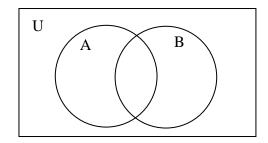
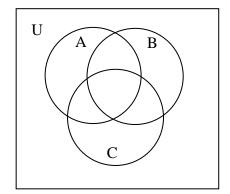
## **1.5A Set Operations**

- 1. Assume  $A = \{1, 3, 5, 7\}$ ,  $B = \{2, 5, 7, 8\}$  and  $C = \{1, 3, 6\}$  are subsets of the universal set  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ . Determine each of the following (use good notation and circle your answers):
  - (a)  $A \cup B$
  - (b)  $A \cap B$
  - (c)  $A \cap C$
  - (d) A B
  - (e)  $A' \cup B'$
  - (f)  $A' \cap (B \cup C')$
  - (g)  $(A \cap B) \cup (A \cap C)$
  - (h)  $A' \cap B'$
  - (i)  $(A \cup B)'$
  - $(j) \quad (A-C) \cup (B-C)$
  - (k) Show that in this problem,  $n(A \cup B) = n(A) + n(B) n(A \cap B)$  is satisfied.

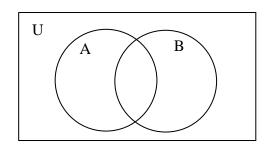
- 2. In each Venn Diagram below, shade the region associated with the given set.
  - a)  $(A \cup B') A$



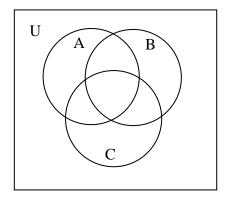
c)  $A \cap (B \cup C')'$ 



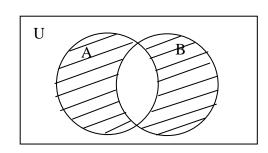
b)  $A \cup (B \cup A)'$ 

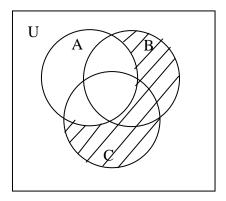


d)  $(B \cap A)' \cup (C - A)$ 



3. In each, name the shaded region using the letters A, B, C, and the set operations.





- 4. The <u>number of elements</u> is written in each region of the following Venn diagram. Find the following:
- a.  $n(A \cup B)$
- b. n(C')
- c. n(U)
- d.  $n((A \cup C) (B \cup C))$
- e.  $n((A \cap C) B)$

