

## Section 7.3

### Sets

## Terms

Set- Well-defined collection of objects

Elements--objects in a set

Subsets—Set A is a subset of B (written  $A \subseteq B$ ) if every element in A is also in B

Set Equality—Two sets are equal if they are subsets of each other.

## More Terms

Universal Set--

Empty Set

Intersection of Sets

Union of Sets

## Examples:

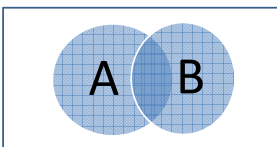
Let  $A = \{a, b, c\}$ ,  $B = \{c, d\}$ ,  $C = \{e\}$  and  $U = \{a, b, c, d, e, f\}$

12)  $A' \cup B$

16)  $(A \cap B)'$

## Venn Diagram

A way to visualize intersections and unions of sets by drawing a rectangle to represent the universal set and then drawing two or more circles within the rectangle representing the sets under discussion.



## Examples:

Use Venn diagrams to shade the given set.

23)  $A' \cap B'$

26)  $A - (B \cap C)$

### More Terms

The Complement of a set  $A'$  is the set of all elements of the universal set  $U$  that are not in  $A$ .

$$A' = \{x: (x \in U) \text{ and } (x \notin A)\}$$

The Difference of Set  $B - A$  is the set of all elements of  $B$  that are not in  $A$ .

$$B - A = \{x: (x \in B) \text{ and } (x \notin A)\}$$

### Generalizations of Intersection and Unions

The idea of intersection and union may be generalized to more than two sets in the natural way.