

1. Write a C equation for the following algebraic equation. Take all variables to be int.

$$y = x + \frac{2x^2}{a + 3/x}$$

2. How many line of print do each of the following produce? The variables i, j, and k are integers.

```
i = 1;
while(i <= 10)
{
    j = 1;
    while(j < 1000)
    {
        printf("%d %d\n", i, j);
        j = j + 2;
    }
    i++;
}
```

```
j = -1;
while(j < 3)
{
    printf("%d \n", j);
    k = 1;
    while(k < 5)
    {
        printf("%d \n", j/k);
        k++;
    }
    j++;
}
```

Lines of Print \_\_\_\_\_

Lines of Print \_\_\_\_\_

3. Answer the following TRUE or FALSE

- A) In C all variables must be declared before they can be used in a program \_\_\_\_\_
- B) C does not permit the use of GLOBAL variables. \_\_\_\_\_
- C) Functions in C may not call other functions. \_\_\_\_\_
- D) IF blocks may not be placed inside the "else" section of another IF block. \_\_\_\_\_
- E) The processing directive #include <math.h> is necessary only if your program is going to do input or output. \_\_\_\_\_

4. Assume that the user has input two integers called i and j. Write an *if block* to print the value of i and j only if the value of i is greater than 10 *and* i is greater than j. If this is not the case your if block should print only the value of j if j is less than zero otherwise, it should print i.  
*// Put your if block here*

5. Show what is printed by the following program and fill in the memory map.

<pre>#include &lt;stdio.h&gt;  int F1(int x); int F2(int x, int y); int main() {     int a = 1, b = 3, c;     printf("%d %d \n", a, b);     printf("%d \n", F1(a));     c = F2(a, b);     printf("%d \n", c);     return 0; }  // int F1(int x) {     x = F2(x, 2);     printf("%d \n", x);     return x; }  // int F2(int w, int x) {     w = 4;     printf("%d %d \n", w, x);     x = w + 23;     return x; }</pre>	<p><b>Printed Results</b></p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>																																											
	<table border="1" style="width: 100%;"><thead><tr><th colspan="3" style="text-align: center;">Memory Address</th><th rowspan="2" style="text-align: center;">Memory Data</th></tr><tr><th style="text-align: center;">F2</th><th style="text-align: center;">F1</th><th style="text-align: center;">Main</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr></tbody></table>	Memory Address			Memory Data	F2	F1	Main																																				
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6. The main program below calls a function named Sum which is supposed to return the sum of all of the integers from 1 to x (the argument). Write the function.

```
int main()
{
    int x;
    scanf_s("%d", &x);
    if(x > 0)
        printf("%d \n", Sum(x));
    return 0;
}
```

6. Write a C program that will prompt the user to enter numbers from the keyboard one at a time. The program should continue prompting for input until either the user has entered 100 numbers OR the user has entered the number 0. Your program should print the sum of the numbers that are greater than 10.

7. Write a program to evaluate the equation given by  $y = 3x^2 - 9x + 4$ . Your program should input the initial value of x from the user and increment x in steps of 1 for the next 10 values. Print all corresponding values of y.