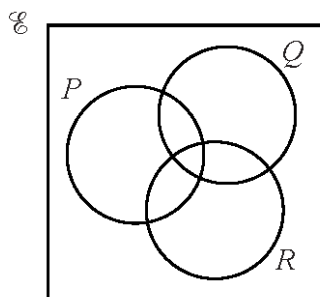
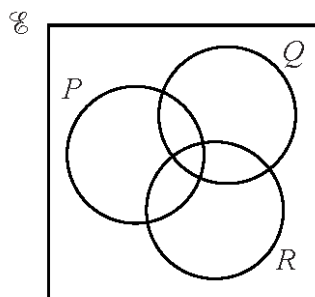


1 - (0606-W 2012-Paper 1/3-Q1) - SETS

- (a) On the Venn diagrams below, shade the region corresponding to the set given below each Venn diagram.



$$P \cup (Q \cap R)$$



$$P \cap (Q \cup R)$$

[2]

- (b) It is given that sets \mathcal{U} , B , S and F are such that

$$\mathcal{U} = \{\text{students in a school}\},$$

$$B = \{\text{students who are boys}\},$$

$$S = \{\text{students in the swimming team}\},$$

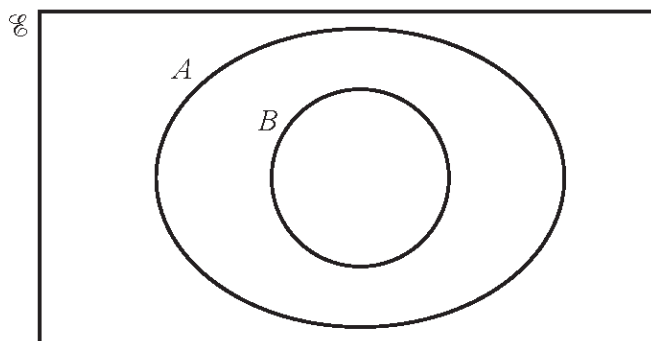
$$F = \{\text{students in the football team}\}.$$

Express each of the following statements in set notation.

- (i) All students in the football team are boys. [1]

- (ii) There are no students who are in both the swimming team and the football team. [1]

2 - (0606-S 2013-Paper 1/2-Q1) - SETS



The Venn diagram shows the universal set \mathcal{C} , the set A and the set B . Given that $n(B) = 5$, $n(A') = 10$ and $n(\mathcal{C}) = 26$, find

(i) $n(A \cap B)$, [1]

(ii) $n(A)$, [1]

(iii) $n(B' \cap A)$. [1]

3 - (0606-W 2013-Paper 1/1-Q4) - SETS

The sets A and B are such that

$$A = \left\{ x : \cos x = \frac{1}{2}, 0^\circ \leq x \leq 620^\circ \right\},$$

$$B = \left\{ x : \tan x = \sqrt{3}, 0^\circ \leq x \leq 620^\circ \right\}.$$

(i) Find $n(A)$. [1]

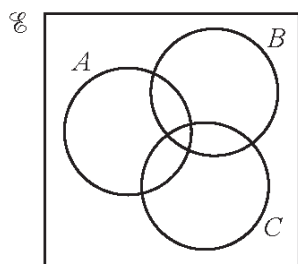
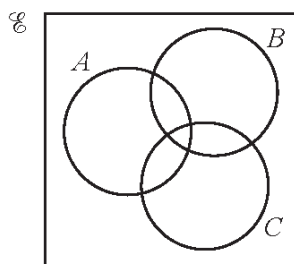
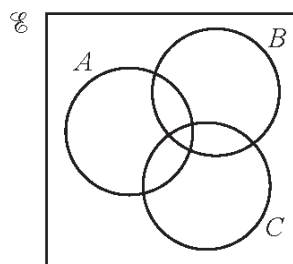
(ii) Find $n(B)$. [1]

(iii) Find the elements of $A \cup B$. [1]

(iv) Find the elements of $A \cap B$. [1]

4 - (0606-S 2014-Paper 1/1-Q3) - SETS

(a) On the Venn diagrams below, shade the regions indicated.

(i) $A \cap B \cap C$ (ii) $(A \cup B) \cap C'$ (iii) $A \cup (B \cap C')$

[3]

(b) Sets P and Q are such that

$$P = \{x: x^2 + 2x = 0\} \text{ and } Q = \{x: x^2 + 2x + 7 = 0\}, \text{ where } x \in \mathbb{R}.$$

(i) Find $n(P)$.

[1]

(ii) Find $n(Q)$.

[1]

5 - (0606-W 2014-Paper 1/3-Q3) - SETS

The universal set \mathcal{U} is the set of real numbers. Sets A , B and C are such that

$$A = \{x: x^2 + 5x + 6 = 0\},$$

$$B = \{x: (x - 3)(x + 2)(x + 1) = 0\},$$

$$C = \{x: x^2 + x + 3 = 0\}.$$

- (i) State the value of each of $n(A)$, $n(B)$ and $n(C)$. [3]

$$n(A) =$$

$$n(B) =$$

$$n(C) =$$

- (ii) List the elements in the set $A \cup B$. [1]

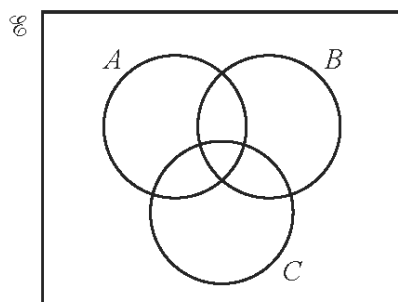
- (iii) List the elements in the set $A \cap B$. [1]

- (iv) Describe the set C' . [1]

6 - (0606-W 2015-Paper 1/3-Q1) - SETS

On the Venn diagrams below, shade the regions indicated.

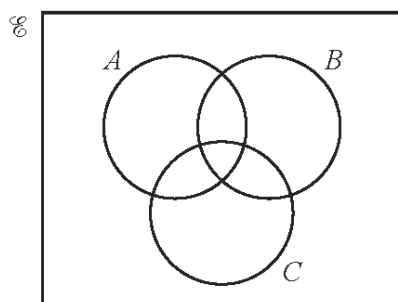
(i)



$$A \cap (B \cup C)$$

[1]

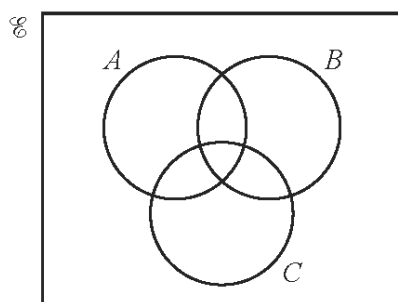
(ii)



$$A \cup (B \cap C)$$

[1]

(iii)



$$(A \cup B)' \cap C$$

[1]

7 - (0606-W 2015-Paper 1/1-Q6) - SETS

It is given that $\mathcal{E} = \{x : 1 \leq x \leq 12, \text{ where } x \text{ is an integer}\}$ and that sets A, B, C and D are such that

$$A = \{\text{multiples of } 3\},$$

$$B = \{\text{prime numbers}\},$$

$$C = \{\text{odd integers}\},$$

$$D = \{\text{even integers}\}.$$

Write down the following sets in terms of their elements.

(i) $A \cap B$ [1]

(ii) $A \cup C$ [1]

(iii) $A' \cap C$ [1]

(iv) $(D \cup B)'$ [1]

(v) Write down a set E such that $E \subset D$. [1]

8 - (0606-S 2016-Paper 1/2-Q1) - SETS

(a) The universal set \mathcal{U} is the set of real numbers and sets X, Y and Z are such that

$$X = \{\text{integer multiples of } 5\},$$

$$Y = \{\text{integer multiples of } 10\},$$

$$Z = \{\pi, \sqrt{2}, e\}.$$

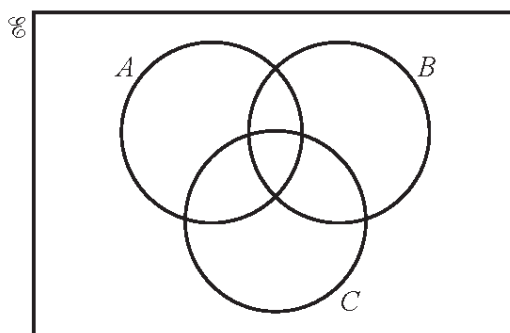
Use set notation to complete the two statements below.

$$Y \dots\dots\dots X$$

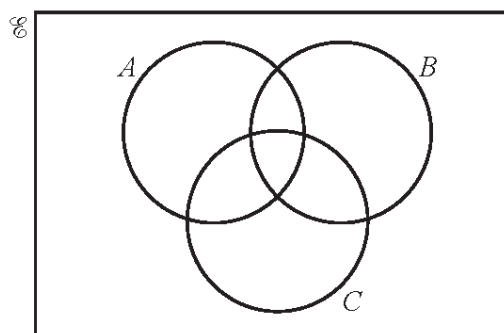
$$Y \cap Z = \dots\dots\dots$$

[2]

(b) On each of the Venn diagrams below, shade the region indicated.



$$(A' \cap B) \cup C$$



$$A' \cap (B \cup C)$$

[2]

9 - (0606-W 2016-Paper 1/1-Q1) - SETS

(a) Sets \mathcal{E} , A and B are such that

$$n(\mathcal{E}) = 26, n(A \cap B') = 7, n(A \cap B) = 3 \text{ and } n(B) = 15.$$

Using a Venn diagram, or otherwise, find

(i) $n(A)$, [1]

(ii) $n(A \cup B)$, [1]

(iii) $n(A \cup B)'$. [1]

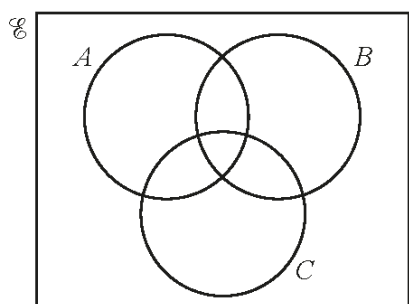
(b) It is given that $\mathcal{E} = \{x : 0 < x < 30\}$, $P = \{\text{multiples of } 5\}$, $Q = \{\text{multiples of } 6\}$ and $R = \{\text{multiples of } 2\}$. Use set notation to complete the following statements.

(i) $Q \dots\dots\dots R$, [1]

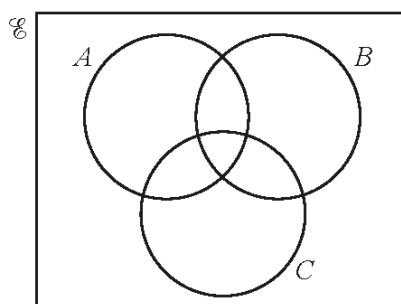
(ii) $P \cap Q = \dots\dots\dots$ [1]

10 - (0606-S 2017-Paper 1/2-Q1) - SETS

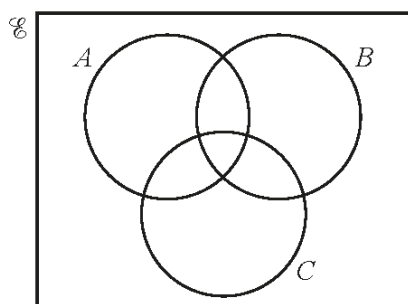
On each of the Venn diagrams below, shade the region which represents the given set.



$$(A \cup B) \cap C$$



$$(A \cap B) \cup C$$

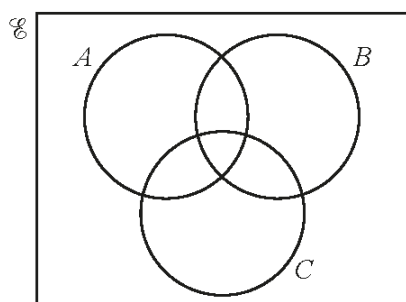


$$(A' \cap B') \cap C$$

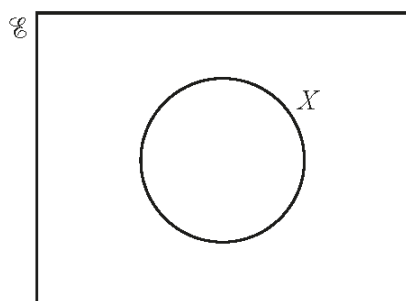
[3]

11 - (0606-S 2017-Paper 1/3-Q1) - SETS

- (a) On the Venn diagram below, shade the region which represents $(A \cap B') \cup (C \cap B')$. [1]



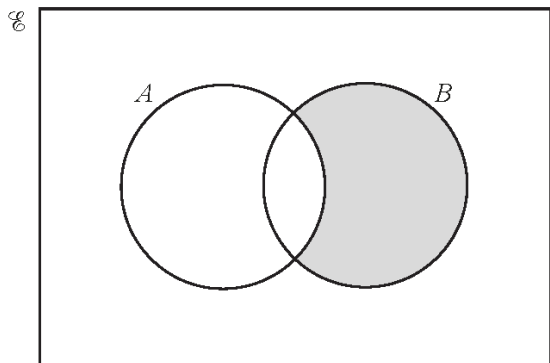
- (b) Complete the Venn diagram below to show the sets Y and Z such that $Z \subset X \subset Y$. [1]



12 - (0606-W 2017-Paper 1/1-Q1) - SETS

Express in set notation the shaded regions shown in the Venn diagrams below.

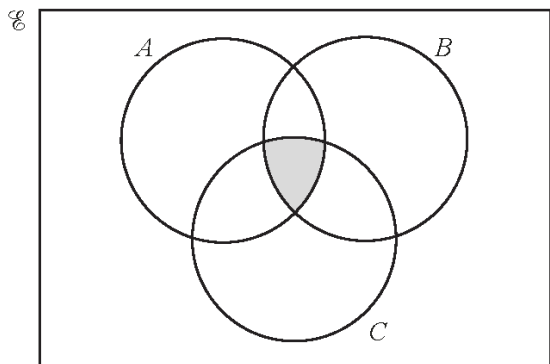
(i)



.....

[1]

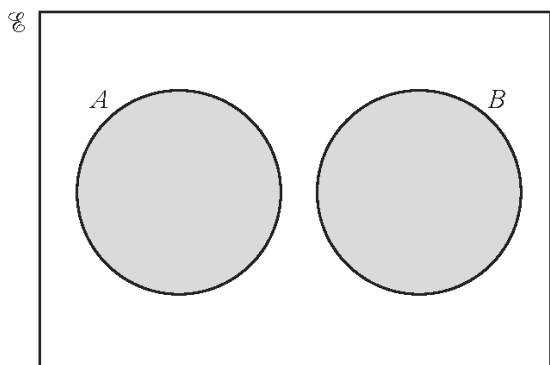
(ii)



.....

[1]

(iii)



.....

[1]

13 - (0606-W 2017-Paper 1/2-Q1) - SETS

- (i) On the Venn diagram below, draw sets X and Y such that $n(X \cap Y) = 0$.



[1]

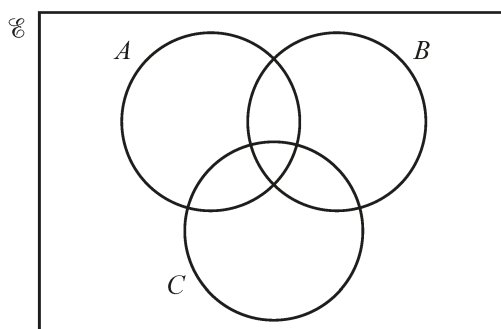
- (ii) On the Venn diagram below, draw sets A , B and C such that $C \subset (A \cup B)'$.



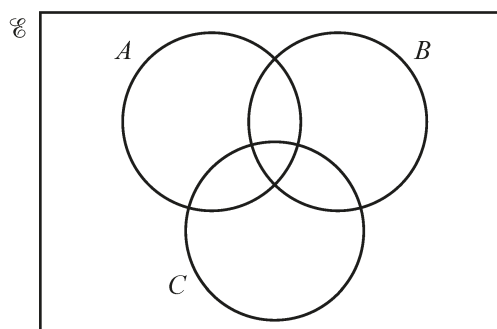
[2]

14 - (0606-S 2019-Paper 1/1-Q1) - SETS

(a) On the Venn diagrams below, shade the region indicated.



$$(A \cap B) \cup C$$

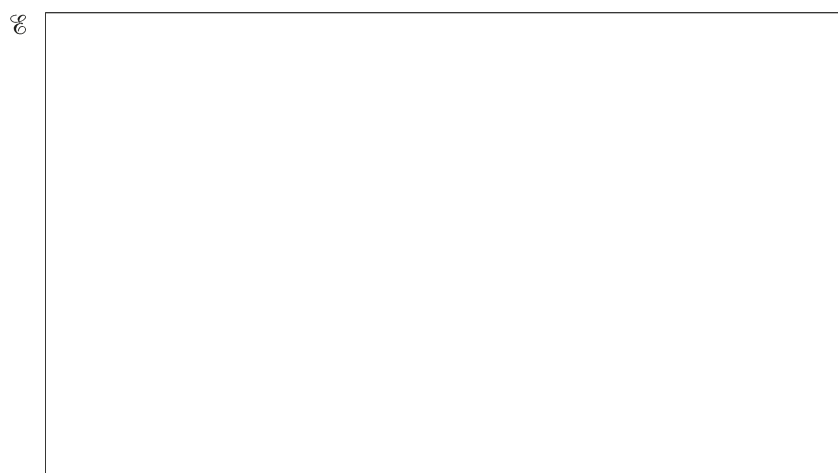


$$(A' \cup B) \cap C$$

[2]

(b) On the Venn diagram below, draw sets P , Q and R such that

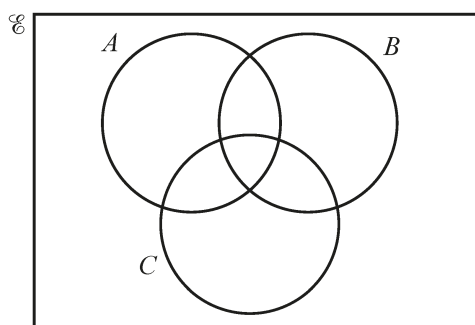
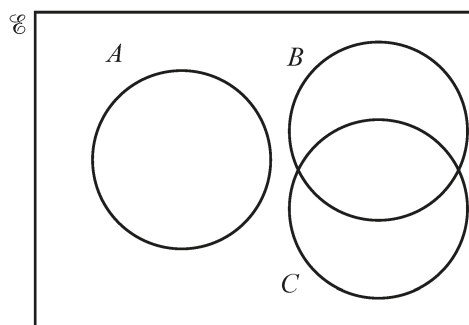
$$P \subset R, Q \subset R \text{ and } P \cap Q = \emptyset.$$



[2]

15 - (0606-S 2019-Paper 1/2-Q1) - SETS

(a) On the Venn diagrams below, shade the region indicated.

 $A' \cap B' \cap C'$  $A \cup (B \cap C)$

[2]

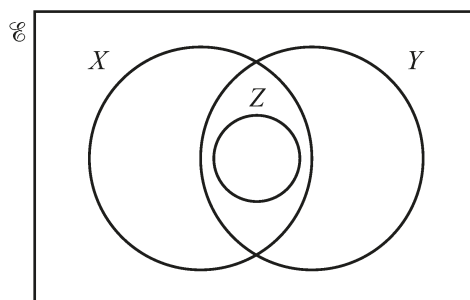
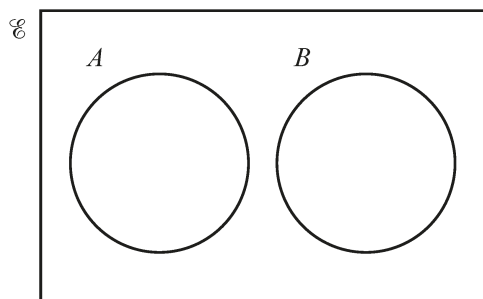
- (b) $\mathcal{U} = \{x : 0^\circ \leq x \leq 360^\circ\}$
 $P = \{x : \cos 2x = 0.5\}$
 $Q = \{x : \sin x = 0.5\}$

Find $P \cap Q$.

[3]

16 - (0606-S 2019-Paper 1/3-Q1) - SETS

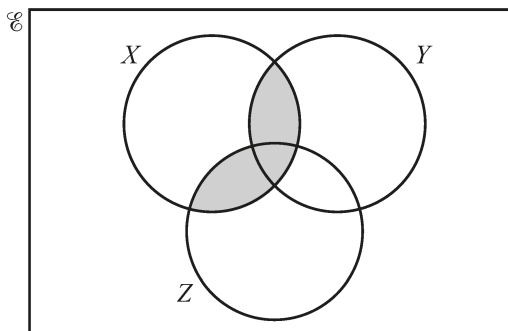
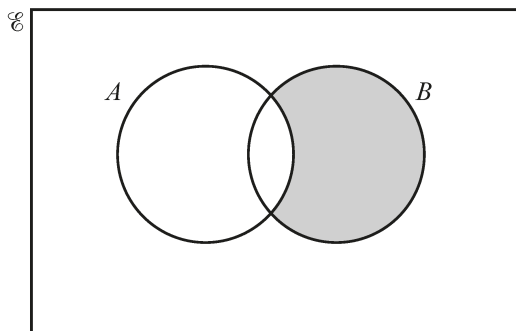
Describe, using set notation, the relationship between the sets shown in each of the Venn diagrams below.



[3]

17 - (0606-W 2019-Paper 1/1-Q1) - SETS

Using set notation, describe the regions shaded on the Venn diagrams below.



..... [2]

18 - (0606-W 2019-Paper 1/3-Q1) - SETS

In a group of 145 students, the numbers studying mathematics, physics and chemistry are given below. All students study at least one of the three subjects.

x students study all 3 subjects

24 students study both mathematics and chemistry

23 students study both physics and chemistry

28 students study both mathematics and physics

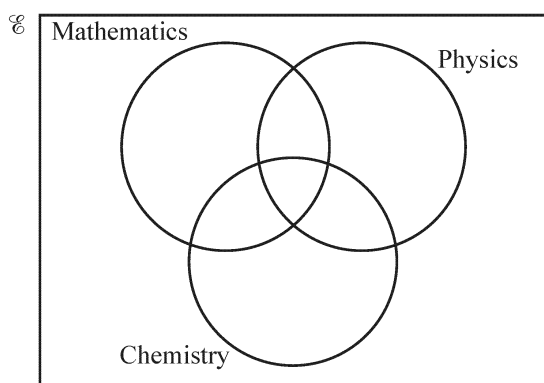
50 students study chemistry

75 students study physics

80 students study mathematics

(i) Using the Venn diagram, find the value of x .

[4]



(ii) Find the number of students who study mathematics only.

[1]