

Real Science-4-Kids



Level I

Laboratory Worksheets

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Real Science 4 Kids: Biology Level- I Laboratory Notebook

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# 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, 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. 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.

If available use safety glasses while using glass objects or strong chemicals such as bleach.

Wash hands after handling chemicals.

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

# Contents

<b>Experiment 1:</b> Putting Things in Order	<i>1</i>
Review	<i>5</i>
<b>Experiment 2:</b> Inside the Cell	<i>7</i>
Review	<i>13</i>
<b>Experiment 3:</b> Take Away the Light	<i>15</i>
Review	<i>18</i>
<b>Experiment 4:</b> Colorful Flowers	<i>19</i>
Review	<i>22</i>
<b>Experiment 5:</b> Which Way Is Down?	<i>23</i>
Review	<i>28</i>
<b>Experiment 6:</b> How Do They Move?	<i>29</i>
Review	<i>33</i>
<b>Experiment 7:</b> How Do They Eat?	<i>35</i>
Review	<i>39</i>
<b>Experiment 8:</b> From Tadpole to Frog	<i>41</i>
Review	<i>45</i>
<b>Experiment 9:</b> From Caterpillar to Butterfly	<i>47</i>
Review	<i>50</i>
<b>Experiment 10:</b> Making an Ecosystem	<i>51</i>
Review	<i>54</i>



## Experiment 1: Putting Things in Order

Date: \_\_\_\_\_

**Objective:** In this experiment we will try to organize a variety of objects into categories

**Materials:**

Collect a variety of objects. Some suggestions are: rubber balls, oranges, cotton balls, banana, apple, paper, sticks, leaves, grass, etc.

**Experiment:**

1. Spread all of the objects on a table. Carefully look at each object and note some of their characteristics. For example, some objects will be round, or fuzzy; some will be edible, others not, some may be large, some small; and so on.
2. Record your observations for each item in the Results section.
3. Now try to define "categories" for the objects. For example, some objects may be "hard," so one category can be called "Hard." Some objects may be "round," so another category can be "Round." Try to think of at least 4 or 5 different categories for your objects. Write the categories along the top of the graph in the Results section.
4. Now list the objects that fit into these categories. Note those objects that can fit into more than one category. Write these objects down more than once, if necessary, into all of the categories they will fit.
5. Now, take a look at each of the categories and each of the objects in those categories. Can you make "sub-categories"? For example, some objects may all have the same color, so "Red" can be a sub-category, or some may be food items so "Food" can be a sub-category. Try to list several sub-categories for each of the categories.
6. List the objects according to their category and sub-category.



Categories						



Categories

Sub-categories



## Review

What is Taxonomy? \_\_\_\_\_  
\_\_\_\_\_

List the five kingdoms: \_\_\_\_\_  
\_\_\_\_\_

List the other six categories for classifying living things:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Which kingdom are dogs, cats, and frogs in? \_\_\_\_\_

Which phylum are dogs, cats, and frogs in? \_\_\_\_\_

Which class are frogs in? \_\_\_\_\_

Which order are dogs in? \_\_\_\_\_

Which family are cats in? \_\_\_\_\_

What is the Latin name given to humans and what does it mean?

\_\_\_\_\_