APCS :: HW 1 – Worksheet and Quiz Prep.

This worksheet covers the following things which you should know for quiz 1:

- **Algorithms**: Know the definition; be comfortable with some level of formality in writing down your thoughts.
- **variables**: know the def; know how to declare variables properly with data types and how to assign and get values.
- **fundamental data types vs. Object data types**
- **int, double**: know the def of int. Know the difference between these two data types especially with respect to how arithmetic is computed with them.
- **operators** {=, +, *, /, -, %}: Know the def of the assignment operator “=”; know how the basic arithmetic operators work. Pay special attention to division on the int data type.
- **Simple I/O programs**: Know how to print a line of text to the console window including variables as well; know how to construct and use a Scanner object to receive input.

1.) (5 points) Write an algorithm to find a specific object in a list. Call the list S and let S[i] represent the i\textsuperscript{th} item of the list. The algorithm is started for you below. Please try to be as formal about it as possible.

Input: A list S of objects, and an object \texttt{obj} to find in the list
Output: the index i in S where \texttt{obj} was found. If not found output is −1

```
Find(S, obj){
```

2.) (3 points) Write down the values of the variables after all the following code has been executed:

```java
int a = 10;
int b = 5;
b = a;
int c = a*a;
c = c + b*b;
```
3.) (4 points)
    int a = 5;
    double b = 2.5
    double c = a * b;
    double d = a / b;

4.) (3 points)
    int a = 5;
    int b = 2;
    int c = a / b;
    int d = a % b

5.) (5 points) Fill in the main program below that converts degrees Celsius to Fahrenheit. Each comment in the program below is meant to guide you; write a line of code below each comment so that the program works as specified. NOTE: °F = °C × 1.8 + 32

```java
public class Convert{
    public static void main(String[] args){
        // construct and instantiate a new Scanner object
        // print message that prompts user for degrees C
        // get input from Scanner and put it into a variable
        // convert the input into Fahrenheit and
        // put it into a new variable.
        // Print a final output message showing the conversion
    }
}
```