

1. Using the sets A, B, and C, determine whether each statement is *True* or *False*.

$$A = \{3, 5, 9, 11\} \quad B = \{4, 6, 8, 10\} \quad C = \{3, 4, 5, 6, 7\}$$

- | | |
|----------------------------------|--|
| (a) _____ $10 \in A$ | (f) _____ $B \not\subseteq C$ |
| (b) _____ $A = \{3, 5, 9, 11\}$ | (g) _____ $\emptyset \subseteq C$ |
| (c) _____ $B \neq C$ | (h) _____ $A \cap B \subseteq C$ |
| (d) _____ $\{4, 5\} \subseteq C$ | (i) _____ $B \cup C \subseteq \{4, 6, 8, 10\}$ |
| (e) _____ $C \subseteq A$ | (j) _____ $A \sim B$ |

2. Using the sets A, B, and C, list the **elements** in each set. If the set is empty write $\emptyset$.

$$A = \{3, 5, 9, 11\} \quad B = \{4, 6, 8, 10\} \quad C = \{3, 4, 5, 6, 7\}$$

- | | |
|----------------|------------------------|
| (a) $A \cap B$ | (c) $B \cap \emptyset$ |
| (b) $B \cup C$ | (d) $A \cup \emptyset$ |

3. Using the sets D, E, and F, list the **elements** in each set. If the set is empty write $\emptyset$.

$$D = \{3, 5, 7\} \quad E = \{2, 4, 6, 8\} \quad F = \{1, 2, 3, 4, 5\}$$

- | | |
|-------------------------|----------------------------------|
| (a) $D \cap E$ | (c) $(D \cap E) \cup (F \cap E)$ |
| (b) $(D \cup E) \cap F$ | (d) $(D \cup E) \cap (D \cup F)$ |

4. Let $A = \{1, 2, 3, 4, 5, 6, 7\}$ $B = \{2, 4, 6, 8\}$ $C = \{0, 1, 2, 3\}$ and $D = \{10, 11, 12\}$.

(a) Is $A - B = A - (A \cap B)$?

Explain.

(c) Are the sets A and B **disjoint**?

Explain.

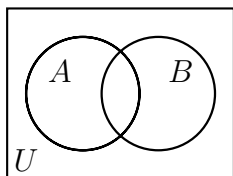
(b) Is $A - B = B - A$?

Explain.

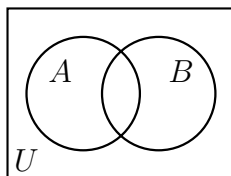
(d) Are the sets C and D **disjoint**?

Explain.

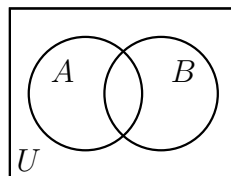
5. Shade each Venn Diagram to represent each of the sets indicated.



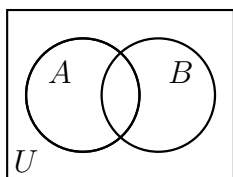
$A \cup B$



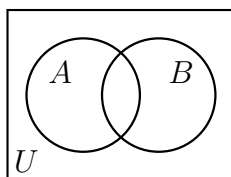
$A \cap B$



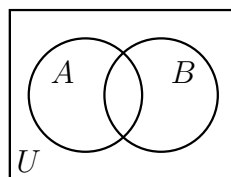
$A - B$



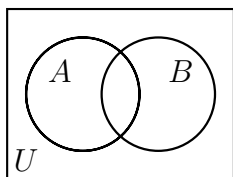
A'



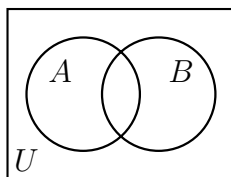
B'



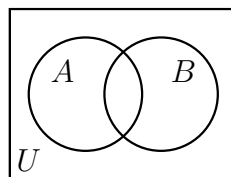
$B - A$



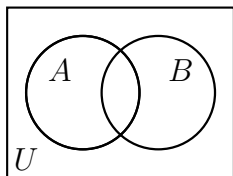
$A - (A \cap B)$



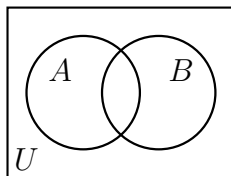
$(A \cup B)'$



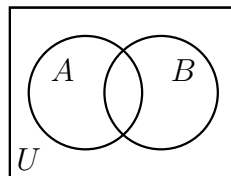
$A' \cap B'$



$(A \cap B)'$

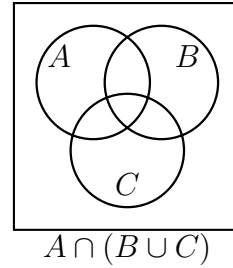
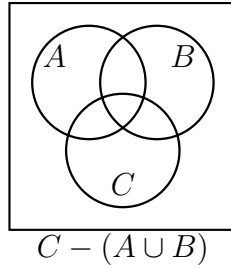
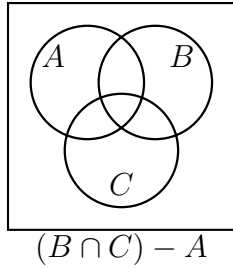
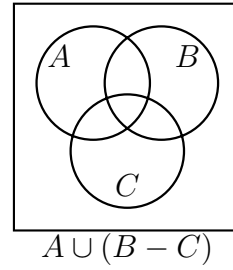
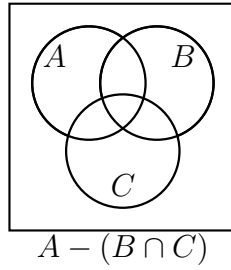
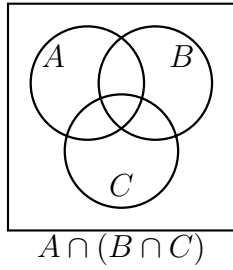


$A' \cup B'$

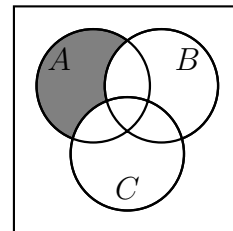
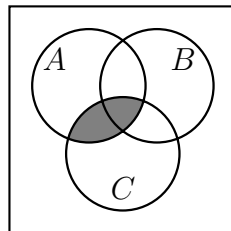
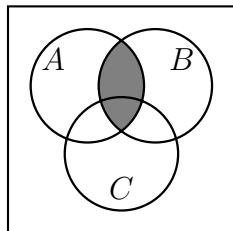
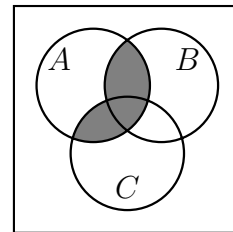
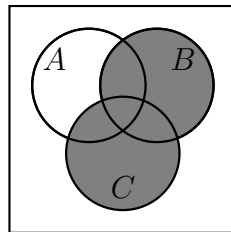
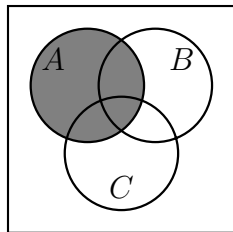


$(A \cup B) - A$

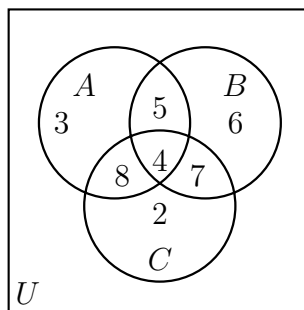
6. Shade the regions that represent each of the following sets.



7. Represent the following shaded regions using the symbols A , B , C , $\cup$, and $\cap$.



8. Using the Venn diagram below, list the element of each of these sets.



(a) $A \cap B$

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

(b) $B \cup C$

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

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

(f) $A \cup (B \cap C) - (A \cap B \cap C)$