Past Papers Worksheet P2 Sets IGCSE Mathematics 0580

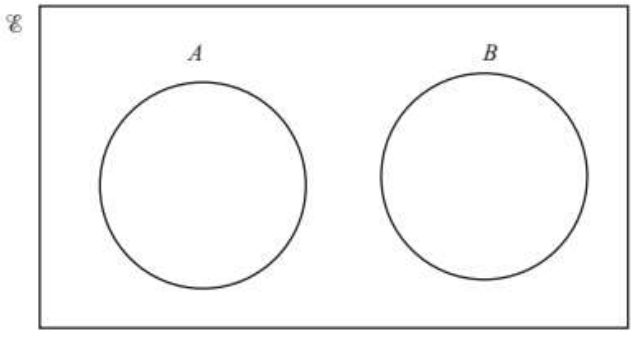
(Set Notations, Subset, Universal, Complement, Union, Intersection)

1. M = { x : x is an integer and $2 \leq x < 6$ }
   (i) Find n(M) [1]
   (ii) Write down a set N where N ⊂ M and N ≠ ∅. [1]
   0580/23/O/N/19 Q18 (a)

2. Q = {1, 2, 3, 4, 5, 6}
   Write down a set P where P ⊂ Q . [1]
   0580/21/O/N/17 Q15 (a)

3. ξ = {x : $2 \leq x \leq 16$, x is an integer}
   M = {even numbers}
   P = {prime numbers}
   (i) Find n(M). [1]
   (ii) Write down the set (P U M)'. [1]
   0580/23/M/J/16 Q14 (a)

4. ξ = {7, 9.3 , π, 5/9, $2\sqrt{8}$}

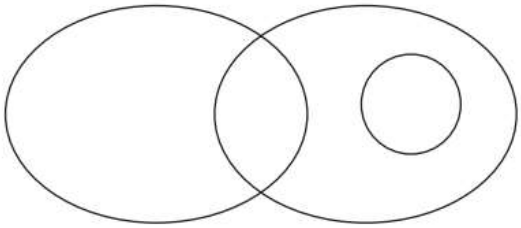


A = {integers} B = {irrational numbers}
Write all the elements of ξ in their correct place on the Venn diagram. [2]
0580/23/O/N/16 Q20)

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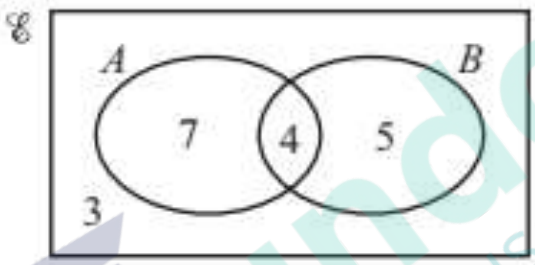


5. Q = {2, 4, 6, 8, 10} and R = {5, 10, 15, 20}.
   15 ∈ P, n(P) = 1 and P ∩ Q = Ø.
   Label each set and complete the Venn diagram to show this information [3]



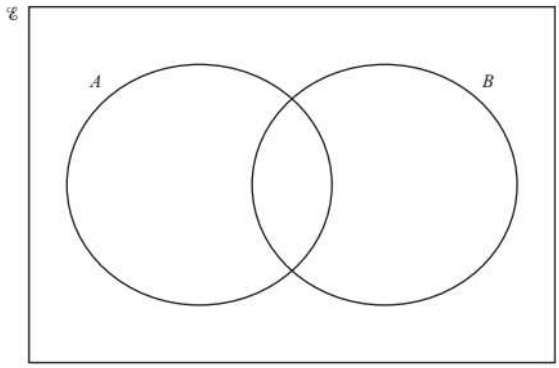
0580/21/M/J/10 Q12)

6. This Venn diagram shows the number of elements in each region.



Write down the value of n(A ∪ B') [1]
0580/23/M/J/11 Q3(b)

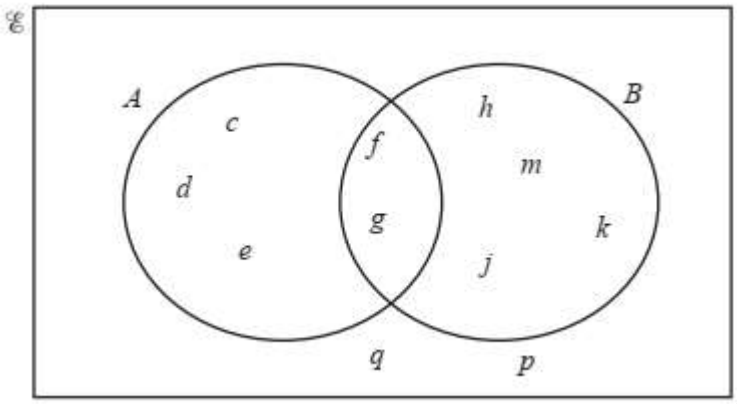
7. ξ = { x : $1 \leq x \leq 10$, where x is an integer}
   A = {square numbers}
   B = {1, 2, 3, 4, 5, 6}
   (a) Write all the elements of ξ in their correct place in the Venn diagram [2]



(b) List the elements of (A ∪ B)'. [1]
(c) Find n(A ∩ B'). [1]
0580/23/M/J/14 Q17)

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8. The Venn diagram shows two sets, A and B.



(i) Use set notation to complete the statements.

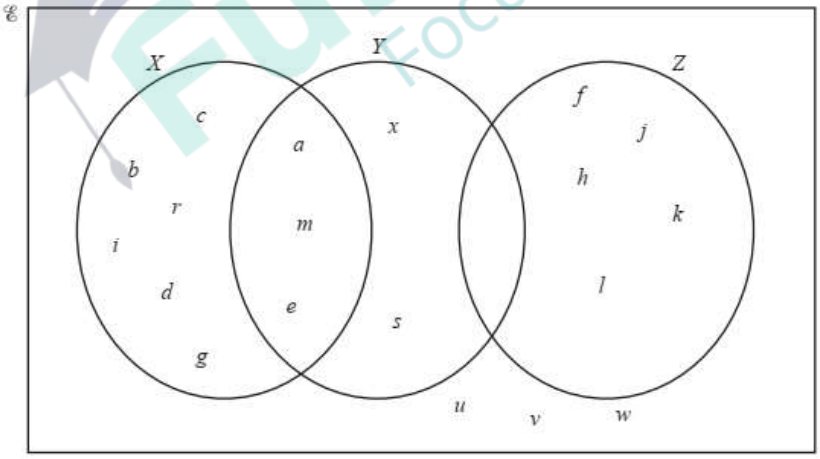
(a) d ..... A [1]

(b) { f, g} = ... [1]

(ii) Complete the statement. n (.....) = 6 [1]

0580/42/F/M/19 Q9

9.



(a) Use set notation to complete the statements for the Venn diagram above.

(i) c..... X [1]

(ii) ..... = { a, m, e } [1]

(iii) Y ∩ Z =..... [1]

(b) List the elements of (X ∪ Y ∪ Z)'. [1]

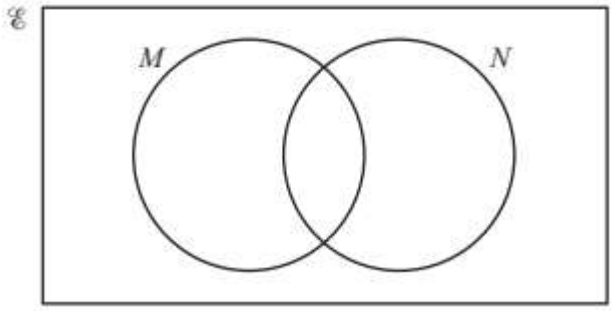
(c) Find n(X' ∩ Z). [1]

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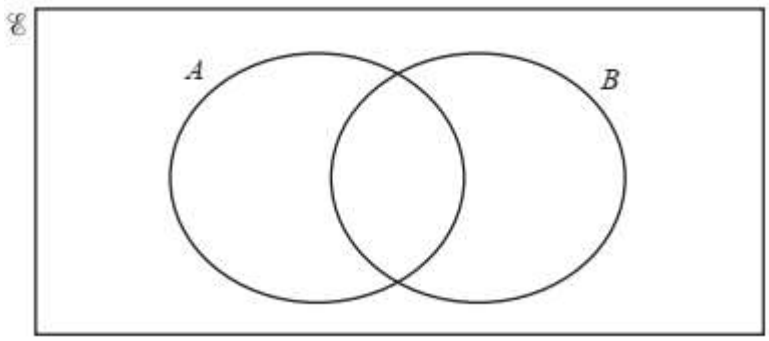


10. You may use this Venn diagram to help you answer



$\xi = \{ x : 1 \leq x \leq 12 , x \text{ is an integer} \}$
M = {odd numbers}
N = {multiples of 3}
(i) Find n(N). [1]
(ii) Write down the set M ∩ N [1]
(iii) Write down a set P where P ⊂ M. [1]
0580/22/M/J/15

11. (i) $\xi = \{ x : x \text{ is an integer and } 1 \leq x \leq 10 \}$
A = $\{ x : x \text{ is even} \}$
4 ∈ A ∩ B
n(A ∩ B) = 1
(A ∪ B)' = {1,7,9}
Complete the Venn diagram below using this information. [4]



(ii) Use your Venn diagram to complete the statement.
B = {.....} [1]
0580/41/O/N/18 Q6

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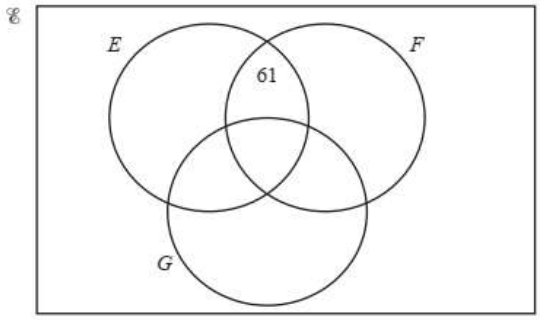
12. ξ = { x : x is an integer and 60 < x <70}

E = { x : x is an odd number}

F = { x : x is a prime number}

G = { x : x is a square number}

(i) Complete the Venn diagram below to show this information. [3]



(ii) Find n(E ∪ F ∪ G)'. [1]

(iii) Use set notation to complete the statement.

E ∩ F ∩ G = ... [1]

0580/23/O/N/17 Q23

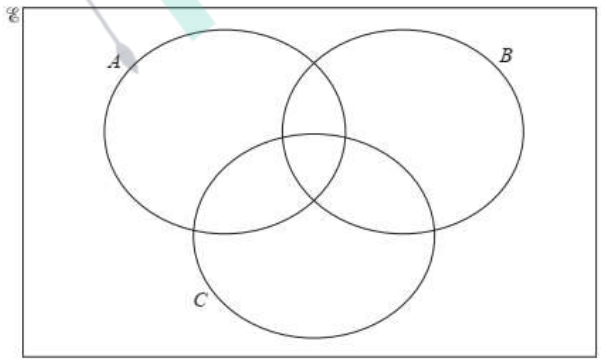
13. ξ = {21, 22, 23, 24, 25, 26, 27, 28, 29, 30}

A = { x : x is a multiple of 3}

B = { x : x is prime}

C = { x : $x \leq 25$}

(a) Complete the Venn diagram. [4]



(b) Use set notation to complete the statements.

(i) 26 ..... B [1]

(ii) A ∩ B = ... [1]

(c) List the elements of B ∪ (C ∩ A).[2]

(d) Find (i) n(C), [1] (ii) n(B' ∪ (B ∩ C)) [1]

(e) (A ∩ C) is a subset of (A ∪ C)

Complete this statement using set notation.

(A ∩ C) ..... (A ∪ C) [1]

0580/43/M/J/17 Q10)

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14. (a) x is an integer.

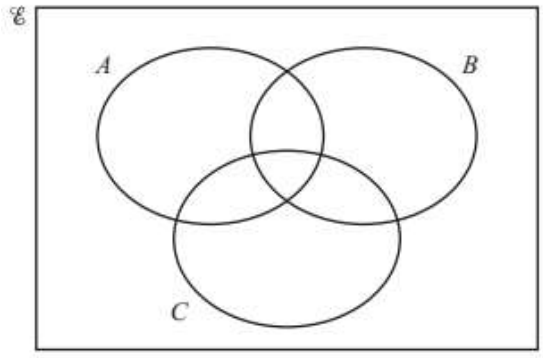
$\xi = \{x: 1 \leq x \leq 10\}$

A = $\{x: x$ is a factor of 12$\}$

B = $\{x: x$ is an odd number$\}$

C = $\{x: x$ is a prime number$\}$

(i) Complete the Venn diagram to show this information. [3]



(ii) Use set notation to complete each statement.

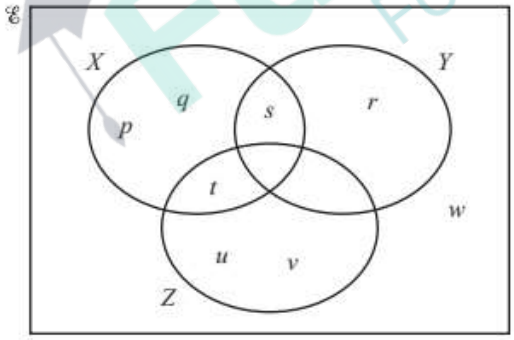
6 ..... A

A ∩ B ∩ C = ...

A ∩ A' = ... [3]

(iii) Find n(B). [1]

(b)



Use set notation to complete the statement.

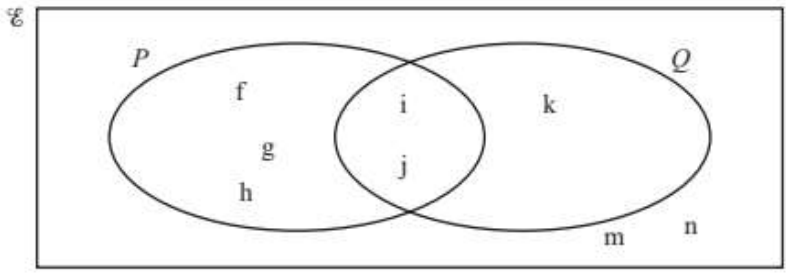
{u, v} ..... Z [1]

0580/42/F/M/15 Q2)

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



(i) P ∩ Q = {.....} [1]

(ii) P' ∪ Q = {.....} [1]

(iii) n(P ∪ Q)' = ... [1]

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

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

~~(c) On the Venn diagram shade the region P' ∩ Q. [1]~~

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

{f, g, h} ..... P [1]

0580/22/M/J/14 Q22)

16. ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9}

E = { x : x is an even number}

F = {2, 5, 7}

G = { x : x^2 - 13x + 36 = 0}

(a) List the elements of set E [1]

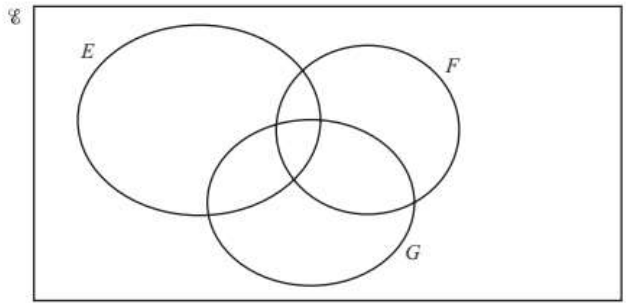
(b) Write down n(F). [1]

(c) (i) Factorise x^2 - 13x + 36. [2]

(ii) Using your answer to part (c)(i),

solve x^2 - 13x + 36 = 0 to find the two elements of G. [1]

(d) Write all the elements of ξ in their correct place in the Venn diagram. [2]



(e) Use set notation to complete the following statements.

(i) F ∩ G = …… [1]

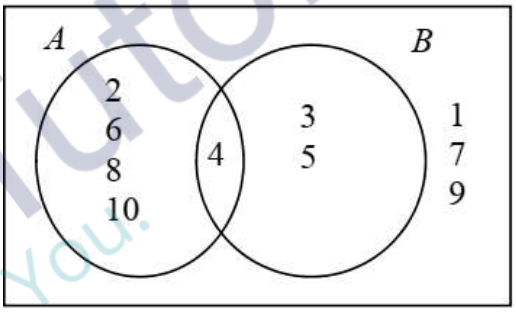
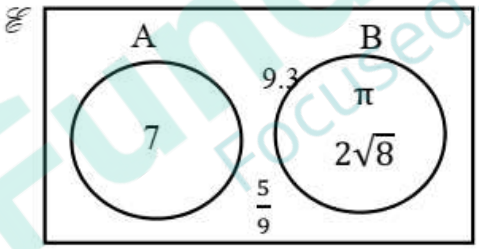
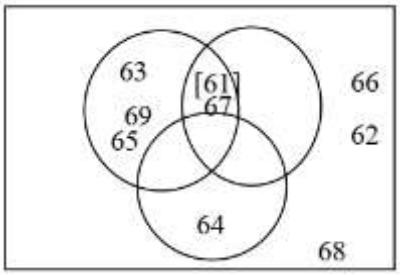
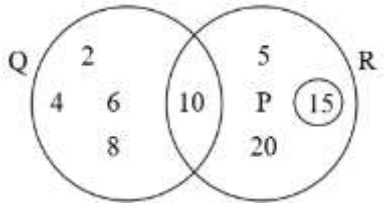
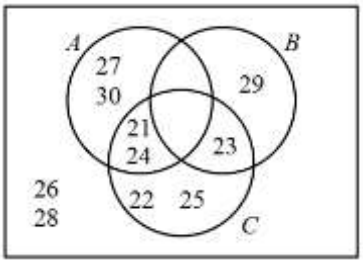
(ii) 7 ……. E [1]

(iii) n(E …… F) = 6 [1]

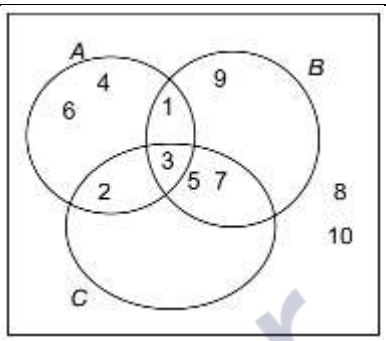
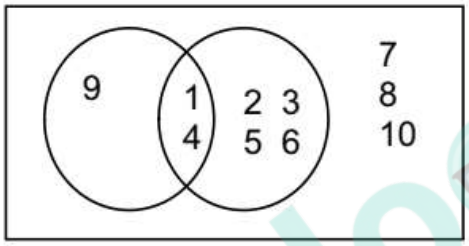
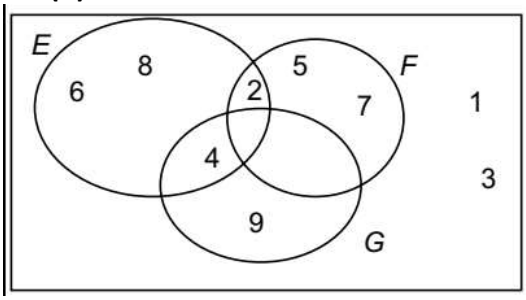
0580/41/M/J/12 Q8)

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Answer

1) (i) 4 (ii) At least one and fewer than four numbers from {2, 3, 4, 5}	**9) (a) (i) ∈ (ii) X ∩Y oe (iii) Ø (b) u, v, w (c) 5**
2) Fewer than 6 elements from {1, 2, 3, 4, 5, 6} or Ø	**10) Q20 (a) (i) 4 (ii) {3, 9} (iii) fewer than 6 numbers from {1, 3, 5, 7, 9, 11} or Ø**
3) (i) 8 (ii) 9, 15	**11) (b)(i)**  **(b)(ii) 3 4 5**
4) 	**12)** **(b)(i)**  **(ii) 3 (iii) Ø or { }**
5) 	**13)** **(a)**  **(b)(i) ∉ (ii) Ø (c) 21, 23, 24, 29 (d)(i) 5 (ii) 9 (e) ⊂ or ⊆**
6) 14	**14) (a) (i)**

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	 **(ii) ∈ cao {3} Ø or {} (iii) 5** **(b) (i) ⊂**
7) (a)  **(b) 7 8 10 (c) 1**	**15) (a)(i) i , j (ii) i, j, k, m, n (iii) 2 (b)2/3 (d) ⊂ or ⊆**
8 (i)(a) ∈ (b) A ∩ B (ii) B or A'	**16) (a) 2 4 6 8 (b)3 (c)(i) (x - 4)(x - 9) (ii) 4 & 9(d)**  **(e) (i) Ø or { } cao (ii) ∉ cao (iii) ∪ cao**

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