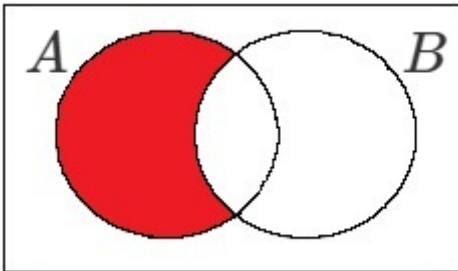


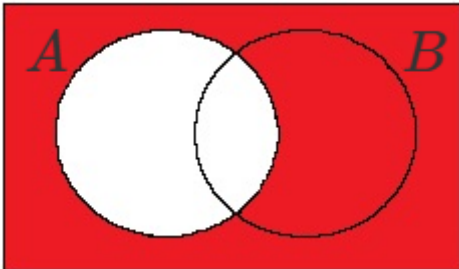
Session 11: Set Language and Notation

- 1 Use set notation to define the shaded region.



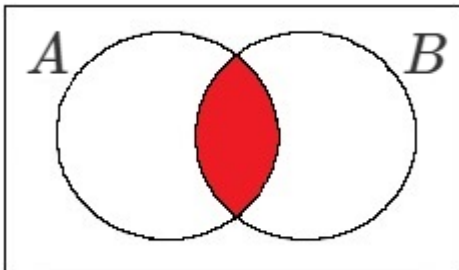
(Total 1 mark)

- 2 Use set notation to define the shaded region.



(Total 1 mark)

- 3 Use set notation to define the shaded region.



(Total 1 mark)

4 $X = \{6, 8, 10, 12, 14, 16\}$

$Y = \{5, 10, 15, 20\}$

a) List the members of the set $X \cup Y$.

b) List the members of the set $X \cap Y$.

c) Explain the meaning of $15 \notin A$.

(Total 3 marks)

5 $X = \{\text{prime numbers between 1 and 12}\}$

$Y = \{\text{factors of 12 between 1 and 12}\}$

$\xi = \{\text{positive integers less than 13}\}$

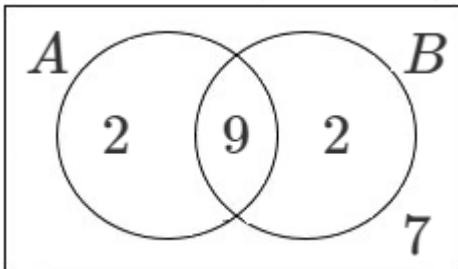
- a) List the members of the set X' .

- b) List the members of the set $(X \cup Y)'$.

- c) Is $4 \in X$? Justify your answer.

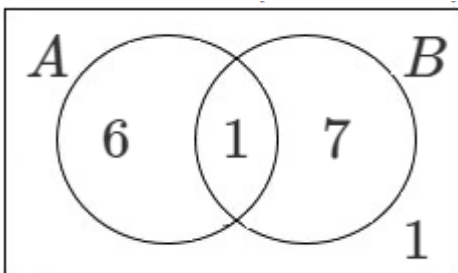
(Total 3 marks)

6 Find $P(B \cap A)$



(Total 2 marks)

7 Find $P(B' \cap A)$

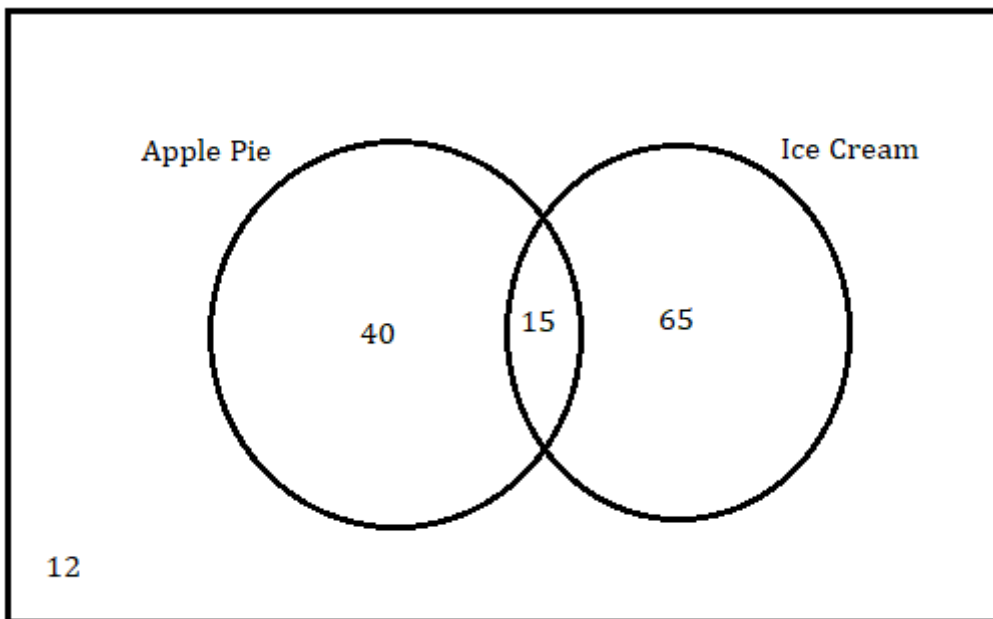


(Total 2 marks)

- 8 In a class there are:
7 students who play cricket and basketball
8 students who do not play cricket or basketball
12 students who play cricket
21 students who play basketball.
How many students are there in the class?

(Total 4 marks)

- 9 At a party, the guests may have ice cream or apple pie as their dessert.
The Venn diagram shows information about the choices the guests made.



- a) How many guests had ice cream?
- b) How many guests had both desserts?
- c) How many guests went to the party?

(Total 3 marks)

- 10 In a class there are:
11 students who study Spanish and German
5 students who do not study a foreign language
14 students who study Spanish
24 students who study German.
How many students are there in the class?

(Total 4 marks)

- 11 50 people were asked in a survey if they like Samsung or iPhone mobile phones.
20 said they only like iPhone
8 said they only like Samsung
17 said they like both iPhone and Samsung

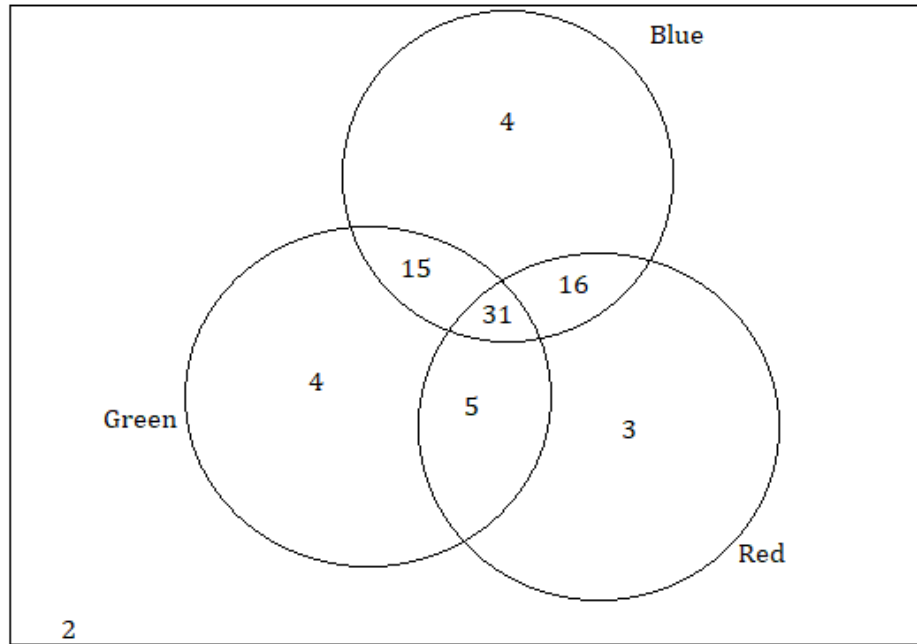
a) Put this information in a Venn Diagram.

b) How many of the surveyed people do not like iPhone or Samsung?

c) One person is chosen at random. What is the probability that this person likes iPhones?

(Total 6 marks)

12 Liam asked 80 people which colours they like from red, blue and green.



- How many people like all three colours?
- How many people like green and blue but not red?
- How many people like red?
- Work out which colour is liked by the most number of people.

(Total 6 marks)

13 Each worker in a company visited at the least one of the following countries: France, Japan and Colombia.

15 people only visited Japan

26 people only visited Colombia

19 people only visited France

5 people visited Japan and Colombia but not France

14 people visited France and Colombia

10 people visited France and Japan

Y people visited all the three countries

a) Put this information in a Venn Diagram.

b) Write down an expression in terms of y , for the number of people who visited France and Colombia but not Japan.

c) There are 79 people in the company.
Find the value of y .

14 Each boy in a scouts' group plays at least one of the following musical instruments: guitar, piano and violin.

10 boys play only guitar

9 boys play only violin

13 boys play only piano

6 play guitar and violin but not piano

7 play guitar and piano

8 play piano and violin

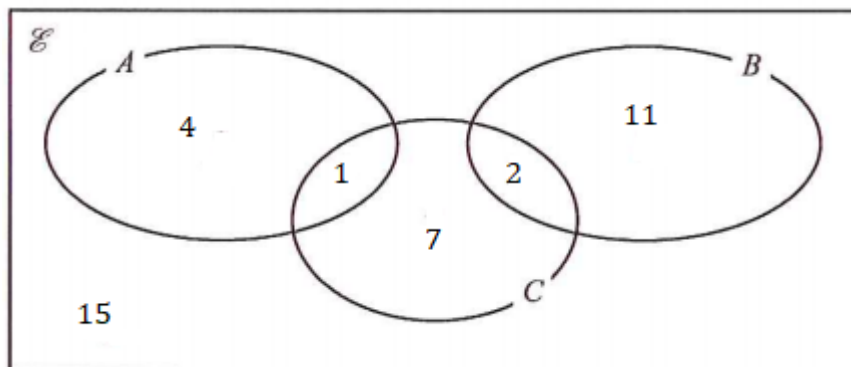
Y play all the musical instruments.

a) Write down an expression in terms of y , for the number of boys that that play guitar and piano, but not violin.

b) There are 50 boys in the scouts' group. Find the value of y .

(Total 4 marks)

15.



Find:

a) $A \cup B$

b) $A \cap C'$

(Total 2 marks)

RECAP:

SETS

$n(A)$ - Num. of elements in A

\cup - **Union (all)**

\cap - **Intersection (overlap only)**

\in - **Member Of**

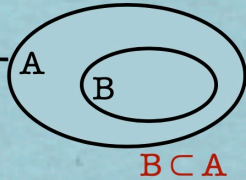
\subset - **Subset Of**

\emptyset - **Empty Set**

ξ - **Universal Set**

' - **Complement ("Not in")**

eg. $(A \cup B)'$ - "everything NOT in A and B"



Understanding the set language:

- \in : belongs to or is an element of
- \notin : does not belong to or it is not an element of
- ξ : universal set (all elements)
- A' : not in A (all elements that do not belong to A)
- \cap : intersection
- $A \cap B$: all elements that belong to both A and to B at the "same time"
- \cup : reunion/ union
- $A \cup B$: elements that belong to A, or to B or to both

TIPS:

- When filling in a Venn Diagram, always start from the centre (what is common to both groups) and fill in the other conditions as you go along
- When you are not sure of what they are asking, sketch the simplest Venn Diagram for a condition and shade the regions as you go along. (see example below)

If looking for $A' \cap B$

