

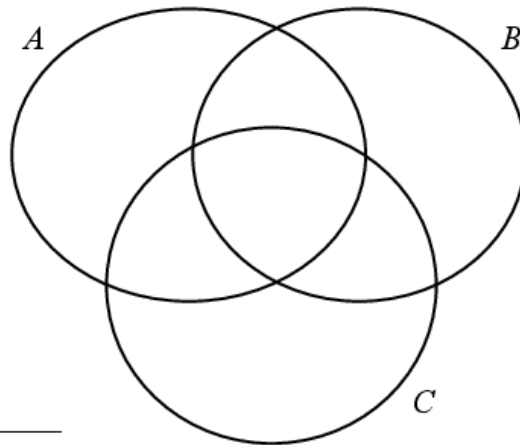
Question 1

(a) The sets A , B , and C are as follows:

$$A = \{2, 3, 4, 5, 6\}, B = \{2, 4, 6, 8, 10\}, \text{ and } C = \{1, 4, 8, 12, 14\}.$$

(i) Complete the Venn diagram.

(ii) List the elements of each of the following sets:



$$A \cap B = \underline{\hspace{10em}}$$

$$B \setminus (A \cap C) = \underline{\hspace{10em}}$$

$$(B \setminus A) \cup (B \setminus C) = \underline{\hspace{10em}}$$

(iii) Write down a null set, in terms of A , B , and C . $\underline{\hspace{10em}}$

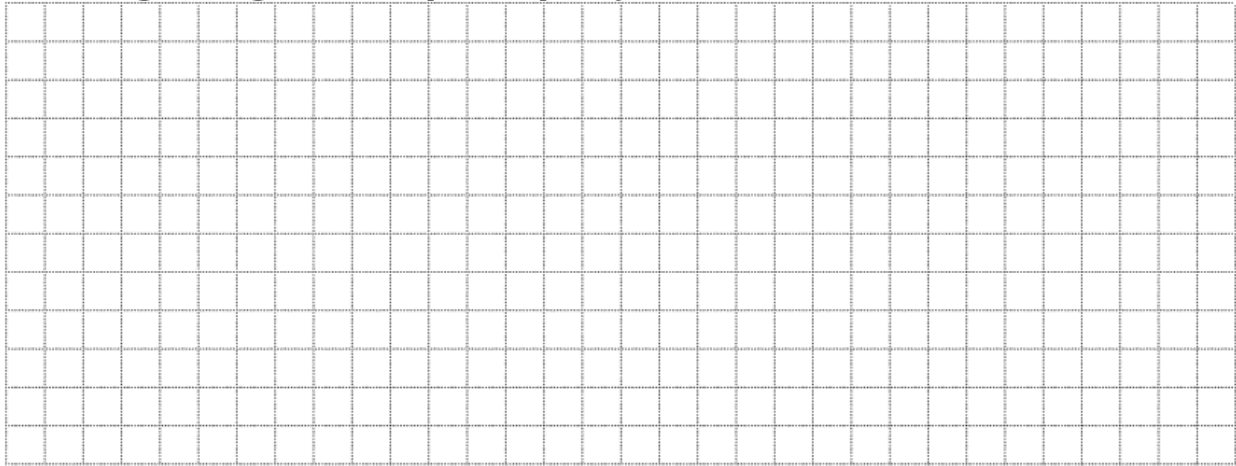
- (b) The box on the right contains six statements,
(note: P' , is the complement of a set P).

A number of the statements are incorrect.

Write down one incorrect statement.

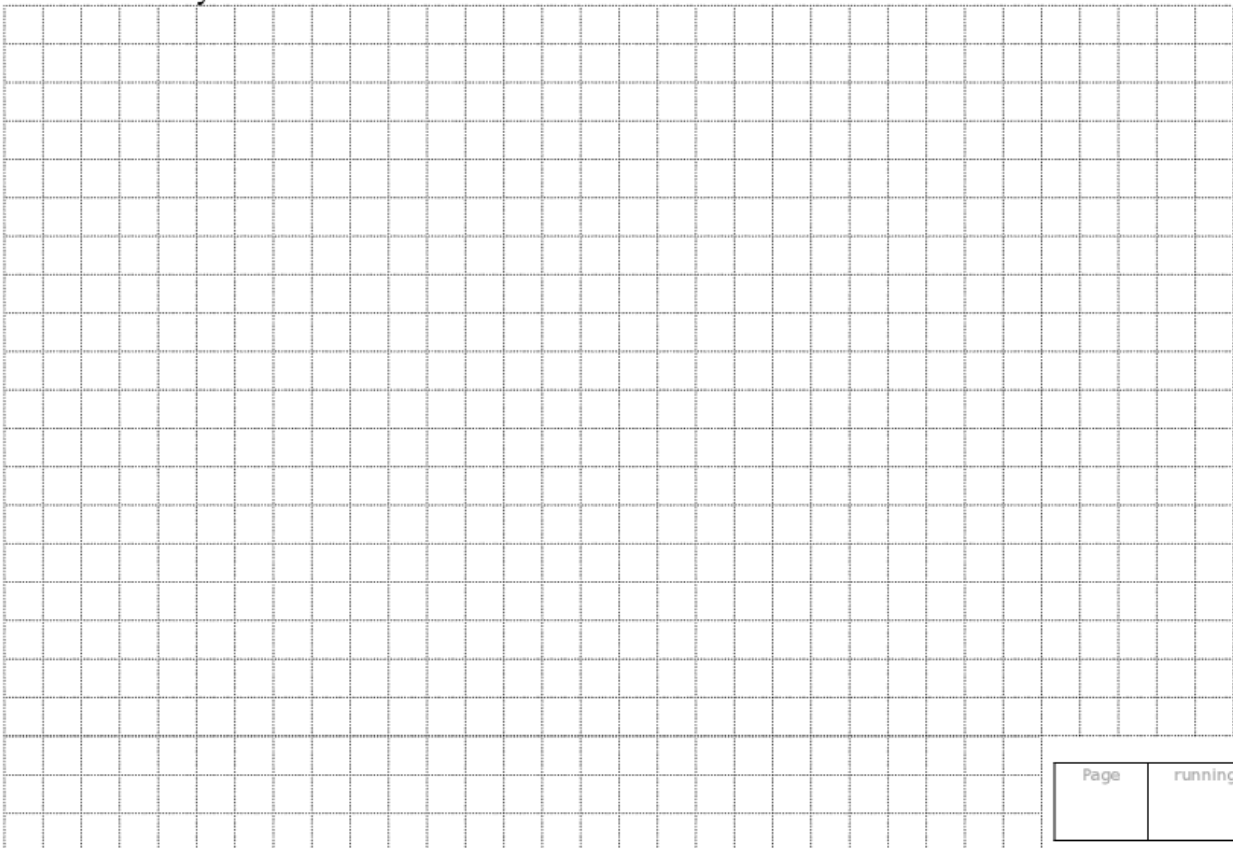
Statements	
(i)	$A \cup B = B \cup A$
(ii)	$(A \cup B) \cup C = A \cup (B \cup C)$
(iii)	$(A \setminus B) \setminus C = A \setminus (B \setminus C)$
(iv)	$(A \cap B)' = U \setminus (A \cap B)$
(v)	$A \setminus B = B \setminus A$
(vi)	$B \setminus (A \cup C) = (B \cup C) \setminus A \setminus C$

Draw a diagram or give an example to explain your choice.



- (c) A group of 38 students were asked if they had ever been to France or Spain.
The number who had been to Spain only was 3 more than the number who had been to both countries.
Twice as many had been to France as Spain.
4 students had not been to either country.

Find how many had been to both countries.



Question 5

In a survey, 54 people were asked which political party they had voted for in the last three elections. The results are as follows:

30 had voted for the Conservatives

22 had voted for the Liberals

22 had voted for the Republicans

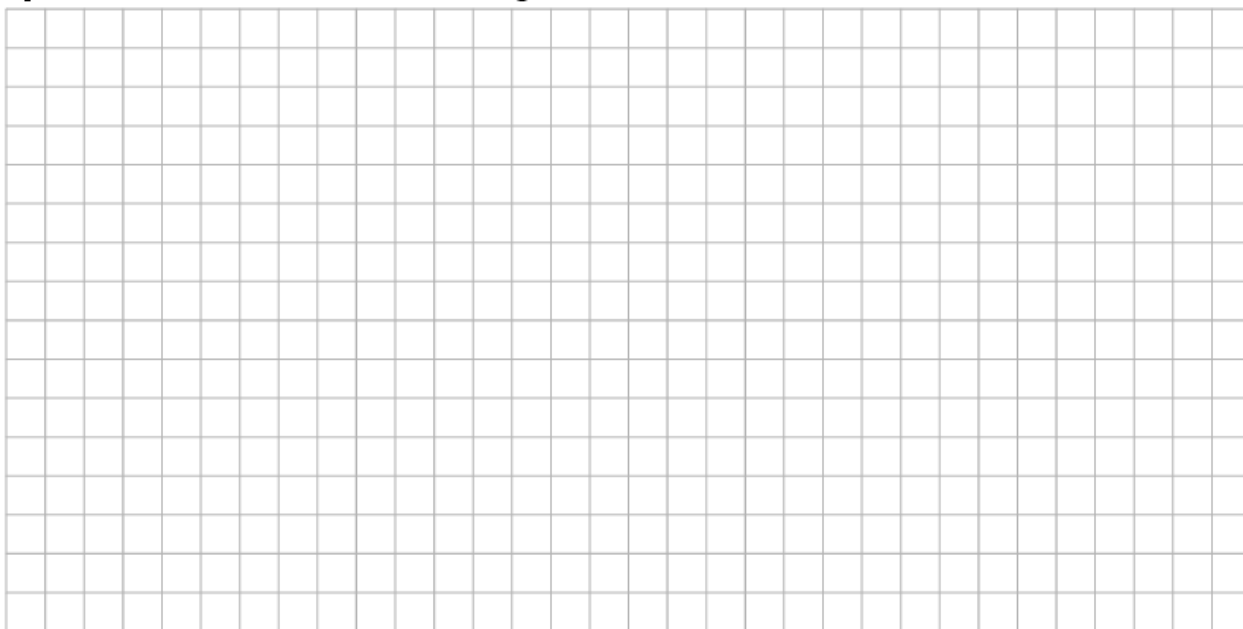
12 had voted for the Conservatives and for the Liberals

9 had voted for the Liberals and for the Republicans

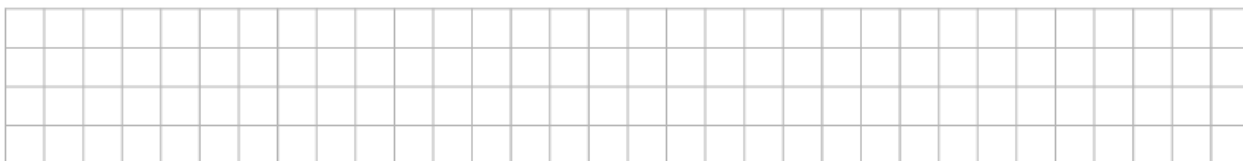
8 had voted for the Conservatives and for the Republicans

5 had voted for all three parties.

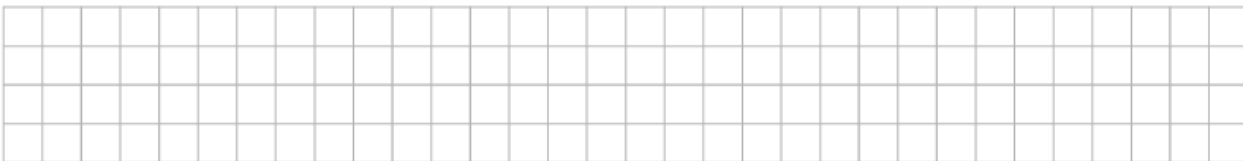
- (a) Represent the information in a Venn diagram.



- (b) If one person is chosen at random, what is the probability that the person chosen did not vote in any of the three elections?



- (c) If one person is chosen at random, what is the probability that the person chosen voted for at least two different parties?



- (d) If one person is chosen at random, what is the probability that the person chosen voted for the same party in all three elections?

