1. (a) Prove that the sum of any consecutive 5 integers is always divisible by 5.

(b) Prove that for all positive integers \( n \), the sum of any consecutive \( n \) integers is always divisible by \( n \). (You may apply the formula \( 1 + 2 + 3 + \cdots + k = \frac{k(k+1)}{2} \) when \( k = n - 1 \).)

2. Do Exercises 1(a, b) on page 64.

3. Do Exercise 12, on page 77.

4. Do Exercise 17, on page 77.

5. Let \( A \), \( B \), and \( C \) be sets. Prove that \( A \cup (B \cap C) = (A \cup B) \cap (A \cup C) \).

6. Do Exercise 10(e), on page 84.