Extra Credit: (10 pts)

Write a C++ program that prints “Programming is fun!” to the console.

```
#include <iostream>

using namespace std;

int main()
{

	return 0;
}
```

Extra Credit: (10 pts)

1 byte = 8 bits
Gigabyte = 2^{30} bytes (roughly 10^9)

If I make a rule stating your C++ program cannot exceed **2 GB** (Gigabytes) or storage, how many **bits** of storage space are you allowed? The answer can be written in scientific notation.

HINT: This is a math question. No computer science knowledge is needed.

Extra Credit: (1 pt/fix)

There are several syntax errors in the following program. Locate as many as you can.

```
*/ What's wrong with this program? /*

#include iostream
using name space std;

int main();
}
   int a, b, c \\ Three integers
   a = 3
   b = 4
   c = a + b
   Cout < "The value of c is: " < C < end;
   return 1;
{
```

20 POSSIBLE POINTS

Extra Credit: **$\sin^2 x + \cos^2 x = ?$** (10 pts)

What is the output of the following program?

```
#include <iostream>
#include <cmath>
using namespace std;
int main(){
   const double PI = 3.14159;
   int ans = pow(sin(PI), 2) + pow(cos(PI), 2);
   cout << ans << endl;
   return 0;
}
```

Write the output in this box.

Extra Credit: **$(a^2 - b^2) = (a - b)(a + b)$** (10 pts)

Initialize a Boolean variable named **valid** that contains the comparison of the above expressions.

```
#include <iostream>
#include <cmath>
using namespace std;

int main()
{
   int a = 5, b = 3;

   return 0;
}
```

Extra Credit: Fill out the left truth table for the relational operator **!=** below.
(10 pts)

P	Q	P != Q

P	Q	P ^ Q

Bonus 5 pts for filling out the XOR(^) truth table on the right.
Hint: Columns P and Q are identical to those in question 10.n