Chapter Self-Test

1. The following five Aboriginal writers from across Canada toured Australia. They gave readings and lectures, and they participated in panels and workshops. Categorize these writers using a Venn diagram.
   - Louise Halfe, poet
   - Lee Maracle, poet, novelist
   - Rita Mestokosho, poet
   - Armand Ruffo, poet, fiction writer
   - Richard Van Camp, poet, fiction writer

2. Consider these sets:
   \[ U = \{ x \mid x \leq 24, x \in \mathbb{N} \} \quad B = \{ x \mid 3x \leq 24, x \in \mathbb{N} \} \]
   \[ A = \{ x \mid 2x \leq 24, x \in \mathbb{N} \} \quad C = \{ x \mid 4x \leq 24, x \in \mathbb{N} \} \]
   a) Show that \( C \subseteq A \) using a Venn diagram.
   b) Determine \( A \cup B \), \( n(A \cup B) \), \( A \cap C \), and \( n(A \cap C) \).
   c) Determine \( A \cap B \cap C \).
   d) Determine \( (A \cup B \cup C)' \).

3. A survey of students in a school cafeteria had these results:
   - 50% of the students drink bottled water.
   - 56% eat fruit.
   - 43% follow a low-fat diet.
   - 22% drink bottled water and follow a low-fat diet.
   - 23% follow a low-fat diet and eat fruit.
   - 27% drink bottled water and eat fruit.
   - 15% drink bottled water, follow a low-fat diet, and eat fruit.
   What percent of the students do not drink bottled water, do not follow a low-fat diet, and do not eat fruit?

4. Write each statement in “if \( p \), then \( q \)” form. Then write the inverse. Determine whether the statements are biconditional, and explain your reasoning. If a statement is biconditional, write it as a biconditional statement. If it is not, state a counterexample.
   a) To win an election, you must get the most votes.
   b) Earth is the third planet from the Sun.
   c) Any number between 1 and 2 is not a whole number.

5. For each conditional statement below,
   i) verify it, or disprove it with a counterexample,
   ii) verify the converse, or disprove it with a counterexample,
   iii) verify the inverse, or disprove it with a counterexample, and
   iv) verify the contrapositive, or disprove it with a counterexample.
   a) If you are over 18, then you are an adult.
   b) If you are 16, then you can drive.

**WHAT DO You Think Now?** Revisit **What Do You Think?** on page 145. How have your answers and explanations changed?