# Chapter Review Questions

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Date: 6-28-2022

Chapter 3 Review Questions (10 points):

1. Compare and contrast the if single-selection statement and the while iteration statement. How are these two statements similar? How are they different?

**The single-selection if statement executes once, whereas the while statement executes as long as a condition remains true. They’re both conditional statements that execute code blocks based on whether a condition is true. They are both control statements, but one incorporates looping.**

1. Explain what happens when a Java program attempts to divide one integer by another. What happens to the fractional part of the calculation?

**When a Java program attempts to divide one integer by another, integer division takes place. In integer division, any fractional components are truncated or discarded. You will essentially end up with an integer result, even if it may not be mathematically correct.**

1. With the loss of the fractional value from integer division, how can we avoid this outcome in integer division?

**If we wish to retain the fractional component, we could convert one of our integer operands to a floating-point number, as that would be workaround to dividing two integers. By making one of our operands a floating-point number, we can avoid the truncation of our fractional component in integer division.**

1. What is the difference between pre-incrementing and post-incrementing a variable?

**When pre-incrementing a variable, we increment the variable prior to any operations with it. When we post-increment a variable, we increment the variable after our other operations are executed. The only difference is the order in which we increment our variable.**

1. What is wrong with the following statement?

System.out.println(++(x + y));

**The increment operator can only be applied to a single variable at a time. By typing ++(x+y), we’re attempting to increment the sum of two variables, even though we should be passing a single variable. We could assign the sum to another variable and then increment that variable.**

Provide the correct statement to add one to the sum of x and y.

**int z = x + y;**

**System.out.println(++z);**

1. Determine the value of the variables my\_val and x, in the statement my\_val \*= x--; after the calculation is performed. Assume that the variables are type int and initially have the values of 5 for my\_val and the value of 8 for the variable x.

**my\_val would contain the integer value 40 and x would hold the integer value 7.**

1. Determine the value of the variables my\_val and x, in the statement my\_val \*= x++; after the calculation is performed. Assume that the variables are type int and initially have the values of 5 for my\_val and the value of 8 for the variable x.

**my\_val would contain the integer value 40 and x would hold the integer value 9.**

1. Determine the value of the variables my\_val and x, in the statement my\_val \*= ++x; after the calculation is performed. Assume that the variables are type int and initially have the values of 5 for my\_val and the value of 8 for the variable x.

**my\_val would contain the integer value 45 and x would hold the integer value 9.**

1. Determine the value of the variables my\_val and x, in the statement my\_val \*= --x; after the calculation is performed. Assume that the variables are type int and initially have the values of 5 for my\_val and the value of 8 for the variable x.

**my\_val would contain the integer value 35 and x would hold the integer value 7.**

1. Determine the value of the variables my\_val and x, in the statement my\_val %= ++x; after the calculation is performed. Assume that the variables are type int and initially have the values of 35 for my\_val and the value of 8 for the variable x.

**my\_val would contain the integer value 8 and x would hold the integer value 9.**