**BARYCENTER LAB**

**Purpose**

* To find the barycenter of a binary system.
* To create a mathematical generalization of how to determine barycenters of other binary systems.

**Materials**

Each lab group needs:

* 1 foot wooden dowel
* Play-Doh® (small canister) or modeling clay (50 grams, about one handful)
* 1 length of string (~1 foot, but length is not critical)
* 1 balance
* 1 ruler

**Explore**

* Tie your string to your dowel.
* Practice putting different masses of clay on either end of the dowel and sliding the string along the dowel until the dowel balances when hanging from the string. This point is called the **barycenter**.



**Hypothesis:**

If the mass of body #2 (M2) increases, then the distance between the barycenter and body #2 (D2) will <increase/decrease> because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Data:**

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| M1 (mass of smaller body) | M2 (mass of larger body) | D2 (distance between barycenter and larger body) |
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**Data Analysis:**

* Graph M2 vs. D2
* Describe the trends in your graph

**Post-lab:**

1. Describe the relationship between mass and barycenter in your own words.
2. What did you learn?
3. What sources of experimental error did you encounter?
4. What would you do differently if you were to do this again?
5. How does this tie in to what we are learning in class?