1. If one can borrow a car every Monday, Tuesday, Wednesday, and every Tuesday, Thursday, and Friday, then how many days can one borrow the car per week?

2. Which of the sets are equal?

- $\{1, 2, 3\} \stackrel{?}{=} \{1, 2, 3\}$

- $\{1, 2, 3\} \stackrel{?}{=} \{1, 2\}$

- $\{1, 2, 3\} \stackrel{?}{=} \{3, 1, 2\}$

- $\{1, 2, 3\} \stackrel{?}{=} \{1, 2, 2, 3, 3, 3\}$

- $\{1, 2, 3\} \stackrel{?}{=} \{$ positive integers whose square has one digit $\}$

- $\{1, 2, 3\} \stackrel{?}{=} \{$ odd numbers less than 4 $\}$

3. Calculate the following unions and intersections:

- $\{1, 2, 3\} \cup \{3, 4, 5\} =$

- $\{1, 2, 3\} \cap \{3, 4, 5\} =$

- $\{1, 2, 3\} \cup \{1\} =$

- $\{1, 2, 3\} \cap \{1\} =$

4. Calculate the following differences:

- $\{1, 2, 3\} - \{1\} =$

- $\{1, 2, 3\} - \{2, 3\} =$

- $\{1, 2, 3\} - \{3, 4, 5\} =$

- $\{1, 2, 3\} - \{4, 5, 6\} =$

- $\{1, 2, 3\} - \{1, 2, 3\} =$

5. Simplify the following expressions:

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

- $A - A =$

- $A \cap A =$

- $A \cup A =$

- $(A \cup A) - A =$

- $A \cup (A - A) =$

6. A standard 52-card deck of playing cards has the following cards:

A♡ 2♡ 3♡ 4♡ 5♡ 6♡ 7♡ 8♡ 9♡ 10♡ J♡ Q♡ K♡

A◇ 2◇ 3◇ 4◇ 5◇ 6◇ 7◇ 8◇ 9◇ 10◇ J◇ Q◇ K◇

A♣ 2♣ 3♣ 4♣ 5♣ 6♣ 7♣ 8♣ 9♣ 10♣ J♣ Q♣ K♣

A♠ 2♠ 3♠ 4♠ 5♠ 6♠ 7♠ 8♠ 9♠ 10♠ J♠ Q♠ K♠

If 5 people are playing, and each has been dealt 10 cards, then:

(a) Why must one of the suits $(♡, ◇, ♣, ♠)$ be completely dealt out?

(b) Must at least two people have at least one clubs ♣?

(c) Must at least one person has at least two clubs ♣?

(d) Must every player have at least 3 of the same suit?

(e) Must some pair of neighbors have at least 6 of the same suit combined (it counts, even if one player has 6 all by themselves)