

Lab Report Template - **SAMPLE**

In this sample, the **purple areas** are completed by the teacher prior to the start of the lab and the **orange areas** are completed by the student.



NAME: *Suzie Smith*

DATE: *3/29*

LAB NAME: *The difference between chemical and physical changes*

PROBLEM: *How can you determine the difference between a chemical and a physical change?*

OBSERVATIONS: *[please watch the board as we observe a few images that represent chemical or physical changes]*

In the first picture, wood is being cut, but it's still wood, just a different shape. In the second picture, wood is being burned. It's no longer wood, but is now ashes.



HYPOTHESIS:

The difference between a chemical and physical change is that in a chemical change, something new is made, but in a physical change, the substance is not changed into something new.



CONDUCT THE EXPERIMENT:

Record your materials, your experimental design, and the procedures you followed.



Materials:

*Two graduated cylinders
40 mL of vinegar
10 drops of food coloring
1 teaspoon of baking soda*



Procedure:

Step 1: I first will place 20 mL of vinegar in two different graduated cylinders.

Step 2: In one of the graduated cylinders (cylinder A), I will put 10 drops of food coloring. I will observe and then record the changes.

Step 3: In the second graduated cylinder (cylinder B), I will add one teaspoon of baking soda. I will observe and then record the changes.



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COLLECT DATA:

I am choosing to record my data in a chart, and I will look at properties I observe before and after I add in my materials.

Cylinder	Properties Before	Properties After
A	Vinegar is clear and still	Vinegar is now red. The dye moved around the cylinder until it was all red. It is still.
B	Vinegar is clear and still	Vinegar is bubbling and overflowing out of the graduated cylinder.

ANALYZE THE DATA:

1. In your first experiment, how did the vinegar change after you added the food coloring? *After we added the food coloring, the vinegar changed color, from clear to red.*



2. In your second experiment, what changed after you added the baking soda? *The vinegar and baking soda started to create bubbles.*



3. Was something new made in your experiments? Why or why not? *Something new was made in cylinder B. I know this because once vinegar was mixed with baking soda, bubbles were formed and began to overflow out of the cylinder. Inside these bubbles was gas, which was not there before we mixed the two substances.*



4. What characteristics indicate to you that a chemical change occurred? *In what experiment did this change occur?*

Cylinder B represents a chemical change, because this reaction produced gas.

CONCLUSION:

My hypothesis was correct. I predicted that the difference between a chemical and physical change is that in a chemical change, something new was made, but in a physical change nothing new was made. The evidence supports my claim. In cylinder A, when food coloring was added to the vinegar, the only thing that changed was the color of the vinegar. Nothing new was made, so this is a physical change. In cylinder B, when baking soda was added to vinegar, gas was made, which was not present before the reaction. I know gas was created because I could see gas bubbles overflowing out of the cylinder. Therefore, chemical changes create new substances, while physical changes do not. If I were to do this experiment again, I would explore different examples of chemical and physical changes to provide more evidence. For example, I could investigate the difference between folding paper and burning paper, or the difference between mixing up a cake batter and baking it. I could also look at other properties as well besides the state of matter, like if heat was produced or lost in the reaction.

