**AP Computer Science - Practice Final Exam**

**Section I - Multiple Choice/Short Answer**

1. Consider the following code:

private static int sum(int n){

int total =0;

for (int i = 1; i<=n; i++)

{

}

return total;

Write a statement that should go in the body of the *for* loop so that the sum of the first *n* integers is returned?

What value should be returned by this method if the method call was *sum(9);* ?

2. What will be printed by the following code segment?

**boolean** flag = **true**;

**int** x = -1;

**if** (flag && (x > 0)) System.*out*.println("yes");

**else** **if** (x==0) System.*out*.println("maybe"); Output =

**else** **if** (!flag) System.*out*.println("sometimes");

**else** System.*out*.println("no");

3. The expression !f || g is the same as which of the following? (deMorgan's Law)

a. f || !g b. !(f || g) c. !(f && g) d. !(!f && !g) e. !(f && !g)

4. Examine this code:

**double** answer = 13/5;

System.*out*.println(answer);

Output =

5. Which of the following pairs of declarations will cause an error message?

I. double x = 14.7; II. double x = 14.7; III. int x = 14;

int y = x; int y = (int) x; double y = x;

A. No errors B. I only C. II only D. III only E. I and III only

6. Given that a, b, and c are integers, consider the boolean expression:

(a < b) || !((c == a \* b) && (c < a))

Which of the following will guarantee that the expression is true?

a. c < a is false

b. c < a is true

c. a < b is false

d. c ==a \* b is true

e. c ==a \* b is true and c < a is true

7. Consider this code segment:

**int** x = 10, y = 0; Write Output Here:

**while**(x >5)

{

y = 3;

**while** (y < x)

{

y \*=2;

**if**(x % y ==1) y +=x;

}

x-=3;

}

System.*out*.println(x + " " + y);

8. What is the output of this program? Write Output Here:

**for** (**int** i = 4; i >=1; i--)

{

**for** (**int** j = i; j >=1; j--)

System.*out*.print(2\*j-1);

System.*out*.println();

}

9. Examine this code:

**int** newNum = 1; **int** temp; Write Output Here:

**int** num =873;

**while** (num > 10)

{

temp = num % 10;

num/=10;

newNum=newNum \* 10 + temp;

}

System.*out*.println(newNum);

10. If we have the following variables: **int** p = 5; **int** q =3;

What value do the following expressions return?

Write Outputs Here:

I. (double) p \* (double) q /2;

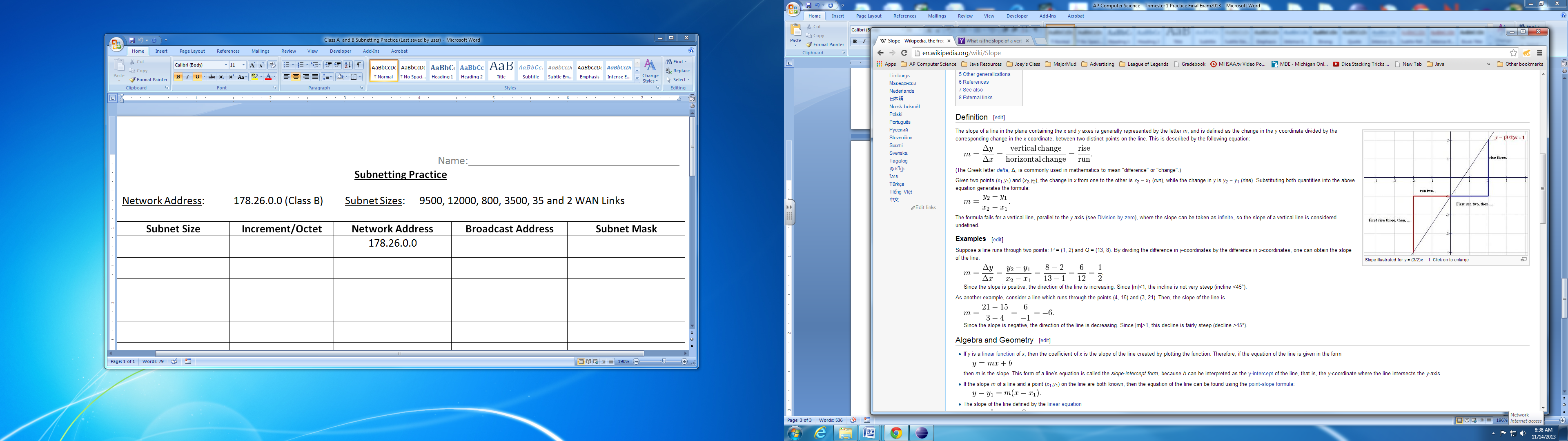
II. (double) p \* (double) (q/2);

III. (double) (p \* q / 2);

**Section II - Writing Code**

**Problem**

You will write a program called *Slope*. This program will ask the user to type in two points in the format (x1, y1) and (x2, y2). The program will then calculate and output the slope. It will also output the direction of the line (see below).



The slope (m) of a line is solved by:

\*\*Note - The slope may be negative and may not be an integer.

Your program will have to pull out the four variables (x1, x2, y1, y2) from the Strings entered, and then use them to calculate the slope. I would suggest using charAt and manipulating the char value to get the desired integer value. You can assume following:

* All coordinates are positive.
* All coordinates are integers.
* All coordinates are a single digit.

**Calculating the direction of the line**

If the slope is positive, the line will go up and to the right. (Syntax: "This line slopes up and to the right.")

If the slope is negative, the line will go down and to the right. (Syntax: "This line slopes down and to the right.")

If the slope is zero, the line will be horizontal. (Syntax: "This line is horizontal.")

If the slope is undefined (divide by 0), the line will be vertical. (Syntax: "This line is vertical.")

Sample Output # 1

Enter point # 1 in the format (2,5)

(2,5)

Enter point # 2

(2,1)

Slope is undefined.

This line is vertical.

Sample Output # 2

Enter point # 1 in the format (2,5)

(1,3)

Enter point # 2

(2,1)

Slope = -2.0

This line slopes down and to the right.