



SEKOLAH BUKIT SION

2ND Sem, AY 2016 – 2017 ... where the abundance in life flows!

CHAPTER TEST: SET NOTATION



NAME: _____

DATE: _____

CLASS: _____

I. MULTIPLE CHOICE

Write the CAPITAL letter of the correct answer on the space provided.

- If $A = \{3, 6, 9, 12\}$ and $B = \{6, 8, 9\}$ then intersection of A and B is ()
A $\{3, 6\}$
B $\{3, 12\}$
C $\{6, 9\}$
D $\{9, 12\}$
- Set of vowels in English alphabet contains elements ()
A $\{a, b, c, d, e, f\}$
B $\{a, e, i, o, u\}$
C $\{p, q, r, s, t\}$
D $\{l, m, n, o, p\}$
- If $\mathcal{E} = \{3, 5, 7, 9, 11, 13, 15\}$ and $A = \{3, 5, 7\}$ then the complement of A is ()
A $\{9, 11, 13, 15\}$
B $\{3, 5, 7\}$
C $\{2, 4, 6, 8\}$
D None of above
- Set $\{x: x \text{ is an odd number between } 10 \text{ and } 18\}$ ()
A $\{11, 12, 13, 15, 17\}$
B $\{12, 16, 15, 13\}$
C $\{11, 13, 15, 17\}$
D $\{12, 14, 16, 18\}$
- If $C = \{a, b, x, y\}$ and $D = \{m, n, o, p\}$ then $C \cup D$ is ()
A $\{a, b, x, y, m, n, o, p\}$
B $\{m, n, o, P, x\}$
C $\{a, b, m, n\}$
D $\{a, x, m, n\}$
- If $\mathcal{E} = \{a, b, c, d, e\}$ and $A = \{a, b, c\}$ then A is ()
A Subset of E
B Universal Set
C Superset
D null set

7. If $E = \{30, 31, 32, \dots, 45\}$ and $D = \{\text{multiples of } 4\}$ then the set containing $\{30, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 45\}$ is called ()

- A Universal Set
- B Complement of D
- C Subset of D
- D Equivalent set of D

8. The set of numbers between 10 and 26 is ()

- A an infinite set
- B a finite set
- C a subset of \mathbb{Z}
- D a subset of \mathbb{N}

9. The cardinality of the set containing the vowels of the word **MATHEMATICS** is ()

- A $\{A, E, I\}$
- B 3
- C $\{a, e, i\}$
- D 5

10. The element that does not belong in set $\{8, 1, 64, 75, 27\}$ is ()

- A 8
- B 1
- C 27
- D 75

II. TRUE OR FALSE

Write **TRUE** if the statement is true. Otherwise, write **FALSE**.

1. $10 \notin$ set of multiples of 5. _____

2. Equivalent sets are always equal. _____

3. $\{0\}$ represents a null set. _____

4. $4 \in \{x : 4 \leq x \leq 10\}$ _____

5. If two sets are equal, they are also equivalent. _____

6. If $A = \{x : x \text{ is a letter in the word SEAT}\}$ and $B = \{x : x \text{ is a letter in the word TASTE}\}$ then sets **A** and **B** are equal. _____

7. If $M = \{4, 8, 12, 16\}$ and $N = \{8, 12, 4, 16\}$ then **M** and **N** are equivalent. _____

III. ANSWER WHAT IS ASKED.

1. List the following sets.

(a) {Even numbers between 1 and 9}

(b) {Factors of 18}

(c) {Months which do not contain the letter "r"}

2. Write the **cardinality** of the sets below.

(a) {Square numbers less than 100}

(b) $G = \{x : x \in \mathbb{N}, 5 < x < 12\}$

(c) {set of odd numbers}

3. Describe the set below in a **set builder form**.

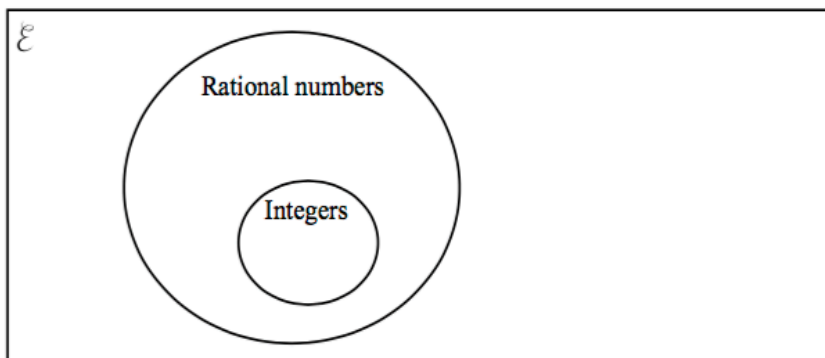
(a) $A = \{7, 14, 21, 35, \dots\}$

(b) $S = \{-4, -3, -2, -1, 0, 1\}$

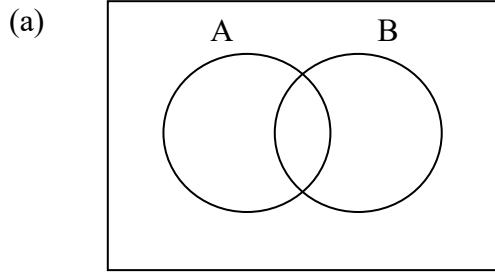
(c) $T = \{1, 2, 3, 6\}$

4. From the list below, write down each of the numbers in the Venn diagram correctly.

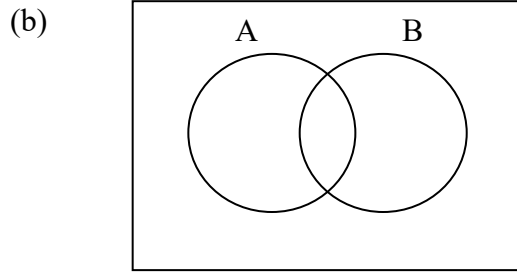
4 $\sqrt{8}$ $\sqrt{25}$ $\frac{5}{2}$ 0.3333...



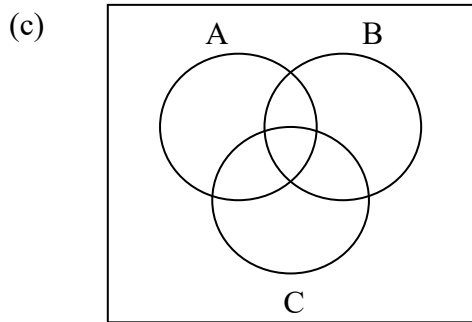
5. Use pencil to shade the region of the Venn Diagram indicated by the following sets.



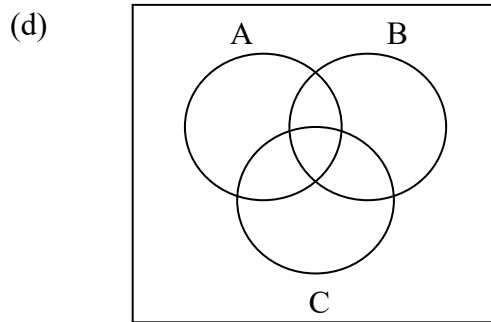
Shade: $(A' \cup B)$



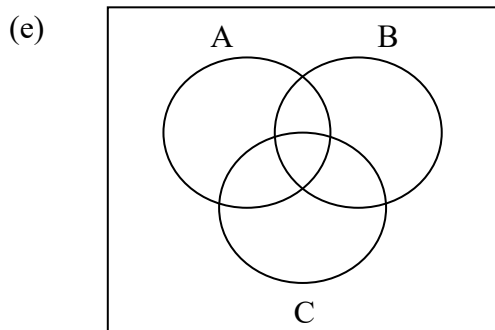
Shade: $(A \cap B)'$



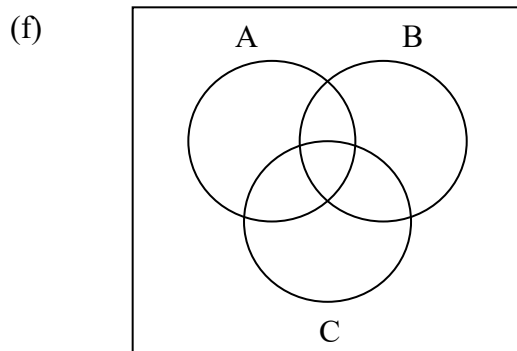
Shade: $A \cup B \cup C$



Shade: $(A \cap B) \cap C$



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



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

6. $\mathcal{E} = \{x : x \in \mathbb{N}, 20 \leq x \leq 30\}$
 $\mathbf{A} = \{\text{prime numbers}\}$
 $\mathbf{B} = \{\text{odd numbers}\}$
 $\mathbf{C} = \{\text{multiples of } 5\}$

(a) Write down the **cardinality** of \mathbf{C}' .

(b) Write down the sets:

(i) $\mathbf{A} \cup \mathbf{B}$

(ii) $\mathbf{A} \cap \mathbf{C}$

(iii) $\mathbf{B}' \cap \mathbf{C}$

(iv) $\mathbf{A} \cap \mathbf{B} \cap \mathbf{C}$

(v) $\mathbf{A}' \cap \mathbf{B} \cup \mathbf{C}$

(c) Draw a Venn diagram illustrating these sets, positioning the circles carefully.

7. There are 30 people in a group. 17 own a car. 11 own a bicycle. 5 do not own either a car or a bicycle. Find how many people in this group own a car but not a bicycle.

8. In a group of households, x have both a video recorder and a DVD player. 75 households have a video recorder, and 40 have a DVD player. 10 households have neither.

Draw a Venn diagram as described above.
If there are 90 houses altogether, find x .

9. \mathcal{E} is the set of students in a class.

A is the set of students who study Art, and B the set of students who study Biology.

There are 28 students in the class, of whom 13 study Art.

Of the 18 students who study Biology, 11 do not study Art.

Fill in the number of students in each section of the diagram.

How many students study neither Biology nor Art?

10. There are 40 members in a sports club.

2 play all three sports.

23 play squash.

24 play tennis.

18 play golf.

14 play squash and tennis.

8 play tennis and golf.

x play squash and golf but not tennis.

1 member makes the refreshments and does not play any sport.

(a) Complete the Venn diagram below according to the information given above.

(b) How many play golf **only**?

