Name: .....

- **This test is printed single sided. Use the back side of the page if you need extra space.**
- **Please make sure to clearly specify your answer.**
- **For each violated or missing punctuation or syntax, 0.25 POINTS WILL BE TAKEN OFF.**

1. [6 pts] What is the output of the following code fragment that invokes calc1 and calc2?

```
int x = 2,
   y = 3,
   z = 4;

calc1(x, y);
cout << x << "  " << y << "  "  << z << endl;

 z = calc2(x, y);
cout << x << "  " << y << "  "  << z << endl;
```

```
void calc1 (int a, int b)
{
        int c;

        a = a + 2;
        b = a * 3;
        c = c + a;
   }
```

```
int calc2 (int & a, int b)
{
        int c,
           d;

        a = a * 2;
        b = b * 3;
        c = a + b;
        d = 2 * c;

        return d;
}
```

Clearly specify your output in the same order that you would see on the screen:

2. [9 pts] What is the output of the following code fragment that invokes func1 and func2?

```
int p = 10,
    q = 20,
    r = 30;

func1(p, q, r);
func2(p, q, r);
cout << p << "  " << q << "  "  << r << endl;
```

```
void func1 (int & p, int & q, int & r)
{
          p = p * 2;
          q = p * 3;
          r = p + q + r;
          cout << p << "  " << q << "  "  << r << endl;
}
```

```
void func2 (int p, int q, int r)
{
          p = p * 2;
          q = p * 3;
          r = p + q + r;
          cout << p << "  " << q << "  "  << r << endl;
 }
```

Clearly specify your Output in the same order that you would see on the screen:

3. [8 pts] Write the prototype and the definition of a function (***readFName)*** that reads a first name from a user and give it back to calling function. Use the proper way to return the value back to the calling function.

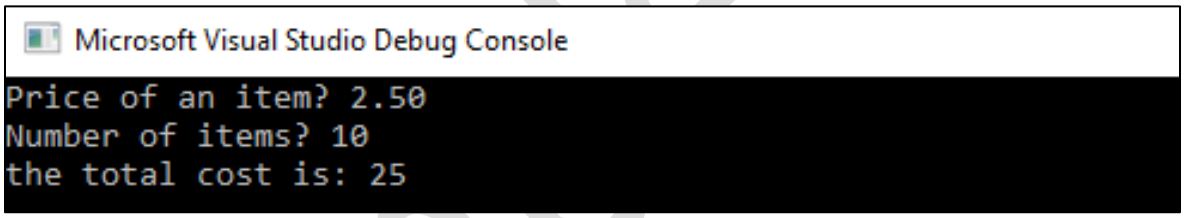
4. [10 pts] Write a function prototype and the definition for a function (***isSum***) that takes three arguments of type int. The function returns *true* if the first two arguments adds upto the third argument; otherwise it returns *false*. For example, ***isSum(1, 1, 2)*** and ***isSum (5, 3, 8)*** both returns *true*, whereas ***isSum(5, 3, 2)*** and ***isSum(2, 6, 9)*** both returns *false*.

5. [7 pts] Determine each of the following as header, prototype, definition, call, or none.

1	int max(int a, int b);	Header/ prototype/ definition/ call/ none
2	int getNum();	Header/ prototype/ definition/ call/ none
3	void readNumbers(float &, float &);	Header/ prototype/ definition/ call/ none
4	int num1, num2; readNumbers(num1, num2);	Header/ prototype/ definition/ call/ none
5	bool checkPositive (double x)	Header/ prototype/ definition/ call/ none
6	displayGreeting();	Header/ prototype/ definition/ call/ none

7	void displayMessage()
	{
	cout << "Hello!";
	}
		Header/ prototype/ definition/ call/ none

Write a program to calculate the total cost of a multiple units purchased from the same item when the item's unit price and the number of units purchased are given by the user (see the given one possible sample output). The functions you are supposed to utilize are given below. (Note: No global variables should be used).



6. [15 pts] a function (**readItemInfo**) that reads two user inputs: the price of an item and the number of items purchased (make sure both are positives; if it is not, keep asking until positive numbers are entered.)
7. [15 pts] a function (***calcTotCost***) that calculates the total cost based on the unit price and the number of units purchased.
8. [15 pts] a function (***displayTotCost***) that displays ONLY the total cost with an appropriate label.
9. [15 pts] the main function.

// Function prototypes

// The main function

// function definitions