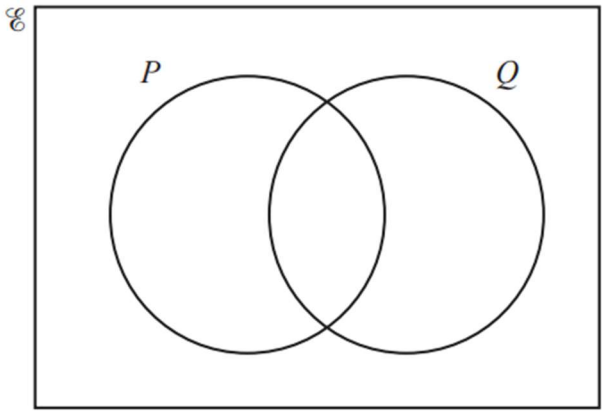
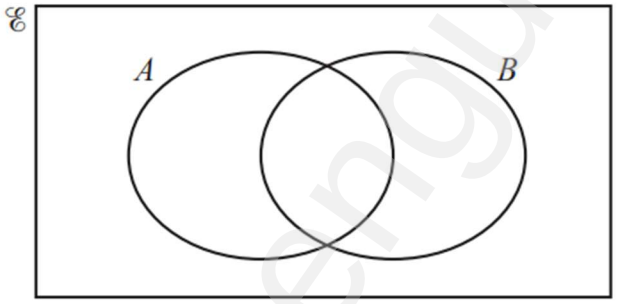
16 x is an integer.

$\mathscr{E} = \{x : 1 \leqslant x \leqslant 10\}$
$P = \{x : x \text{ is an even number}\}$
$Q = \{x : x \text{ is a multiple of } 5\}$



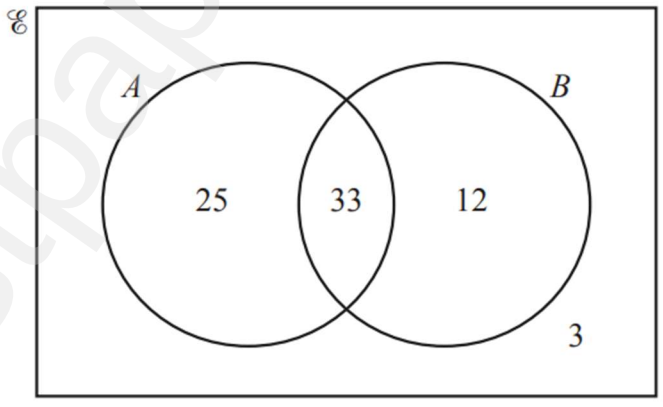
Complete the Venn diagram. [2]

3



On the Venn diagram, shade the region $A \cap B$. [1]

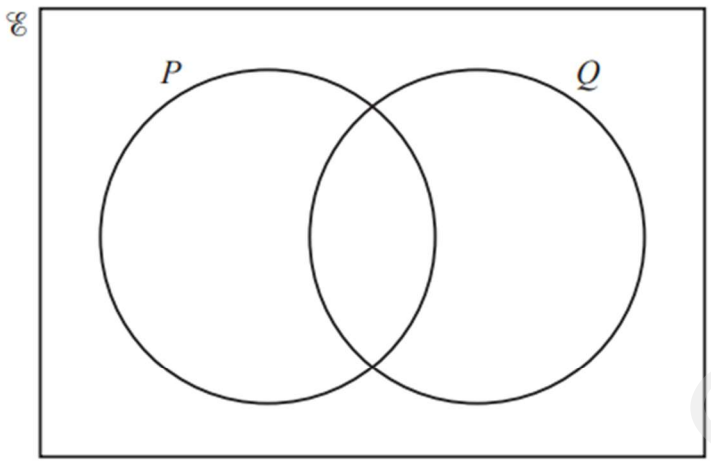
10



Find $\text{n}(A \cap B)'$.

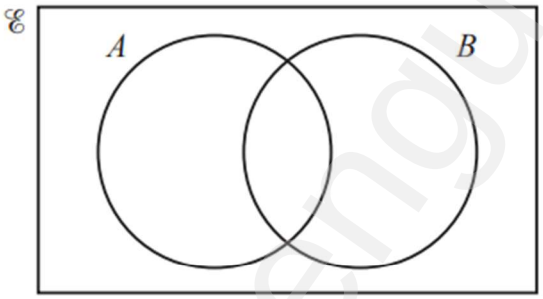
..... [1]

11 **(a)** $\mathscr{E} = \{ a, b, e, g, l, m, o, r, t, y \}$
$P = \{ a, b, e, g, l, r \}$
$Q = \{ e, g, m, o, r, t, y \}$



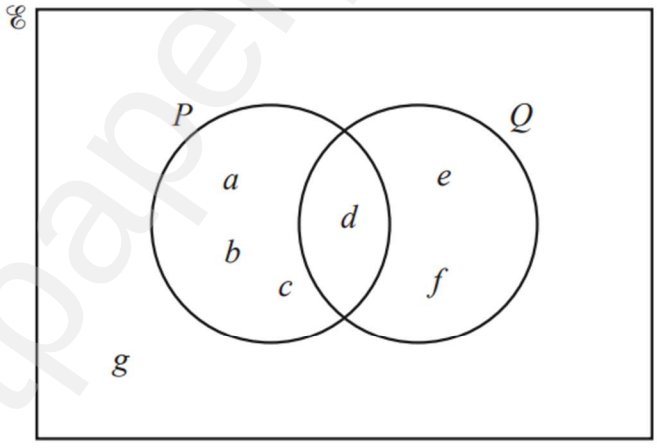
Complete the Venn diagram. [2]

(b)



Shade the region $A' \cap B$. [1]

7



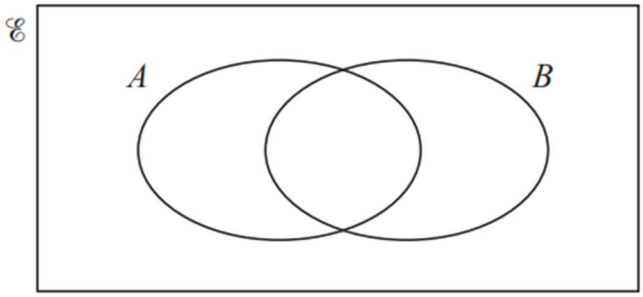
The Venn diagram shows the elements of the sets $\mathscr{E}$, P and Q.

Complete the statements.

(a) $P = \{$ ..... $\}$ [1]

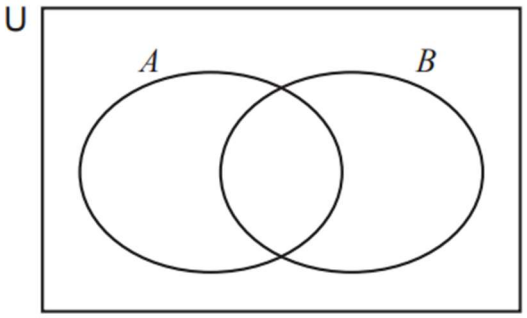
(b) $n(P \cup Q) =$ ..... [1]

7

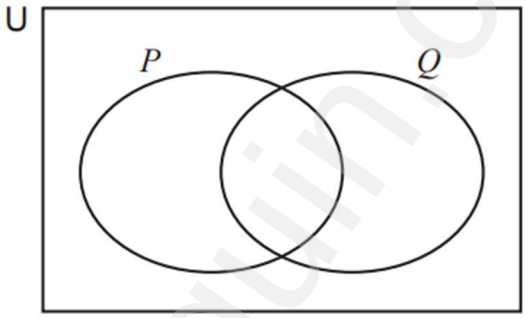


On the Venn diagram, shade the region $A \cap B$. [1]

9 In each Venn diagram, shade the given set.



$A \cup B$

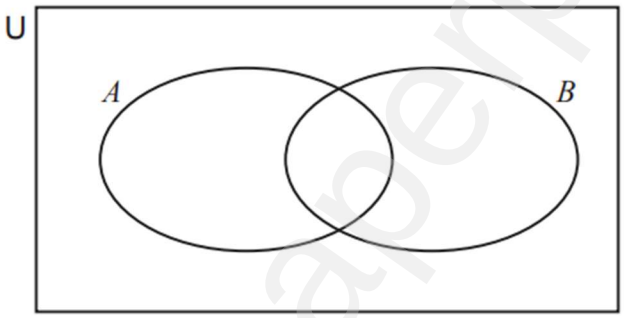


$(P \cap Q)'$

[2]

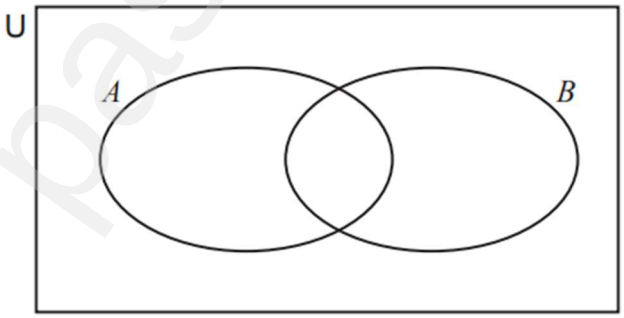
13 Shade the given sets in each of these Venn diagrams.

(a) $A' \cup B'$



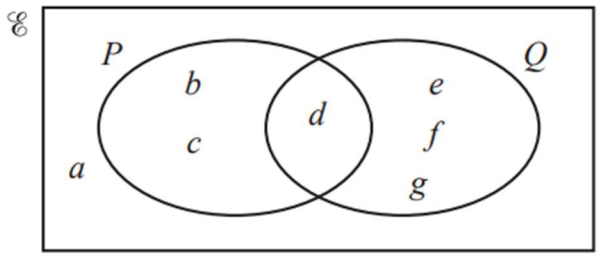
[1]

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



[1]

14



(a) Complete the statement.

$P \cup Q = \{$ ..... $\}$ [1]

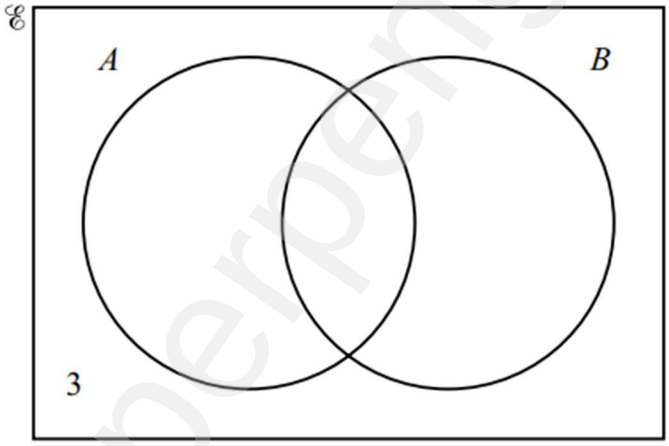
(b) Find $n(Q)$.

..... [1]

(c) Find $n(P' \cap Q)$.

..... [1]

11



$n(\mathscr{E}) = 20$, $n(A \cup B)' = 3$, $n(A) = 10$ and $n(B) = 13$.
The Venn diagram shows some of this information.

Find

(a) $n(A \cap B)$

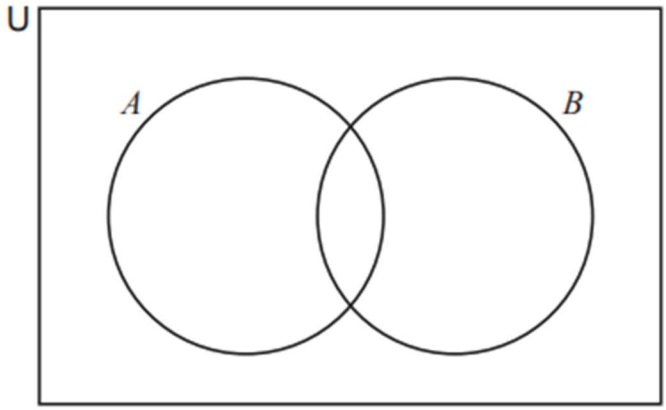
..... [2]

(b) $n(A' \cap B)$.

..... [1]

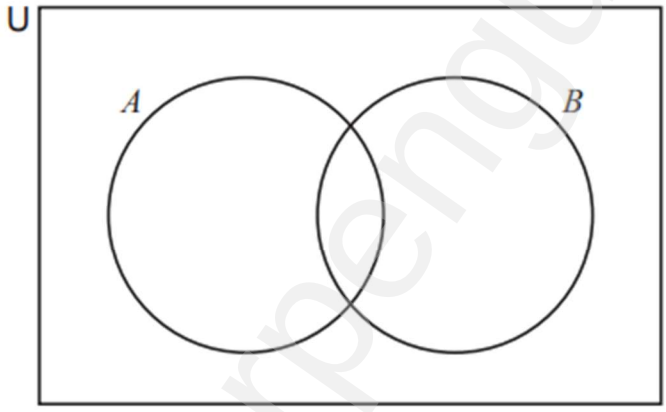
13 Shade the given region on the Venn diagram.

(a) $A' \cap B'$



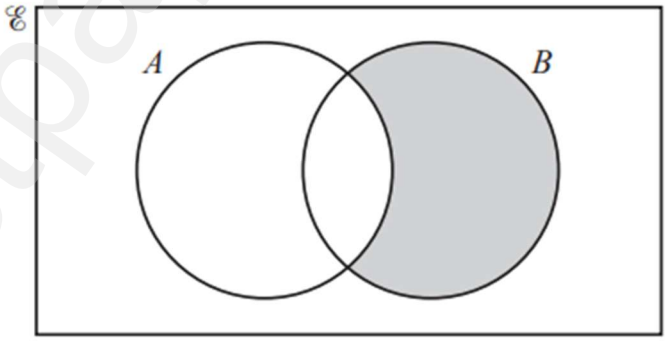
[1]

(b) $(A \cup B')'$



[1]

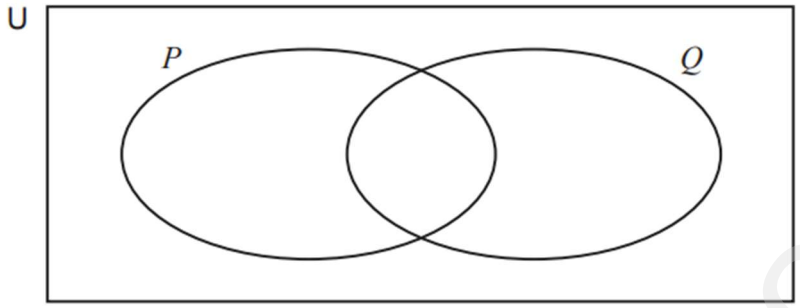
13



Use set notation to describe the shaded region.

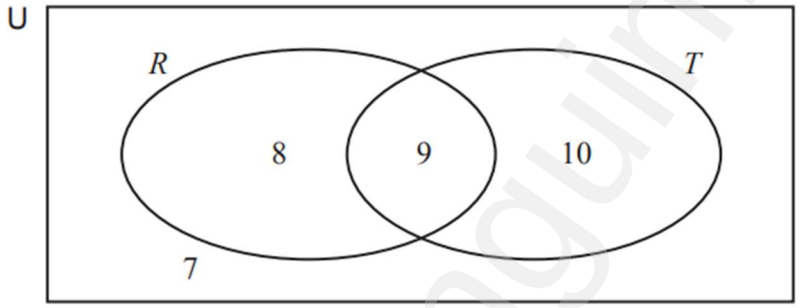
..... [1]

10 **(a)** Shade the region $(P \cup Q)'$.



[1]

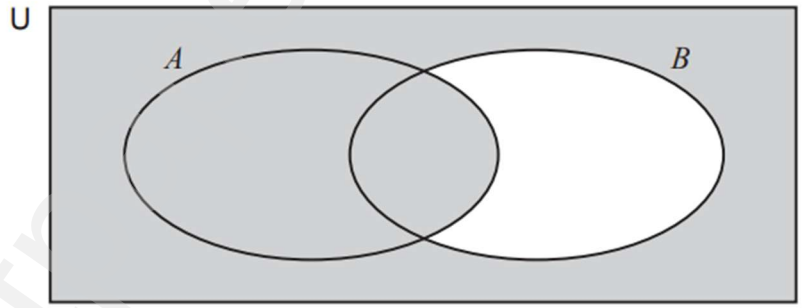
(b) The Venn diagram shows the number of elements in each region.



Find $n(R \cap T')$.

..... [1]

(c) Use set notation to describe the shaded region.



..... [1]

7 $\mathscr{E} = \{x: x \text{ is an integer and } 1 \leqslant x \leqslant 12\}$
$E = \{\text{even numbers}\}$
$M = \{\text{multiples of 3}\}$

(a) Find $n(M)$.

..... [1]

(b) Write down the set $E \cap M$.

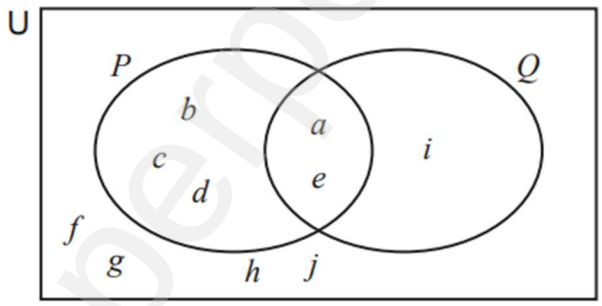
{ ..... } [1]

(c) $y \in (E \cup M)'$

Write down a possible value of y.

..... [1]

9



$U = \{a, b, c, d, e, f, g, h, i, j\}$

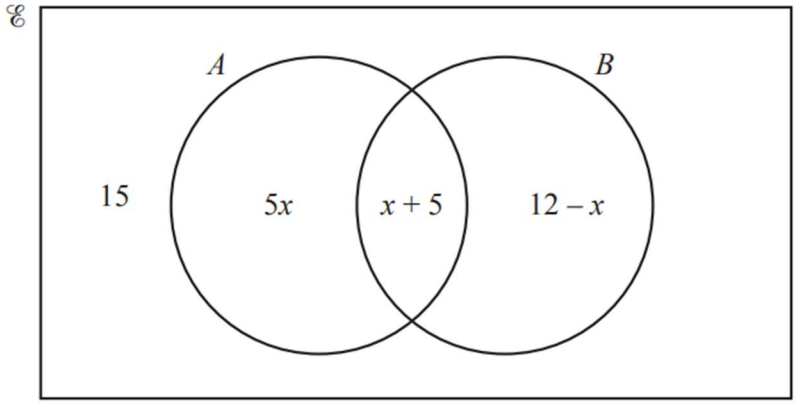
Complete each statement.

(a) $(P \cup Q)' = \{.....\}$ [1]

(b) $\{a, e\} = P$.....Q [1]

(c) $n(P' \cup Q) =$ ..... [1]

14 (a)

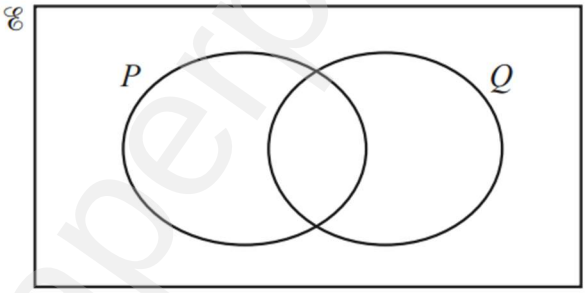


The Venn diagram shows information about the number of elements in sets A, B and $\mathscr{E}$.
$n(\mathscr{E}) = 52$.

Find $n(A \cap B)$.

..... [3]

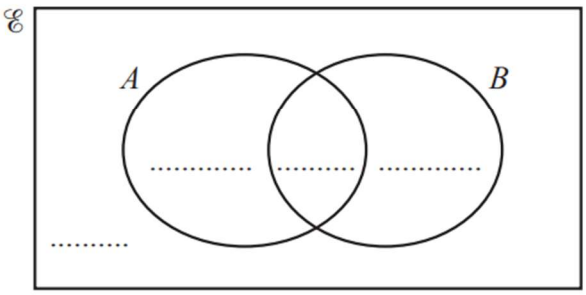
15 (a) On the Venn diagram, shade the region $P \cup Q'$.



[1]

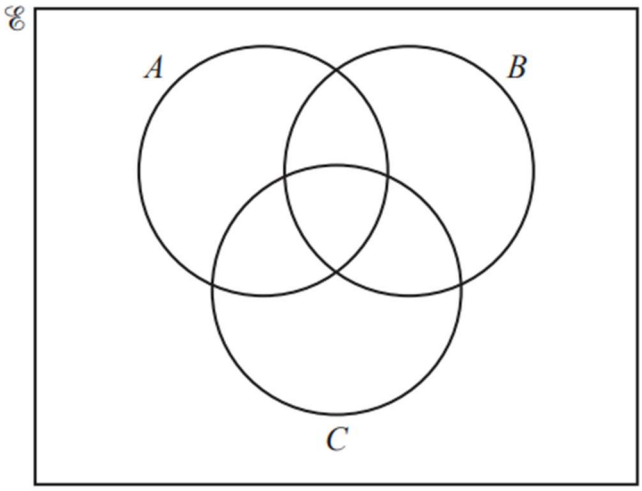
(b) $n(\mathscr{E}) = 20$ $n(A \cup B)' = 1$ $n(A) = 12$ $n(B) = 10$

Complete the Venn diagram.



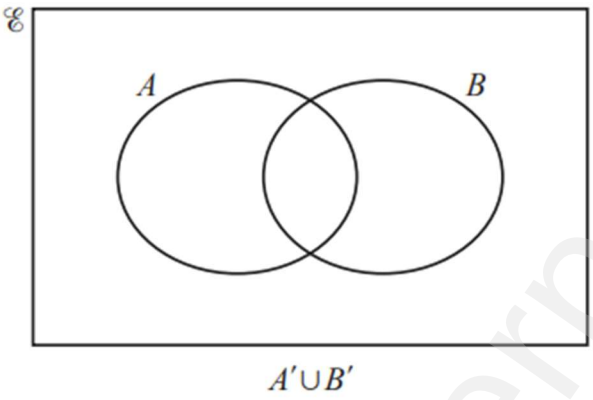
[2]

20 In the Venn diagram, shade the region $A \cap B' \cap C$.

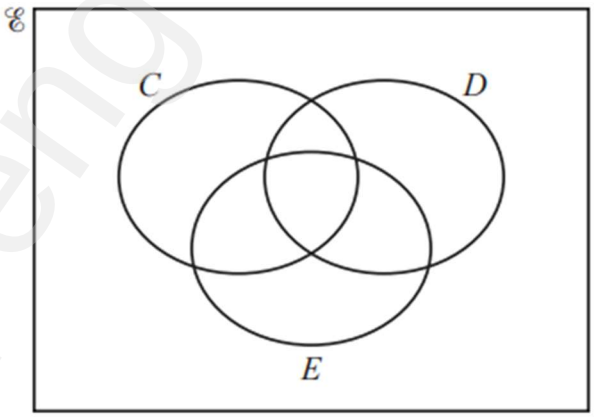


[1]

19 In these Venn diagrams, shade the given regions.



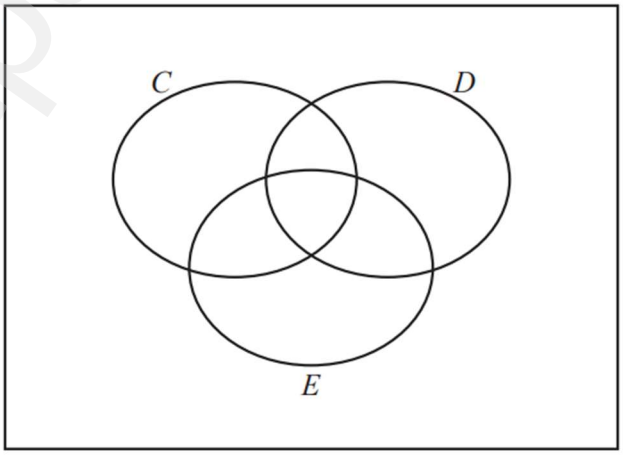
$A' \cup B'$



$(C \cup D) \cap E'$

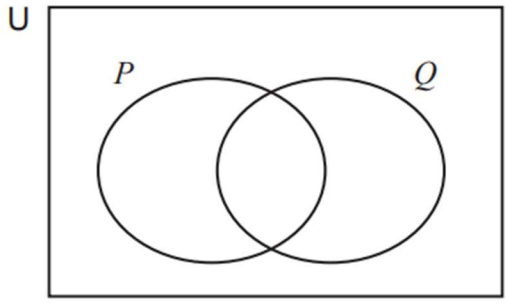
[2]

(b) In this Venn diagram, shade the region $C \cap D \cap E$.



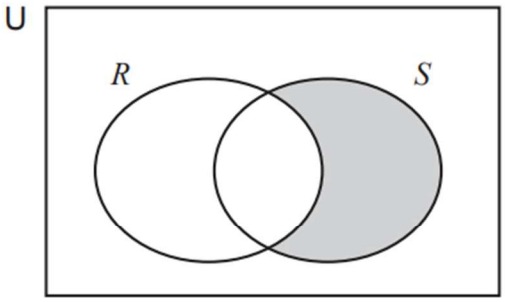
[1]

11 **(a)** Shade $P \cup Q$.



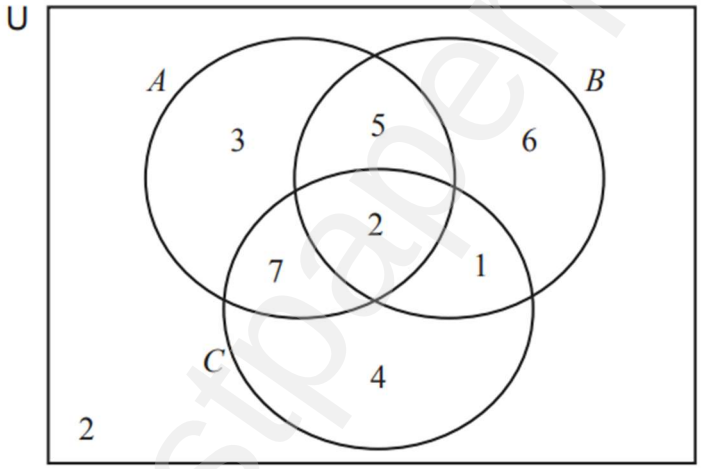
[1]

(b) Describe the shaded area using set notation.



..... [1]

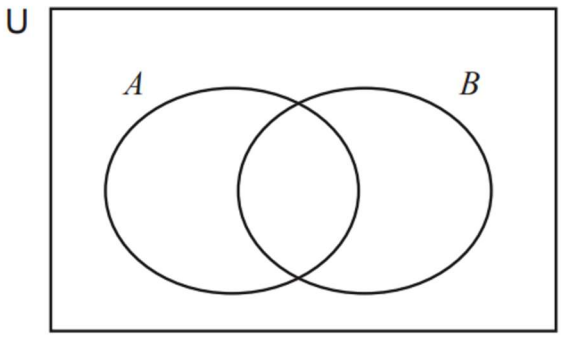
(c) The Venn diagram shows the number of elements in each subset.



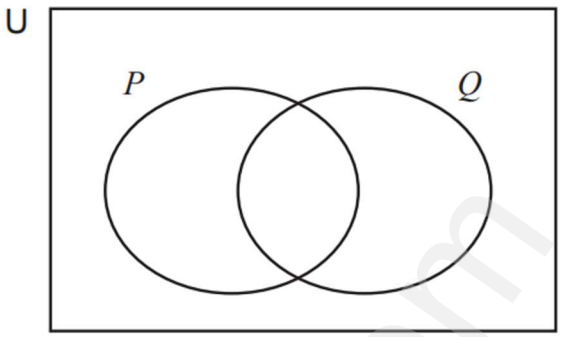
Find $\mathrm{n}((B' \cap C) \cap A)$.

..... [1]

9 On the Venn diagrams, shade the given subsets.



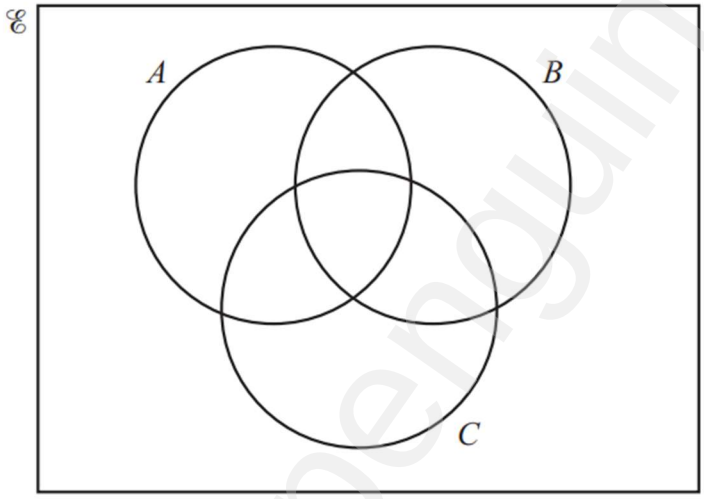
$A \cup B$



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

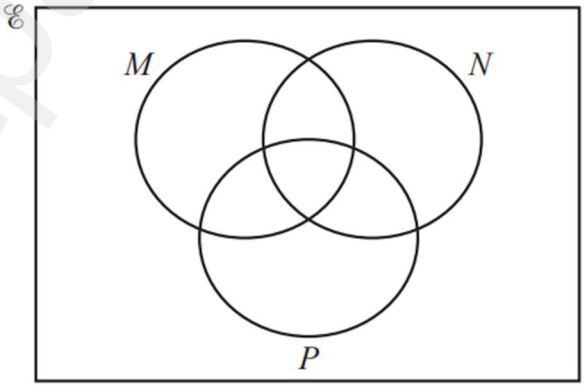
[2]

19



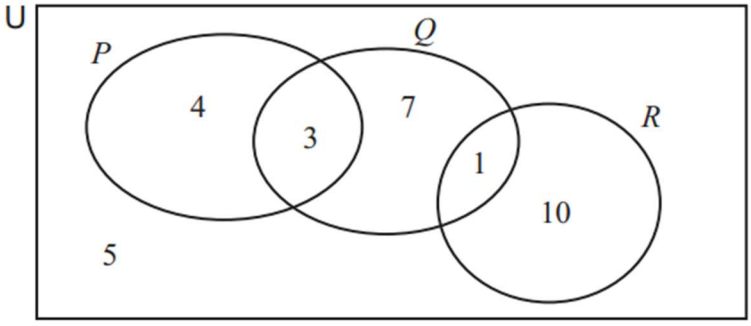
In the Venn diagram, shade the region $(A \cup B \cup C)'$. [1]

19 In this Venn diagram, shade the region $M' \cup N \cup P$.



[1]

13



The Venn diagram shows the number of elements in each subset.

(a) Use set notation to complete the statement.

$P \cap Q \cap R =$ ..... [1]

(b) Find $\mathrm{n}\big((Q \cup R) \cap P'\big)$.

..... [1]

(c) Shade the subset $(P \cap Q') \cup R$. [1]

6 $\mathscr{E} = \{x: 1 \leqslant x \leqslant 20\}$
$E = \{\text{even numbers}\}$
$M = \{\text{multiples of 5}\}$

(a) Find $\mathrm{n}(M)$.

..... [1]

(b) Find the elements in the set $E \cap M$.

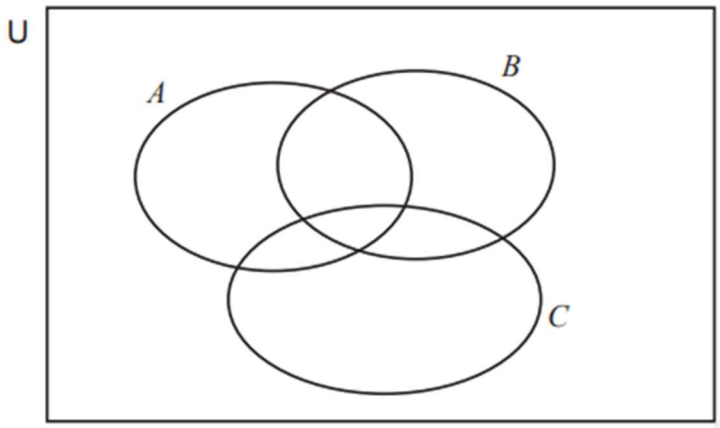
..... [1]

(c) $y \notin E$.

Write down a possible value of y.

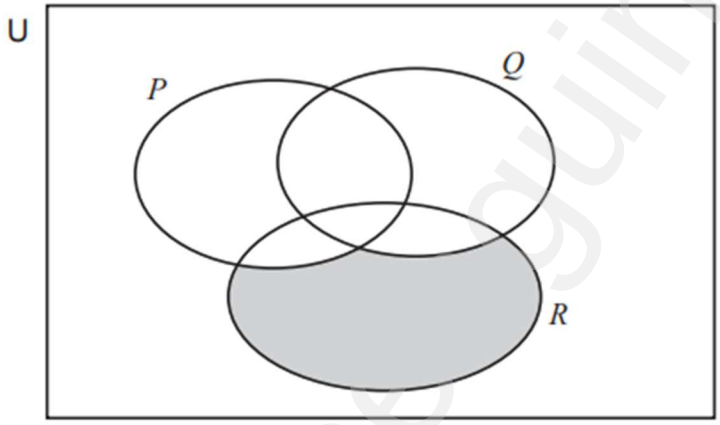
..... [1]

15 **(a)** On the Venn Diagram, shade the set $A \cap B \cap C'$.



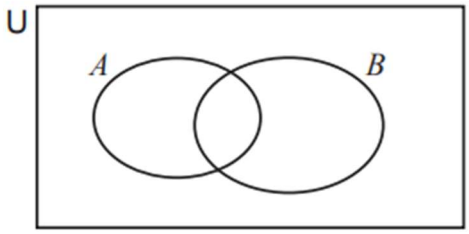
[1]

(b) Use set notation to describe the shaded region.

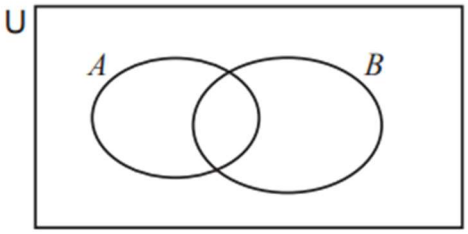


..... [1]

11 **(a)** In each Venn diagram, shade the given set.



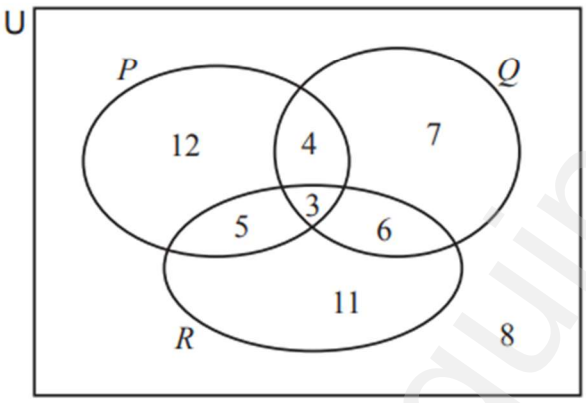
$A \cup B$



$(A \cap B)'$

[2]

(b) In this Venn diagram, the number of elements in each of the subsets is shown.



Find.

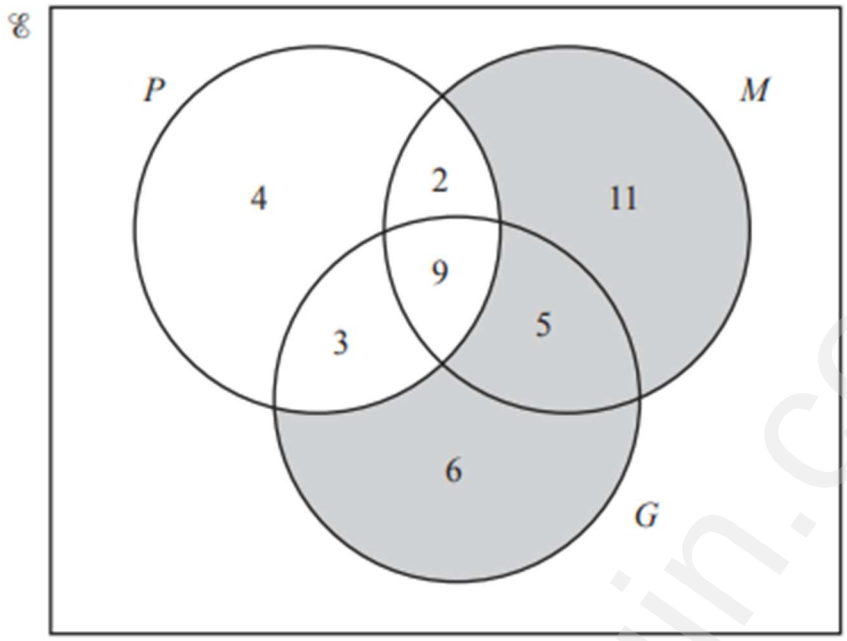
(i) $n(P \cup (Q \cap R))$

..... [1]

(ii) $n((P \cup Q) \cap R')$

..... [1]

16 The Venn diagram shows the number of students in a class of 40 who study physics (P), mathematics (M) and geography (G).



(a) Use set notation to describe the shaded region.

..... [1]

(b) Find $\mathrm{n}((P \cap G) \cup M')$.

..... [1]

(c) A student is chosen at random from those studying geography.

Find the probability that this student also studies physics or mathematics but not both.

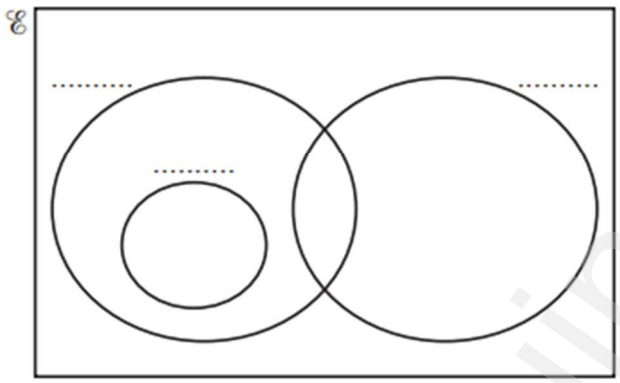
..... [2]

12 **(a)** $\mathscr{E}$ = {integers greater than 2}
A = {prime numbers}
B = {odd numbers}
C = {square numbers}

(i) Describe the type of numbers in the set $B' \cap C$.

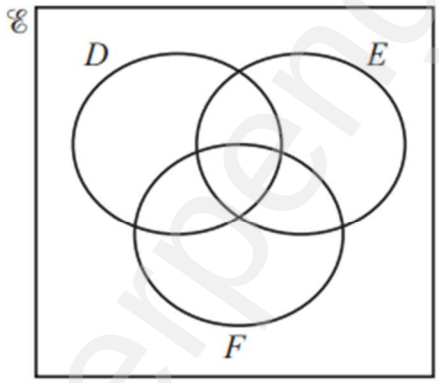
..... [1]

(ii) Complete the set labels on the Venn diagram.



[1]

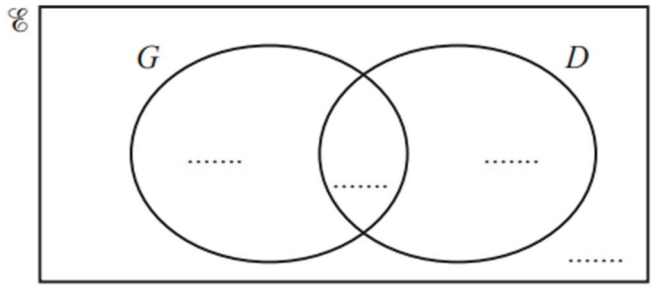
(b)



Shade the region $D' \cup (E \cap F)'$. [1]

19 **(a)** In a class of 40 students:

- 28 wear glasses (G)
- 13 have driving lessons (D)
- 4 do not wear glasses and do not have driving lessons.

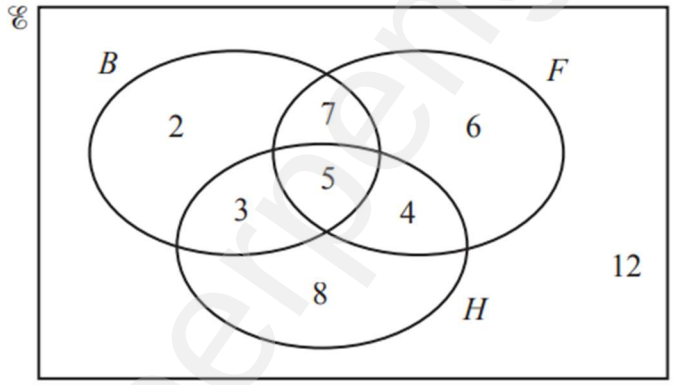


(i) Complete the Venn diagram. [2]

(ii) Use set notation to describe the region that contains a total of 32 students.

..... [1]

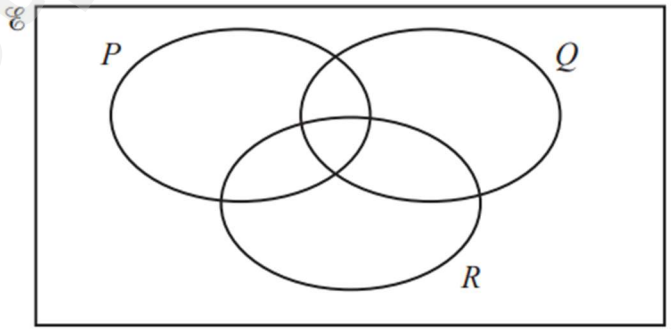
(b) This Venn diagram shows information about the number of students who play basketball (B), football (F) and hockey (H).



Find $n((B \cup F) \cap H')$.

..... [1]

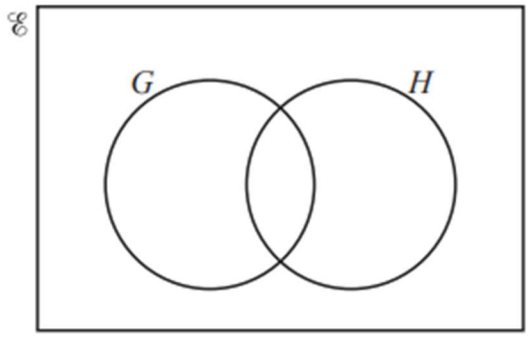
(c)



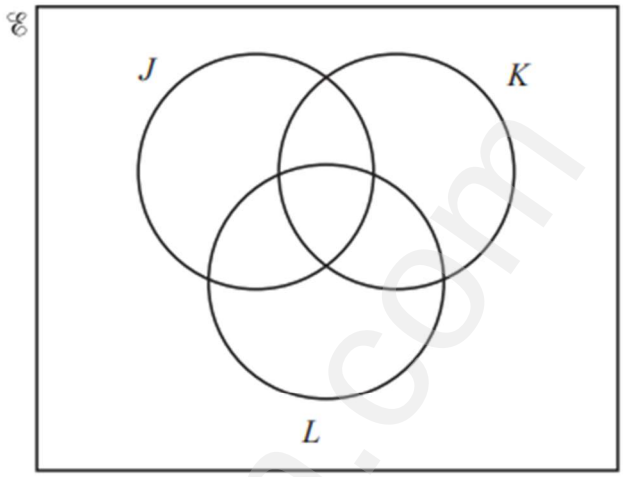
Shade the region $P \cup (Q \cap R)'$. [1]

16 **(a)** Shade the region indicated in each Venn diagram.

$G \cap H'$

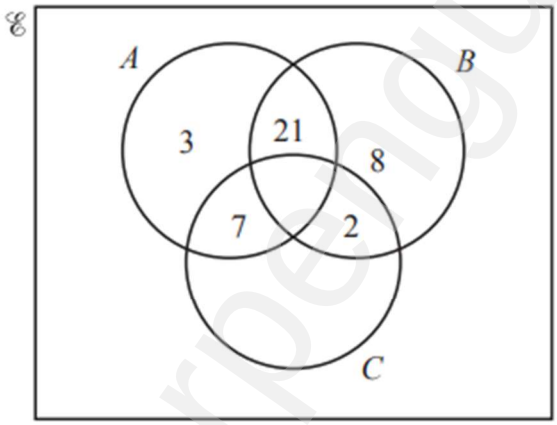


$(J \cup K') \cap L$



[2]

(b) The Venn diagram shows some information about the number of elements in sets A, B, C and $\mathscr{E}$.

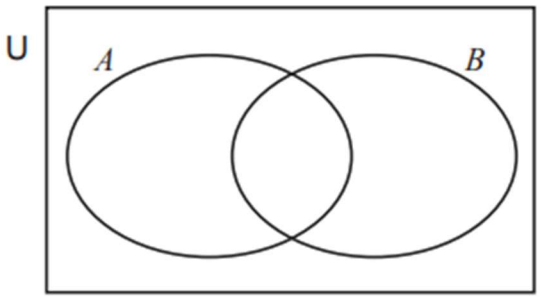


Given the following information, complete the Venn diagram.

$n(A \cap B \cap C) = 1$
$n(A \cup B \cup C)' = 17$
$n(C) = 42$

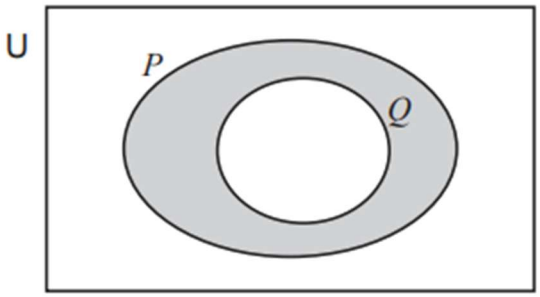
[2]

11 **(a)** On the Venn diagram, shade $(A \cup B)'$.



[1]

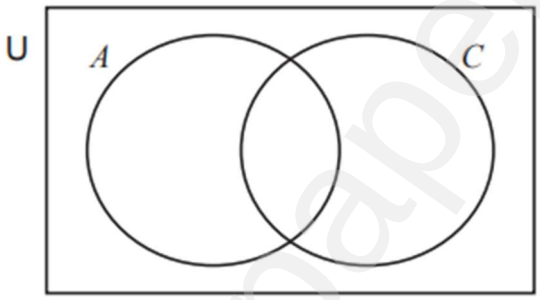
(b) Use set notation to describe the shaded region.



..... [1]

(c) There are 35 students in a class.
The students are asked if they like athletics (A) or cricket (C).
$n(A) = 15$
$n(C) = 14$
$n(A \cap C) = 5$

Complete the Venn diagram below by writing the number of elements in each subset.



[2]