

- Let  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$  be the universal set and define  $A = \{1, 4, 5, 6, 9\}$ ,  $B = \{3, 4, 5, 7\}$ ,  $C = \{1, 2, 3, 6, 7\}$ . Find the following sets:
  - $A \cap B$
  - $C^c$
  - $A \cup B^c$
  - $B^c \cap C$
  - $(A \cap B) \cup (A^c \cap C)$
  - $(A \cap C^c) \cup (C \cap B^c) \cup (B \cap A^c)$
- Draw Venn diagrams and shade in the sets in the previous question:
- Andy, Bill, and Chris like to go out to dinner. Andy likes McDonald's, Burger King, Taco Bell, and the Cheesecake Factory. Bill likes the Cheesecake Factory, Outback, McDonald's, and the Olive Garden. Chris likes the Olive Garden, Molly Woo's, Burger King, and the Cheesecake Factory.
  - Draw a Venn diagram showing where the friends like to eat.
  - Where should all three go to eat together?
  - If Chris stays home, which restaurant(s) might Andy and Bill go to together?
  - If Andy is eating alone and trying to avoid Chris, where should he eat?

### Voting Theory

Do the following exercises beginning on page 28.

**#5** What are the possible drawbacks to this type of election strategy? What are the benefits?

**#17** What fairness criterion is violated here?

**#28**

**#37** Is there a Condorcet candidate? If so, who?

**#51**

### Apportionment Theory

Do the following exercises beginning on page 160.

**#7, #17** What observations can you make about how these two methods of apportionment differ?

Explain the difference in Jefferson's and Adams's methods. How does this affect their relative apportionments?

**#13**

**#26**