Function Practice

1. Label the 3 parts of a function prototype.
    1. Function Name
    2. Return Datatype
    3. Parameters

2. Create a prototype for a function which calculates a persons SAT Score. The function should take in the a Math score, and a Reading/Writing scores and return an overall SAT Score.
   Example: Math - 400, Reading/Writing - 300, Total - 700

   int calcSAT(int iMath, int iRW)

3. Answer the following questions given the code segment below.

```
1  int unknownFunction(int iA, int iB)
2  {
3      int iC = 1;
4
5      for(int i = 0; i < iB; i = i + 1)
6      {
7          iC = iC * iA;
8      }
9
10     return iC;
11 }
```

   (a) Fill out the tracing table below given the function call *unknownFunction(2,3)*.

iA	iB	iC	i
2	3	1 1*2=2 2*2=4 4*2=8	0 1 2 3

   (b) What is the purpose of unknownFunction?

   Power function *

   Doesn't work for (-) exp

   $2^{-1} = \frac{1}{2}$

   (c) What are parameters iA and iB each representing?
    1. iA: Base
    2. iB: Exp

   (d) What is the return iC representing?
    1. iC: Product

4. Answer the following questions given the code segment below

```
1  #include <iostream>
2
3  using namespace std;
4  int functionA(int iA, int iB)
5  {
6      int iC = iA * iB;
7      return iC;
8  }
9
10 int functionB(int iA, int iB)
11 {
12     int iC = iA + iB;
13     return iC;
14 }
15
16 void functionC(int iA, int iB)
17 {
18     cout << "iA: " << iA << endl;
19     cout << "iB: " << iB << endl;
20 }
21
22 int main()
23 {
24     int iA = 2, iB = 10;
25
26     iA = functionA(iA, iB);
27     iB = functionB(iA, iB);
28
29     functionC(iA,iB);
30     return 0;
31 }
```

(a) Trace the function call *functionA(3,2)* using a function t-chart.

call | Return
Body + Parameters

functionA(3,2) | 6
iA=3
iB=2
iC = iA * iB = 3 * 2 = 6

(b) Track the changes to iA and iB using the table below and function t-charts.

↗ in Main

Start @ Main

iA	iB	Output
~~2~~ 20	~~10~~ 30	

iA =
functionA(2,10) | 20
iA=2
iB=10
iC = iA * iB = 2 * 10 = 20

iB =
functionB(20,10) | 30
iA=20
iB=10
iC = iA + iB = 20 + 10 = 30

functionC(20,30) | ∅
iA=20
iB=30
"iA: 20"
"iB: 30"
=> ∅

↗ Scope

(c) Assume we replace Line 29 with *functionC(iB,iA)*, what happens to the output of the program?

iA: 30
iB: 20