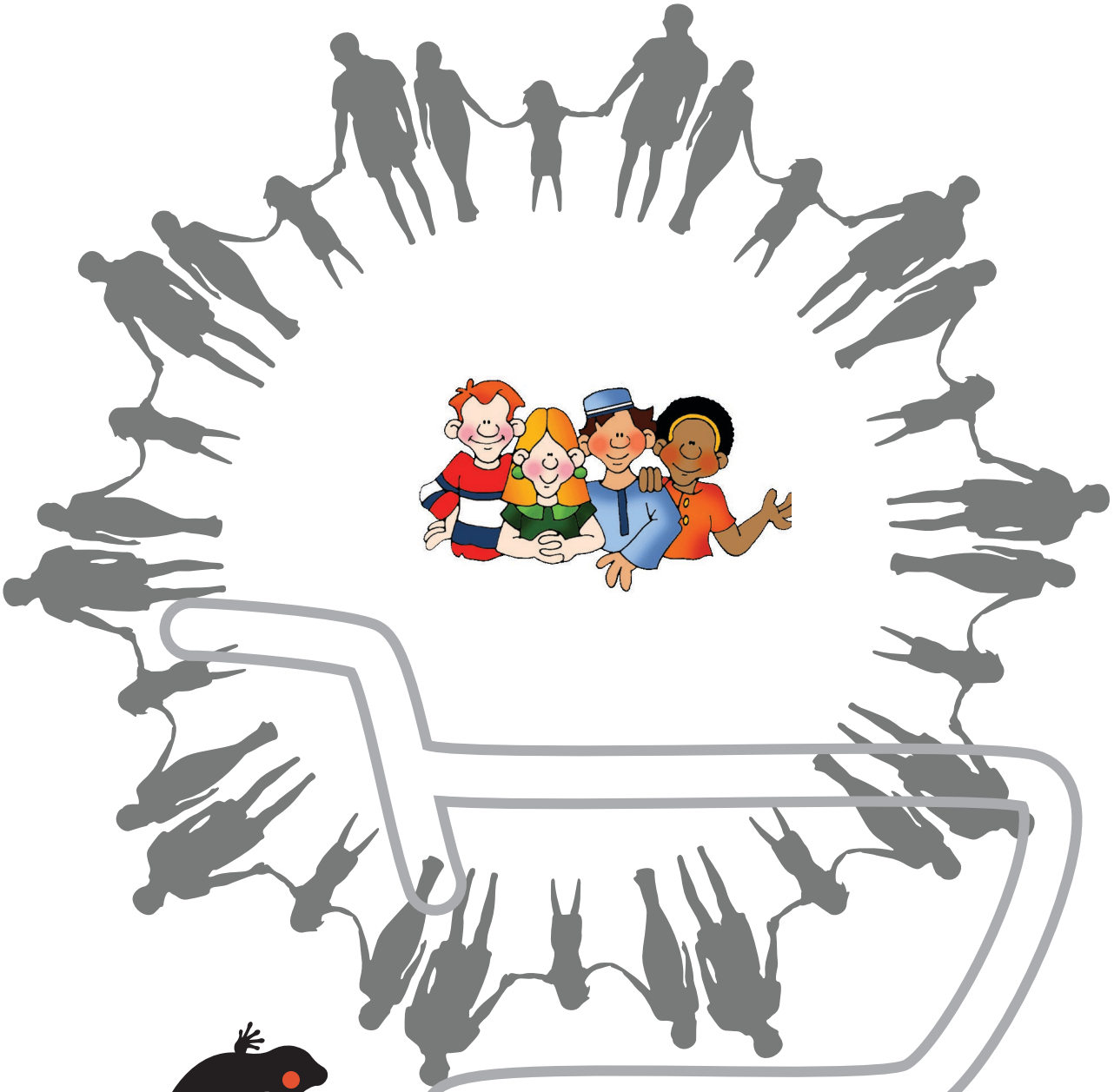
PARENT HELPER GUIDE



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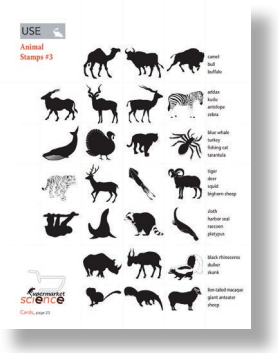
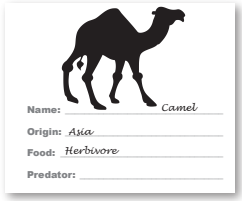
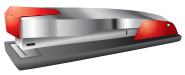
TEACH

Introduction to Supermarket Science Materials

What You Need:







Parent Helpers

How to Use These Materials

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 for 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 these Standards 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 printed out and given to the kids. 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. Animal Cards and Map Cards are examples of USE pages. And finally, the DO pages contain the actual activities and experiments—please print as many copies as you need and give them to your children. Please use the back of these pages as scrap and add additional pages as needed.

On some pages, there are icons of animals. For example, an activity about elephants might have an elephant icon next to it. These icons can be used as keys to link information between all of the Supermarket Science Materials.

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: Animal Stamps pages, Animal Cards pages, research books, pencil, scissors, glue, etc.

Some of the activities use of cards from the Supermarket Science Cards or Stamps USE pages. Creating taxonomies is part of the scientific process. Card games and activities allow kids an opportunity to practice this skill.

No matter what age you are, these activities will be fun and exciting. We all have a surprising amount of misconceptions about gravity and how it works. While these activities don't really discuss gravity, they provide experiential grounding into how gravity feels and acts under different situations. Kids should be encouraged to test their ideas and experiment with marbles and egg drops.

There is a lot to notice, so please consider doing these multiple times and discussing the results over dinner or as part of a class. And remember, there are as many ways of learning as there are people doing it. We encourage you to come up with other ways of explaining what happens when marbles hit the ground. Consider discussing what would happen if a large meteorite hit a populated area. Look up people who were unlucky-enough to get hit by a meteorite! Think of these activities as inspirational examples, jumping off points. For more activities and suggestions by teachers and parents on how to explore this material with kids, visit Supermarket Science web site at SupermarketScience.com.

Summary and Introduction

These activities and experiments introduce students to the science of collisions, impacts, and gravity. All of the activities in these pages are doable even by the youngest elementary-aged school children. And the older kids would be able to not only do the activities but theorize on what they are doing. This is truly an experiential set.

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Introduction to Supermarket Science Impact Craters and Gravity Materials

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

Main Ideas

Impact Craters

- The size and shape of the impact crater can be predicted based on the size, shape, and speed of the missile and the medium into which it is being dropped. This is top down reasoning—induction!
- We can also look at a crater and make some observations and deductions about how it was made—it's bottom up reasoning.
- When we do scientific experiments, we want to keep a lot of the conditions the same across the many trials while varying just one variable.
- It's okay to fail and be wrong—scientists are wrong all the time. It's part of the scientific process. So keep dropping those eggs until at least one survives. Do the experiments form different heights—science is worth scrambling a few eggs.

Here, sixth grade students are measuring the relationship between the height from which a marble is dropped and the diameter of the resulting crater. The collected data is then graphed to represent the results in a graphical form. Students are asked to state their hypothesis and then compare it to the outcome of their experiments.

Hair spray glues the sand grains on the surface and helps create a well defined crater edge that's easier to measure.

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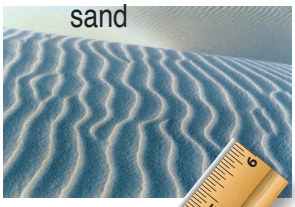
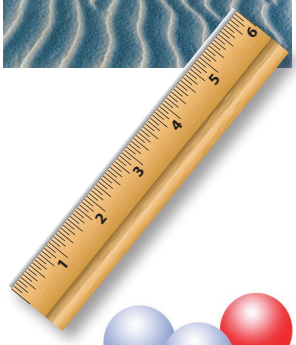
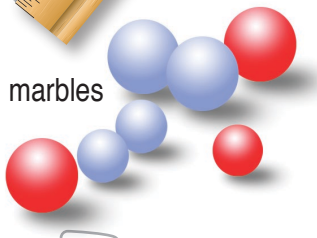
What You Need to Conduct These Activities

Parent Helpers







What You Need

The concepts covered in this section are complex, but the experiments themselves are easy. Make sure to have adequate time set aside for discussions. For maximum fun and benefit, it might be necessary to spend several days to complete these activities, varying the various variables for the Eggsperiment's egg drop activity, for example. With older students, dovetail these activities with discussions of gravity, force, and Newton's Third Law of equal and opposite reaction.

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—dropping eggs from different heights can get messy, and eggs sometimes drop prematurely from tables. 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.

Some of the activities in this section require special materials. Most of these are probably already in your possession, but if not, they are very easy to get.

The materials you will need for each group of kids:

- Pencils
- Scissors
- Tape
- Paper
- Newspaper—for creating egg cradles
- Sand in a large box
- Hairspray—for creating a *hard* surface on top of the sand
- Marbles of different sizes—it would be good to get a solid metal marble too (same size but heavy)
- Eggs
- Parent Helpers to help kids with setting up, clean up, and organization

Do More

This is a very fun set of activities—who doesn't want to throw things, make craters, and design safe landing packages for eggs? So after you've finished dropping your marbles and eggs in the prescribed manner, consider making changes to the experiments' parameters: drop marbles from greater heights; don't use hairspray on sand; drop marbles into other things (don't break anything); throw with force instead of just drop them. The possibilities are endless.

And with the Eggsperiment, consider other solutions—wrap the egg into tissue paper and stuff it into a sock; make a parachute from a plastic bag; use some bubble wrap for cushioning; drop the egg into water and then onto grass and concrete, etc. What made the most dramatic difference in outcomes? What about using different kinds of eggs: duck or quail or brown chicken egg instead of white? What if the egg was cooked? Discuss.

And please send us your photos and stories so we can share them with the world!

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