Name _____ Date _____

AP Physics Methods WS #1

Period _____ Mrs. Nadworny

(20 pts)

Weigh the World

How much does the Earth weigh?

How do scientists actually measure this number?

Directions:

In this online activity, you are going to learn about two efforts to find the mass (not the weight) of the Earth—one historical and one modern. Here's a simple example of a real-life experiment and how real-life data is processed to arrive at a conclusion. Pay attention to the measurement uncertainties and how they were dealt with.

Find out about the "Weigh the World" Challenge by going to the Weigh the World homepage and viewing the PowerPoint presentation of the experiment as well as reading the Notes and the Results. The answers to the homework questions can all be found there. (Hint: Many of the answers to the homework questions can be found at the end of the PowerPoint.) In addition, you may also want to view a short video clip that gives a good overview of the experiment.

Submit your answers to the questions below in the body (not as an attachement) of an email by the due date. Be sure to clearly state your name and "Weigh the World" in the subject line of the email so I know who the assignment is from. Hand-written assignments will not be accepted for credit.

Questions:

1. What was the purpose of the modern experiment? (2)
2. Briefly describe Maskelyne's method. (3)
3. Briefly describe the modern method. (3)
4. Name two systematic errors that had to be taken into account and state the size of the uncertainties they produced. (Can be found in the PowerPoint only!) (4)
5. How were random uncertainties minimized? (2)
6. State Maskelyne's experimental value. (1)
7. State the modern experimental value along with its uncertainty. (2)
8. State the actual value. (1)
9. Based on your answers to questions 7 and 8, would you conclude that the modern experimental value agrees with (is consistent with) the actual value? Justify your answer. (2)