Mystery White Powders Lab # \_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Performed: \_\_\_\_\_\_\_\_\_\_\_

Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Due: \_\_\_\_\_\_\_\_\_\_\_

Pre-Lab Assignment:

For this investigation you and your partner will be given individual samples of four different white

solids, three testing liquids (water, acetic acid, iodine) and a mystery mixture which is a combination

of two of the four solids.

Using the steps of the scientific method you and your partner will:

1. Develop a testing procedure to make observations of the properties of the individual white powders

and of your Mystery Mixture.

2. Based on your observations, form a hypothesis statement which answers the question –

What two substances are in your Mystery Mixture?

3. Test your hypothesis.

4. State your conclusion about the contents of your Unknown (Mystery Mixture).

Hints and Reminders:

You will need to create a data table to record all observations of the samples including the letter of the solid samples and the ID number for your Unknown (Mystery Mixture).

You should test each of your solid samples individually with each of the liquids and record all observations on your data table.

You should test the unknown sample with the liquids using the same procedure as the individual sample and record all observations on your data table. Record the number of your Unknown.

The Unknown contains a combination of two of the four white solids. You only need to identify unknown in terms of the individual samples using the letter ID. You do not need to determine what the white solids actually are. (ie. flour, sugar, table salt etc..)

Use the observations you recorded for your white solids to determine which two solids are in your Unknown sample. Your Analysis section must include the evidence you used to determine which two solids you believe are in the unknown.

Write a Hypothesis statement about which two substances are in your Unknown. Then test your hypothesis by mixing the two substances, testing the mixture with the liquids and comparing the results to the observations for your Unknown.

Mystery White Powders Lab # \_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Performed: \_\_\_\_\_\_\_\_\_\_\_

Group Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Due: \_\_\_\_\_\_\_\_\_\_\_

Here is an outline to help in preparing your formal lab report for the Mystery White Powders Lab.

Heading: Should include the name of the lab activity, your name, your partners’ names, the lab

number, the date performed and the date due. See heading above as an example.

Purpose: To identify the substances in the Unknown, using the individual samples as reference.

Hypothesis: Write your Hypothesis Statement

Materials: List any equipment and substances used for the experiment including the

Letter of White Powder Samples used and ID number for the Unknown Sample Mixture

Procedure: Write out the steps you performed in conducting the experiment/investigation.

The steps should be written as a set of clear instructions that anyone could follow to repeat your

experiment. Your procedure should not be a narrative of what you did.

Data: You need to include a neat, easy to read data table of all of your observations including the

unknown. If you redo your original data table for your formal report, you must also include the raw

data table in your report. You cannot discard your original data.

Analysis:

List all of the changes you observed in this lab.

Explain how you developed your Hypothesis Statement – How did you figure out what the two substances are - What is your evidence?

Conclusion:

Did you prove or disprove your original Hypothesis?

State which two of the four solids are in your unknown?

Discuss any problems you encountered.

Evaluate your procedure and describe what you would do differently if you were to repeat the experiment.

**Chemistry and You**

**The Scientific Method**

The scientific method is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ approach to gather knowledge to answer questions about the world we live in.

Steps of the Scientific Method:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is a tentative \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the question.

A hypothesis must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, includes recording and analyzing data gathered.

Each experiment has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the factor being tested and a control.

A control responds in a predictable way to the experiment and is used as a basis for

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, may lead to new questions, new hypothesis, or new experiments.

After many experiments, scientists may summarize results in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_, which is a description of how nature behaves.

Scientists may formulate a \_\_\_\_\_\_\_\_\_\_\_\_\_\_. A theory explains why nature behaves the way described by the natural law.

Theories can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ results of further experiments.

Support for Cornell Center for Materials Research RET Program is provided through

NSF Grant DMR-0317597

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