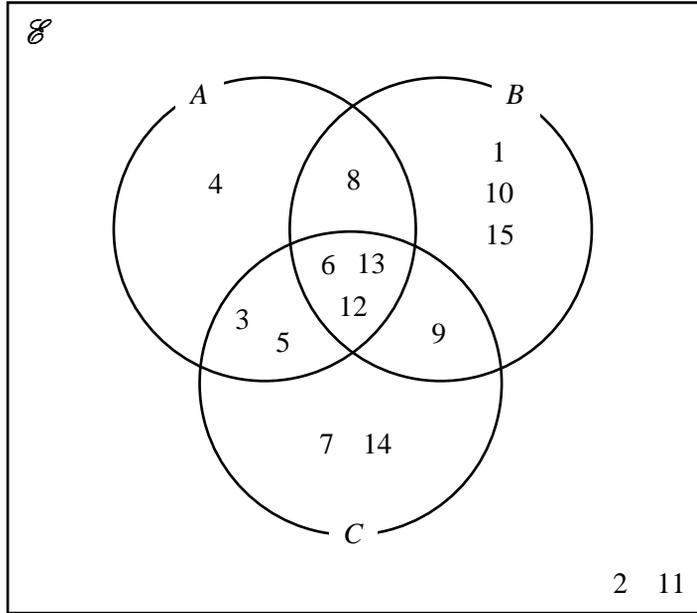
(c) Write down the numbers that are in set $A \cap B \cap C$

12
..... (1)

(Total for Question 13 is 3 marks)



14 Here is a Venn diagram.



(a) Write down the numbers that are in set A

.....
 3, 4, 5, 6, 8, 12, 13
 (1)

(b) Write down the numbers that are in set $A \cup B \cup C$

.....
 1, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15
 (1)

(c) Write down the numbers that are in set $B \cap C$

.....
 6, 9, 12, 13
 (1)

(Total for Question 14 is 3 marks)

