

Excellent Experiments

Exploring the world, from a small penny to the vast night sky, can teach your child about science. With these experiments, your youngster will learn about chemical reactions, simple machines, moon phases, mold growth, and more.

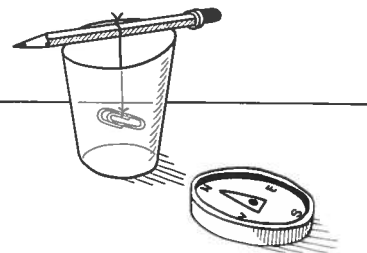
All you need are household materials and a little time. Then, help your child conduct these experiments—and watch him learn to think like a scientist.



Make a compass

Does your child know that the earth's north and south poles are magnetic? This experiment will show him the proof.

You'll need: paper clip, magnet, string, pencil, clear cup



Here's how: First, your youngster will need to make one end of the paper clip magnetic by rubbing it along the magnet about two dozen times (rub in the same direction each time). To

test it, he can hold the clip to the refrigerator to see if it sticks. Next, help him tie one end of a string tightly around the center of the paper clip so the clip hangs horizontally. He should tie the other end around the middle of a pencil and lay the pencil across the cup so the paper clip hangs freely.

What happens! When the paper clip stops moving, the magnetic end will point north.

Why! The earth has a magnetic field, which is strongest at the North Pole. But if your child holds the magnet close to the paper clip, the clip will turn toward the magnet. That's because the magnetic field of the magnet is closer than that of the North Pole.

Create a scent

Making perfume is a fun way for your youngster to learn about *diffusion*, or the way that matter spreads through a liquid.

You'll need: water, measuring cup, 2 bowls, scented natural objects (lemon or orange peels, flowers, pine needles), coffee filters, funnel, small clean jar with a lid, food coloring

Here's how: Have your child measure 1 cup of water into a bowl. Ask her what the water smells like (it will have no odor). Then, she can add any scented item, or combination of items, to the water. Let the mixture sit overnight. The next day, she should strain the liquid through the coffee filter into the other bowl and smell it again. She can use a funnel to pour her perfume into the jar so she can keep it.

What happens! The water will smell like the objects she added.

Why! Molecules from the items spread, or *diffuse*, into the water. They start out close together and gradually get farther apart until they're spread evenly throughout the liquid. *Idea:* Your youngster can watch diffusion happen if she adds a drop of food coloring to the water.

Raise a flag

A simple machine has no moving parts, yet it makes objects easier to move. This activity will show your child how one simple machine, a *pulley*, can help raise and lower a flag.

You'll need: 4-foot piece of string, paper, crayons, tape, spool, pencil (pencil must fit through the spool and turn easily)

Here's how: Help your youngster tie the string together into a loop. Then, let him draw and color a flag and tape its left edge to the string. Have him slide the spool to the center of the pencil and hang the string over the spool (the flag should be at the bottom of the loop). To work his pulley, he can pull down on the loop of string opposite from the flag.



continued

What happens! The flag can be raised and lowered.

Why! In science, “work” means using force to move an object. Simple machines do some of the work for us so that we need less force to make something move. In this experiment, the spool and string make a pulley, which directs the force your child puts on the string to move the flag up and down.

Tip: Ask your youngster to think about the flagpole at his school. Without a pulley, the flag raisers wouldn’t be able to get the flag to the top of the pole.



the moon, she would draw nothing. After 28 days, she can look over the calendar to find a pattern. Then, ask her to use the calendar to predict what the moon will look like on any particular day next month.

What happens! The moon moves in a regular pattern—it appears to get bigger and then smaller.

Cause a reaction

Why is the Statue of Liberty green? Your child will find out with this chemistry experiment.



You’ll need: several pennies, paper towel, shallow dish, vinegar

Here’s how: Have your youngster lay the pennies on

a paper towel in a shallow dish. Next, have her pour a little vinegar onto the paper towel, leaving the tops of the pennies exposed to the air. She should check on them in an hour or two to observe any changes in their color.

What happens! The tops of the pennies will begin to turn greenish.

Why! Pennies, like the Statue of Liberty, are coated with copper. When copper is exposed to the oxygen in the air, it causes a chemical reaction that creates a green substance called copper oxide. Acids in liquids (such as vinegar) speed up the reaction. In the statue’s case, the combination of exposure to air and the acid in rain has caused it to turn green.

Find a full moon

The moon makes a full circle around the earth every 28 days. Encourage your youngster to follow and then predict the patterns of the moon’s cycle.

You’ll need: calendar, pencil

Here’s how: On a clear night, take your child outside with a calendar and a pencil. Have her draw the moon in that day’s calendar square and write words describing it (“completely dark,” “a tiny sliver,” “a perfect circle”). *Note:* If she can’t see

Why! “Moonlight” is actually sunlight reflected off the moon. As the moon travels around the earth (once every 28 days), the planet blocks some or all of the sunlight. When the moon is between the sun and the earth, all the light is blocked—we see the side of the moon that’s completely dark, so it seems to be invisible. When the entire bright side of the moon faces the earth, we call it a “full moon.”

Discover mold

Where does mold come from? Your child can find out with this experiment.

You’ll need: 1 slice of bread, 1 slice of cheese, small piece of fruit (grape, strawberry), 3 zipper bags, teaspoon, water, notebook, pencil, crayons

Here’s how: Have your youngster put each food in a separate zipper bag. He should add 1 tsp. of water to each bag and seal it tightly. Have him observe the changes daily and record what he sees (in words and pictures) in his notebook.

What happens! Mold appears on the food.

Why! Mold is everywhere. It is a *fungus*, a living thing that gets its nutrients from the food it grows on. Because mold starts out as microscopic *spores*, we don’t see it until it begins to grow. Mold spores grow quickly in dark, wet places—especially when they have a food source like bread, cheese, or fruit.

Idea: Your child can see how darkness helps mold grow by repeating the experiment with two sets of bags: one set in the light and another in a dark cabinet. In which place does mold grow faster?

