Name _____

CS120 Computer Science I
First Exam

This is a closed note, closed book exam.

1. (20 points) Fill in the rest of the following C++ program to do the following:

1) Ask the user to enter two integers greater than 0.
2) Print "Error" if either value is 0 or less.
3) Print "Same" if both integers have the same value (and are greater than 0).
4) Print "Larger = X", where X is the larger number (and both are greater than 0).

```
#include <iostream>
using namespace std;
int main( ){









}
```

2. (21 points) Fill in the blanks in the sentences below with the term that fits best. (Some of the terms won't be used.)

a. type	h. break	o. argument
b. compiler	i. switch	p. double
c. syntax	j. do while	q. public
d. run-time	k. while	r. private
e. integer	l. class	s. data member
f. float	m. library	t. member function
g. Boolean	n. function	

1. A _____ loop is always executed at least once.

2. The _____ case is executed in a switch statement when none of the other cases is matched.

3. A _____ data member (or member variable) can only be accessed by function members of a class.

4. A _____ "translates" a program written in a high-level language into a program the computer can execute.

5. A _____ error in a program can be caught by the compiler.

6. A value whose type is _____ gets truncated if a program attempts to store the in a variable of type _____.

7. A _____ is often used when you are going to need to use the same segment of code many different times in many different places in a program.

3. (8 points) Are the following Boolean expressions true or false in C++ if the variables have the values: x = 37, y = 6, and z =0.

(x != y)

(x > z) && (z > y)

(x % y == 0)

((x * y) >= 0) && ((y*z) >= (x*z))

4. (10 points) Consider the following fragment of code.

```
int function(int z){
    int var2;
    var2 = z + z;
    return var2;
}

int main(){
    int var1 = 4;
    int var2 = 3;
    var1 = function(var2);
    cout << var1 << " " << var2;
   return 0;
}
```

What will the program print?

5. (20 points) Write a complete program that asks the user for an integer in the range 2-200, then prints all of the *even* numbers from 2 to the value entered by the user. If the user enters an integer outside of the required range the program should ask for a new integer, one in the acceptable range is entered.

The following questions are based on this definition of a car class, which could be used to help a user decide which car to purchase:

```
class car{
private:
   double price;                // car's price
   double maintenance;          // estimated monthly maintenance cost.
   double MPG;                  // miles per gallon
public:
   car();
   void print();
   double total_cost(int);
}
```

6. (6 points) Answer the following questions:

What, if any, are the private data members of the car class?

What, if any, are the private member functions of the car class?

Does the car class have a constructor?

7. (5 points) Write the print() function for the car class. It should print the car's price, maintenance costs, and MPG in an easy to read format.

8. (10 points) Write the total_cost() function for the car class. The total_cost() function should calculate the total cost of ownership, which includes initial price, maintenance, and gas over the lifetime of the car, where the lifetime is defined as M months. The total_cost() function receives the number of months as an argument (the integer parameter); it should then ask the user how many months they plan to own the car. Based on these values it should calculate, *and return*, the total cost of ownership.