

# 6.1

# Quick Notes

1) SET - a collection of objects (those objects are called elements)

Ex) {a, b, c} The set containing a, b, and c  
 {1, 5, 8, 11} The set containing 1, 5, 8, and 11

Set Builder notation ex) { x | x is an English word starting with the letter K}  
 (the above is read "the set of all x's such that x is an English word starting with the letter K")

2) If A and B are sets.....

$A = B$  A equals B A and B have the exact same elements, order is irrelevant

$A \subseteq B$  A is a subset of B Every element in A is also in B. A and B could be equal.

$A \subset B$  A is a Proper Subset of B Every element in A is also in B, but A and B are not equal

$\emptyset$  or { } empty set The set that has no elements

$A \cap B$  A intersect B An element is in  $A \cap B$  if it is in both A and B

$A \cup B$  A union B An element is in  $A \cup B$  if it is in either A or B.

$U$  Universal Set (Universe) The set of All elements being considered

$\bar{A}$  The complement of A An element is in  $\bar{A}$  if it is in the universe, but not in A

(BOARD EXAMPLES)

$A = \{a, b, c\}$   $B = \{e, f\}$   $C = \{a, b, f\}$   $U = \{a, b, c, d, e, f\}$   
 Find  $A \cap B$ ,  $A \cup B$ ,  $\bar{A}$ ,  $A \cap C$ ,  $\bar{A} \cap \bar{C}$ ,  $\overline{A \cap C}$ ,  $(\overline{B \cup C}) \cap A$

List all subsets of {1, 2, 3, 4}

3) Venn diagram

A rectangle represents the universe. Circles inside the rectangle represent sets.

(BOARD EXAMPLES) Shade the regions  $A \cap B$ ,  $A \cup B$ ,  $\bar{A}$ ,  $A \cap C$ ,  $A \cap \bar{C}$ ,  $\overline{A \cap C}$ ,  $(\overline{B \cup C}) \cap A$ ,  $(A \cap B) \cup C$ ,  $(A \cup B) \cap C$