**Intro to c++**

**Observations**

Create a copy of this worksheet by selecting file->Make copy. Create a c++ program using the following code segment.

#include <iostream>

#include <iomanip>

using namespace std;

int main() {

int x = 4, y = 10, z = -1;

//Program Statements here

return 0;

}

Identify the precedence of the following expressions, then predict the output. Check your answer by pasting the command into your project.

| **Expression** | **Precedence** | **Value** |
| --- | --- | --- |
| cout << x + 2 \* 5 + 1; | *2 \* 5, add x, add 1* | *15* |
| cout <<(x + 2 ) \* 5 + 1; | X + 2, \* 5 + 1 | 31 |
| cout << (x + 2 ) \* (5 + 1); | 4 + 2 = 6, 5 + 1 =6, 6\*6 | 36 |
| cout << y + x - 16 - z; | 10 + 2 - 16 + 1 | -3 |
| cout << !(z+1); | 0 + 1 | 1 |
| cout << -(x \* z) % 2 + z; | -(4 \* -1) = 4 , % 2 + z | -1 |
| cout << x++ << " " << ++y; | Inc x 0 times, “ “, increment y 0 + 1 | 4 11 |
| cout << x \* z / y; | 4 \* 10, divide by -1 | -40 |
| cout << setprecision(3)  << 1.23456; | NA | 1.23 |
| cout << fixed << setprecision(3)  << 1.23456; | NA | 1.235 |
| cout << setw(4) << 12  << setw(4) << 12 << endl;  cout << setw(4) << 123  << setw(4) << 123 << endl;  cout << setw(4) << 1234  << setw(4) << 1234 << endl; | NA | 12 12  123 123  12341234 |

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The following code shows the result of three different types of division. Format the code to use the setw and setprecision command so it displays as follows.

| int resultInt = 11 / 4;  int resultMod = 11 % 4;  float result = 11.0f / 4;  const double PI = 3.14159265359;  cout << "Type" << "Result" << endl;  cout << "Int" << resultInt << endl;  cout << "Mod" << resultMod << endl;  cout << "Regular" << result << endl;  cout << "PI" << PI << endl; | Type Result  Int 2  Mod 3  Regular 2.75  PI 3.14 |
| --- | --- |

The following code shows a partially working Fahrenheit calculator. Complete the code so it calculates the celsius correctly.

#include <iostream>

using namespace std;

int main() {

int fah, cel; //Declare Variables

cout << "Enter Fahrenheit: ";

cin >> fah; //Get the Input

cel = 5/9 \* (fah - 32); //Do the Math

cout << "Celsius: " << cel; //Display the output

return 0;

}

1. Run the program. Enter the value 32. Did the program calculate correctly?

It seems as though it did, as 32 degrees fahrenheit is equal to 0

1. Lookup on the internet what 50 degrees Fahrenheit is in celsius. Run the program entering 50 degrees? Did it run correctly?

50 degrees fahrenheit is supposed to be 10 degrees C. When the program runs it outputs 0

1. Observe the “Do the Math” section. Is there anything in the equation that would cause integer division? Fix the issue.

Yes, the order of operations is backwards. It needs to be changed to (fah - 32)\* 5/9

1. Lookup on the internet what 60 degrees in Fahrenheit is in celsius. Run the program using 60 degrees? Did it calculate with precision?

Yes, it now runs with precision. Output Celsius: 15.5556

1. Look at the “Declare Variables” section of the code. What data type is being used? Change it to something that allows for decimals, then run the program again to check it is working.

Instead of using Int which does not allow any decimal places and rounds up the number, I opted to use a double type so it can accurately display the actual answer

1. Modify the “Display the Output” section to display to 3 decimal places.

Added to code

cout << fixed;

cout.precision(3);

cout << "Celsius: " << cel << endl; //Display the output