

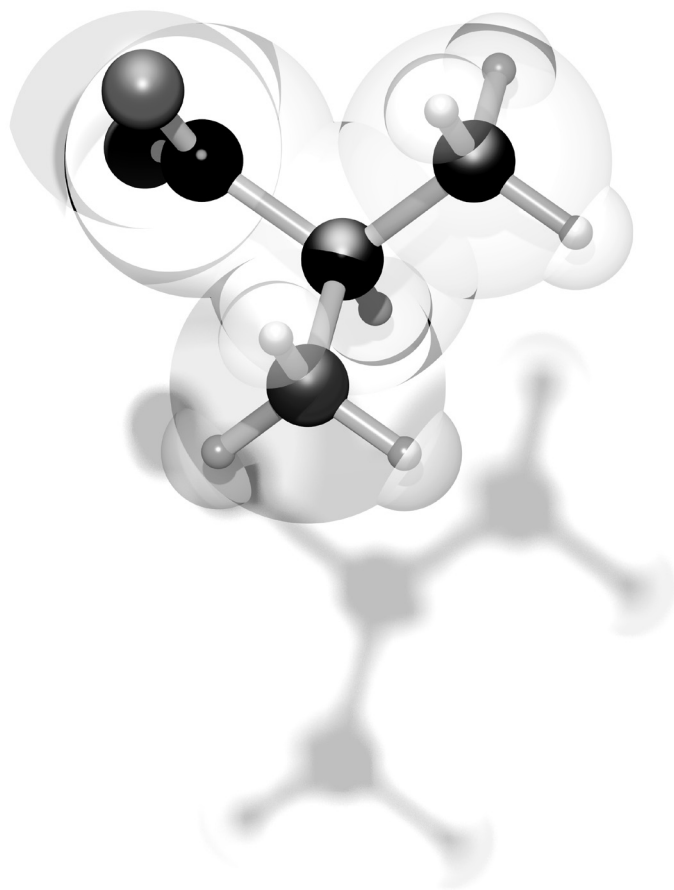
Real Science-4-Kids

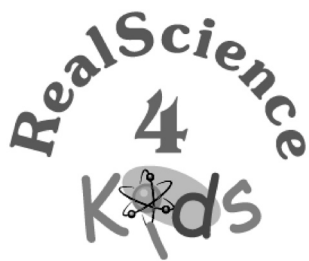
CHEMISTRY

Level I

Laboratory Worksheets

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Opening page: David Keller, Rebecca Keller

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RealScience 4 Kids: Chemistry Level I-Laboratory Manual

ISBN 0-9749149-1-6 (Previously ISBN # 1-931796-02-5)

Published by Gravitas Publications, Inc.

P.O. Box 4790

Albuquerque, NM 87196-4790

Printed in Hong Kong

Keeping a Laboratory Notebook

A laboratory notebook is essential for the experimental scientist. In this notebook, the results for all of the experiment are kept together with comments and any additional information. For this curriculum, you should record your experimental observations and conclusions directly on these pages, which are designated as the laboratory notebook- just like real scientists.

The experimental section for each chapter is pre-written. The exact format of a notebook may vary among scientists, but all experiments written in a laboratory notebook have certain essential parts. For each experiment, a descriptive but short *Title* is written at the top of the page together with the *Date* the experiment is performed. Below the title, an *Objective* and *Hypothesis* are written. The objective is a short statement that tells something about why you are doing the experiment, and the hypothesis tells what is the predicted outcome. Next, a *Materials List* should be written. The materials should be gathered before the experiment is started. Following the materials list, the *Experiment* is written. The sequence of steps for the experiment is written beforehand and any changes should be noted during the experiment. All of the details of the experiment are written in this section. All information that might be of some importance is included. For example, if you are to measure out 1 cup of water for an experiment, but you actually measured 1 and $\frac{1}{4}$ cup, this should be recorded. It is hard sometimes to predict how small variations in an experiment will affect the outcome and it is easier to track a problem if all of the information is recorded.

The next section is the *Results* section. Here you will record your experimental observations. It is extremely important that you be honest about what is observed. For example if the experimental instructions say that a solution will turn yellow, but your solution turned blue - record blue. You may have done the experiment incorrectly or you might have discovered a new and interesting result, but either way it is very important that your observations be honestly recorded.

Finally, the *Conclusions* should be written. Here you will explain what the observations may mean. You should try to write only valid conclusions. It is important to learn to think about what the data actually show and what cannot be concluded from the experiment.

Laboratory Safety

Most of these experiments use household items. However, some items, such as iodine, are extremely poisonous. Extra care should be taken while working with all chemicals in this series of experiments. Outlined below are some general laboratory precautions that should be applied to the home laboratory:

Never put things in your mouth without explicit instructions to do so. This means that food items should not be eaten unless it is part of the experiment.

Use safety glasses while using glass objects or strong chemicals such as bleach.

Wash hands after handling chemicals.

Use adult supervision while working with iodine and any step requiring a stove.

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Experiment 1: What is it made of? Date: _____

Objective:

To become familiar with the Periodic Table of Elements and investigate the composition of some common items.

Materials:

pen
paper
food labels
dictionary
encyclopedia
Periodic Table of Elements

Directions:

1. Take out the Periodic Table of Elements and answer the following questions:
 - A. How many protons does aluminum have? How many electrons?
 - B. What is the symbol for carbon?
 - C. List all of the elements that have chemical properties similar to helium.
 - D. What is the atomic weight for nitrogen? How many neutrons does nitrogen have?
2. Next, think of several different items and write them in the column labeled "Item." These can be any item, like "tires" or "cereal." Try to be specific, for example, instead of writing just "cereal" write "corn cereal" or "sweet colored cereal."
3. Next look up in an encyclopedia or on the food label the composition of the items you have selected. Try to be as specific as possible while identifying the composition. For example, if your cereal contains vitamin C write "sodium ascorbate" if that name is also listed. Try to identify any elements in the compounds you have listed. For example, vitamin C contains the element "sodium."
4. Write the source next to the composition. Source means where you got your information, for example, "food label" or "encyclopedia."

Answers to Questions:

A.

B.

C.

D.

Item	Composition	Source
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Results:

Briefly describe what you discovered about the composition of the various items.

For example:

"Kelloggs Sugar Smacks™ cereal contains vitamin C which is called sodium ascorbate."

Conclusions:

State your conclusions based on the information you collected.

For example:

"Many cereals contain sodium in the form of "salt" and "vitamin C."

Review

Define the following terms:

chemistry

matter

atoms (atomos)

proton

neutron

electron

nucleus

electron cloud

element

atomic weight
