C++ PROGRAMMING NOTES **Name:** _____

Date: ____ **Per:** ___

Calculations in Math and C++:

OPERATION	MATH	C++
additon	+	+
subtraction	-	-
multiplication	x	*
division	÷	/
exponents	3^2	pow(3,2)
square roots	$\sqrt{5}$	sqrt(5)
greatest integer	[1.9]	int(1.9)

Try the following problems: Rewrite each expression in a form C++ can use.

1. $\sqrt{7}$ _____
2. $(1.6)^3$ _____
3. [23.45] _____
4. 123.4 ÷ 0 _____
5. [2.436*100+.5] ÷ 100 _____

DEFINITIONS:

Computer Program: _____

Computer Languages: _____

Source Code: _____

Object Code: _____

Compile: _____

Project : _____

Case sensitive: _____

Debug: _____

Online SOURCES:

http://cplus.about.com --- Click on C++ Tutorials

www.cplusplus.com/doc/language/**tutorial**/

http://www.doc.ic.ac.uk/lab/cplus/c++.rules/

Example of a C++ program:

```
// example 1 program
// by _____________________________
//  date: _____________
#include <iostream>  // ____________________________________________________
using namespace std;   // ____________________________________________
int main()  {     // ____________________________________________

        int nbr1 =5;          // ____________________________________________
        int nbr2(7);          // ____________________________________________
        int sum;
        sum = nbr1 + nbr2;
        cout << "sum of nbr1 and nbr2 = " << sum<< endl;
        return 0;  //_____________________________________________________
}
```

DISCUSS Peanut Butter and Jelly Sandwich analogy

FORM OF AN ASSIGNMENT STATEMENT:

VALID NUMERIC VARIABLES	INVALID NUMERIC VARIABLES
x	2a
a2x	a;b
begin_value	sum 4
	cout

RULES FOR VALID C++ NUMERIC VARIABLES:

1. _____

2. _____

3. _____

4. _____

HIERARCHY (ORDER) OF OPERATIONS

1. ( )	parentheses
2. pow(,) and sqrt( )	exponents and square roots
3. * and /	multiplication and division
4. + and -	addition and subtraction

SAMPLE PROBLEMS:

1. a = 4 + 2 * 3 / (4 - 1)
   a = 4 + 2 * 3 / 3
   a = 4 + 6 / 3
   a = 4 + 2
   a = 6

2. q = 12 * pow(2 ,2) - pow(3, 8 / 4)

3. k = int((28 - 9/3)/2)

4. p = int (sqrt(2))

WRITING FORMULAS AS C++ PROGRAM LINES:

1. $y = mx + b$ — y = m * x + b;

2. $w = \frac{a}{b + c + d}$ — _____

3. $p = 2l + 2w$ — _____

4. $x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$ — _____

5. $a = \frac{h(b1 + b2)}{3}$ — _____

6. q = [n/d] — _____

VALUE TABLES: Used to check a program

EXAMPLE:

PROGRAM (partial)	VALUE TABLE
int x = 3;	
int y = 4;	
int m = x + 1;	m = _____
m= m + 1;	m = _____
m++;	m = _____
m+=2;	m= _____
x =m + y;	x = _____
int d = pow(m,2) + x;	d = _____

WRITING PROGRAMS TO EVALUATE FORMULAS:

EXAMPLE: v = lwh, if l = 3.2, w = 4.1, h = 4.3

```
#include <iostream>
using namespace std;
int main()
{
        double length, width, height, volume;
        length = 3.2;
        width = 4.1;
        height = 4.3;
        volume = length*width*height;
        cout<<"volume = "<<volume<<endl;

        return 0;
}
```

To enter this into computer:
open up Xcode (look for hammer in dock)
under File pulldown menu, choose new project
choose C++ Tool and hit next button
enter project name-- example1
check where it is being stored -- change if necessary
type Desktop/ after the ~/ -- becomes: ~/Desktop/example1/
click on finish button
double click on the main.cpp
edit the program

to run: open-apple-R, or click on Build and Go button
after quiting xcode be sure to drag the folder to the documents folder of your server – NOT the house.

to re-open a saved project, open the folder and double click on the xcodeproj icon – then open main.cpp

Try the following example:
EXAMPLE: a = h/2 (b1 + b2) if h = 5, b1 = 100, b2 = 25

```
        int main () {
```