Name _____ Partner(s) _____ Period _____

Physical and Chemical Changes Lab

Purpose: To observe and classify different changes in matter as physical or chemical.

Background: When a physical change occurs, only the form of the substance changes. The composition and, therefore, its chemical formula stay the same. Chemical changes, however, result in the formation of new substances with different properties.

Materials: Magnesium ribbon, chalk, sugar (sucrose), baking soda, vinegar, potassium iodide solution, lead(II) nitrate solution, water, Bunsen burner, matches, tongs, mortar and pestle, test tubes, graduated cylinders, beakers, petri dish, scoopulas, stirring rods, plastic pipettes or droppers

Safety: Wear safety goggles and aprons. Tie back long hair, and secure loose clothing. Use caution with the open flame. Do not look directly at magnesium when it burns. Do not ingest chemicals.

Hypothesis: Place a check (✓) in the appropriate column to predict whether each activity will be a physical or chemical change.

	Activity Description	**Physical Change**	**Chemical Change**
A	**DEMO**: Potassium iodide with lead(II)nitrate		
B	Magnesium in Bunsen burner		
C	Crushing chalk		
D	Adding chalk to water		
E	Combining baking soda and vinegar		
F	Mixing sucrose and water		

Fill in the hypothesis statement and give reasons for the predictions.

The physical change(s) will be Activity(ies) _____ *because* _____
A, B, C, D, E, and/or F

_____,

and the chemical change(s) will be Activity(ies) _____ *because* _____
A, B, C, D, E, and/or F

_____.

Procedure:

1. Record qualitative observations of all substances before beginning each activity.
2. **Activity B: Magnesium in Bunsen burner.** Record initial qualitative observations of the magnesium in the data table. Light the Bunsen burner and adjust burner until a small cone of blue flame appears. Hold strip of magnesium with tongs and place in flame until it ignites. Observe while burning. Once the flame has extinguished, place the remains in the waste container (not trash can); observe remains and record.
3. **Activity C: Crushing chalk.** Record initial qualitative observations of chalk in data table. Use mortar and pestle to crush a small piece of chalk and record observations after crushing. Save crushed chalk for Activity D.
4. **Activity D: Adding chalk to water.** Record initial qualitative observations of chalk sample. Place small amount of crushed chalk from Activity C in a test tube. Add about 5 mL water to test tube. Stir with stirring rod and record observations, then let test tube sit; observe again after several minutes and record observations. Then, pour the water out of the test tube into the sink; discard chalk in the trash can at your station. Clean the test tube and stirring rod.

5. **Activity E: Combining baking soda and vinegar.** Place a small scoopula of baking soda in a small beaker; record qualitative observations of baking soda. Take a clean test tube to your teacher and obtain about a sample of vinegar; record qualitative observations of vinegar. At the lab station, add the vinegar to the baking soda. Stir with stirring rod. Record observations. Pour the contents of the test tube down the sink. Clean the beaker, test tube, and stirring rod.
6. **Activity F: Mixing sucrose with water.** Take a clean test tube to the teacher workstation and obtain a small amount of sucrose; record qualitative observations of sucrose. At the lab station, add about 5 mL water and record initial observations. Stir for 2-3 minutes with the stirring rod and record observations. Clean the test tube and stirring rod.
7. **Clean-up:** Wash all equipment using soap. Use sponge to wipe down counter. Be sure sink is clean and clear of all solid material.

Observations and Conclusions: For each activity, write your observations before and during/after the activity.

	Activity	**Observations/Evidence: Before**	**Observations/Evidence: During/After**
A	DEMO: Potassium iodide with lead(II) nitrate		
B	Magnesium in Bunsen burner		
C	Crushing chalk		
D	Adding chalk to water		
E	Combining baking soda and vinegar		
F	Mixing sucrose and water		

Results: On a **separate sheet of paper**, write a well-developed paragraph reporting the results for this lab. This paragraph only reports the qualitative observations that you made before, during, and after each activity. Do not draw conclusions about the data in this paragraph; "just the facts" are reported.

Analysis of Results: In a second paragraph, interpret your results and explain their meaning. Explain how and why you classified each activity as either a physical change or a chemical change. Use specific results from the lab to support your explanation.