SETS

[ESTIMATED TIME: 60 minutes]

(+ IGCSE) EXAM QUESTION PRACTICE

		[2 marks]
$S = \{c, h, i, n, a\}$	$V = \{i, t, a, l, y\}$	
List the elements of the set		
(i) $S \cap V$		
(ii) $S \cup V$		
2.		[4 marks]
$A = \{ \text{Prime numbers between 10 and 16} $ $B = \{ \text{Multiples of 3 between 10 and 16} \}$		
(a) List the members of $A \cup B$.		
	(2)	
(b) What is $A \cap B$?		
	(1)	
(c) Is it true that $11 \in B$?		
Explain your answer.		
	(1)	

3.	[3 marks]
$A = \{2, 4, 6, 8, 10, 12, 14\}$ $B = \{1, 3, 5, 7, 9, 11, 13\}$ $C = \{3, 6, 9, 12\}$	
(a) List the members of the set	
(i) $A \cap C$	
(ii) $A \cup C$	
	(2)
(b) Explain why $A \cap B = \emptyset$	
	(1)
4.	[3 marks]
(a) $S = \{1, 3, 5, 7\}$ $T = \{2, 3, 7, 11\}$	
How many members are there in $S \cup T$?	
	(1)
(b) $U = \{3, 4, 5\}$ $U \cup V = \{1, 2, 3, 4, 5\}$	
The set V has as few members as possible. List the members of the set V .	
	(1)
(c) $A = \{\text{Cats}\}\$ $B = \{\text{Black animals}\}\$	
Describe the members of $A \cap B$.	

(1)

5.		[3 marks]
(a) $A = \{s, u, p, e, r\}$ $B = \{c, o, m, p, u, t, e, r\}$		
List the members of the set		
(i) $A \cap B$		
(::\		
(ii) $A \cup B$		
	(2	
(b) $X = \{\text{prime numbers}\}\$ $Y = \{\text{factors of } 12\}$		
Is it true that $X \cap Y = \emptyset$?		
Tick (\checkmark) the appropriate box.		
	Yes No	
Explain your answer.		
	/1	
	(1	
6.		[4 marks]
$\mathcal{E} = \{ \mathbf{even} \text{ numbers less than 19} \}$ $M = \{ \text{multiples of 3} \}$ $F = \{ \text{factors of 12} \}$		
(a) (i) Explain why it is not true that $9 \in M$.		
(ii) List the members of <i>M</i> .		
	(2)	
(b) List the members of $M \cap F$.		
	(2)	
	(2)	

7.		[3 marks]
<pre> @ = {odd numbers} A = {1, 5, 9, 13, 17} B = {1, 9, 17, 25, 33} C = {7, 11, 15} </pre>		
(a) List the members of the set		
(i) $A \cap B$,		
(ii) $A \cup B$.		
	(2)	
(b) Explain why $A \cap C = \emptyset$		
8.	(1)	[2 manks]
\mathscr{E} = {even numbers}		[3 marks]
$A = \{2, 4, 6, 8, 10\}$		
(a) B is a set such that $A \cap B = \{4, 8\}$ The set B has 3 members.		
List the members of one possible set B .		
	(2)	
(b) C is a set such that $A \cap C = \emptyset$ The set C has 3 members.		
List the members of one possible set C .		
	(1)	

).		[2 marks
<pre> E = {2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} A = {odd numbers} P = {prime numbers} </pre>		
List the members of the set		
(i) $A \cap P$,		
(ii) $A \cup P$.		
10.		[3 marks
\mathcal{E} = {positive whole numbers less than 19} A = {odd numbers} B = {multiples of 5} C = {multiples of 4}		
(a) List the members of the set		
(i) $A \cap B$		
(ii) $B \cup C$		
		(2)
$D = \{ prime numbers \}$		
(b) Is it true that $B \cap D = \emptyset$?		
Tick (\checkmark) the appropriate box.	Yes No	
Explain your answer.		

(1)

11.			

[2 marks

$$\mathscr{E} = \{\text{even numbers}\}$$

$$A = \{ \text{factors of } 8 \}$$

$$B = \{\text{factors of } 20\}$$

List the members of $A \cap B$

.....

12. [4 marks

- (a) $\mathcal{E} = \{ \text{Students in Year } 12 \}$
 - $G = \{ \text{Students who study German} \}$
 - $F = \{ \text{Students who study French} \}$
 - $M = \{ \text{Students who study Maths} \}$
 - (i) $G \cap M = \emptyset$

Use this information to write a statement about the students who study German in Year 12

(ii) Preety is a student in Year 12 Preety $\notin F$.

Use this information to write a statement about Preety.

(2)

(b)
$$A = \{2, 4, 6, 8, 10\}$$

 $A \cap B = \{2, 4\}$
 $A \cup B = \{1, 2, 3, 4, 6, 8, 10\}$

List all the members of set *B*.

13.			[4 marks]
(a)	$A = \{2, 3, 4, 5\}$		
	$B = \{4, 5, 6, 7\}$		
	(i) List the members of $A \cap B$.		
	(ii) How many members are in $A \cup B$?		
		(2)	
(b)	$\mathcal{E} = \{3, 4, 5, 6, 7\}$ $P = \{3, 4, 5\}$ Two other sets, Q and R , each contain exactly three members: $P \cap Q = \{3, 4\}$ $P \cap R = \{3, 4\}$ Set Q is not the same as set R .		
	(i) Write down the members of a possible set Q .		
	(ii) Write down the members of a possible set R .		
		(2)	
14.			[4 marks]
(a)	$A = \{1, 2, 3, 4\}$ $B = \{2, 4, 6, 8\}$		
	Write down the members of $A \cup B$.		
		(2)	
(b)	$\mathcal{E} = \{\text{Positive integers less than 10}\}\$ $P = \{3, 4, 5, 6, 7, 8\}$ $P \cap Q = \emptyset$		
	Write down all the possible members of Q .		

 $\mathcal{E} = \{\text{Clothes}\}\$

 $A = \{Mr \text{ Smith's clothes}\}\$

 $B = \{\text{Hats}\}\$

 $C = \{Mrs Koshi's hats\}$

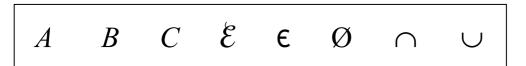
(a) (i) Describe the members of the set $A \cap B$

.....

(ii) How many members has the set $A \cap C$?

(2)

(b)



Use a letter or symbol from the box to make each of the following a true statement.

- (i) $B \cup C = ...$
- (ii) Mr Smith's favourite shirt A

(2)

16. [3 marks]

$$\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8\}$$

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

(a) List the members of P'

(1)

The set Q satisfies both the conditions $Q \subset P$ and n(Q) = 3

(b) List the members of **one** set Q which satisfies both these conditions.

$\mathscr{E}=$	{1,	2,	3,	4,	5,	6,	7,	8,	9,	10}
A =										
B =	{od	ld :	nu	mb	er	s				

(a) List the members of $A \cup B$

	(1)

C is a set such that $A \cap C = \{4, 5\}$

The set C has 4 members.

(b) List the members of one possible set C

	(2)		

18. [3 marks]

 \mathcal{E} = {positive whole numbers **less than** 13}

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

 $B = \{\text{multiples of 3}\}\$

 $C = \{ prime numbers \}$

(a) List the members of the set

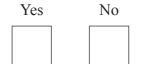
(i) $A \cap B$

(ii) $B \cup C$

(2)

(b) Is it true that $14 \in A$?

Tick (\checkmark) the appropriate box.



Explain your answer.

_										
$\mathscr{E}=$	(1	2	2	1	5	6	7	O	Ω	10
6 –	ΔI.	4.	Э.	4.	J.	U.	/ -	ο.	7.	10

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

 $B = \{\text{multiples of 3}\}\$

(a) List the members of set B.

(1)

(b) Find $A \cup B$

(1)

(c) Find $A \cap B$

(1)

x is a member of \mathscr{E}

 $x \in B$

 $x \not\in A$

(d) What are the possible values of x?