Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_ Mr. Dillon Chemistry

Physical and Chemical changes

Discussion:

Chemistry is the study of matter and the changes it undergoes. These changes can be split into two categories: physical change & chemical changes. In physical changes one or more physical properties of a substance are altered like shape, color, and the phase of matter. Grinding, melting, dissolving and evaporating are all physical changes. NO NEW SUBSTANCES are formed as a result of a physical change.

A chemical change results in the production of one or more NEW substances. These new substances differ in chemical properties and chemical composition from the original substance. The rusting of iron and the burning of gasoline are examples of a chemical change. In a chemical change there is ALWAYS a NEW SUBSTANCE formed. There are some clues that signal a presence of a chemical change: energy change (temperature change, light given off, sound energy), odor change, color change, creation of gas, liquid (e.g. water) or formation of a precipitate (solid).

PURPOSE: Differentiate between physical and chemical changes

PROCEDURE: As soon as you complete a step, place a check mark next to the completed step in the procedure.

1. \_\_\_\_\_Add a small amount of wax, the size of a corn kernel, into a test tube. Heat the test tube gently over a burner flame until the wax melts completely write observations in the data table; then allow the sample to cool. Write your observations in the data table.
2. \_\_\_\_\_Add a microspatula of NaCl to a large test tube and add 3 ml of water to the test tube. Shake the contents of the test tube and write observations in your data table.
3. \_\_\_\_\_ Heat the NaCl solution from step 2 while keeping the test tube pointed away from ALL students. Heat until the water is removed. Write your observations about the remaining material.
4. \_\_\_\_\_ Add a microspatula of NaCl to a second test tube and add 3 ml of water to the test tube. Shake the contents of the test tube then add 3 drops of AgNO3 to the salt solution. Write observations in your data table.
5. \_\_\_\_\_Place a small piece of Mg into a test tube and add 1 – 2 ml HCl hydrochloric acid. Document your observations in your data table.
6. \_\_\_\_\_Document the observations from the teacher’s demonstration of adding a microspatula of sugar to a test tube and heating the sugar. Document observations in your data table.
7. \_\_\_\_\_Add a small piece of calcium to a test tube with about 1 cm of H2O. Document your observations in the data table.
8. \_\_\_\_\_Place a microspatula of CoCl26H2O into a clean dry test tube and heat gently for 1 minute. Document observations in your data table.
9. \_\_\_\_\_Allow the sample from #8 to cool, then add a few drops of water and document observations.
10. \_\_\_\_\_Document the temperature of a copper sulfate solution (bluestone solution). Add a small piece of aluminum to a small beaker and add 10 mL of blue CuSO4 (bluestone solution). Document the observations over a 5 minute period.

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| --- | --- | --- | --- |
|  | Physical or Chemical Change | Before | Observations  After |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |

1. Describe the difference between burning a candle and the procedure in step number 1? Which type of change is burning a candle? Write in complete sentences. NO SENTENCE = NO POINTS
2. Name 4 possible indications that a chemical change has taken place. Give examples FROM THIS LAB.
3. In a chemical change, a “new” substance is formed. Briefly describe the “new” substance that formed as a result of each chemical change in this lab.
4. The following changes do not always indicate a chemical change. Give examples **from the lab** in which an observed change in color may result from a physical change.

In your conclusion be sure to

* Restate the objective and give a brief overview of the lab
* Define a physical and chemical change.
* Discuss each procedure that was a physical change and tell what specific observations you used to determine that this the was a physical change.
* Pick 2 procedures that you determined to be a chemical change and give specific evidence of this (you must refer to your specific data).
* What did you learn from this experiment?