Name _____

Section I: Multiple Choice & Short Answer

1. Which of these values can an **`int`** not hold? (1 pt)
    a. 25
    b. -12
    c. 2147483647
    d. -23.5

2. What do you get when you add an **`int`** to a **`double`**? (1 pt)
    a. an int
    b. a double
    c. a compiler error
    d. a runtime error

3. What is the output of the following program? (1 pt)

```
double answer = 5 / 2;
System.out.println(answer);
```

    a. 2.5
    b. 2
    c. 3
    d. 2.0

4. List the eight primitive types and possible values they can hold. An example has been provided for you. You DO NOT need to list the minimum/maximum values for all data types. (7 pts)

Ex: boolean	→	*true or false*
byte	→	
short	→	
	→	
	→	
float	→	
	→	
	→	

Questions 5-7 refer to the following 2D array:

```
int[][] myArray = new int[]{
      new int[]{2, 5, 9, 10},
      new int[]{1, 2, 3, 4, 5}};
```

5. What is the result of `myArray[1][1] + myArray[1][2]?` (1 pt)
   a. 7
   b. 5
   c. 3
   d. Runtime Error: ArrayIndexOutOfBoundsException

6. What is the result of `myArray[2][1] + myArray[2][2]?` (1 pt)
   a. 7
   b. 5
   c. 3
   d. Runtime Error: ArrayIndexOutOfBoundsException

7. What is the output of the following method? (1 pt)

```
public void numberSeven() {
      for (int i = 0; i < 10; i++) {
            if (i < 6 && i % 2 == 0) {
                  System.out.print(i);
            }
      }
}
```

   a. 123456789
   b. 123456
   c. 246
   d. 135

8. What is the result of: **`true && 5 > 0 || 1 % 2 == 0 && 2 / 5 >= 1`**? (1 pt)
   a. true
   b. false

9. What can access something modified with **private**? (1 pt)
   a. Nothing
   b. Anything
   c. Items in the same class
   d. Items in the same package

10. What is the output of **Bar.main()**? (1 pt)

```
public class Foo {
      public void foo() {
            this.bar();
      }

      public void bar() {
            System.out.print("Foo");
      }
}

public class Bar extends Foo {
      public void bar() {
            System.out.print("Bar");
      }

      public static void main(String[] args) {
            Foo foo = new Bar();
            foo.foo();
      }
}
```

a. Foo
b. Bar
c. Compiler Error
d. Runtime Error

Section II: Free Response

11. Write a method **fibonacciFinder** that accepts an integer n and returns the n^{th} Fibonacci number. One bonus point for using a recursive method. (3 pt)

12. Use any method to sort a given array of integers in **ascending** order. (3pts)

```
public void sort(int[] numbers) {

}
```

Questions 13 & 14 refer to the BankAccount and SavingsAccount class.

```
public class BankAccount {
	private double balance;

	public BankAccount(double balance) {
		this.balance = balance;
	}

	public double getBalance() {
		return this.balance;
	}

	protected void setBalance(double balance) {
		this.balance = balance;
	}
}

public class SavingsAccount extends BankAccount {
	double interestRate = 0.05; // 5% Interest Rate

	// put constructor below









}
```

13. Write a constructor for SavingsAccount (above) that accepts a balance and an interest percent (3 pts)

14. Complete the method to calculate interest and add it to the balance (2 pts)

```
public void calculateInterest() {









}
```

15. Briefly describe what an `interface` is. Can interfaces be instantiated? (2 pts)

Extra Credit: Describe the header of the main method: (1 pt)

```
public static void main(String[] args)
```