Second exam study guide

Exam data
April 7th for T/Th students
April 8th for Fri students
This exam will cover chapters 1 – 4, with the concentration on chapters 3 and 4.

What to study: Redo all the problems for chapters 3 and 4 and all the in-lab activities.

You will be tested on the following major topics:

1. Methods that accepts parameters and return values
2. String class and the usage of the available methods
3. Math class and usage of the available methods
4. Scanner class and usage of all the available methods
5. Random class and its methods
6. Conditional statements
7. Switch statements
8. For loops
9. Cumulative some
10. Unicode/asci code

These are just practice questions and they are not the actual questions. The actual questions will be different than the following

1. Write a program which reads as input a single character followed (on the next line) by one or two real numbers (depending on the character input). (There will be no more than one character or number on each input line.) Solve this problem once using if/else and solve it for the second time using switch statements. You must ask the user how many times he/she wants to repeat the run of the program.

The character represents a shape — allowable inputs are
C or c for circle - followed by one real number for the radius
T or t for triangle – followed by two real numbers for base and height
R or r for rectangle – followed by two real numbers for length and width

Input the dimensions for the given shape and carry out the required arithmetic to calculate the area of the shape. If the single character is not one of the allowable ones, print a reasonable error message.

Prompt appropriately for the inputs.

Enter character: *r*
Enter length: *7.5*
Enter width: *10.0*

The area of a rectangle with length = 7.5 and width = 10.0 is 75.0

2. Write a method to count the number of the words in a given string. For example the String s = “ I have to eat lunch soon”; words can be separated with one space or more than one space.
3. Write a method named `pay` that accepts a real number for a TA's salary and an integer for the number of hours the TA worked this week, and returns how much money to pay the TA. For example, the call `pay(5.50, 6)` should return `33.0`.

   The TA should receive "overtime" pay of 1 ½ normal salary for any hours above 8. For example, the call `pay(4.00, 11)` should return (4.00 * 8) + (6.00 * 3) or `50.0`.

4. Write a method that accepts one String as a parameter and return true if the word is spelled the same forward and backward, otherwise it should return false. This method must have a for loop so the user can try different words. A word that is read the same backward and forward is called Pallindrome

5. Write a method called doubleNum that accepts a String as its parameter and determines if the given string could be converted to a double value. Returns true if it can be converted and false otherwise. doubleNum(“123.456”) returns true, doubleNum(“a123.56”) returns false, doubleNum(“12”) return true, doubleNum(“1.0”) returns true.

6. Write a method that accepts two integers value as its parameter and determines if the sum of the two numbers is devisable by 3 or 4 or 5. A number is divisible by 3 if the **sum of its digits** is divisible by 3. A number is divisible by 4 if the number's **last two digits** are divisible by 4. A number is divisible by 5 if its **last** digit is a 0 or 5. I

7. Write a method called `wordCount` that accepts two `String` as its parameter and returns true if the two string has the same number of words. A word is a sequence of one or more nonspace characters (any character other than ' '). For example, strings

   ```
   ”hello CSc 15” and “   how    are you” have the same numbers of words
    therefore this method should return true.
   ```

8. `Write a method to count the number of the vowels in a given string.`

9. What is the output of the following code:

```
public class Mystery
{
   public static void main(String[] args)
   {
```

```
      int x = 4;
      int z = 3;
      int y =6;
      x = mystery(x,z,y);
      z = mystery(z,z,x);
      y = x + y;
      System.out.println("x = " + x);
      System.out.println("Z = " + z);
      System.out.println("Y = " + y);


      System.out.println("X + Y + Z = " + (x + z + y));
   }
   public static int mystery(int y, int x, int z)
   {
       z++;
       boolean b = false;
       if( !(z > 5 && z <=10) || !true && !(x+ y >0) || !b)
       {
             x = x + y * 2;
             y = y/2;
       }
       else if ( !(x == z))
       {
             x = z;
       }
       else
       {
          x = x -y * z;
          z++;
       }
       x = x + y + z;
       return x;

}   }
```