

Name: \_\_\_\_\_

SSN: \_\_\_\_\_

## CS 12 - Basic Proficiency Exam January 12, 1998

1. (6 pts) How many times will the following loop body execute? What values will *sum* and *counter* hold after the program code has completed its execution?

```
sum = 0;
counter = 1;
while (counter <= 13)
{
    sum = sum + counter;
    counter = counter + 4;
}
```

(a) Loop will execute \_\_\_\_\_ times.

(b) sum = \_\_\_\_\_

(c) counter = \_\_\_\_\_

2. (6 pts) Given two integer variables, *x* and *y*, write a code segment that exchanges their values.

3. Determine what the following code will output.

(a) (4 pts)

```
int i=7, j=5;
i = i * 6 + j / 2;
cout << i << " " << j ;
```

(b) (8 pts)

```
void func(int &num1, int num2)
{
    if (num1 < num2)
        num1 = 0;
    else {
        num1 = num2;
        num2 = 100;
    }
    cout << num1 << " " << num2 << endl;
}

main()
{
    int a = 17;
    int b = 9;
    func(a,b);
    cout << a << " " << b << endl;
}
```

4. (6 pts) Write a function to compute the area of a circle. The formula for the area of a circle is given below. Your function should accept one double parameter for the diameter of the circle, and it should return the area as type double.

$$area = \pi * radius^2$$

$$\pi = 3.14$$

5. (5 pts) Define an array of 10 integers. Write code to initialize each element in the array. You may choose what values to initialize each element to. Write code to print out each element on a separate line.