Getting Ready for Physics Class

You are a physics teacher preparing for the upcoming semester. You want to provide your students with some functions that will help them calculate some fundamental physical properties.

If you get stuck during this project or would like to see an experienced developer work through it, click “Get Help“ to see a project walkthrough video.

Tasks

13/13Complete

Mark the tasks as complete by checking them off

Turn up the Temperature

1.

Write a function called f\_to\_c that takes an input f\_temp, a temperature in Fahrenheit, and converts it to c\_temp, that temperature in Celsius.

It should then return c\_temp.

The equation you should use is:

Temp (C) = (Temp (F) - 32) \* 5/9

To define a function with an input, use this syntax:

def your\_function(your\_input):

... # do something with the input

return some\_final\_value

2.

Let’s test your function with a value of 100 Fahrenheit.

Define a variable f100\_in\_celsius and set it equal to the value of f\_to\_c with 100 as an input.

3.

Write a function called c\_to\_f that takes an input c\_temp, a temperature in Celsius, and converts it to f\_temp, that temperature in Fahrenheit.

It should then return f\_temp.

The equation you should use is:

Temp (F) = Temp (C) \* (9/5) + 32

4.

Let’s test your function with a value of 0 Celsius.

Define a variable c0\_in\_fahrenheit and set it equal to the value of c\_to\_f with 0 as an input.

Use the Force

5.

Define a function called get\_force that takes in mass and acceleration. It should return mass multiplied by acceleration.

6.

Test get\_force by calling it with the variables train\_mass and train\_acceleration.

Save the result to a variable called train\_force and print it out.

7.

Print the string “The GE train supplies X Newtons of force.”, with X replaced by train\_force.

8.

Define a function called get\_energy that takes in mass and c.

c is a constant that is usually set to the speed of light, which is roughly 3 x 10^8. Set c to have a default value of 3\*10\*\*8.

get\_energy should return mass multiplied by c squared.

9.

Test get\_energy by using it on bomb\_mass, with the default value of c. Save the result to a variable called bomb\_energy.

10.

Print the string “A 1kg bomb supplies X Joules.”, with X replaced by bomb\_energy.

Do the Work

11.

Define a final function called get\_work that takes in mass, acceleration, and distance.

Work is defined as force multiplied by distance. First, get the force using get\_force, then multiply that by distance. Return the result.

12.

Test get\_work by using it on train\_mass, train\_acceleration, and train\_distance. Save the result to a variable called train\_work.

13.

Print the string "The GE train does X Joules of work over Y meters.", with X replaced with train\_work and Y replaced with train\_distance.