

Lab partner(s): _____

Mass & Volume Lab

Purpose: In this lab, you will practice finding the mass and volume of different objects.

Materials:

triple beam balance

100mL graduated cylinder

250mL beaker

metric ruler

Safety: Goggles, proper handling of glassware and lab equipment

Part A: Measuring mass directly.

1. Measure the objects in the table using the triple beam balance. Each partner should do this ONCE solo. No peeking. Then, share and compare.
2. Be sure to use the proper number of decimal places.
3. Don't forget units!

Data Table 1:

object	Partner 1	Partner 2	Average
Coin (penny/dime/nickel)			
Paper clip			
Rubber stopper large			
Rubber Stopper small			
metal slab (green/silver)			
small metal cube (1 or 2)			
marble			

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Part B: Finding mass by difference.

1. Find the mass of an empty 250mL beaker. Record the mass in data table 2.
2. Using the graduated cylinder, obtain 15.0 mL of water.
3. Pour the water into the beaker and find the mass of the beaker and the water. Record the mass in data table 2.
4. Find the mass of the water alone by subtracting the mass of the beaker from the mass of the beaker and the water. Record the mass in data table 2.
5. Repeat using the different volumes of water in the table.
6. Be sure to use the proper number of decimal places.
7. Don't forget units!

Data Table 2:

volume of water	mass of beaker alone	mass of beaker and water	mass of water
15.0 mL water			
53.0 mL water			
100.0 mL water			

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Part C: Using water displacement to measure the volume of an irregular solid.

1. Fill a graduated cylinder with water. Record the volume in the table below.
2. Carefully drop the solid object into the graduated cylinder. Note the new level of the water and record it in the data table 3.
3. Find the volume of the marble by subtracting the initial volume of water from the volume of water with the marble in it. Record your results in data table 3.
4. Repeat steps 1- 3 for the remaining objects.

Data Table 3:

object	volume of water	volume of water with object	volume of object
paper clip			
marble			
penny/dime/nickel			

Part D: Using a ruler to measure the volume of a regular solid

1. Find Volume of regular solids.
2. Be sure to use the proper number of decimal places.
3. Don't forget units!

Data table 4

object	length	width	height	volume
metal cube (1 or 2)				
metal slab (green/silver)				
large cube (gold/silver/bronze)				

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Part E: Find the density of the solids and liquids

1. Calculate the density of the following objects by dividing mass/volume.
2. Use the proper units!

object	mass	volume	density = $\frac{\text{mass}}{\text{volume}}$
Coin (penny/dime/ nickel)			
paper clip			
metal slab (green/silver)			
small metal cube (1 or 2)			
marble			
15.0 mL water			
53.0 mL water			
100.0 mL water			