**Physical and Chemical Changes Lab**

**Objective:**

In this lab you will explore physical and chemical changes in matter. A physical change is any change to matter that does not change the composition of the matter, ie: ripping a piece of paper changes the appearance of the paper but it is still paper, melting an ice cube is a physical change. The water is only changing from a solid to a liquid.

 A chemical change on the other hand does not change the composition of matter by rearranging the atoms and molecules in a compound. A good example of a chemical change is when you mix baking soda and vinegar, and a gas is produced.

**VOLUME OF LIQUIDS:**

Step 1: Find the four graduated cylinders and record the volume of water that is in each

 cylinder. DO NOT DUMP THE WATER OUT. LEAVE IT FOR THE REST

 OF THE CLASS TO USE. Record you answer on data table 1.

**MIXTURE TYPE:**

Step 1: Find the four mixtures in the beakers and look at each beaker and determine if

 they are homogeneous or heterogeneous mixtures. Record you answers in data

 table 2.

**CHEMICAL CHANGES:**

Step 1: Using the pipette add 10-15 drops of water to four of your wells in a 24-well

 container.

Step 2: Repeat step one using vinegar. DO NOT MIX LIQUIDS! Each liquid should be

 in its own well. Be sure to remember which liquid is in each well.

Step 3: Label the four chemical names from data table 3 on a piece of paper.

Step 4: Add a small scoop of each chemical by the name on the paper. DO NOT MIX CHEMICALS!

Step 5: Add one solid chemical to one of the liquids and watch what happens. Record results in data table 3. Decide if a chemical reaction took place or not by placing a Y or N in the data table.

Step 6: Add ONE (1) drop of indicator to each of the wells, note if there is a color change in data table 3. Determine if a reaction took place.

**Measurement Lab Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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

Weights:

1. Weigh the following objects using a triple beam balance.

 a. Weigh your pencil \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. Weigh your notebook \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. Weigh an object of your choice \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lengths and Distances:

1. Use the instrument of your choice to:

 a. Measure the length of your pencil \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. Measure the area of your textbook cover \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Volumes:

1. Use a 100 mL graduated cylinder for the following steps. Fill about ½ way and then proceed with the measurements.

 a. Place a rubber stopper in and determine its volume \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. Place a different rubber stopper in and determine its volume \_\_\_\_\_\_\_\_\_\_\_\_

1. Determine the volume of your pencil by the same procedure. ­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_

Data Table 1 (Volume of Liquids)

|  |  |  |  |
| --- | --- | --- | --- |
| **Volume A** | **Volume B** | **Volume C** | **Volume D** |
|  |  |  |  |

Data Table 2 (Mixture Type)

|  |  |  |
| --- | --- | --- |
| **Mixture** | **Homogeneous** | **Heterogeneous** |
| **A** |  |  |
| **B** |  |  |
| **C** |  |  |
| **D** |  |  |

Data Table 3 (Chemical Changes)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Vinegar** | **Water** | **Indicator** |
| **Potassium Hydroxide** |  |  |  |
| **Potassium Chloride** |  |  |  |
| **Ammonium Nitrate** |  |  |  |
| **Sodium Bicarbonate** |  |  |  |

Questions:

1. How could you tell when a chemical reaction took place?
2. Could you always tell if a reaction took place?
3. Describe four different physical changes a substance can undergo.
4. Describe four different chemical changes a substance can undergo.
5. Why is it important to take accurate measurements?