

SET THEORY- UNIT TEST

Name: _____

Date: _____

INSTRUCTIONS: Answer ALL questions in the spaces provided.

1. Write in words.

(a) $A \subset B$ _____

(b) $2 \in G$ _____

(c) $D = \emptyset$ _____

(d) $n(E) = 10$ _____

2. List the members of the following sets.

(a) $A = \{\text{prime numbers less than 20}\}$ _____

(b) $B = \{\text{integers greater than -3 but less than 2}\}$ _____

(c) $C = \{\text{days of the week beginning with T}\}$ _____

(d) $D = \{\text{Factors of 18}\}$ _____

3. Describe **fully** each of the sets given below.

(a) $M = \{\text{January, February, March, April}\}$ _____

(b) $P = \{3, 6, 9, 12, 15\}$ _____

(c) $R = \{1, 3, 5, 7, 9, \dots\}$ _____

(d) $S = \{1, 2, 3, 4, 6, 12\}$ _____

4. Identify the shaded region in each diagram below.

$A \cup B$

$A \cap B$

B'

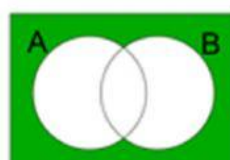
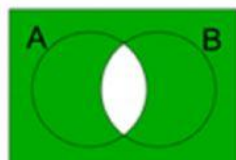
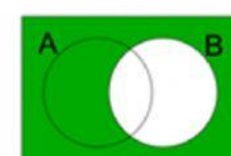
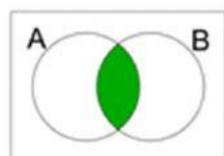
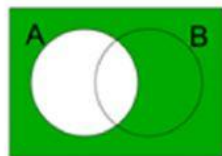
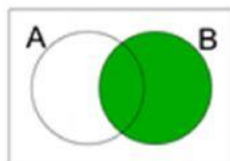
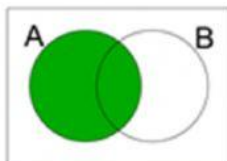
A'

A

B

$(A \cup B)'$

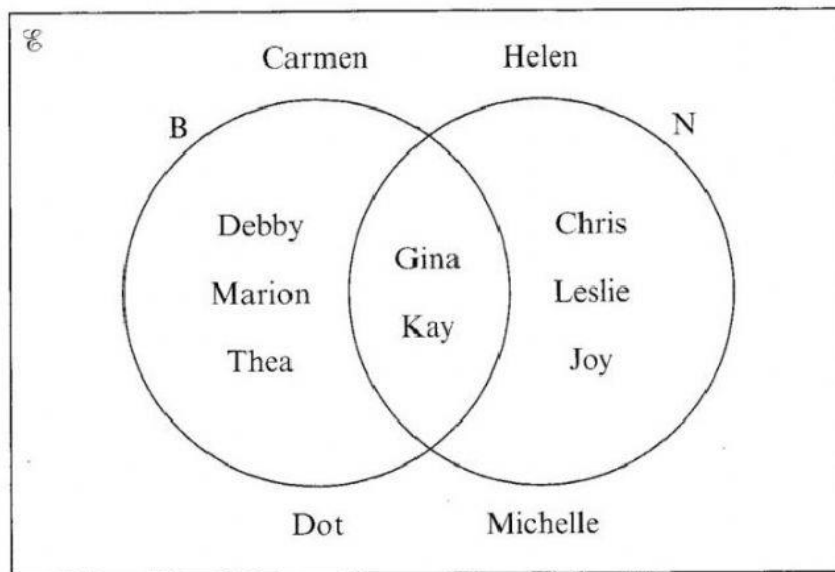
$(A \cap B)'$



5. The Venn diagram below shows the results of a class survey.

$B = \{ \text{students who play basketball} \}$

$N = \{ \text{students who wear New shoes} \}$



- (a) How many students play basketball?

Answer: _____ [1]

- (b) Which students play basketball and wear new shoes?

Answer: _____ [1]

- (c) Write down $n(B \cup N)$.

Answer: _____ [2]

- (d) To which group does Michelle belong?

Answer: _____ [2]

- (e) How many students are in the class?

Answer: _____ [1]

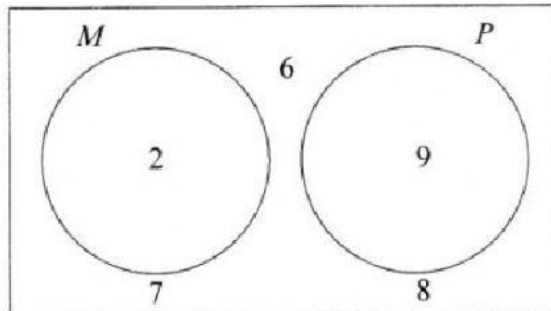
6. Write true or false for each of the following statements.

[7]

- (a) If $A = \{\text{prime numbers less than 12}\}$, then $n(A) = 5$ _____
- (b) An infinite set is a set where all members can be listed. _____
- (c) Disjoint sets are sets whose intersection is the null set. _____
- (d) $\{2, 3, 5, 7\}$ and $\{\text{prime numbers less than 10}\}$ are equal sets. _____
- (e) Equivalent sets have the same elements. _____
- (f) The union of two sets contains all common elements. _____

7.

Use the Venn diagram below to answer the questions which follow.



List the member(s) of

(i) M ,

Answer: { _____ } [1]

(ii) P ,

Answer: { _____ } [1]

(iii) $M \cup P$,

Answer: { _____ } [1]

(iv) $M \cap P$,

Answer: { _____ } [1]

(v) M' ,

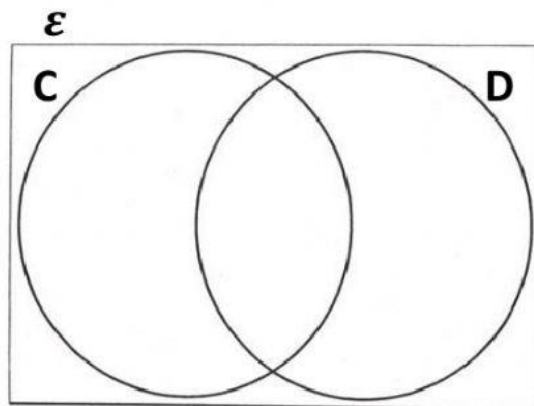
Answer: { _____ } [2]

(vi) $\mathcal{E}$.

Answer: { _____ } [2]

8. Given $\epsilon = \{-3, -2, -1, 0, 1, 2, 3\}$, set $C = \{-2, 0, 2\}$, and set $D = \{0, 1, 2, 3\}$ find :

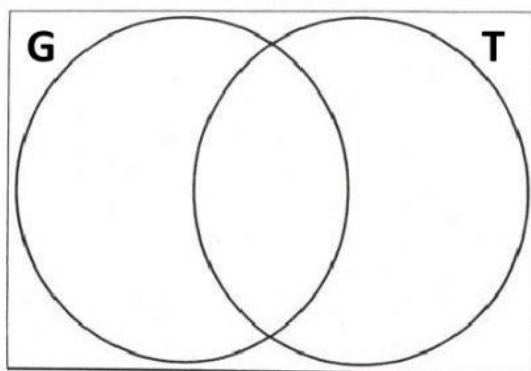
- $C \cup D$ _____
- $C \cap D$ _____
- C' _____
- $n(D)$ _____
- $n(C \cap D)$ _____
- $(C \cup D)'$ _____
- Describe set D fully _____
- Place the information above in the venn diagram below.



9. For his class project, Donald did a survey on the newspapers, Guardian (G) and Tribune (T), read by his class. There were 32 students in the class. 11 students read both papers. 16 read the Guardian. 7 read the Tribune only.

- (a) Represent the information above on a Venn diagram.

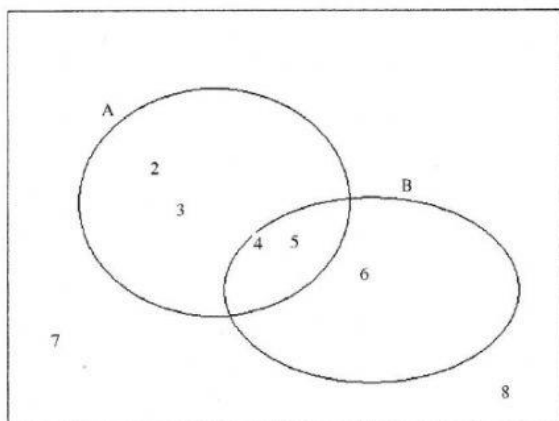
[4]



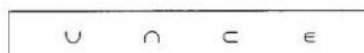
- (b) Using the information in your Venn diagram, write the number of students who read:

- (i) only the Guardian _____ (ii) neither the Guardian nor the Tribune _____

10. Study the Venn diagram below.



Using each symbol only once, fill in the blanks to make a true statement.



- $A \subset B = \{4,5\}$ [1]
 - $\{2,3\} \subset A$ [1]
 - $A \subset B \{2,3,4,5,6\}$ [1]
 - $4 \in B$ [1]