

This worksheet is for your use during and after lecture. It will not be collected or graded, but I think you will find it a useful tool as you learn C++ and study for the exams. Explain all false answers for the “True or False” questions; in general, show enough work and provide enough explanation so that this sheet is a useful pre-exam review. I will be happy to review your answers with you during office-hours, via Email, or instant messaging.

1. State whether each variable declaration is valid C++; if it is not, explain why.

(a) `double o2pct;`

(f) `double oxygen%;`

(b) `integer X;`

(g) `const int ROWS(1024);`

(c) `let a_crowd = 3;`

(h) `bool register;`

(d) `bool switch = false;`

(i) `int 2TooMany = 3;`

(e) `const E = exp(1);`

(j) `PI const double = 3.14;`

2. Show three different ways to declare an integer variable named `theInt` and set its value to 724.

3. Consider the variable declaration:

`int X;`

Does `X` have a value immediately after this line of code is executed by the CPU? What term do programmers use to describe the value of `X`? Can you predict the value of `X`?

4. What does the term `const` mean when it precedes a variable declaration, for instance:

`const double PI(acos(-1));`

5. How many different types of integer variables are there in C++? Name them in order of increasing memory footprint.
6. True or False: Integer variables represent only the counting numbers 1, 2, 3, ...
7. True or False: double variables represent all possible numbers from their smallest minimum value to their largest positive value.

8. The ASCII code for a letter is:
- Its number in the English alphabet (A=1, B=2, ...).
 - A unique number representing the lower and upper case English letter.
 - An index into the ASCII Character Code Table (or *codepage*) describing many different symbols.
9. True or False: The `char` variable type stores only an upper or lower case letter of the English alphabet.
10. Explain the difference between binary operators and unary operators.
11. What is the C++ value for `3 + 12 % 5 * 5`? Explain your reasoning.
12. In the context of C++ operators, what does the word *precedence* mean? Which operator has “first” precedence, which has “last” precedence?
13. Calculate the final values for the variables `x`, `y`, and `z` given their initial values and the C++ statements operating on them.

Pre Execution				Post		
x	y	z	C++ statement	x	y	z
1	2	3	<code>x = y++ - z;</code>			
1	2	3	<code>y = --z - x++;</code>			
1	2	3	<code>y = z-- - ++x;</code>			
1	2	3	<code>x = y = z;</code>			
1	2	3	<code>z = y = x;</code>			
1	2	3	<code>z *= y - ++x;</code>			
1	2	3	<code>z += y - x++;</code>			

14. Consider the snippet of code at the right. What are the values of `x`, `y`, and `z` after the variables have been initialized?

```
1 double x( 1/10 );
2 double y( 1%10 );
3 double z( 3.0/10 );
```

(a)

(b)

(c)

15. Of the following mathematical functions, which are considered operators in C++?

- | | |
|--------------------|------------------------------|
| (a) addition | (f) modulo arithmetic |
| (b) subtraction | (g) exponentiation |
| (c) multiplication | (h) logarithms |
| (d) division | (i) square roots |
| (e) negation | (j) parenthetical evaluation |