Worksheet 0.1: Java Basics

1. You want your computer program to remember a variety of information. Write the most appropriate primitive type that should be used to represent each of the following:

   a. Number of students in this class

   b. Number of stars in the sky

   c. Whether you are a senior or not

   d. The letter grade from your last math class

   e. If you had Mr. T as a teacher for Intro

2. Show the memory simulation for the following code segment.

```
int num1 = 30;
double num2 = 11.2;
boolean isRed = true;
char letter;
num2 += 4;
```

```
//Memory simulation
```

3. What prints as a result of the following code?

```
int x1 = 18;
int y1 = 45;
double x2 = 19.4;
double y2 = 31.2;
double midX = (x1 + x2) / 2;
double midY = (y1 + y2) / 2;
System.out.print("Midpoint: (" + midX + ", ");
System.out.println(midY + ")");
```

4. What prints as a result of the following code?

```
int numA = 5 + 6;
int numB = 17 % 3;
System.out.println(numA + numB);
System.out.println(numA);
numA -= numB;
System.out.println(numA);
System.out.println(numB);
```

5. What is the output of the following code? [Note: casting happens before any mathematical operation unless otherwise specified!] Also, NO CALCULATOR!

```
System.out.print((char)(16 - 29 % 12 * -10 + 5));
System.out.print((char)(100 + 12 / 11 + 10));
System.out.print((char)32 - (int) 17.8 - 5 % 8 * 3);
System.out.print((char)(100.5));
System.out.print((char)(10 / 2.0 * 12 - 26.4));
```

6. Tell whether each of the following lines of code are legal (i.e. would compile). If they do not, explain why.

```
int num1 = 16;
double num2 = 18;
int result1 = num1 + num2;
double result2 = num1 / num2;
```

7. Evaluate each of the following expressions.

   a. `15 < 10 || 8 + 3 > 1`

   b. `true || false && false`

   c. `15 / 4 == 15.0 / 4`

8. Simplify each boolean expression using DeMorgan's Law.

`!(A && B || !C)`

`!(!A || B && !(C && D))`