Earthquake Comparison
(Function)

I) Introduction: According to the National Earthquake Information Center, there are approximately 55 earthquakes per day. The magnitude of earthquakes is measured using the Richter scale which ranges from 1.0 - 9.0 and greater. We can also compare earthquakes by comparing the energy that they release using the formula:

$$10^{(1.5 \times (M1 - M2))}$$

For example: Compare the difference in energy between the Haiti earthquake in 2010 with the magnitude of 7.0 with a recent earthquake in Petrolia, CA with a magnitude of 4.4

Difference = 10 ^ (1.5 x (7.0 - 4.4)) = 7943.3

II) Requirement: Using what you learn about creating functions, write a simple Python program that asks the user for the magnitude of 2 different earthquakes. Then compare the earthquakes to determine which one is a larger earthquake as well as calculating the difference in energy between the 2 earthquakes. Your program should keep asking the user whether they want to quit or continue comparing more earthquakes.

III)Specification:

_____Below are the skeletons of the functions that will be used in your program:

1) **get_magnitude(num):**
    a) This function asks the user for the magnitude of the earthquakes and makes sure that the user enters the correct value before returning it.
    b) The parameter “num” is just to print out which earthquake it is for the user to distinguish

   Such as:

   input(“Enter the magnitude of the {0} earthquake: “. format(num)))
2) **compare_magnitudes(mag1, mag2):**
    a) This function compares the magnitude of the 2 earthquakes given by the users and returns the amount of energy difference between the 2 earthquakes.
    b) Remember to put the larger earthquake into mag1, otherwise, you will get a negative value.
3) **get_run_again():**
    a) Ask the user if they want to continue the program or quit. Return true if the user chooses yes and false if they want to quit.
4) **main():**

a) This function is where you put all your functions together and make them act as one.
b) Use a while loop to keep asking for user input, compare the magnitude between the two earthquakes and calculate the difference
c) Print the values to the console for the user.

You are welcome to change the parameter names of the function but you should not be adding more or omitting parameters.

IV)Things to remember:

1) Round your calculation to the first decimal point
2) Check your functions by running them separately to make sure that they work
3) Document your code using comments.

V)Sample output:

```
ecs174\cecs174\lab\cecs174lab5.py
Enter the magnitude of the earthquake 1: 6
Enter the magnitude of the earthquake 2: 4

An earthquake of magnitude 6.0 is 1000.0 times more
powerful than an earth quake 4.0
Enter 1 to do it again: 1
Enter the magnitude of the earthquake 1: 5
Enter the magnitude of the earthquake 2: 7

An earthquake of magnitude 7.0 is 1000.0 times more
powerful than an earth quake 5.0
Enter 1 to do it again: 5
Bye
>>>
```

```
Enter the magnitude of the earthquake 1: 7
Enter the magnitude of the earthquake 2: 4

An earthquake of magnitude 7.0 is 31622.8 times more
powerful than an earth quake 4.0
Enter 1 to do it again:
```