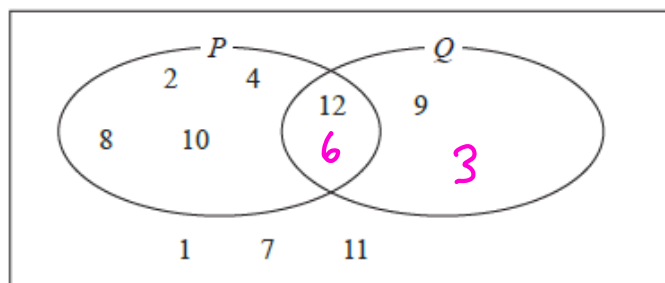# **Questions**

Q1.

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*.

Q′ means not Q

$\dfrac{7}{11}$

(2)

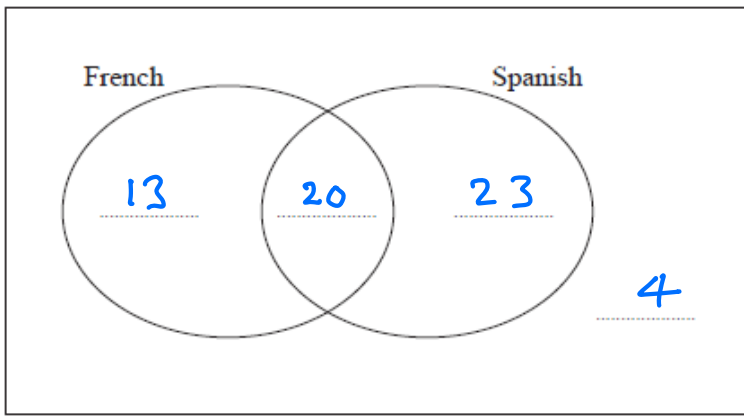**(Total for question = 4 marks)**

Q2.

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.

French   Spanish

13   20   23

4

(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.
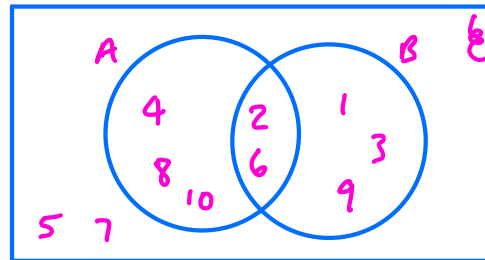
$\dfrac{4}{60}$

(1)

(Total for question = 4 marks)

Q3.

$\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{\text{multiples of } 2\}$
$A \cap B = \{2, 6\}$
$A \cup B = \{1, 2, 3, 4, 6, 8, 9, 10\}$

Draw a Venn diagram for this information.

A   B $\mathscr{E}$

4   2   1

8   6   3

10   9

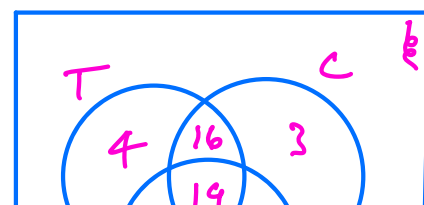5 7

(Total for question is 4 marks)

Q4.

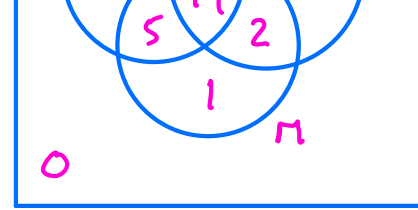Sami asked 50 people which drinks they liked from tea, coffee and milk.

All 50 people like at least one of the drinks
19 people like all three drinks.
16 people like tea and coffee but do **not** like milk.

T   C $\mathscr{E}$

4   16   3

19

21 people like coffee and milk.
24 people like tea and milk.
40 people like coffee.
1 person likes only milk.

Sami selects at random one of the 50 people.

(a) Work out the probability that this person likes tea.

$\dfrac{44}{50}$

....

(4)

(b) Given that the person selected at random from the 50 people likes tea, find the probability that this person also likes exactly one other drink.
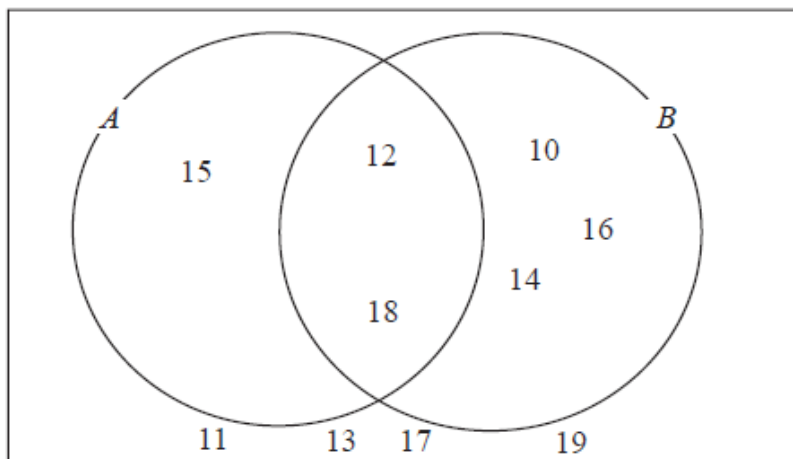
$\dfrac{21}{44}$

....

(2)

(Total for question = 6 marks)

Q5.

Here is a Venn diagram.

(a) Write down the numbers that are in set

(i) $A \cup B$

15, 12, 18, 10, 14, 16

....

(ii) $A \cap B$

12, 18

....

(2)

One of the numbers in the diagram is chosen at random.

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

A' means not A

$\dfrac{7}{10}$

....

(2)

(Total for question = 4 marks)
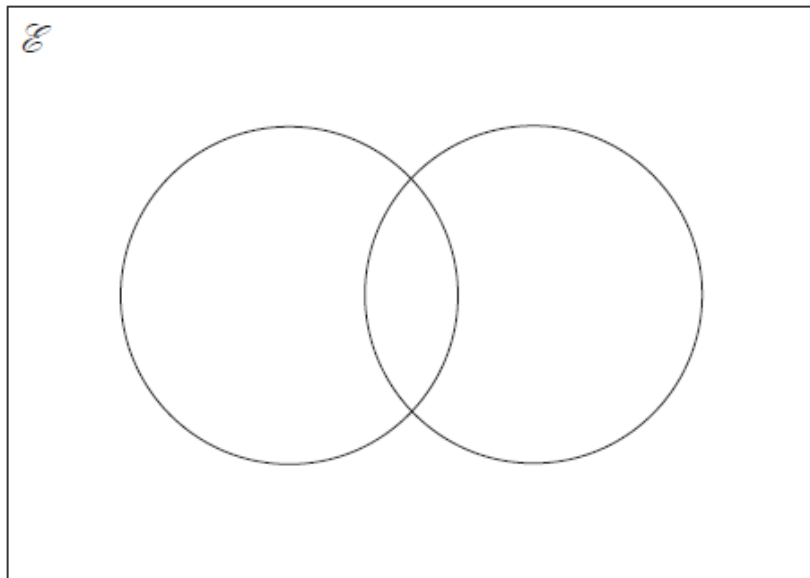
Q6.

$\mathcal{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13}
A = {multiples of 3}
B = {even numbers}

Complete the Venn diagram for this information.

(Total for question = 4 marks)

Q7.
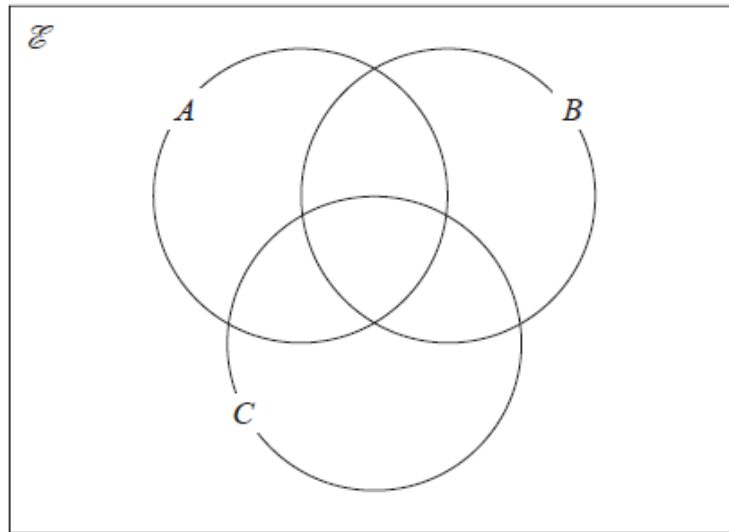
$\mathcal{E}$ = {even numbers between 1 and 25}
A = {2, 8, 10, 14}

$B = \{6, 8, 20\}$
$C = \{8, 18, 20, 22\}$

(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 ∩ B.

....

(2)

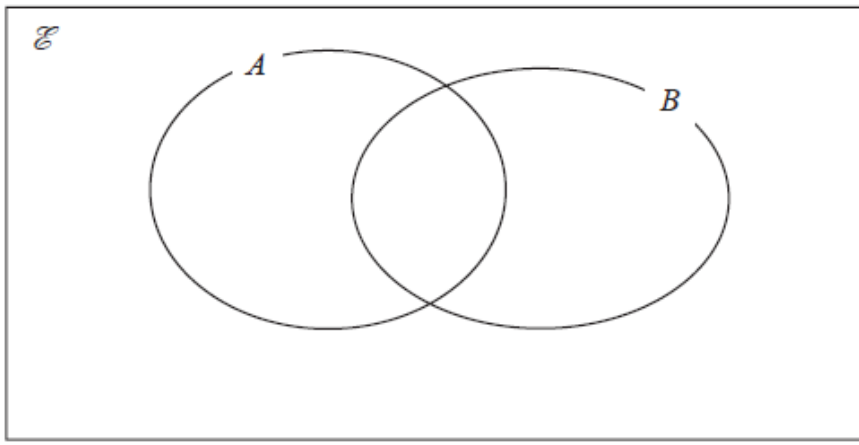**(Total for question = 6 marks)**

Q8.

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

(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 $A \cap B$

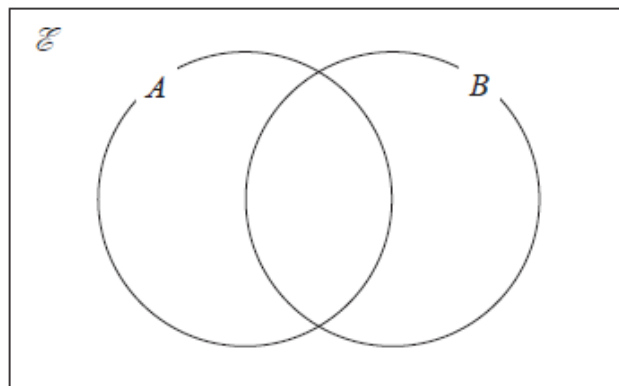...

(2)

(Total for question = 5 marks)

Q9.

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

(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 ∩ B

....

(Total for question = 5 marks)

Q10.

50 people were asked if they speak French or German or Spanish.

Of these people,

31 speak French
2 speak French, German and Spanish
4 speak French and Spanish but not German
7 speak German and Spanish
8 do not speak any of the languages all
10 people who speak German speak at least one other language

Two of the 50 people are chosen at random.

Work out the probability that they both only speak Spanish.

....

(Total for question = 5 marks)