Lab - Honors Chemistry Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Period \_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Graphing Density to Determine Identity**

**Purpose:** Determine the identity of two unknown solids using physical properties. It may be helpful to know that the volume of a cylinder can be found using the following equation: $ v =π r^{2}h$ .

**Materials:** Unknown solids, ruler, electronic balance, 100-mL graduated cylinder, water

**Procedure:**

1. Using the materials available, find the mass and volume of each solid as accurately as possible.

**Unknown Solid # \_\_\_\_\_\_ Unknown Solid # \_\_\_\_\_\_**

Mass (\_\_\_ ) Volume(\_\_\_ ) Mass (\_\_\_ ) Volume(\_\_\_ )

1. Construct a separate Mass vs. Volume graph for each unknown solid using LoggerPro.

Be sure to label both axes, including units.

Use LoggerPro to determine the line of best fit for each unknown solid.

1. Either take a picture or save the file of your graph & turn in on Google Classroom.

*Everyone must submit their own graph.*

1. How is the line of best fit related to the density of the material measured? Explain.
2. Compare your values to those listed in the table below to determine the identities of the unknowns.

|  |  |  |  |
| --- | --- | --- | --- |
| **Solid** | **Density (g/mL)** | **Solid** | **Density (g/mL)** |
| Acrylic | 1.2 | Phenolic | 1.32-1.70 |
| Aluminum | 2.70 | Polyethylene | 0.92 |
| Brass | 8.55 | Polypropylene | 0.90 |
| Copper | 8.9 | Polyurethane | 1.23 |
| Maple | 0.60-0.75 | PVC | 1.35-1.45 |
| Nylon | 1.15 | Teflon | 2.2 |

 Unknown Solid #\_\_\_\_\_ is:

 Unknown Solid #\_\_\_\_\_ is: