Tutorial #3: Java Fundamentals - SOLUTIONS

Question 1:

What is the difference between pre increment and post increment- for example what will each code segment below display?

a)
```
int k =5;
System.out.println(k++);     // will display 5, then increment k
```

b)
```
int k =5;
System.out.println(++k);     // will increment k then display 6
```

Question 2:

What is the value of the following expressions / variables?

- ❑ `(5 + 6) * 2 - 1` // 21
- ❑
```
i = 5; j = 3; j -= 1;
k = ++i / j--;                // 3
```
- ❑
```
int k = 5;
k = -k * --k;                 // -20
```
- ❑ `10 * 3 < 300 / 10 || 13 > 12` // true
- ❑ `true || false && true` // true

Question 3: Mixed Mode Operations

Predict the output of the following program.

```
public class MixedMode {
   public static void main(String[] args) {
      int x =10, y = 12;
      int iResult;
      float w = (float)4.5;
      float z = (float)8.2;
      float fResult;

      iResult = (int) (z/w);
      fResult = y * x;
      System.out.println("iResult now is: " + iResult + " and fResult is : " + fResult);
      x = 2;
      fResult = z / x;
      System.out.println("fResult now is: " + fResult);
      x = 10;
      y = 4;

      //Notice that the following casting will be useless (too late)
      fResult = (float) (x/y);
      System.out.println("fResult now is: " + fResult);

      //The proper way to do so would be as follows
      fResult = (float) x/y;
      System.out.println("fResult now is: " + fResult);

   } // end of main()

} // end of class
```

Answer:

```
iResult now is: 1 and fResult is: 120.0
fResult now is: 4.1
fResult now is: 2.0
fResult now is: 2.5
```

Question 4: Strings

A.

What is the output of the following code segment?

```
String s1, s2, s3;
s1 = "Quest for the holy Grail";
s2 = s1.toLowerCase();
s3 = s1 + " " + s2;
System.out.println(s3.replace('h', 'z'));
```

Answer:
Quest for tze zoly Grail quest for tze zoly grail

B.

What is the **length** of the string "`mississipi`"? What is the **index** of the last character?

Answer:
Length: 10
Index last character: 9

C.

Assume the `String` variable s contains the value "`Agent`". What is the effect of the following assignment statements?

```
a. s = s + s.length();
b. s+= s.length();
```

Answer:
Both result in s = "Agent5"

D.

Assume the following declaration: `String name = "Your Name Here";`
What is the value of each of the following expressions?

```
a. name.substring(9) ;                    //" Here"
b. name.substring(1,6);                   //"our N"
c. name.substring(1,name.length()-1);     //"our Name Her"
d. name.length();                         //14
e. name.indexOf('r');                     //3
f. name.indexOf('n');                     //-1
```

Question 5:

What is the output of the following program? Once you have answered the question, run the code to make sure your answers are right.

```
public class Question5
{
    public static void main (String[] args)
    {
        final String sentence = "I hate programming.";
        int position = sentence.indexOf("hate");
        String firstPart = sentence.substring(0, position);
        String afterHate = sentence.substring(position + 4);
        String newString = firstPart + "love" + afterHate;
        System.out.println("The line of text to be hanged is: ");
        System.out.println(sentence);
        System.out.println("I have rephrased the line to read:");
        System.out.println(newString);

    }// end of main ()
}// end of class Question5
```

Answer:
The line of text to be changed is:
I hate programming.
I have rephrased the line to read:
I love programming.