**Answers to Chapter 3 Questions**

**Exercise 1**

**3.10: Comparing if and while statements**

* **Similarities**: Both if and while statements execute a block of code based on a condition.
* **Differences**:
  + if is a **single-selection statement** that executes the block once if the condition is true.
  + while is a **repetition statement** that continues executing the block repeatedly while the condition remains true.

**3.11: Integer Division in Java**

* When dividing one integer by another in Java, the result is an **integer** (the fractional part is discarded).
* Example: 5 / 2 results in 2, not 2.5.
* **Solution**: Convert at least one operand to a floating-point type (double or float).
* double result = 5.0 / 2; // Output: 2.5

**3.12: Two Ways to Combine Control Statements**

1. **Sequential execution** – Statements are executed in order.
2. **Control structures nesting** – One control structure is placed inside another, like an if statement inside a while loop.

**3.13: Repetition for Sum Calculations**

* **First 100 positive integers**: Use a for loop (definite repetition).
* **Arbitrary number of positive integers**: Use a while loop with user input (indefinite repetition).

**3.14: Preincrement vs Postincrement**

* **Preincrement (++x)**: Increments x **before** using it in an expression.
* **Postincrement (x++)**: Uses x **first**, then increments it.