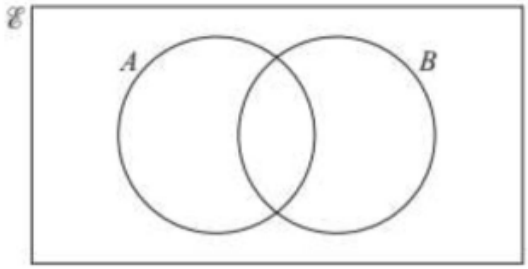
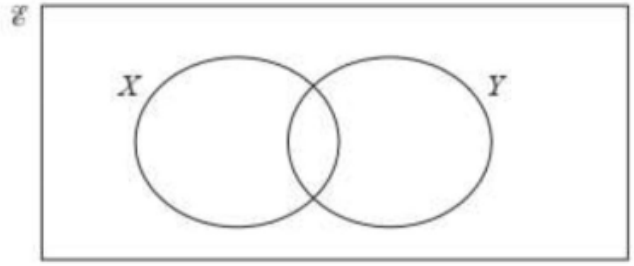
Past Papers Worksheet P2 Sets (Venn Diagrams) IGCSE Mathematics 0580

1. On the Venn diagram, shade A∩B' [1]



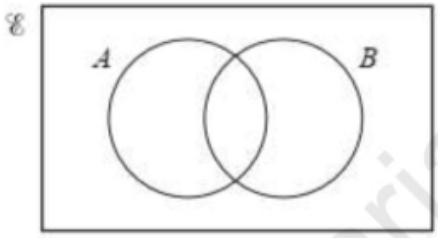
0580/23/M/J/16 Q14 (b)

2. (a) In the Venn diagram, shade X'∩Y [1]



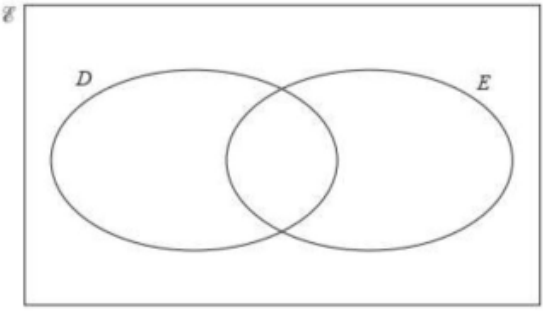
0580/22/M/J/19 Q21 (a)

3. On the Venn diagram, shade the region (A∩B)' [1]



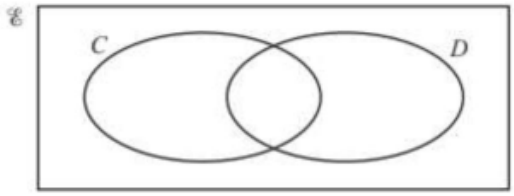
0580/22/O/N/19 Q4)

4. On the Venn diagram below, shade the region D ∪ E' [1]



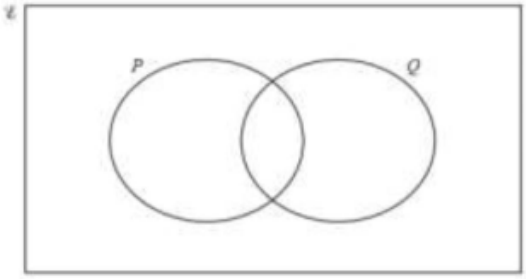
0580/22/M/J/17 Q23 (b)

5. On the Venn diagram below, shade the region C′ ∩ D′. [1]



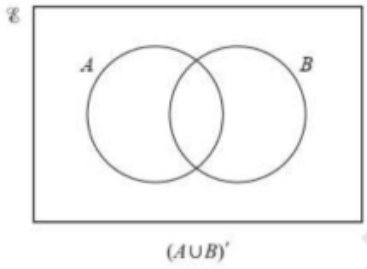
0580/21/O/N/16 Q22)(b)

6. In the Venn diagram below, shade the region (P ∪ Q) ∩ Q′ [1]

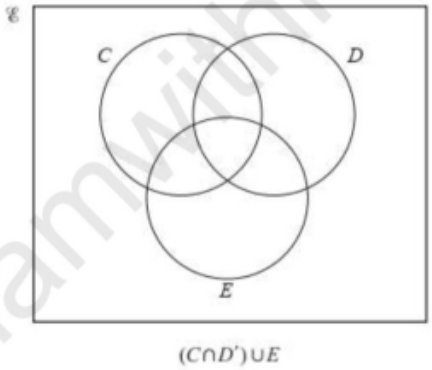


0580/22/F/M/17 Q17 (b)

7. In each Venn diagram, shade the required region. [2]



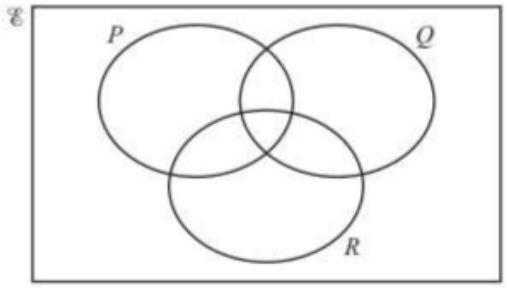
$(A \cup B)'$



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

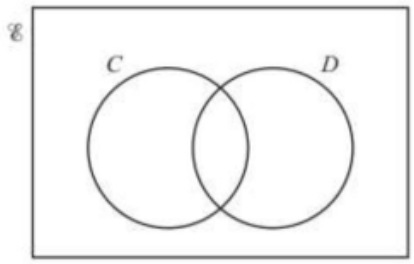
0580/23/O/N/19 Q18 (b)

8. On this Venn diagram, shade the region R ∩ (P ∪ Q)′. [1]

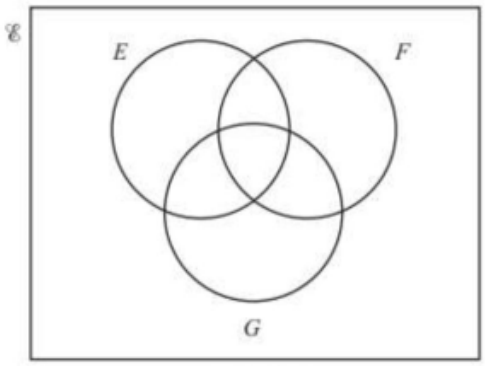


0580/23/M/J/15 Q16) (b)

9. Shade the region in each of the Venn diagrams below. [2]



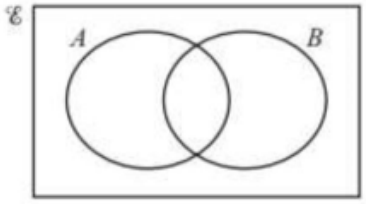
$C' \cup D$



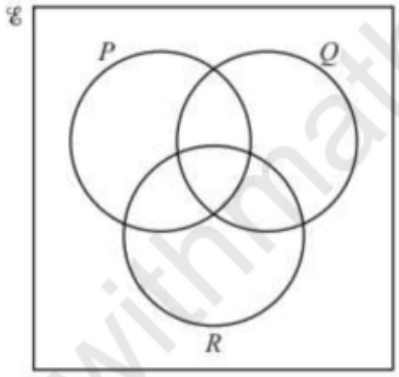
$E \cap F' \cap G$

0580/23/O/N/16 Q20) (b)

10. Shade the required region in each of the Venn diagrams. [2]



A'

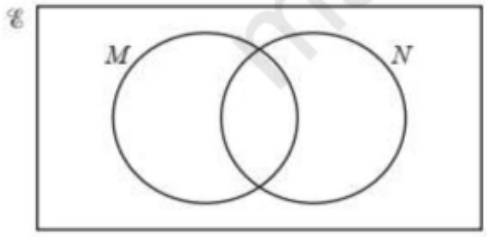


$(P \cap R) \cup Q$

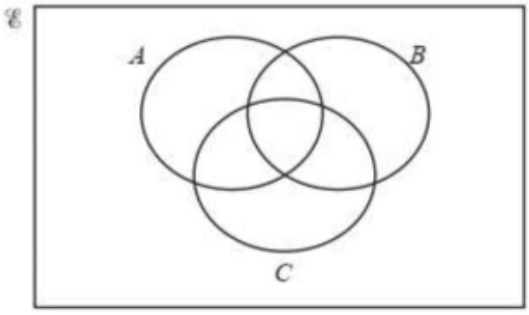
0580/23/O/N/12 Q9)

11. Shade these regions in the Venn diagrams [2]

$M \cup N'$

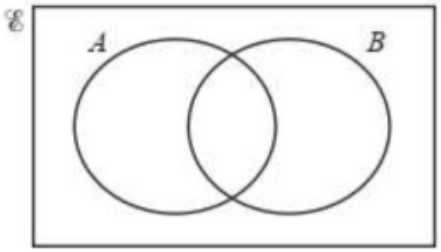


$(A \cup B) \cap C'$

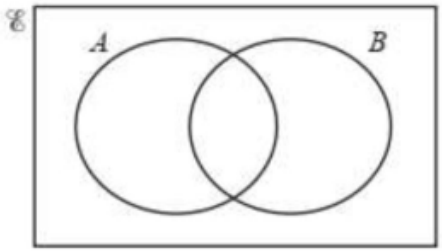


0580/21/O/N/17 Q15 (b)

12. Shade the required regions on the Venn diagrams [2]



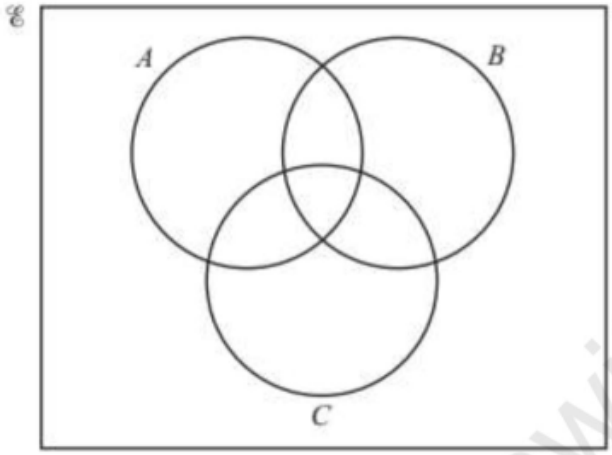
$A \cup B'$



$A' \cap B$

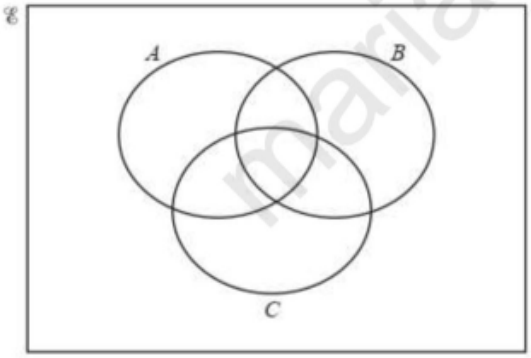
0580/23/O/N/17 Q23(a)

13. Shade (A ∪ C) ∩ B' in the Venn diagram below [1]



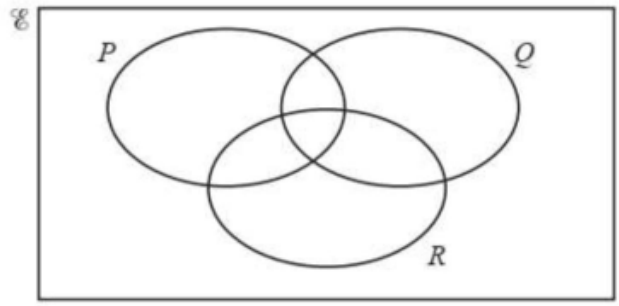
0580/22/M/J/15 Q20 (b)

14. In this Venn diagram, shade the region (A ∪ B') ∩ C [1]



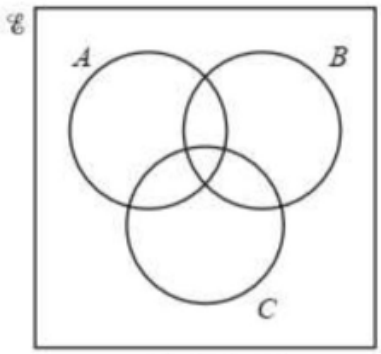
0580/23/M/J/19 Q20(b)

15. Shade the region P ∪ (Q ∩ R)′. [1]

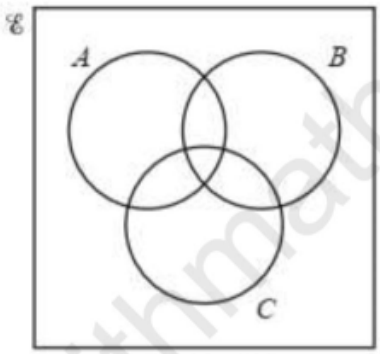


0580/23/M/J/20 Q19 (c)

16. Shade the required regions in the Venn diagram [2]



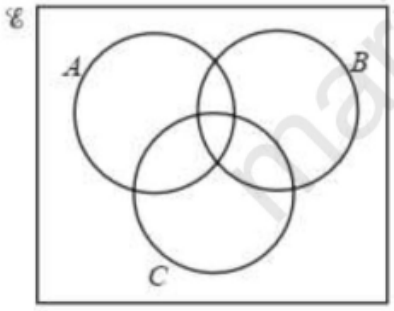
$(A \cup B)' \cap C$



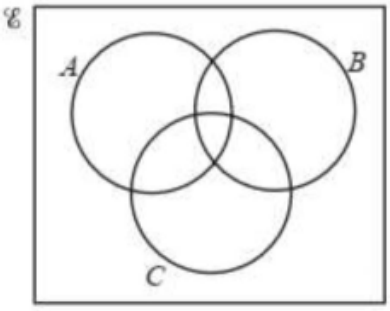
$(A \cap B) \cup C$

0580/23/M/J/10 Q7)

17. Shade the region required in each Venn Diagram. [2]



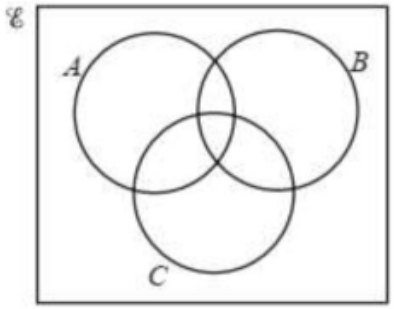
$A' \cap (B \cap C)$



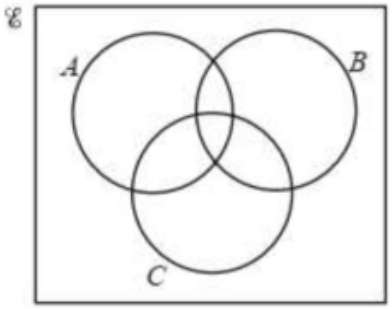
$A' \cap (B \cup C)$

0580/21/O/N/09 Q7)

18. Shade the region required in each Venn Diagram. [2]



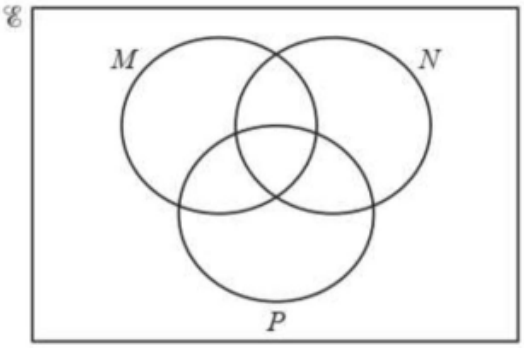
$B' \cap (A \cap C)$



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

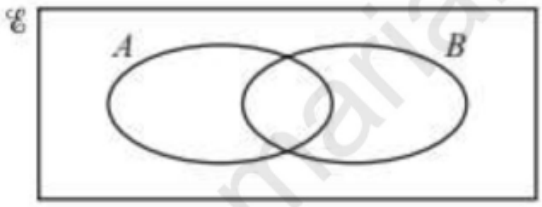
0580/22/O/N/09 Q7)

19. In this Venn diagram, shade the region M' U N U P [1]

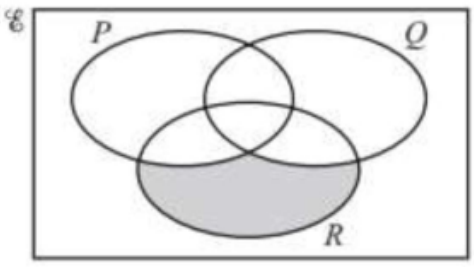


0580/21/O/N/20 Q19)

20. (a) On the Venn diagram, shade the region A ∪ B'. [1]

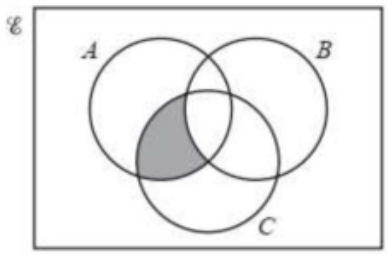


(b) Use set notation to describe the region shaded on the Venn diagram. [1]

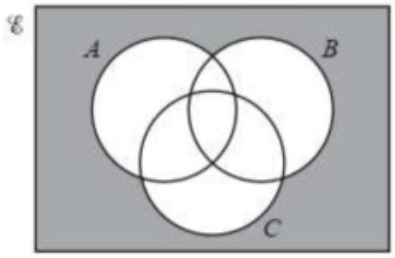


0580/27/M/J/14 Q6)

21. The shaded area in the diagram shows the set (A ∩ C) ∩ B'.



Write down the set shown by the shaded area in each diagram below. [2]



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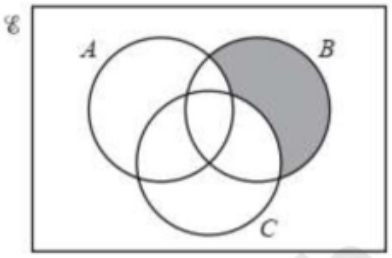
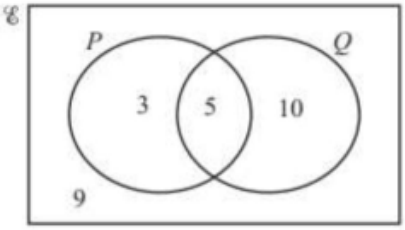


.....

0580/22/M/J/10 Q7)

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

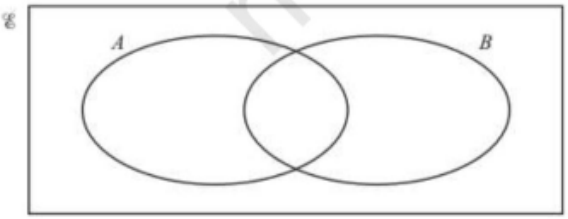


(a) Find n(P' ∩ Q). [1]

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

0580/23/O/N/15 Q12)

23. n(ξ) = 10, n(A) = 7, n(B) = 6, n(A∪ B)' = 1



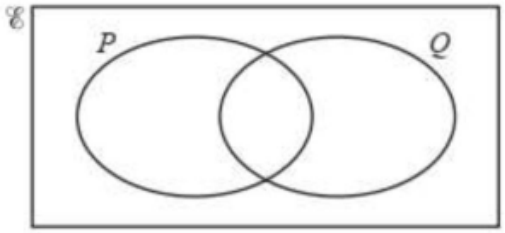
(i) Complete the Venn diagram by writing the number of elements in each subset. [2]

(ii) An element of ξ is chosen at random.

Find the probability that this element is an element of A' ∩ B . [1]

0580/21/O/N/16 Q22)(a)

24. $n(\xi) = 20$, $n(P) = 10$, $n(Q) = 13$ and $n(P \cup Q)' = 5$.

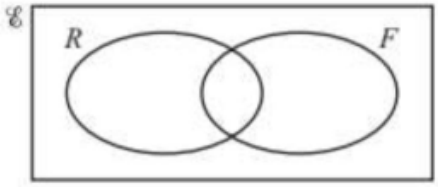


Work out $n(P \cap Q)$.

You may use the Venn diagram to help you. [2]

0580/23/M/J/18 Q12)

25. In the Venn diagram, ξ = {students in a survey}, R = {students who like rugby} and F = {students who like football}.



$n(\xi) = 20$ $n(R \cup F) = 17$ $n(R) = 13$ $n(F) = 11$

(a) Find

(i) $n(R \cap F)$, [1]

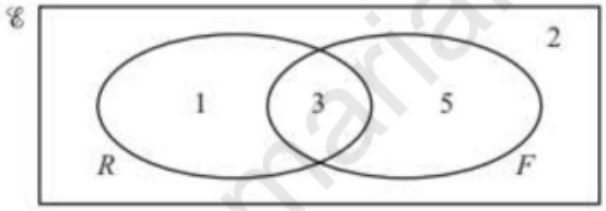
(ii) $n(R' \cap F)$. [1]

(b) A student who likes rugby is chosen at random.

Find the probability that this student also likes football. [1]

0580/23/O/N/11 Q17)

26. 11 students are asked if they like rugby (R) and if they like football (F).



The Venn diagram shows the results.

(a) A student is chosen at random.

What is the probability that the student likes rugby and football? [1]

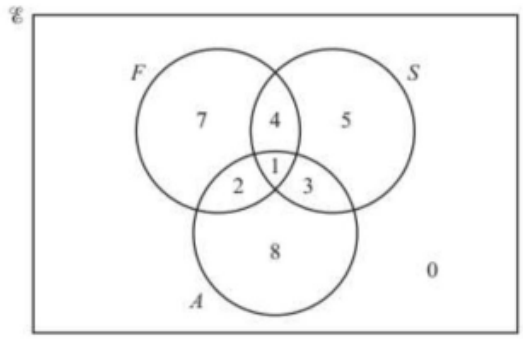
(b) On the Venn diagram shade the region $R' \cap F'$. [1]

0580/21/M/J/13 Q12)

27. The Venn diagram shows the number of students who study French (F), Spanish (S) and Arabic (A).

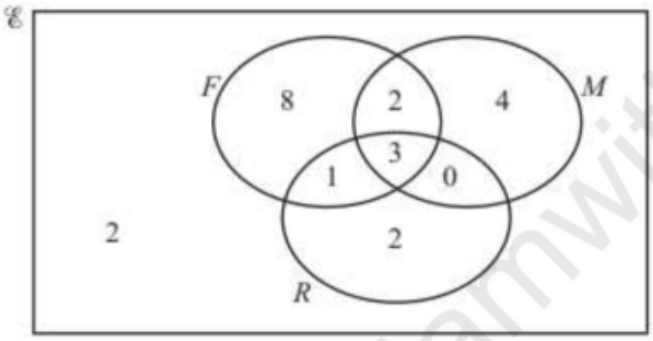
(a) Find n(A ∪ (F ∩ S)). [1]

(b) On the Venn diagram, shade the region F' ∩ S. [1]



0580/22/O/N/15 Q6)

28. The Venn diagram shows the number of people who like films (F), music (M) and reading (R).



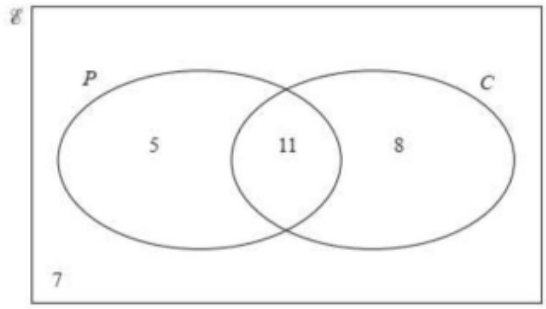
(a) Find (i) n(M), [1] (ii) n (R ∪ M), [1]

(b) A person is chosen at random from the people who like films.
Write down the probability that this person also likes music. [1]

(c) On the Venn diagram, shade M' ∩ (F ∪ R). [1]

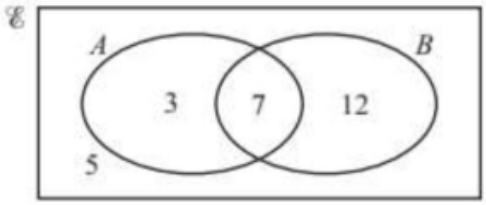
0580/22/O/N/15 Q19)

29. ξ = {students in a class}
P = {students who study physics}
C = {students who study chemistry}
The Venn diagram shows numbers of students.



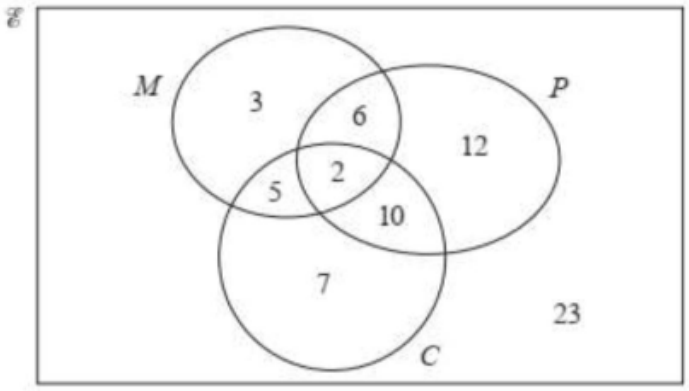
(i) Find the number of students who study physics or chemistry. [1]
(ii) Find n(P ∩C'). [1]
(iii) A student who does not study chemistry is chosen at random.
Find the probability that this student does not study physics. [1]
0580/22/M/J/17 Q23

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



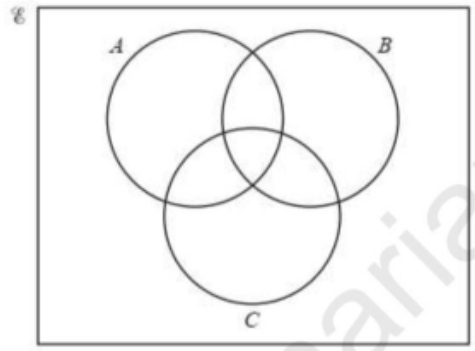
(a) Find n(A ∩ B'). [1]
(b) An element is chosen at random. Find the probability that this element is in set B. [1]
(c) An element is chosen at random from set A. Find the probability that this element is also a member of set B. [1]
(d) On the Venn diagram, shade the region (AU B)'. [1]
0580/21/M/J/16 Q22)

31. The Venn diagram below shows information about the number of gardeners who grow melons (M), potatoes (P) and carrots (C).



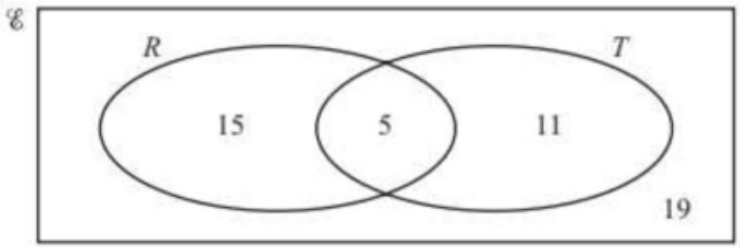
(i) A gardener is chosen at random from the gardeners who grow melons.
Find the probability that this gardener does not grow carrots. [2]
(ii) Find n((M ∩ P) ∪ C') . [1]
0580/22/M/J/19 Q21 (b)

32. ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9}
A = {x: x is an odd number}
B = {x: x is a square number}
C = {x: x is a multiple of 3}
(i) Write all the elements of ξ in the Venn diagram below. [2]



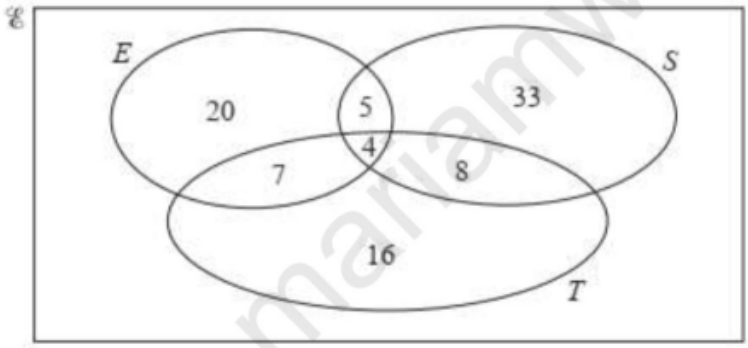
(ii) Another number is included in the set ξ.
This number is in the region A' ∩ B ∩ C.
Write down a possible value for this number. [1]
0580/21/M/J/17 Q17)

33. The Venn diagram shows the number of red cars and the number of two-door cars in a car park.



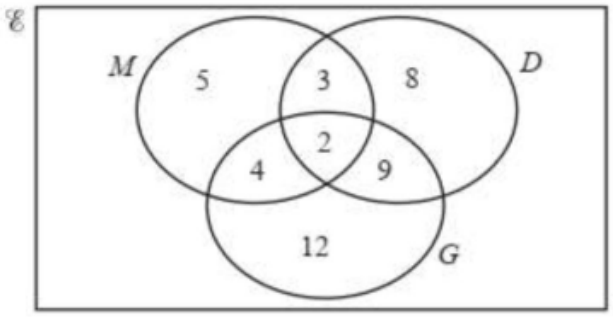
There is a total of 50 cars in the car park.
R = {red cars} and T = {two-door cars}.
(a) A car is chosen at random.
Write down the probability that
(i) it is red and it is a two-door car, [1]
(ii) it is not red and it is a two-door car. [1]
(b) A two-door car is chosen at random.
Write down the probability that it is not red. [1]
(c) Two cars are chosen at random.
Find the probability that they are both red. [2]
(d) On the Venn diagram, shade the region R ∪ T'. [1]
0580/21/O/N/13 Q22)

34. On another day, the number of members using the exercise machines (E), the swimming pool (S) and the tennis courts (T) is shown on the Venn diagram.



(i) Find the number of members using only the tennis courts. [1]
(ii) Find the number of members using the swimming pool. [1]
(iii) A member using the swimming pool is chosen at random.
Find the probability that this member also uses the tennis courts and the exercise machines. [2]
(iv) Find n(T ∩ (E ∪ S)). [1]
0580/41/M/J/18 Q10)(c)

35. The Venn diagram above shows information about the number of students who study Music (M), Drama (D) and Geography (G).



(i) How many students study Music? [1]

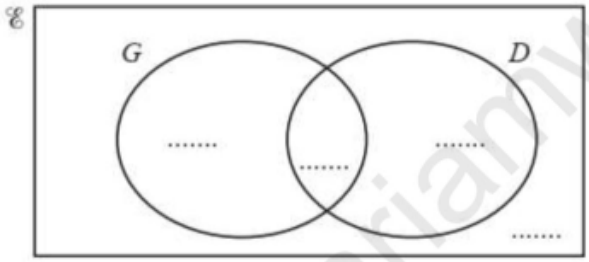
(ii) How many students study exactly two subjects? [1]

(iii) Two students are chosen at random from those who study Drama. Calculate the probability that they both also study Music. [3]

(iv) In the Venn diagram above, shade M ∩ D′. [1]

0580/41/O/N/18 Q6)

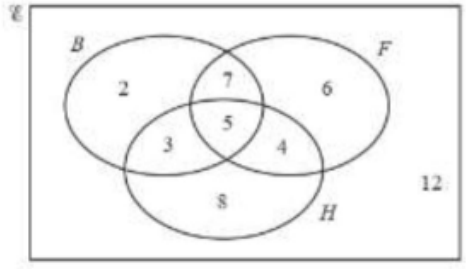
36. (a) In a class of 40 students:
- 28 wear glasses (G)
- 13 have driving lessons (D)
- 4 do not wear glasses and do not have driving lessons



(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 U F) ∩H′) [1]

0580/23/M/J/20 Q19)

37. ξ = {students in a school}

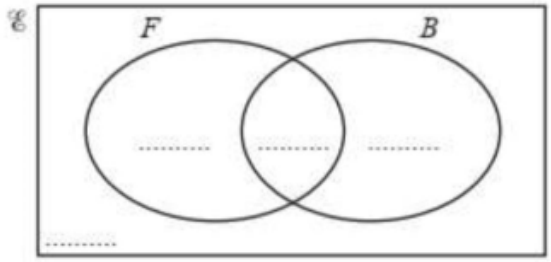
F = {students who play football}

B = {students who play baseball}

There are 240 students in the school.

- 120 students play football
- 40 students play baseball
- 90 students play football but not baseball.

(a) Complete the Venn diagram to show this information. [2]



(b) Find n(F′ ∩ B′) . [1]

(c) A student in the school is chosen at random.

Find the probability that this student plays baseball but not football. 1]

(d) Two students who play baseball are chosen at random.

Find the probability that they both also play football. [3]

0580/41/M/J/19 Q6)

38. ξ = {25 students in a class}

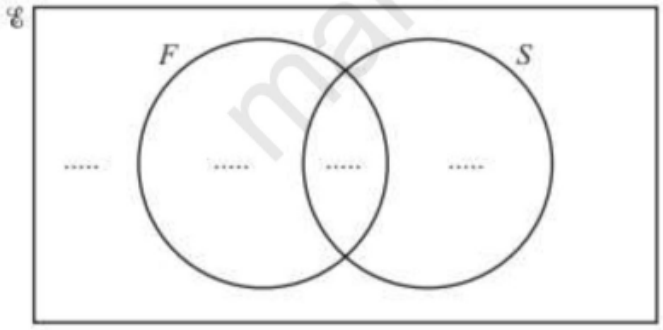
F = {students who study French}

S = {students who study Spanish}

16 students study French and 18 students study Spanish.

2 students study neither of these.

(i) Complete the Venn diagram to show this information [2]



(ii) Find n(F'). [1]

(iii) Find n(F ∩ S)'. [1]

(iv) One student is chosen at random.

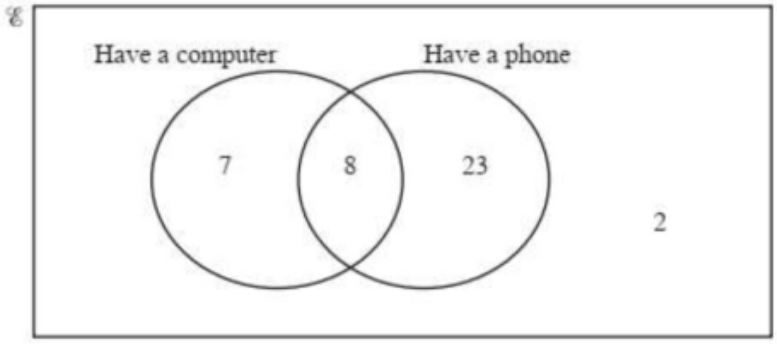
Find the probability that this student studies both French and Spanish. [1]

(v) Two students are chosen at random without replacement.

Find the probability that they both study only Spanish. [2]

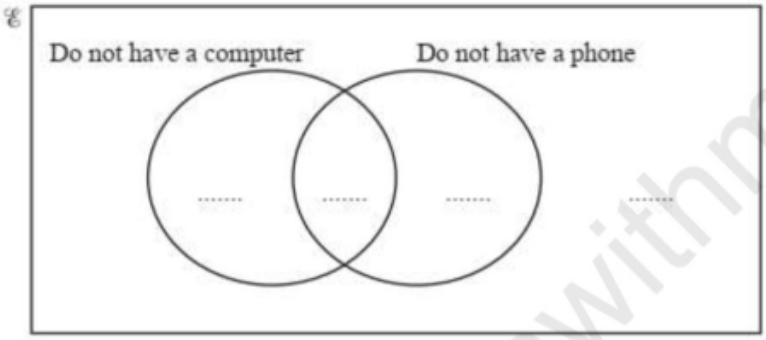
0580/42/O/N/12 Q9

39. 40 children were asked if they have a computer or a phone or both.
The Venn diagram shows the results.



(i) A child is chosen at random from the children who have a computer.
Write down the probability that this child also has a phone. [1]

(ii) Complete the Venn diagram [2]



0580/23/M/J/19 Q20 (a)

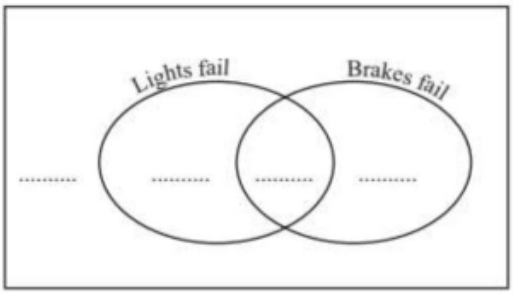
40. The lights and brakes of 30 bicycles are tested. The table shows the results.

	Lights	Brakes
Fail test	3	9
Pass test	27	21

The lights and brakes both failed on one bicycle only

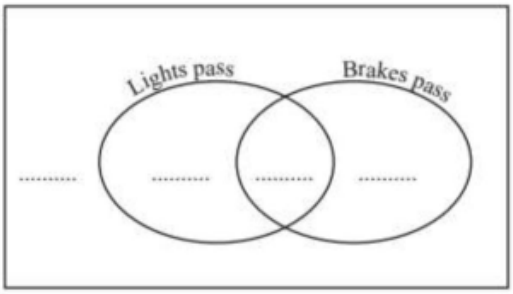
ξ = {30 bicycles} , Complete the Venn diagrams.

(a)



[2]

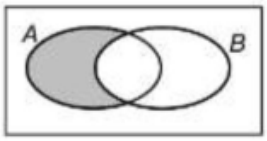
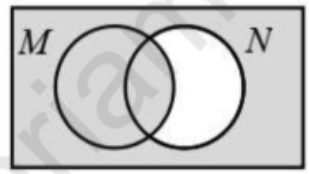
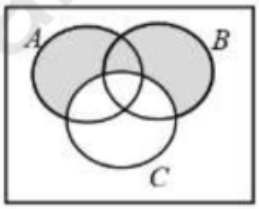
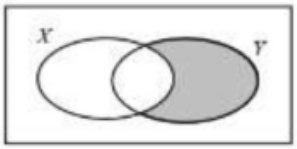
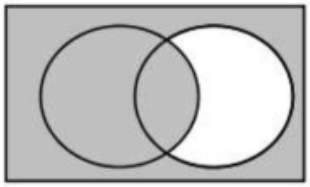
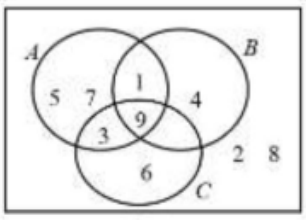
(b)

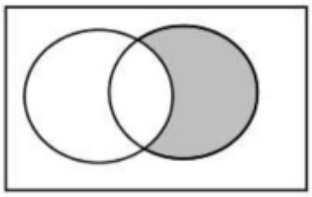
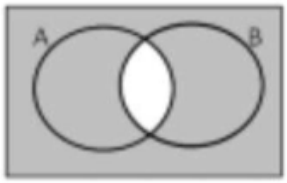
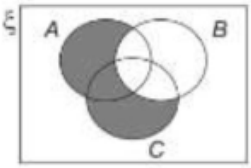
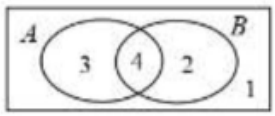
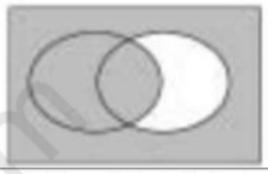
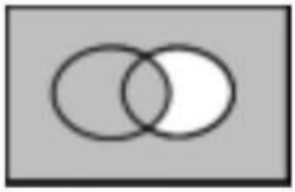
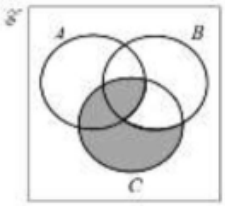
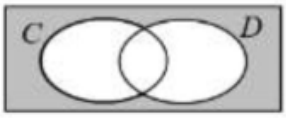
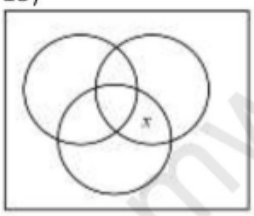
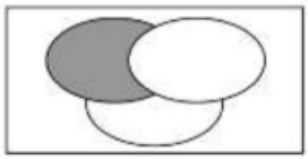
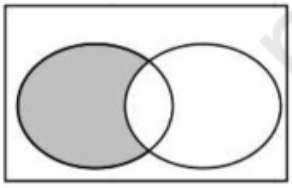
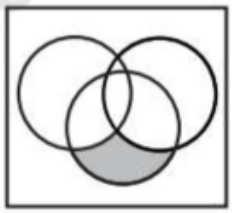
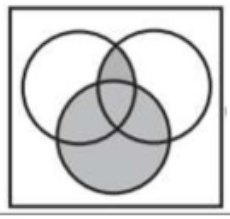
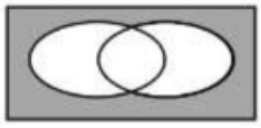


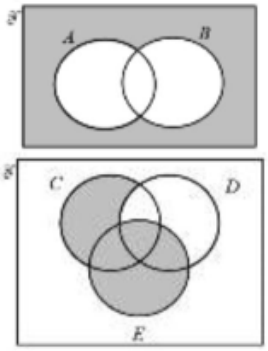
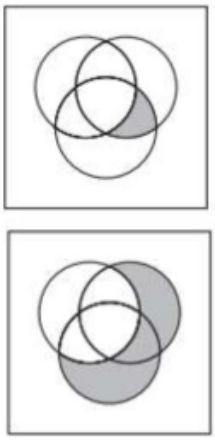
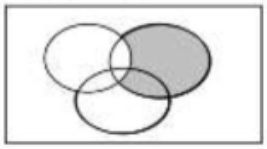
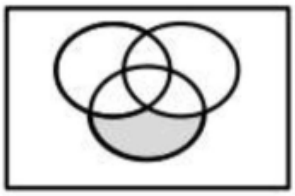
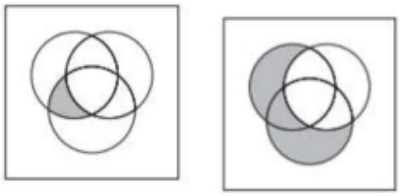
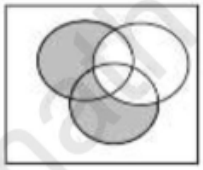
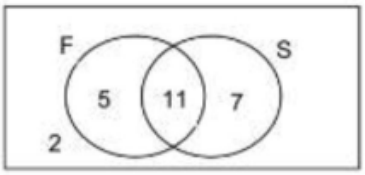
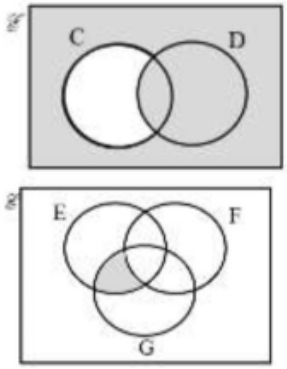
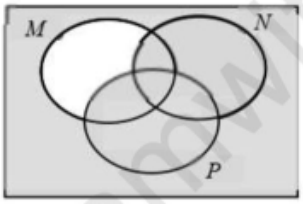
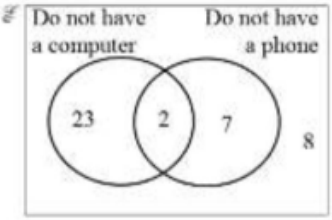
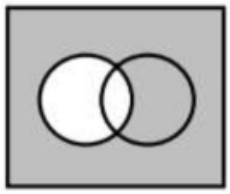
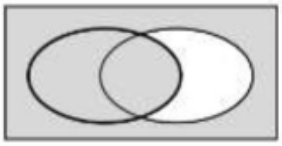
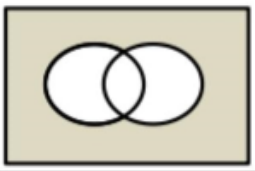
[2]

0580/23/O/N/14 Q15)

Answers

1) 	11)  	21) $(A \cup B \cup C)'$ and $(A \cup C)' \cap B$	31) (i)9/16 (ii) 46
2) 	12) 	22) (a) 10 (b) $P \cup Q'$	32) (i)  (ii) Any even square number that is

			also a multiple of 3
3)  	13)  	23)(i)  (ii) 2/10	33) (a) (i)5/50 (ii)11/50 (b)11/16 (c)38/245 (d) 
4) 	14)  	24) 8	34) (i) 16 (ii) 50 (iii)4/50 (iv) 19
5)  	15)  Shade whole rectangle except for region containing x	25) (a)(i)7(ii)4 (b)7/13	35) (a) (i) 14 (ii)16 (iii)10/231 (iv) 
6) 	16)  	26) (a) **3/11** **(b)** 	36) (a)(i)23 5 8 4 (ii)G U D′ (b) 15

7)  	17) 	27) **(a)18 (b)** 	37) (a) 110 , 90 , 30 ,10 (b)110 (c)1/24 (d) 29/52
8) 	18) 	28) (a)(i)9 (ii)12 (b) 5/14 (c) 	38) (a) (i)  (ii) 9 (iii) 14 (iv)11/25 (v)42/600
9)  	19)  	29) (a) (i)24 (ii)5 (iii)7/12	39) (i) 8/15 (ii) 
10) 	20) (a)  (b) R ∩ (P ∪ Q)′ or R ∩ P′ ∩ Q′	30) (a)3 (b)19/27 (c)7/10 (d) 	40) (a) 19 2 1 8 (b) 1 8 19 2