

THE WEATHER OUTSIDE

A few household items and your child's observations can teach him a lot about the weather. Our forecast? The activities in this guide will inspire your youngster to use science and math to learn about meteorology.



WEATHER TRACKER

Watching weather patterns lets your child see how weather travels.

Materials: map, paper, pencil, Internet or newspapers

Help your youngster find your city or town on a map and then choose a town in each direction (north, south, east, west). Have him draw a chart on paper with the days of the week down the left side and five columns (one each for your hometown and the other four locations).

For one week, he can check the weather report for each place (online or in a newspaper) and record the conditions in his chart. After a week, encourage him to look for patterns in how the weather moved and to predict tomorrow's weather at

home. He might say that yesterday it was sunny and 85° to the west and predict warm, sunny weather for your town.

What's happening? Most weather systems follow the *jet stream*—a large air current that blows from west to east.

FOLKLORE FORECAST

"Red sky in morning, sailor take warning. Red sky at night, sailor's delight." Long ago, people used signs from nature to predict the weather.

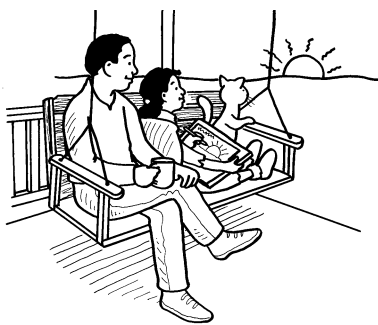
Encourage your child to test this saying for accuracy.

Materials: crayons, paper

Suggest that your youngster draw pictures of each day's sunrise and sunset and note what

they would predict according to the sailor's rhyme. For example, a red sunset would mean fair weather tomorrow, while a red sunrise would indicate a stormy day. The next day, have her record the actual weather conditions at the bottom of the drawing. After a few days, she can analyze the data she collected. Does the saying hold true?

What's happening? The sky's color shows changes in atmospheric pressure. Also, the amount of moisture and dust particles in the air affects the color and the weather conditions. A red sunrise can mean low pressure (rain) is coming. A red sunset may indicate high pressure (fair weather) is on the way.



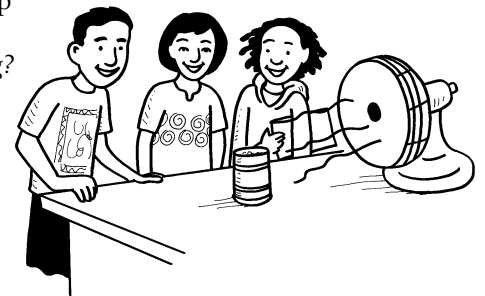
DO-IT-YOURSELF FROST

Some farms use wind machines to protect plants from frost. Here's a way for your child to see how frost forms—and how to prevent it from forming.

Materials: an empty soup can with the label removed, crushed ice, salt, spoon, fan

Have your youngster make frost by filling the can $\frac{2}{3}$ full with ice. Let him stir in $\frac{1}{2}$ tsp. salt—this will lower the melting point of the ice and bring the can's surface below the freezing point. Soon, water vapor from the air will condense and freeze on the can's outer surface, and he will see frost. Next, he can repeat the process, but this time, place the can a few feet from a fan set on low. What does your child discover? Let him experiment with moving the can closer to or farther from the fan, and with changing the fan's speed, to determine the best way to keep frost from forming.

What's happening? Steady air movement prevents water vapor from condensing and freezing on surfaces.



continued

CLOUD CENSUS

Observing clouds is another tool for predicting the weather. Suggest this idea.

Materials: Internet access or books about clouds, paper, crayons

Using a library book on clouds or a printout from a website, your youngster can learn to identify the types of clouds she sees outside. Encourage her to create a recording sheet with four columns, one labeled “Cloud types” and three labeled for the weather: “Mostly sunny,” “Mostly cloudy,” and “Stormy.”

She could identify the clouds she sees each day (*cirrus*, *stratus*, *cumulus*, and so on) and log them with tally marks. For instance, if she sees both *cirrus* and *cumulus* clouds on a mostly sunny day, she would make one tally mark in the “Mostly sunny” column for both *cirrus* and *cumulus*. (*Hint:* She should do her recording around the same time each day.)



Eventually, your child may be able to look at the clouds and tell you what kind of weather to expect.

What’s happening? Different types of clouds indicate different types of weather ahead. For example, stratus clouds indicate rain or snow, while cirrus clouds usually mean good weather ahead.

TWISTER IN A JAR



This experiment will create a vortex that resembles the whirling mass found in tornadoes and hurricanes.

Materials: empty jar with lid, water, dish soap, glitter (optional)

Have your youngster fill the jar $\frac{3}{4}$ full of water and add a drop of dish soap. Help him screw the lid on tightly and shake to mix. (The soap bubbles will make it easier to see the vortex.) Tell him to swirl the jar in a quick circular motion and place it on the table. If he looks through the side of the jar, he’ll spot a vortex spinning in the water. *Idea:* Add $\frac{1}{2}$ tsp. of glitter to the jar so he can see how debris moves within a vortex.

What’s happening? Swirling the bottle makes the water spin and creates *centripetal force*—a force that causes the rotating water to move toward the center.

TEMPERATURE EXPLORER

Collecting data from several locations will help your child explain variances in temperature.

Materials: outdoor thermometer, graph paper, red crayon

Help your youngster identify four outdoor locations: a sunny lawn, a shaded lawn, a sunny paved area (like a basketball court), and a shaded paved area (say, a driveway under a tree). Then, have her measure the temperature in each spot and make a bar graph to compare them. She can label the locations along the bottom and write numbers for the temperature up the left side.

Now she’ll color a bar to represent the temperature recorded for each location. *Idea:* Suggest that she record the temperatures three times a day and choose different colors on the bars

to represent each time. Finally, let her use her graph to make comparisons and explain her findings. What does she think caused the differences in temperature?

What’s happening? Concrete and asphalt absorb and hold more heat than areas with dirt and grass do. That’s why cities are often warmer than suburban or rural surroundings.

