Java Fundamentals – Worksheet

Submit questions 1 to 6 in a word processing document and submit Java files for questions 7-10.

1. Assume you are writing a Java program that is going to need variables for the following data. Write the required declaration statements for each of the listed items below.
   You have two things to consider:
   - type of data (`int`, `double`, `boolean`, `char` or `String`)
   - an appropriate name (**don't forget to use camel case notation**)

   For example, for a company's net sales we would declare: `double netSales;`

a) Age of an employee, in years
b) Customer's street address
c) Mass of an object in a science experiment
d) Employee's rate of pay per hour (e.g. $12.50)
e) 4-digit employee number
f) Single letter product price code (e.g. A, B, C, D, ..., H)
g) Customer's phone number
h) Number of students in a class

2. What range of values can you store in a `float` variable?

3. Evaluate (mentally) the following numeric expressions. In each case, also indicate whether the final result will be a `double` or an `int`.

a) 58 / 6
b) 31 % 10
c) 17 * 2 + 3 * 4.5
d) 3.0 + 117 % 7
e) 14 + 18 / 4
f) 4.2 * 3

4. Given the following declarations, which of the assignment statements below are allowed in Java? If a statement is not allowed, explain why.

```
int intVar;
double doubleVar;
char charVar;
String strVar;
```

a) intVar = doubleVar;
b) doubleVar = intVar;
c) charVar = intVar;
d) charVar = doubleVar;
e) strVar = doubleVar;
f) doubleVar = charVar;
g) strVar = charVar;
h) charVar = strVar;

5. What is the result of the following code fragment: Explain!

```
System.out.println("1 + 2 = " + 1 + 2);
System.out.println("1 + 2 = " + (1 + 2));
```

6. What is the result of the following code fragment: Explain!

```
System.out.println(1 + 2 + "abc");
System.out.println("abc" + 1 + 2);
```

7. Write Java code that calculates the tax on a new smartphone which costs **CAD 1367.53**, and outputs a proper message that states the tax amount.

8. Write Java code that calculates how many hours are there in **371** minutes, and outputs the result.

9. Write Java code that calculates the circumference of a circle with diameter 7 **meters**, and outputs the result.

10. Write Java code that calculates and outputs on the screen the average (arithmetic mean) of the following three numbers: **13, 34, 50**.