**Week 1 Practice Problems**

**#1.** Write a program that simply prints "I am going to love this course" to the screen.

**#2.** Write a program that defines two integers, one being the largest 3-digit number and one being the smallest 5-digit number. Then, print these two values, and their sum to the screen.

**#3.** Write a program that calculates the final cost of a set of items. For example, if each item costs 1.43 and we need 9 of them. Then, print the final cost.

Cost? 1.43

How many? 9

Total cost is $12.87.

First do it by “hard-coding” the numbers. Once you have that working, add the ability to ask the user to input the numbers. (Hint: Look up the input() function in your textbook.)

**#4.** Write a program that for a temperature in degrees Celsius, prints the equivalent temperature in degrees Fahrenheit (multiply C by 1.8, then add 32). For example:

Celsius temperature: **30**

Fahrenheit equivalent is: **86**

**As with #3, first put the Celsius temperature in your program directly and get it working. Then add the functionality to prompt the user for the Celsius temperature.**

**#5.** Write a program to evaluate y = 4x + 3 for any float number the user may pick. Ask a user to input any x, and then evaluate y, and present the result to two decimal places. For example:

Input x: 3.69

The value of y = 4x + 3 is 17.76

**#6.** Figure 1 presents a diagram that introduces the parameters required to calculate the deflection of a beam. The formula to calculate beam deflection ( is:

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The meaning of the parameters is:

* *P* is the force applied in newtons
* *a* is the distance to the force applied in m
* *E* is Young's modulus: Pa
* I is the area of the moment of inertia of the cross-section:
* *l* is the beam length in m

A diagram of a line with arrows pointing to a line

Description automatically generated

Figure 1. Diagram for the deflection of a beam.

Write a program to calculate . Create and assign variables for each relevant value. Check to make sure your code calculates the correct value.

**#7.** The Arrhenius equation to calculate the chemical rate constant, *k*, is:

Where:

* *A* is the "pre-exponential factor". You can assume it is 80.
* *e* is Euler's number: 2.718281828
* *Ea* is the activation energy: 108000
* *T* is the temperature in kelvin
* *R* is the universal gas constant: 8.3144598

Assume that you are given the temperature as 95 degrees Fahrenheit.

Write a program to calculate . Create and assign variables for each relevant value. Check to make sure your code calculates the correct value.