1. \( A = \{ \text{Prime numbers between 10 and 16} \} \)
   \( B = \{ \text{Multiples of 3 between 10 and 16} \} \)

   (a) List the members of \( A \cup B \).

   

   

   (2)

   (b) What is \( A \cap B \)?

   

   

   (1)

   (c) Is it true that \( 11 \in B \)?

   Explain your answer.

   

   

   (1)

   (Total 4 marks)

8. (a) The universal set, \( \mathcal{U} = \{ \text{Angela’s furniture} \} \).

   \( A = \{ \text{Chairs} \} \).

   \( B = \{ \text{Kitchen furniture} \} \).

   Describe fully the set \( A \cap B \).

   

   

   (2)

   (b) \( P = \{ 2, 4, 6, 8 \} \).

   \( Q = \{ \text{Odd numbers less than 10} \} \)

   (i) List the members of the set \( P \cup Q \).

   

   

   (iii)

   (ii) Is it true that \( P \cap Q = \varnothing \)?

   Explain your answer.

   

   

   (3)

   (Total 5 marks)
9. \( \mathcal{E} = \{ \text{Positive integers less than 11} \} \)  
\( A = \{ \text{Multiples of 3} \} \)  
\( B = \{ \text{Multiples of 2} \} \)

(a) List the members of

(i) \( A \),

(ii) \( A \cup B \).

(b) \( \mathcal{E} = \{ \text{Students in class 12Y} \} \)  
\( P = \{ \text{Students who study Mathematics} \} \)  
\( Q = \{ \text{Students who study History} \} \)

(i) Describe the members of \( P \cap Q \).

(ii) \( R \) is also a set of students in class 12Y.  
\( P \cap R = \emptyset \)  
Use this information to write a statement about the students in set \( R \).
11. The universal set, \( \mathbb{U} = \{ \text{Whole numbers} \} \)
\( A = \{ \text{Multiples of 5} \} \)
\( B = \{ \text{Multiples of 3} \} \)

Sets \( A \) and \( B \) are represented by the circles in the Venn diagram.

(a) (i) On the diagram, shade the region that represents the set \( A \cap B' \).

(ii) Write down three members of the set \( A \cap B' \).

........................................

(2)

\( C = \{ \text{Multiples of 10} \} \).

(b) (i) On the diagram draw a circle to represent the set \( C \).

(ii) Write down three members of the set \( A \cap B \cap C' \)

........................................

(2) Q11

(Total 4 marks)
15. There are 35 students in a group.
18 students play hockey.
12 students play both hockey and tennis.
15 students play neither hockey nor tennis.

Find the number of students who play tennis.

16. Set $P$ is shown on the Venn Diagram.
Two sets, $Q$ and $R$, are such that

$R \subset P$

$Q \cap R = \emptyset$

$P \cup Q = P$

Complete the Venn Diagram to show set $Q$ and set $R$.

(Total 3 marks)
16. **Statements**

| A ⊂ B | B ⊂ A | A \(\cup\) B = \(\mathcal{E}\) | A \(\cap\) B = \(\emptyset\) | A \(\cap\) B = A |

Choose a statement from the box that describes the relationship between sets A and B.

(i)

(ii)

(Total 2 marks)

19. The numbers are the **number** of elements in each part of the Venn Diagram.

(i) Find \(n(P)\)

(ii) Find \(n(Q')\)

(iii) Find \(n(P \cap Q \cap Q')\)

(iv) Find \(n(P' \cup Q')\)

(Total 4 marks)
19. Each student in a group plays at least one of hockey, tennis and football.

10 students play hockey only
9 play football only.
13 play tennis only.
6 play hockey and football but not tennis.
7 play hockey and tennis.
8 play football and tennis.
x play all three sports.

(a) Write down an expression, in terms of x, for the number of students who play hockey and tennis, but not football.

...............................  (1)

There are 50 students in the group.

(b) Find the value of x.

...............................  (3)

(Total 4 marks)