Gravity Force Lab

Go to http://phet.colorado.edu/en/simulation/gravity-force-lab
And select RUN

Qualitative Observations

1. How does the separation of the masses affect the force between them?

2. What happens to the force between the objects when mass 1 is doubled?

3. What happens to the force between the objects if you Cut Mass 2 in half?

4. In any of the situations did the forces ever differ in magnitude? What model(s) apply?

5. In any of the situations did the forces ever not point in opposing directions? What model(s) apply?
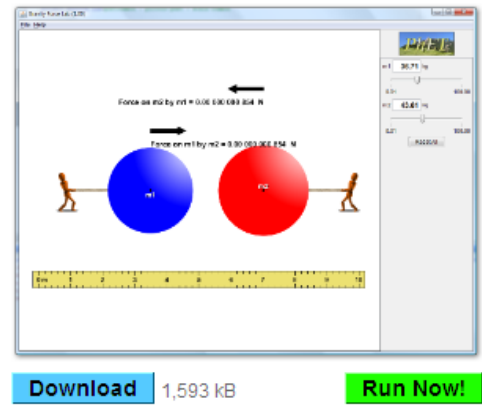
Quantitative

It is now time to build a model.

1. What THREE things can we change/vary?

2. Select an independent and dependent variable and constant

    a. DV _____

    b. IV _____

    c. C _____

3. Collect 10 data points and graph

4. Select a new independent and dependent variable and constant

    a. DV _____

    b. IV _____

    c. C _____

5. Collect 10 data points and graph

6. Repeat the varying mass vs. force experiment, changing the second mass.

Questions

1. How did varying the second mass affect your results?

2. What is the relationship between Mass and force?

3. What is the relationship between distance and the force of gravity? (This one is a little tricky.)

4. Write out the proportions between Mass 1 (m_1), Mass 2 (m_2) distance (r) to the Force of gravity (F_g).

Check with your instructor to make sure your proportionality is correct.
5. Does your lab data for m_1, m_2, and r does equal F_g? Also work out your units, do they equal a unit of force?

6. Make a graph of Force vs. your proportionality

7. Determine the gravitational constant (G) that will satisfy your units

$$G=\text{_____}$$

8. Write your full formula and check with your instructor.