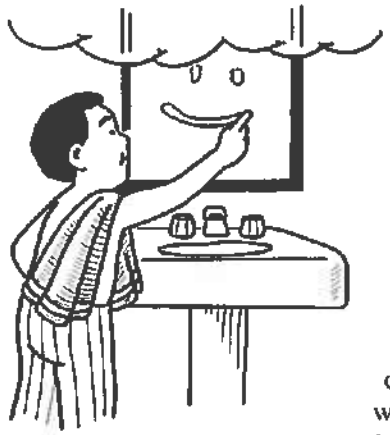
Water, Water Everywhere!

Splish, splash… it's science time! Whether your child is floating a rubber duck in the bathtub or wading in a stream, she probably loves to play with water. You can use her fascination to help her learn about science. These activities will show her what happens when water gets hot or cold, where water comes from and where it goes, and more.

Make a mountain

Give your youngster a cup, a small plastic bucket, and a shovel, and head to a stream or creek that is safe to play near. Together, watch the water flow. Talk about how it goes in one direction and moves over and around rocks and branches. Then, suggest that your child use her shovel and bucket to make a "mountain" of dirt beside the stream and place rocks and twigs in the pile. She can put some water in her cup, pour it on the dirt mound, and watch. She'll see that the water flows down. If she makes the pile higher, does the water move faster or slower? You can also point out the little tunnels and valleys that the water makes. This is called *erosion*—as water flows and carries soil along with it, it shapes the land on earth.



Write a message

Your youngster can see *water vapor* above a pot of boiling water or on a foggy mirror. After his next bath, ask him to look toward the bathroom ceiling and at the mirror—what does he see? He might say "fog" or "steam." Explain that when water gets warm, it rises up and floats in the air as tiny drops of steam, or vapor. Encourage your child to write a message on the mirror and then look at his finger. There will be water on it because vapor is made of water.

Sink or float?

Let your youngster test household objects to see whether they will sink or float. Put water in a sink or in a plastic wading pool while she collects items in a variety of sizes and materials (blocks, paper clips, coins, rocks, balls, fruit). Then, have her make a chart by dividing a piece of paper into three columns. In the first column, she can draw a picture of each object. In the second, ask her to predict whether it will sink or float. In the third column, she can record what happens. When she has tested each item, what conclusions can she make? Your child might think that a heavy object like an apple will sink. Tell her that whether something sinks or floats has to do with its density—how tightly its molecules are packed together. An apple is heavy, but it has a lot of air pockets inside. A penny weighs less, but it will sink because it is denser.

Go with the flow

Water normally flows down—with this experiment, your child can make it flow up.

Help her cut a paper towel or a coffee filter into strips. Then, have her dip one end of a strip into a glass of water. The water will climb up the strip. That's because the water molecules stick to each other and to the material. This is how water climbs up from the roots of a tree through the trunk and to the leaves—it's called *capillary action*.

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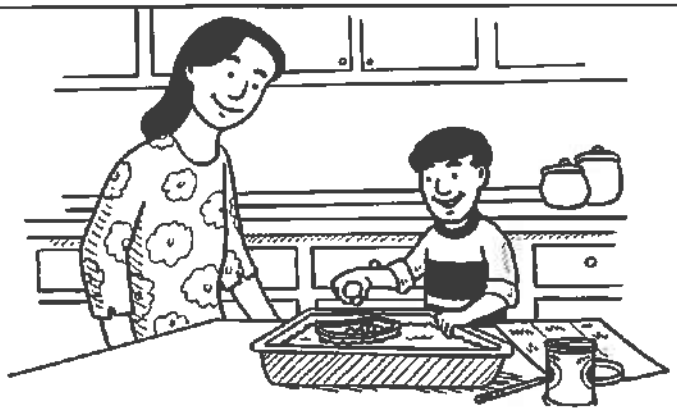
Sail a boat



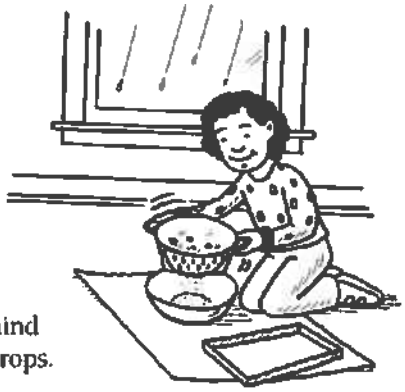
Can your youngster make a clay boat that will carry "cargo"? First, let him see that clay can sink: have him roll it into a ball and drop it into a bowl of water. Then, ask him to think about what boats look like—does he think the clay will float if he shapes it like a boat? Once he gets it to float, have him add marbles, one at a time, to see how many it will hold. When it sinks, suggest that he try to make a new boat that will carry more marbles. Your child can keep track of what works best by drawing each boat on a piece of paper and writing down the number of marbles that it holds before sinking.

Break a cup

When water gets cold enough (32 degrees), it becomes solid. Your youngster has seen solid water—he has probably used ice cubes to keep his drink cool, and perhaps he has skated on an ice rink. Let him use your freezer to make ice and see what happens. Help him fill a paper or plastic cup all the way to the rim with water. Set it carefully in a bowl and place the bowl in the freezer before he goes to bed. Ask him what he thinks will happen. In the morning, he will see that the water turned to ice and cracked the cup. You can explain that when water freezes, it expands, or takes up more space. That's why the cup broke!

Collect raindrops

How big is a raindrop? The next time it rains, your child can find out. Let her pour some flour into a shoebox lid and pat it down flat. Then, have her set it outside in the rain. After a minute, bring the lid back inside. Help her pour the flour into a colander over a bowl and gently shake the colander. The lumps of flour left behind show the sizes of the raindrops.



The water cycle

Where do puddles go? Where does rain come from? Water is constantly being recycled: it rises into the air (evaporation), forms clouds (condensation), and falls back to earth (precipitation). Your youngster can discover the three stages of the *water cycle* with these experiments.

1. Evaporation

Help your child understand why water seems to disappear. On a hot, sunny day, have him get two glasses, put ½ cup water in each, and use masking tape to mark the water levels. Then, he can put both glasses outside, one in the sun and the other in the shade. Let him check back once an hour, and he'll soon notice that the glass in the sun has slightly less water. The heat from the sun helps water *evaporate* (turn into vapor) faster.

2. Condensation

Your youngster can explore condensation by creating a cloud in a jar. Help her fill a glass jar with hot tap water and let it sit for 1 minute. Then, have her pour out almost all of the water—she should leave about 1 inch in the bottom of the jar. Next, let her use a rubber band to secure a piece of plastic wrap over the mouth of the jar and put some ice cubes on the top. A cloud will appear inside the jar. The warm water had started to evaporate, and the ice cooled it down. This happens in the sky, too—when water evaporates and then cools, it condenses to form clouds.

3. Precipitation

With this activity, your child can make a plant water itself! Let him fill a plastic cup halfway with soil, poke a hole in the soil with his finger, and place a few dried beans in the hole. He should water the soil until it's very damp. Then, have him set the cup inside a gallon-sized zipper bag. He can seal the bag tightly, put it by a sunny window, and leave it alone for a few days (he won't need to water it again). What happens? As the sun warms the water in the soil, it will evaporate. As it cools, it will condense into little drops on the bag. And finally, like rain, the drops will trickle down and "water" the plant.

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