**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_**

![j0310842[1]]()**Physical Science**

**Mass Lab**

1. **Objectives**

-Students will know what metric units are used to calculate mass in the metric system.

- Students will demonstrate how to use a triple beam balance (measure mass directly, measuring mass by difference and measuring a substance)

**II. Materials**

100 mL beaker, 100 mL graduated cylinder, water, large paper clips, salt, weighing paper, pennies, pencil,

**Part A Measuring mass directly**

 **Procedure**

1. Become familiar with the parts of your triple beam balance. Locate the different riders and units that they measure in.
2. Make sure that your balance is properly balanced. If you are unsure of how to do this, ask your teacher.
3. Measure the mass of the following objects and record your answer to the nearest tenth of a gram.
4. Record your measurements in the table below.
5. Remember to correctly label your answers.

**Data Table Part A**

|  |  |  |
| --- | --- | --- |
| Large Paper Clip=  | Pencil =  | Four Pennies = |

**Part B Measuring mass by difference**

**Procedure**

1. Measure the mass of the 100 mL beaker to the nearest tenth of a gram and record in the data table below.
2. Measure out exactly 50 mL of water in the graduated cylinder. (Do not just pour the water in the beaker to the 50 mL mark, remember it is much more accurate using a graduated cylinder)
3. Add this 50 mL of water to the 100 mL beaker
4. Measure out the mass of the beaker that is filled with water to the nearest tenth of a gram and record in the data table below.
5. Subtract the mass of the empty beaker from the full beaker to obtain the mass of the 50 mL of water. Record the value in the table below.
6. Remember to correctly label your answers.

**Data Table Part B**

|  |  |  |
| --- | --- | --- |
| Empty Beaker =  | Beaker with water =  | Mass of water = |

**Part C Measuring out a substance**

**Procedure**

1. Obtain salt and weighing paper from your teacher.
2. Place the weighing paper on the balance and measure the mass of the paper to the nearest tenth of a gram. Record this value on the data table.
3. Now take the value you just got for the mass of the weighing paper and add 5 grams to that value.
4. Move the riders to this value that you just calculated, leaving the weighing paper on the pan of the balance.
5. Add salt until the balance becomes balanced. If you add too much, take some off. If there is not enough added for it to be balanced, slowly keep adding more until it becomes balanced.
6. Remember to correctly label your answers.

**Data Table Part C**

|  |  |
| --- | --- |
| **Mass of the weighing paper =** | **Mass of the salt measured =**  |

**Questions**

1. What is the largest mass that your balance can measure?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grams
2. Explain why you used a graduated cylinder to measure out the 50 mL of water instead of just pouring it into the beaker until it reached the 50 mL mark:
3. How many grams are there in a kilogram?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. How many milligrams are there in a gram?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Explain the difference between mass and weight:

(mention the tools used, units measured in and how they are different)

1. If you were baking a cake and uthe recipe called for 250 grams of sugar, how would you use the triple beam balance to obtain this amount?
2. In this lab you found the mass of 50 mL of water. Calculate the mass of 1 mL of water. (Use the formula below, cross multiply and divide to get your answer.

50 mL of water = 1 mL

(mass you got) (answer)