

SAMUEL CORD STIER AND JEAN POTTER



SCIENCE IN SECONDS FOR KIDS

100+
experiments
and activities
you can do
in 10 minutes
or less

SECOND
EDITION

J JOSSEY-BASS™
A Wiley Brand

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This book is dedicated to my dear friend James H. Harless in appreciation for his friendship and love for fellow man and for his significant contributions to the field of education.

— **Jean**

To teachers everywhere who guide children toward a good life by fostering wonder, curiosity, and discovery – sensations evolution has given us the capacity to feel that have made humankind what it is today.

— **Sam**

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Introduction

Science in Seconds for Kids contains 108 quick and easy activities and experiments that will help you discover the wonders of science and our world, from how rockets work to what causes lightning. Each activity takes only 10 minutes or less to complete. You will soon be able to look quickly into many exciting topics.

How This Book Is Organized

Science in Seconds for Kids is divided into sections by topic. If you are looking for a particular activity, you can find it in the Activities Index at the back of the book.

Each activity answers a particular question about science and includes a list of the materials you need, easy-to-follow steps, and an explanation of what the activity demonstrates. There is no need to buy special materials, but you may want to visit the Internet or a library for additional information on the topic.

Tips for Completing the Activities

Try to be very careful as you perform your activities. These tips will help:

Be prepared. Read through any activity before you begin to do it. Collect all the materials required before you start, and place them in the order in which you will use them. Science can be messy, so wear old clothes while doing activities. Give yourself enough space to work and enough ventilation. Cover surfaces with newspaper in case of spills.

Be accurate. When conducting your activities, follow the directions closely, and write down all results. Consider repeating experiments to see if you get the same result again. Doing an experiment more than once can help improve the accuracy of your results.

Be creative. After completing an activity according to the directions, try to think of ways that you can change an experiment. Look for the results from your change to the experiment. Before you make the change, ask an adult if your substitution is all right.

Be careful. Ask for adult assistance and supervision when using sharp instruments. Materials should be used for the purpose for which they are intended. Work cautiously.

Be neat. Keep your work and your work area as neat as you can. Use clean instruments, and wash them after every use. Put your materials away after they have been washed.

Have fun! Because our world is so interesting, science is full of discoveries and adventure that lasts forever!



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Air

Air is a special mixture of gases that surrounds and protects our planet and makes Life possible. Since it is colorless, odorless, and tasteless, we sometimes do not remember it is there. But it is, and it is very important.

Air has many uses, from keeping living things alive to making it possible for you to play basketball, fly a kite, or fly in an airplane. In this section, you will do some activities and experiments to learn how air can push objects, lift things, and make balls bounce.



Dry Paper

Can Paper Stay Dry in Water?

Materials

tap water

plastic tub

sheet of paper

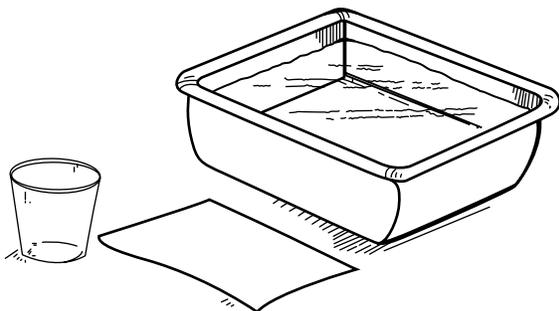
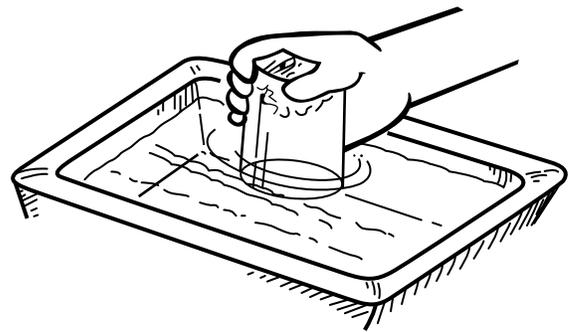
plastic cup

Try This

1. Run tap water into the plastic tub until the tub is about three-fourths full.
2. Crumple the sheet of paper and push it to the bottom of the plastic cup. Use enough paper so it will stay at the bottom when the cup is upside down.
3. Hold the cup upside down and push it into the water. Be sure to hold the cup straight up and down, not tilted.
4. Pull the cup straight up out of the water and, with dry hands, remove the paper. What happens to the paper?

What's Going On?

The paper did not get wet. Air surrounded the paper in the cup. When you pushed the cup into the water, the air was trapped in the cup. The trapped air pushed back on the water, keeping it from reaching the paper. If you had tilted the cup, the air would have escaped, and the water would have taken its place. In that case, the paper would have become wet.



Elastic Air

Why Does a Balloon Filled with Air Bounce?



Materials

balloon

string

Try This

1. Inflate the balloon.
2. Tie the neck of the balloon closed. Tie a string to the neck.
3. With your hand, push in the balloon at different places.
4. Bounce the balloon against a table or your fist. What happens to the balloon when you press or bounce it against something?

What's Going On?

Balloons are made of an **elastic** (stretchy) material called **latex**. When you blew air into the balloon, the air **molecules** (the smallest particle or amount of a chemical substance) were packed closer and closer together. When you pushed in on the balloon, you actually felt all those air molecules pushing back. Because the balloon and air are elastic, the balloon bounced back when you pushed it against a table or your hand. If the balloon were filled with sand, it would not bounce! This is why basketballs, soccer balls, and other balls are filled with air.

