1. (4 pts) Which of the following is true about methods?
   a. Method can have multiple parameters and can return at most one return value.
   b. Methods can have only one parameter and can return only one return value.
   c. Methods can have multiple parameters and can return multiple return values.
   d. Methods can have one parameter and can return multiple return values.

2. (4 pts) Which of the following is the correct first line for a method definition that takes two parameters of type int and returns true if the first value is greater than the second value?
   a. public static boolean m(int a, b)
   b. public static boolean m(int a, int b)
   c. public static int m(bool a, bool b)
   d. public static void m(int a, int b)

3. (4 pts) What is the output of the following

   ```java
   int x = 0;
   for (int i=3; i < 5; i++) {
       x = x + 1;
       for (int j = 0; j < 3; j++) {
           x = x + 1;
       }
   }
   System.out.println("x = " + x);
   ```

   Ans: _____________
4. (4 pts) What is wrong with the following code?

```java
public static char grade(int score)
{
    if (score >= 9)
    {
        return 'A';
    }
    else if (score >= 8)
    {
        return 'B';
    }
    else if (score >= 6)
    {
        return 'C';
    }
}
```

a. No return statement for all possible logic paths
b. Invalid parameter types
c. Invalid return type
d. None of the above

5. (4 pts) What is the syntax error in the following method definition?

```java
public static int area(double r)
{
    double a;
    a = 3.14 * r * r;
    return r * r;
}
```

a. The variable `a` is set but never used.
b. The value that is returned does not match the specified return type.
c. The method does not return the value `a`.
d. The method does not specify a return type.

6. (4 pts) Recursion: What is the output if the method call is `testmyval(6)` in the following code snippet?

```java
public static void testmyval(int nval)
{
    if (nval > 0)
    {
        testmyval(nval - 2);
    }
    System.out.print(nval + " ");
}
```

a. 0 2 4 6
b. 0 0 0 0
c. 6 6 6 6
d. 6 4 2 0
7. (3 pts each, 9 pts total) For the code below:

```java
1 public class DoSomething{
2  public static double result = 0;
3
4  public static void main(String[] args) {  
5      int n = 3;
6      result = prod(n);
7      System.out.println("result = " + result);
8  }
9
10  public static double prod(int t) {  
11      double b = 1.0;
12      for (int n = 1; n < t; n++) {  
13          b = b*n;
14      }
15      return times(b);
16  }
17
18  public static double times(double s) {  
19      double t = s*2;
20      return t;
21  }
22}
```

a. (3 pts) What is the scope of the variable result?
   i. the entire main method
   ii. lines 6 and 7
   iii. the entire class
   iv. none of the above

b. (3 pts) What is the scope of the variable `n` in the method `prod`?
   i. the entire main method
   ii. the entire method `prod`
   iii. the entire class
   iv. lines 12 - 14
   v. none of the above

c. (3 pts) What is the scope of the parameter `t` in the method `prod`?
   i. the entire main method
   ii. the entire method `prod`
   iii. the entire class
   iv. the entire method `prod` and the method `times`
   v. none of the above

8. (4 pts) Which one of the following statements is true about passing arrays to a method?
   a. By default, arrays are passed by reference to a method.
   b. Arrays are passed only if size is specified as another parameter.
   c. Arrays when updated in a called method are not reflected to the calling method.
   d. By default, arrays are passed by value to a method.
9. (4 pts) Which one of the following statements is true when declaring an `ArrayList` as a method parameter?

   a. An `ArrayList` declared as a method parameter is a constant value by default.
   b. An `ArrayList` value cannot be modified in a method when the array list is declared as a parameter.
   c. An `ArrayList` value can be modified inside the method.
   d. An `ArrayList` declared as a method parameter should be accompanied with its size.

10. (4 pts) How many elements can be stored in an array with 3 rows and 6 columns?

    Ans: _________________

11. (2 pts each, 10 pts total) Suppose you have a 2D array of `Strings` called `names` with 4 rows and 3 columns. Match the following types:

    A. `String`
    B. `int`
    C. `2D array of Strings`
    D. `1D array of Strings`

with each of the following:

   i. `names.length`    corresponding type (circle one): A  B  C  D
   ii. `names[1]`       corresponding type (circle one): A  B  C  D
   iii. `names`         corresponding type (circle one): A  B  C  D
   iv. `names[2][0]`    corresponding type (circle one): A  B  C  D
   v. `names[2].length` corresponding type (circle one): A  B  C  D

12. (4 pts) What is the output of the following statements?

    ```java
    ArrayList<String> names = new ArrayList<String>();
    names.add("Amy");
    names.add(0, "Allen");
    names.remove(1);
    names.add("Frank");
    names.add(1, "Kelly");
    for (String s : names)
    {
        System.out.print(s + ", ");
    }
    ```

    a. Amy, Frank, Kelly,
    b. Allen, Kelly, Frank,
    c. Amy, Kelly, Frank,
    d. Allen, Kelly,
13. (4 pts) What is the output of the following code snippet:

```java
public static void main(String[] args) {
    int[] myNums = {10,10,10};
    timesTwoArray(myNums);
    System.out.println("main: " + Arrays.toString(myNums));
}

public static void timesTwoArray(int[] nums) {
    for (int i=0; i < nums.length; i++) {
        nums[i] = 2*nums[i];
    }
    System.out.println("timesTwoArray: " + Arrays.toString(nums));
}
```

- a. timesTwoArray: [20, 20, 20]
  main: [20, 20, 20]
- b. timesTwoArray: [20, 20, 20]
  main: [10, 10, 10]
- c. main: [20, 20, 20]
  timesTwoArray: [20, 20, 20]
- d. main: [10, 10, 10]
  timesTwoArray: [20, 20, 20]
- e. none of the above.

14. (4 pts) What does the following code output?

```java
for(int i=0; i<6; i++)
{
    for(int j=i; j>=0; j--)
        System.out.print(j+" ");
    System.out.println();
}
```

- a. 0
  0 1
  0 1 2
  0 1 2 3
  0 1 2 3 4
  0 1 2 3 4 5

- b. 0
  1 0
  1 2 0
  1 2 3 0
  1 2 3 4 0
  1 2 3 4 5 0

- c. 5 4 3 2 1 0
  4 3 2 1 0
  3 2 1 0
  2 1 0
  1 0
  0

- d. 0 1 2 3 4 5
  1 0
  2 1 0
  3 2 1 0
  4 3 2 1 0
  5 4 3 2 1 0
15. (4 pts) The local fraternity (Alpha Kappa Gamma) and sorority (Sigman Delta) have written a program to mix together letters from their names to produce a secret code word to be used by members to get into a special party. Show what code word their program will print out.

```java
String[] greeks = { "kappa", "gamma", "sigma", "delta" };  
for(int i=greeks.length-1; i>=0; i--)  
{     for(int j=0; j<=i; j++)  
{         System.out.print(greeks[i].charAt(j));     }  
}  
```

Ans: _______________________

16. (10 pts) Programming – Methods: Write a method that computes the area of a rectangle by multiplying its length by its width, and then returns `true` if the area is larger than 30. The length and width parameters are `double` values.
17. (19 pts total) Programming - 2D Arrays: Write code (e.g. that would go in main) that does the following:
   a. (4 pts) Declare and create a 2D array of doubles with 10 rows and 5 columns:
   b. (7 pts) Write code to fill the array with random numbers (e.g. use Math.random()):
   c. (8 pts) Write code to sum the values within each row and print the resulting row sums: