

PARENT HELPER GUIDE



Introduction to Supermarket Science Materials

What You Need:



Parent Helpers



How to Use This Book

Supermarket Science Materials are organized into thematically linked sets with experiments and activities as well as background information that makes them easier to do. There are also a bunch of simple, fun art and writing projects. All of the activities can be done alone or in conjunction with other project sets. Choose activities that are developmentally appropriate to your children.

All **Supermarket Science Materials** are primarily geared toward students in elementary and secondary schools, as well as their parents and teachers, but can be expanded to higher grades. The activities are designed to advance the understanding of concepts of biology, ecology, geology, and sociology based on local resources like a backyard or a local grocery store. All of the materials in this set and others link the **Core Curriculum Standards**. Use them to focus the activities to a particular grade level.

There are also **LEARN**, **SHOW**, **USE**, **DO**, and **TEACH** pages. **LEARN** pages are designed to be given to the students. They contain explanations, stories, or diagrams. **SHOW** pages usually present interesting photographs or illustrations that demonstrate specific concepts. **USE** pages are created as supplemental materials for the activities and experiments. **Plant Cards** are examples of **USE** pages. And finally, the **DO** pages contain the actual activities and experiments. Please use the back of these pages as scrap and add additional pages as needed.

Most **DO** pages have a **What You Need** list of items in the margin under the title of the activity. This is a quick reminder for what children should have while doing the activity. It might look something like a list on the right: pencil, scissors, knife, etc. Some of the activities in this set use cards. Creating taxonomies is part of the scientific process. The card games and activities allow kids an opportunity to practice this skill.

There are many activities which can be done using information about plants and food. This set shows some possibilities. We encourage you to come up with others. Think of these activities as inspirational examples, jumping off points.

Using red cabbage pH paper, 5th graders test house-hold liquids for acidity in front of their Science Buddies from 2nd grade.



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Words in red are vocabulary words. They are used in a word puzzle **DO** pages.

Using red cabbage pH paper, 5th graders test house-hold liquids for acidity in front of their Science Buddies from 2nd grade.



Main Ideas

In these activities, children are asked to analyze data and to come up with a scientific conclusion through logical reasoning.

Plants and Chemistry

- all plants produce chemical compounds
- some plants taste sour, some bitter, some sweet—the differences in taste is due to the chemicals made by the plant and where in the plant those chemicals are stored
- plants can be tested to find out what types of compounds they produce using pH paper, starch and glucose testers, and other chemical identifiers
- the plant's smell is also the result of chemical compounds it produces
- plants use chemicals to attract pollinators through smell and taste
- plants can't run away from danger but they can make toxic chemicals for defense

Do More

There are many experiments that can be done with pH test kits—so many liquids, so little time! Look around the home, classroom, lunch room, and students' lunch bags for interesting things to test. For example, you can compare the pH values of the different juices from the student lunches. Another interesting measurement is the water hardness. Different bottled water have different hardness. Compare the bottled water with tap water. You can also test rainwater by collecting samples from puddles or by leaving jars outside in the rain. If you do rainwater testing over the whole year, you might be able to plot the acidity of the rainwater over time. These measurements will help children understand the concept of "acid rain" in a very direct way. And finally, consider collecting and testing the waters from local springs, rivers, lakes, and ponds. The students can map the variation in acidity and hardness over a geographic area of their neighborhood.

Kids can share their work online. SupermarketScience.com will try to post kids' stories, art, and projects. How are these different from each other?



Students are cutting strips out of coffee filters soaked in red cabbage juice to be used as pH paper.

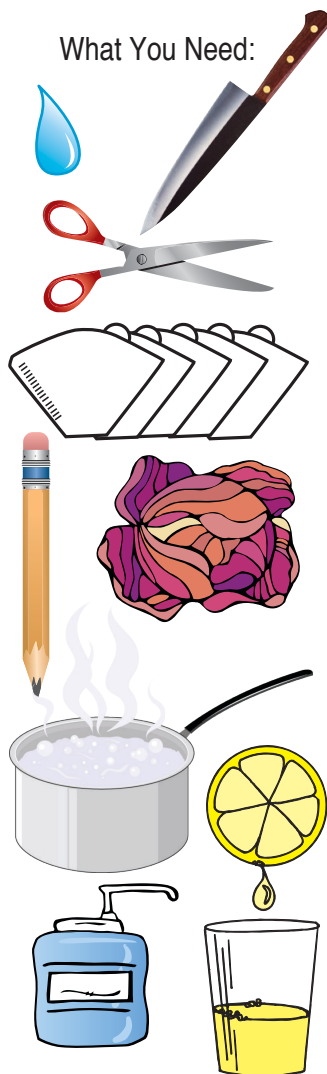
What You Need for This Experiment

What You Need

The concepts covered in this section are complex but the experiments are easy. Parents, teachers, and older students should read all of the **LEARN** pages. Younger students would benefit from having parents or teachers read the **LEARN** pages to them. Make sure to have adequate time set aside for discussions.

For younger children, consider making the pH paper ahead of the activity—working with boiling water, a knife, and a blender might not work with really young children. But while young student might not be able to make the pH paper themselves, they can certainly watch and perform the experiments.

What You Need:



The **DO** pages are appropriate for elementary school children as well as older students. In elementary school, these activities work well when performed in pairs with plenty of adult supervision. A parent can help students organize their materials and their thinking. In higher grades, such supervisory function can be taken up by the students themselves.

The activities in this section require pH test kits or pH meter. You can purchase these at a hardware store, at a fish pet store, a medical equipment supplier, or at a gardening supply center. The cheapest pH paper will cost about \$3 for an entire class to do the activities in this section once. pH meters can cost a lot more but can be used over and over again. These devices range from \$10 to over \$100.

You might want to discuss why these particular stores carry this item. The presence of blood in a liquid can be detected with a pH paper test, which is why it could be found at a medical supply store. Most pH kits include tests for water hardness. Water hardness—the amount of metals dissolved in the water—affects plumbing fixtures, and so is an important diagnostic tool. Most hardware stores have some version of pH and water hardness tests. Gardeners use pH tests to determine the quality of the soil. When the soil is too acidic or too basic, some plants can't grow. A simple pH tests can explain the why a particular plant is not thriving. And finally, most fish prefer water with neutral pH (that's pH=7). When the water gets too acidic or too basic, fish die. All pet fish supply stores carry several types of pH testing and adjustment kits.

The materials you will need:

- Learn Pages, Do Pages, and Use Pages
- pH test kit or meter
- Coffee Filters
- Red Cabbage
- Boiling Water
- Blender or Knife
- Household Liquids: Juices, Liquid Soaps, Teas, Water, etc.
- Variety of edible fruits, roots, leaves, and stems
- Household Chemicals: Baking Soda, Antacids, Detergents, etc.
- Magic Markers or Color Pencils
- One Pencil or a Pen
- Plastic Cups or Test Tubes
- Paper
- Parent helpers to help students with setting up, clean up, and organization



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