



EXAM PAPERS PRACTICE

Sets & Venn Diagrams

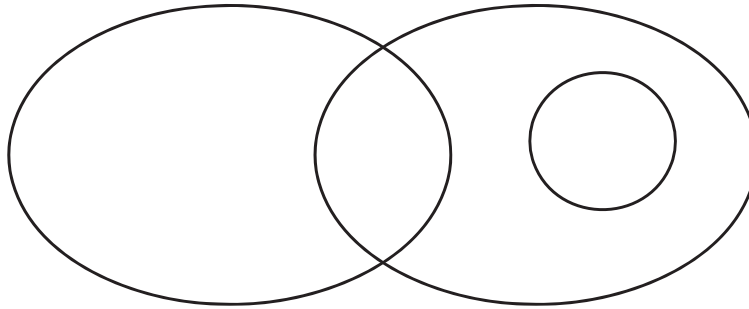
Question Paper



Question 1

$Q = \{2, 4, 6, 8, 10\}$ and $R = \{5, 10, 15, 20\}$.
 $15 \in P$, $n(P) = 1$ and $P \cap Q = \emptyset$.

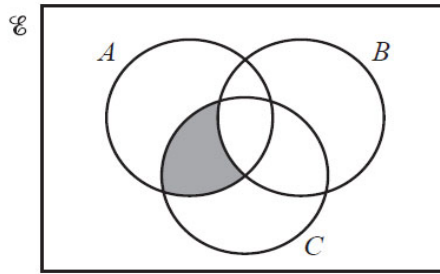
Label each set and complete the Venn diagram to show this information.



[3]



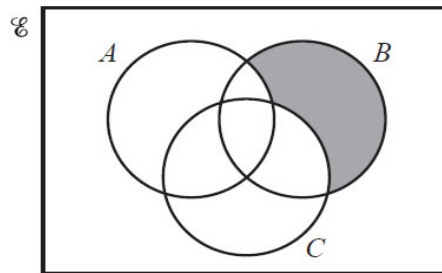
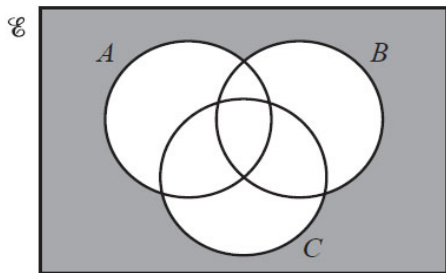
Question 2



The shaded area in the diagram shows the set $(A \cap C) \cap B'$.

[2]

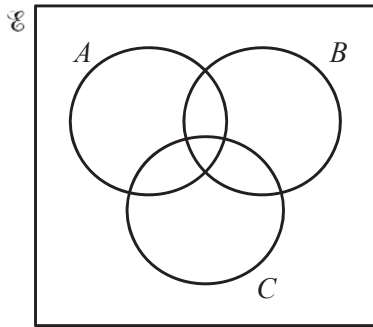
Write down the set shown by the shaded area in each diagram below.



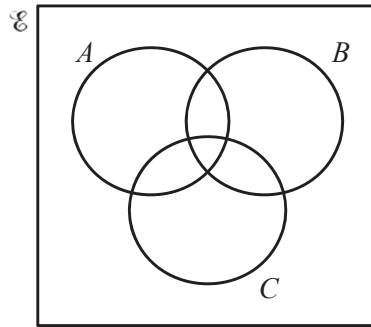


Question 3

Shade the required regions in the Venn diagrams below.



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



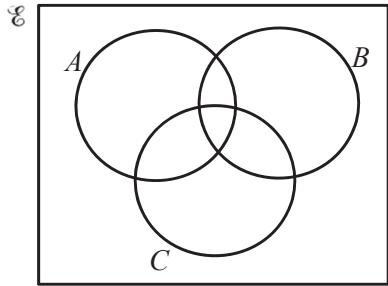
$$(A \cap B) \cup C$$

[2]

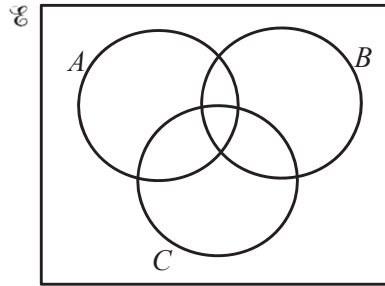


Question 4

Shade the region required in each Venn Diagram.



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



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

[2]

Question 5

$$E = \{1,2,3,4,5,6,7,9,11,16\}$$

$$P = \{2,3,5,7,11\}$$

$$S = \{1,4,9,16\}$$

$$M = \{3,6,9\}$$

(a) Draw a Venn diagram to show this information.

[2]

(b) Write down the value of $n(M' \cap P)$.

[1]

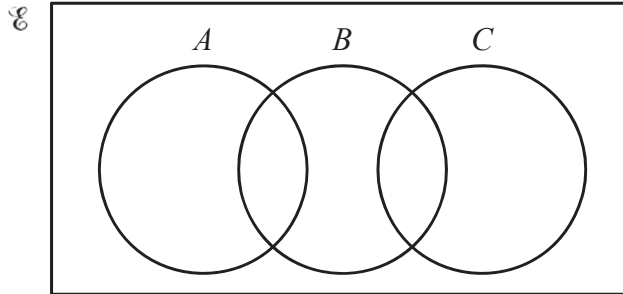


Question 6

On the Venn diagrams shade the regions

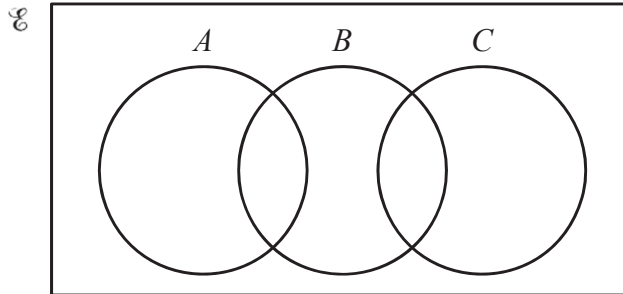
(a) $A' \cap C'$,

[1]



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

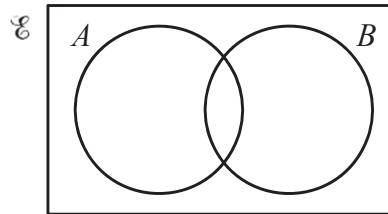
[1]





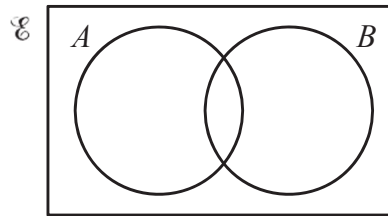
Question 7

(a) Shade the region $A \cap B$.



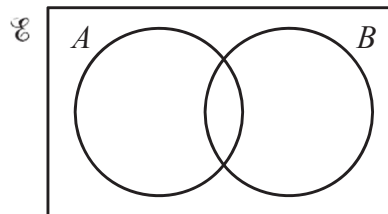
[1]

(b) Shade the region $(A \cup B)'$.



[1]

(c) Shade the complement of set B .

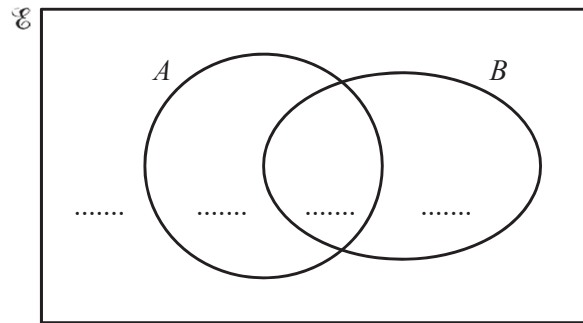


[1]



Question 8

$n(\mathcal{E}) = 21$, $n(A \cup B) = 19$, $n(A \cap B') = 8$ and $n(A) = 12$.
Complete the Venn diagram to show this information.



[3]



Question 9

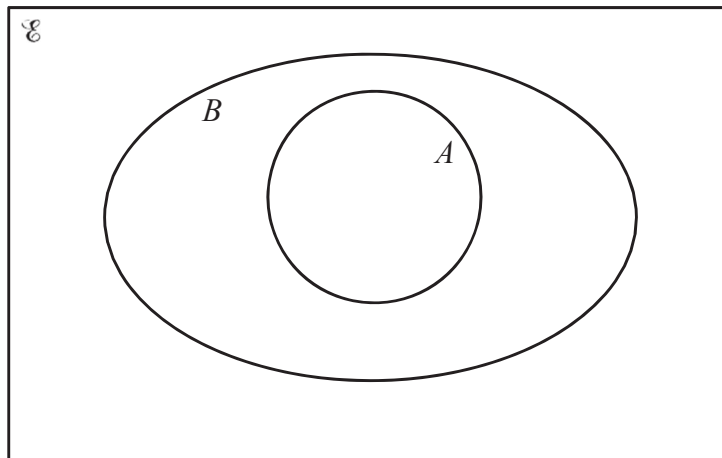
$$\mathcal{E} = \{40, 41, 42, 43, 44, 45, 46, 47, 48, 49\}$$

$$A = \{\text{prime numbers}\}$$

$$B = \{\text{odd numbers}\}$$

(a) Place the 10 numbers in the correct places on the Venn diagram.

[2]



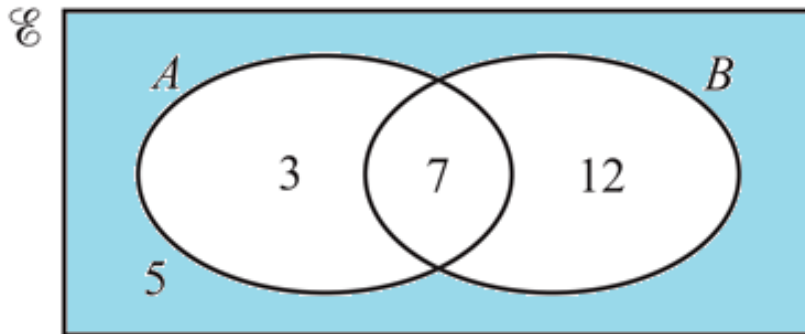
(b) State the value of $n(B \cap A')$.

[1]

Question 10



EXAM PAPERS PRACTICE



The Venn diagram shows the numbers of elements in each region.

(a) Find $n(A \cap B')$.

[1]

(b) An element is chosen at random.

Find the probability that this element is in set B .

[1]

(c) An element is chosen at random from set A .

Find the probability that this element is also a member of set B .

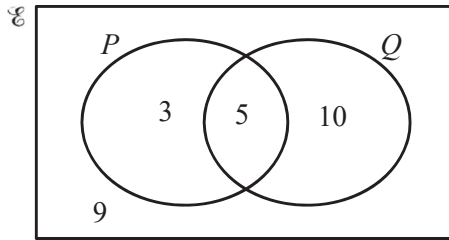
[1]

(d) On the Venn diagram, shade the region $(A \cup B)'$.

[1]



Question 11



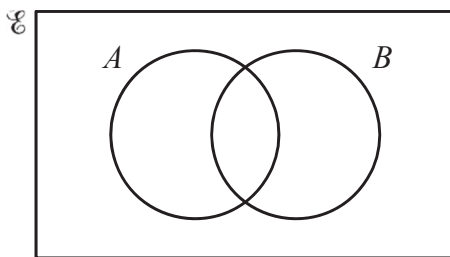
The Venn diagram shows the number of elements in each set.

(a) Find $n(P' \cap Q)$. [1]

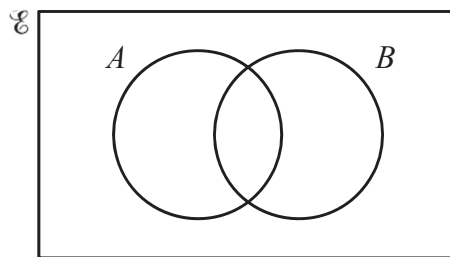
(b) Complete the statement $n(\dots) = 17$. [1]

Question 12

Shade the region required in each Venn diagram. [2]



$(A \cup B)'$



$A' \cap B$



Question 13

The lights and brakes of 30 bicycles are tested.
The table shows the results.

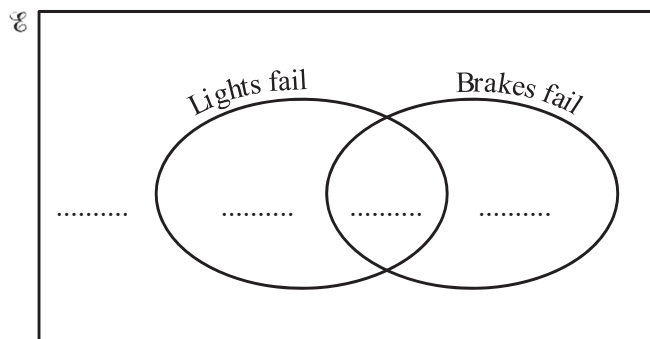
	Lights	Brakes
Fail test	3	9
Pass test	27	21

The lights and brakes both failed on one bicycle only.

$\mathcal{E} = \{30 \text{ bicycles}\}$

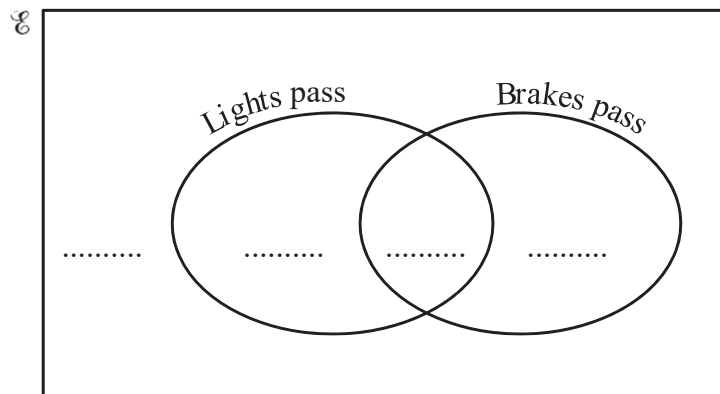
Complete the Venn diagrams.

(a)



[2]

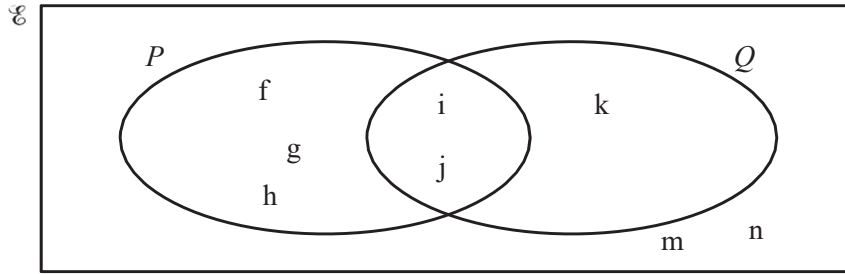
(b)



[2]



Question 14



(a) Use the information in the Venn diagram to complete the following.

(i) $P \cap Q =$ [1]

(ii) $P' \cup Q =$ [1]

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

(b) A letter is chosen at random from the set Q .

Find the probability that it is also in the set P .

Find the probability that it is also in the set P . [1]

(c) On the Venn diagram shade the region $P' \cap Q$. [1]

(d) Use a set notation symbol to complete the statement.

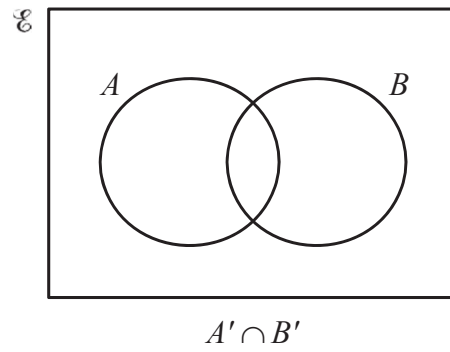
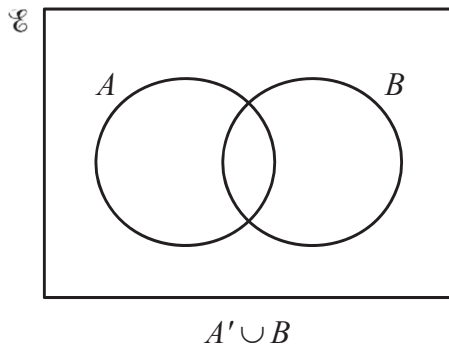
$\{f, g, h\}$ P [1]



Question 15

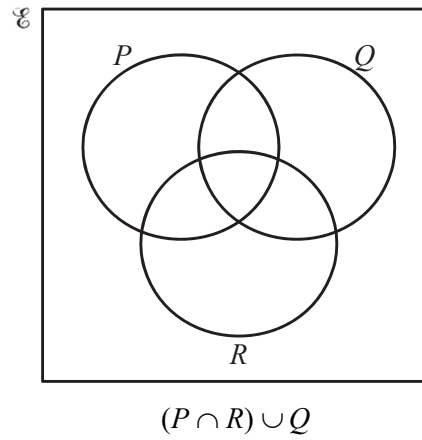
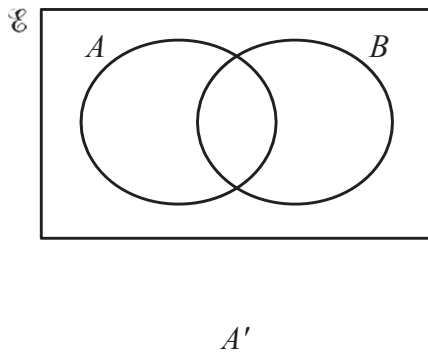
Shade the required region on each Venn diagram.

[2]



Question 16

Shade the required region in each of the Venn diagrams.



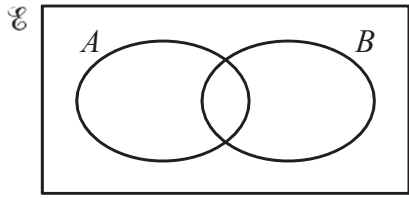
[2]



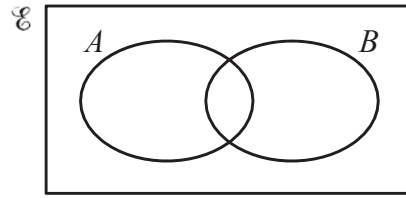
Question 17

Shade the required region on each Venn diagram.

[2]



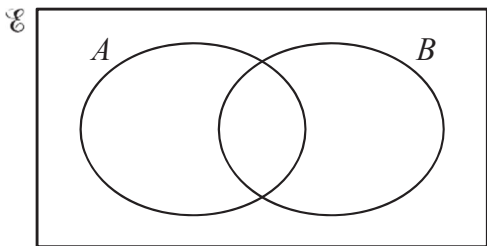
$$A \cup B'$$



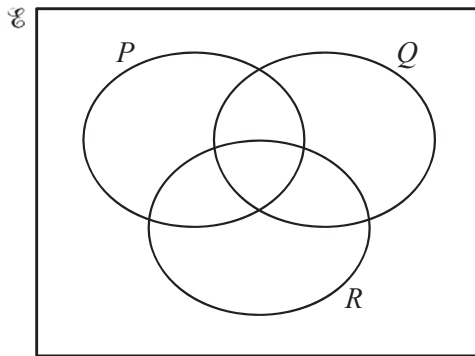
$$(A \cap B)'$$

Question 18

Shade the required region on each Venn diagram.



$$A \cap B'$$



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

[2]