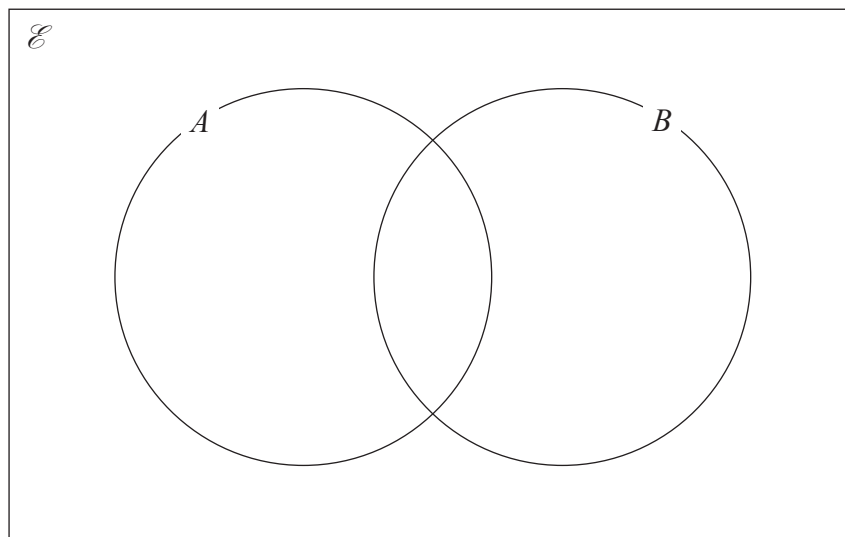


1  $\mathcal{E} = \{\text{even numbers less than 19}\}$

$A = \{6, 12, 18\}$

$B = \{2, 6, 14, 18\}$

Complete the Venn diagram for this information.



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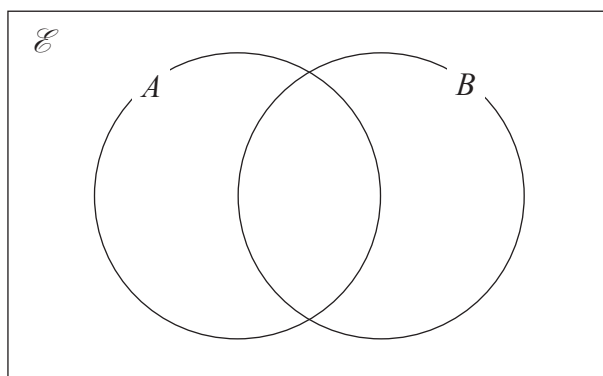
(Total for Question 1 is 3 marks)

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

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

$B = \{\text{factors of } 10\}$

(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  $A \cap B$

.....  
(2)

---

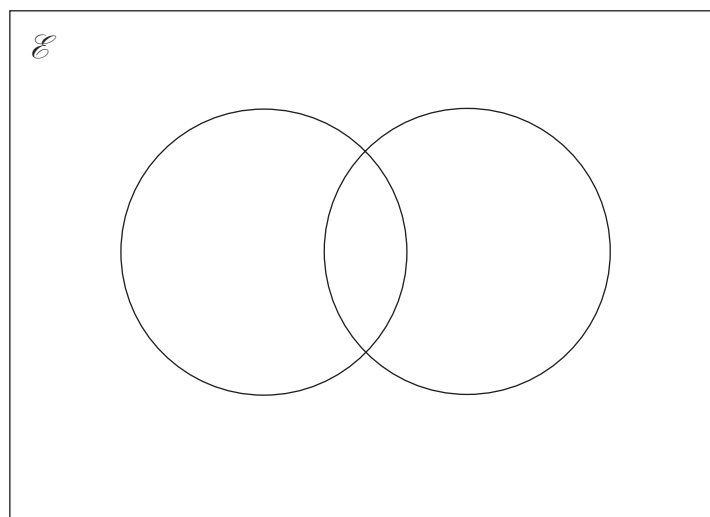
(Total for Question 2 is 5 marks)

3  $\mathcal{E} = \{\text{odd numbers less than 30}\}$

$A = \{3, 9, 15, 21, 27\}$

$B = \{5, 15, 25\}$

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



(4)

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

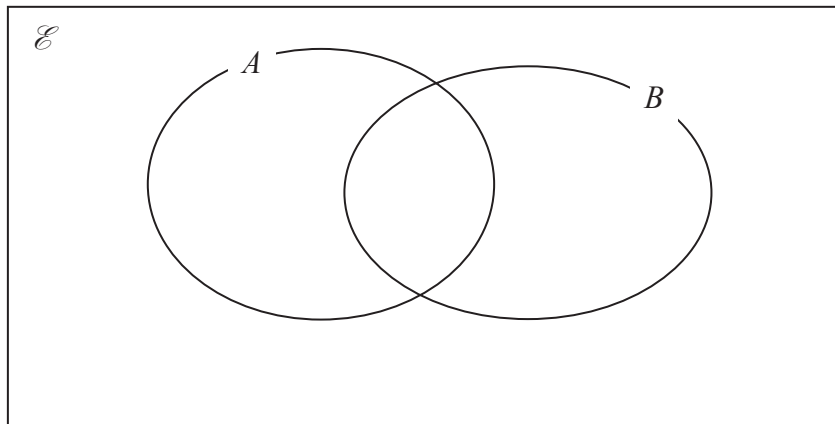
(b) What is the probability that the number is in the set  $A \cup B$ ?

.....  
(2)

**(Total for Question 3 is 6 marks)**

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



(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)

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(Total for Question 4 is 5 marks)

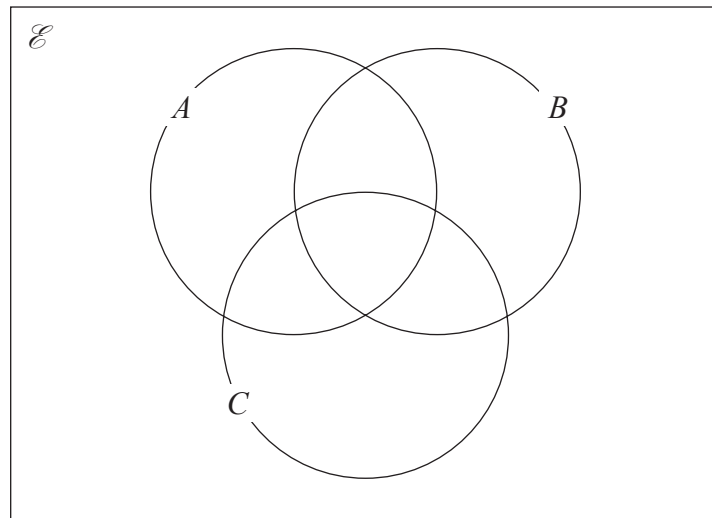
5  $\mathcal{E} = \{\text{even numbers between 1 and 25}\}$

$A = \{2, 8, 10, 14\}$

$B = \{6, 8, 20\}$

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

(a) Complete the Venn diagram for this information.



(4)

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

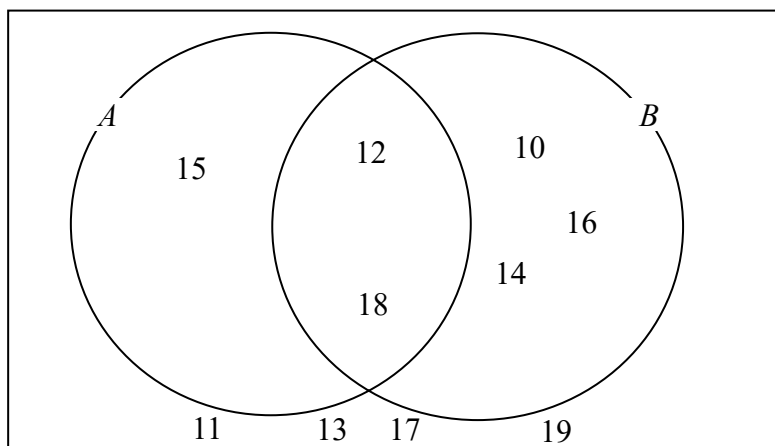
(b) Find the probability that the number is a member of  $A \cap B$ .

.....  
(2)

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(Total for Question 5 is 6 marks)

6 Here is a Venn diagram.



(a) Write down the numbers that are in set

(i)  $A \cup B$

.....

(ii)  $A \cap B$

.....

(2)

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

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

.....

(2)

(Total for Question 6 is 4 marks)

7 A shop manager wants to advertise special offers on social media platforms.

The manager asks 100 customers which of type  $A$ , type  $B$  or type  $C$  they use.

Of these customers,

4 use all three types

16 do not use any of type  $A$ , type  $B$  or type  $C$

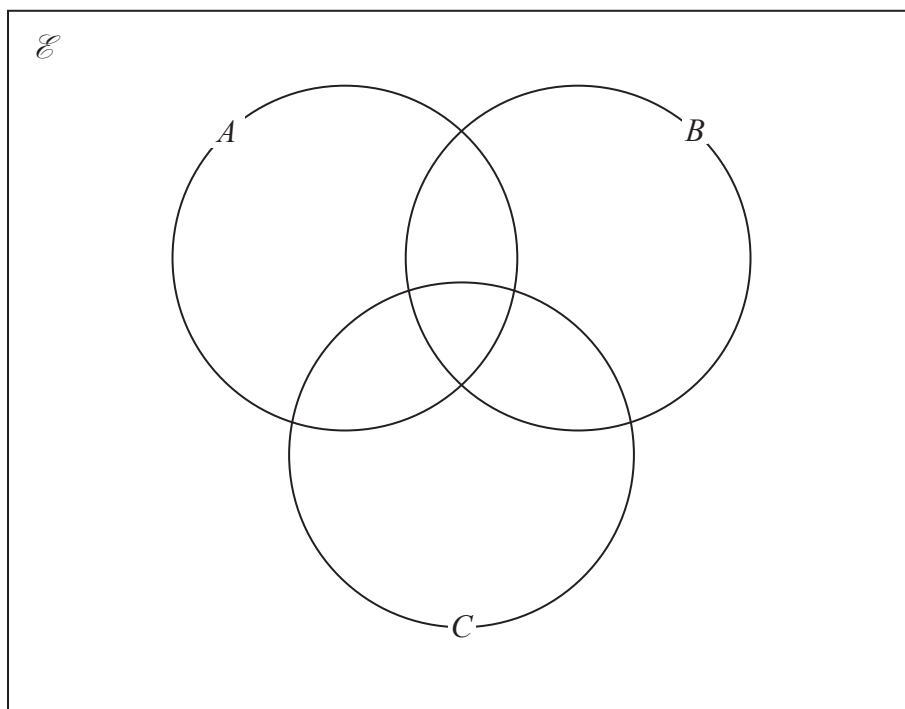
8 use both type  $A$  and type  $B$ , but not type  $C$

14 use both type  $B$  and type  $C$

62 in total use type  $A$

all 20 who use type  $C$  also use at least one of type  $A$  and type  $B$ .

(a) Complete the Venn diagram for this information.



(4)

One of the customers is chosen at random.

Given that this customer uses type  $A$ ,

(b) find the probability that this customer also uses type  $B$ .

(2)

(Total for Question 7 is 6 marks)

**8** 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.

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.

.....  
(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.

.....  
(2)

---

(Total for Question 8 is 6 marks)



9 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 9 is 5 marks)

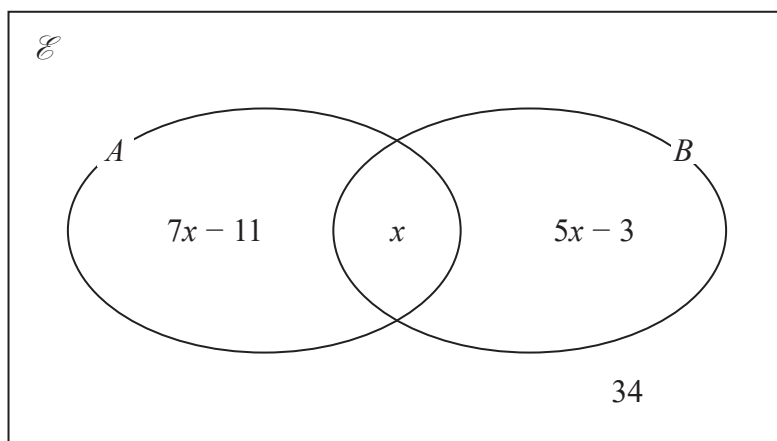
**10** Vicky has a collection of medals.

The Venn diagram gives information about the number of medals in her collection where

$\mathcal{E} = \{\text{all medals}\}$

$A = \{\text{English medals}\}$

$B = \{\text{gold medals}\}$



Vicky is going to take at random a medal from her collection.

Given that the medal is gold, the probability that the medal is English is  $\frac{2}{11}$

Work out the number of medals in Vicky's collection.

.....  
(Total for Question 10 is 4 marks)