



PEEP and the Big Wide World™

Family Science and Math

The activities in these letters turn everyday situations—like a walk in the park or a sink full of water—into simple science explorations that families can enjoy together.

At the beginning of each PEEP science unit, copy and distribute the letter, encouraging your children to continue their shadow, water, plants, color, sound, and ramps explorations at home. It's a great way to connect school and family learning! During Circle Time, be sure to invite children to share at-home science discoveries with their classmates.

Each letter is provided in English and Spanish.

Exploring Science with Kids

Explore Shadows with Your Child

Explore Water with Your Child

Explore Plants with Your Child

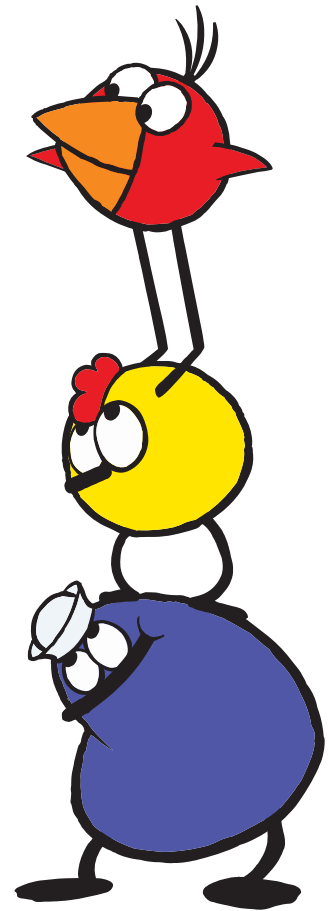
Explore Color with Your Child

Explore Sound with Your Child

Explore Ramps with Your Child

Explore Patterns with Your Child

Explore Measuring with Your Child



Watch *Peep and the Big Wide World* on public television.

Visit peepandthebigwideworld.org for fun games, family science and math activities, videos to watch, and much more!

Find *Peep and the Big Wide World* on Facebook. 



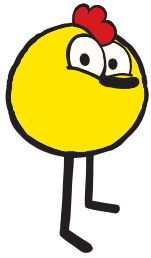
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PEEP and the Big Wide World™

Exploring Science with Kids

You don't need to be a science expert to help your child make discoveries about science in the world around you. All you need is an open mind and a willingness to join the exploration. It's fun and a great way to support your child's science learning.

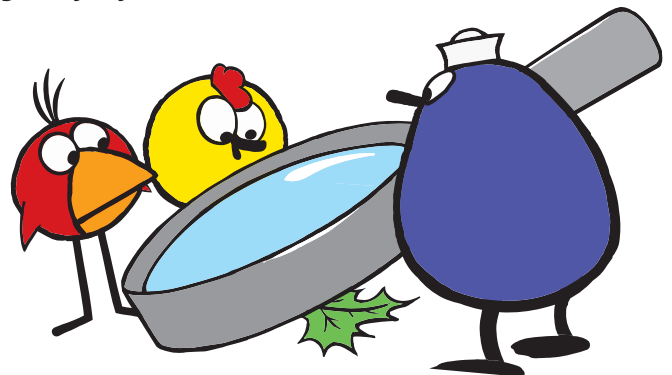
Tips for Parents

- 1** Take time to look, wonder, and try things out together. For example, if your child notices a dripping faucet, an interesting rock, or a weed in the sidewalk, stop to examine it closely.
- 2** Let your child take the lead in exploring things. Notice what catches your child's interest. Is it the weed, the crumbling pavement, or the tiny insects nearby?
- 3** Ask questions to keep the exploration going. You might say, *Wow! Did you see...? Listen to the sounds the drops make when they hit the water. I wonder what would happen if...?*
- 4** It's OK to say, "I don't know" when your child asks you hard-to-answer questions. You can also say, *Maybe we can find out together.* Then visit your local library, museum, or zoo and see what new information you can discover.
- 5** Visit our Web site, peepandthebigwideworld.org, with your child. Watch *Peep* episodes, play science and math games created especially for young kids, find easy, fun family ideas for exploring everyday science, and much more.

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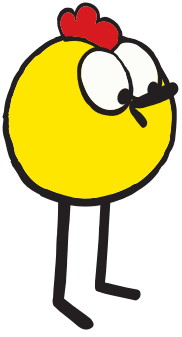
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PEEP and the Big Wide World™

Explore Shadows with Your Child

Searching for Shadows

Go outside on a sunny day with your child. Ask: *Where is your shadow? What other shadows can you see?* Hop, dance, and do silly walks together. Watch how your shadows move.

Take a walk with your shadows. Notice what happens to your shadows when they fall on a wall, some steps, or a bench.

Compare shadows at different times of day. Help your child notice the shape and size of shadows in the early morning, noontime, and late afternoon. Ask your child to describe his or her shadow: *How is your shadow like you? How is it different? How did your shadow change during the day?* You might want to draw chalk outlines of your child's shadow at different times of the day.

Shadow Theater

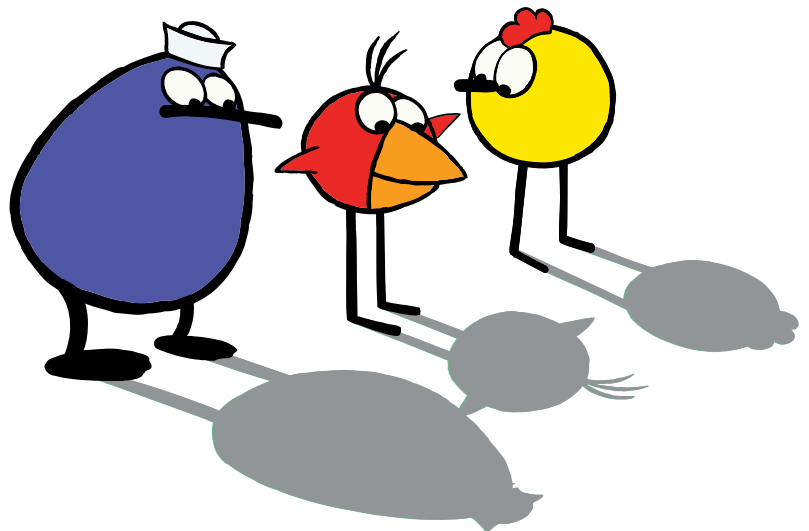
Turn on a lamp or flashlight in a darkened room. Have your child join you in moving your hands in front of the light and watching the shadows on the wall. Ask your child: *How can you make your shadow bigger? Smaller? What shadow shapes can you make with your hands?*

Put on a shadow play! Use your hands to make shadows that look like a flapping bird, a quacking duck, or a running spider. Or use toys and household objects as shadow puppets. You can also make shadow puppets out of paper—cut out shapes and tape them to the top of a ruler, drinking straw, or unsharpened pencil.

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Learn More about Shadows

Read and Find Out!

Visit your library and look for these books. Ask your librarian for additional recommendations.

Guess Whose Shadow? by Stephen R. Swinburne
Boyd's Mills Press, 1999

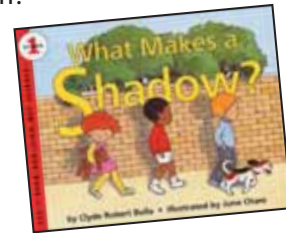
Shadows come in all shapes and sizes. This book invites the reader to guess the objects that make the mysterious shadow shapes.

Nothing Sticks Like a Shadow by Ann Tompert
Houghton Mifflin Company, 1988

Can Rabbit escape his shadow? "I can if I want to," says Rabbit. "Oh no, you can't," says Woodchuck. The bet is on. Who will win?

What Makes a Shadow? by Clyde Robert Bulla
HarperCollins Publishers, 1994

This "Let's-Read-and-Find-Out Science" book encourages children to explore and have fun with shadows both indoors and outdoors.



Click and Explore!

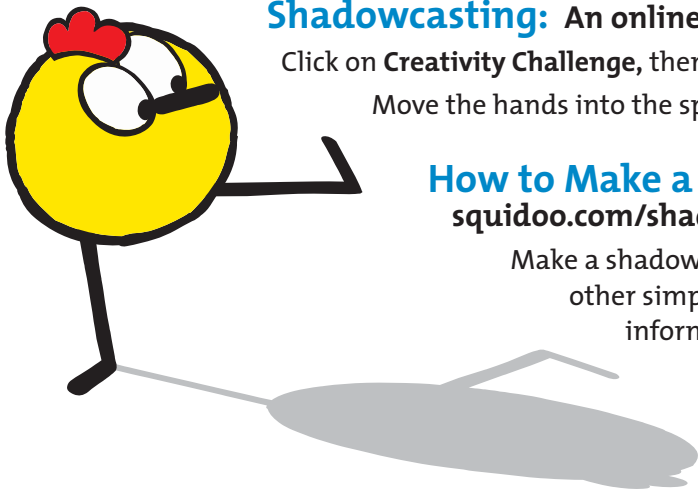
Shadowcasting: An online activity pbs.org/parents/creativity

Click on **Creativity Challenge**, then choose **Shadowcasting**.

Move the hands into the spotlight. What kinds of hand shadows can you make?

How to Make a Shadow Puppet Theater
squidoo.com/shadow-puppet-theater

Make a shadow puppet theater using a cereal box and other simple materials. You'll also find links and other information about shadows and shadow puppetry.



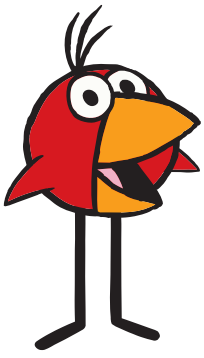
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Explore Water with Your Child

Painting with Water

On a warm day, **pour water on different outdoor surfaces**, like dirt, sand, grass, and concrete. What happens to the water? Does it form droplets, puddles, or streams? Does it soak in?

Make water pictures by dribbling water on sand or dirt. Use a paintbrush and water or an ice cube to paint a water picture on concrete.

Notice how the water pictures change as time passes. Ask your child, *What's happening? Why do you think that's happening?*

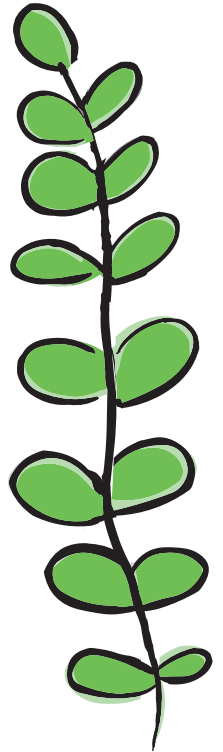
Making Bathtub Boats

Collect everyday items like plastic containers, sponges, pieces of wood, metal spoons, rocks, and Styrofoam packing materials.

Invite your child to try **floating these objects** in the bathtub. Which ones float? How can your child make these "boats" sink?

Flowing with the Current

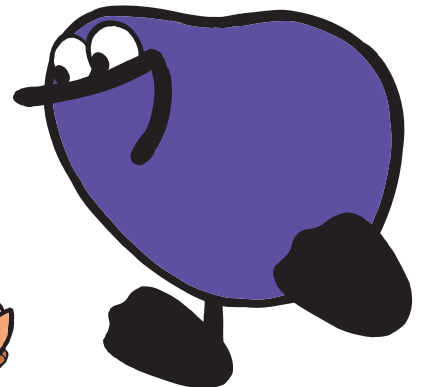
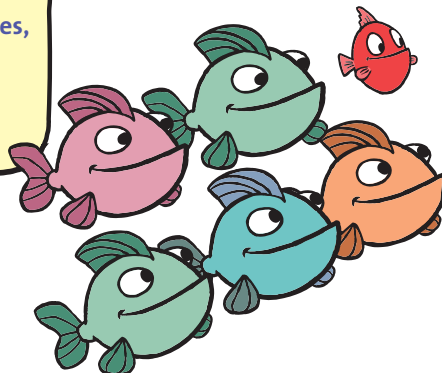
Turn on a garden hose and let water flow slowly over a hard surface. Have your child gently **place small floating objects**, like twigs and leaves, into the water. Notice what happens. Which way do the objects go?



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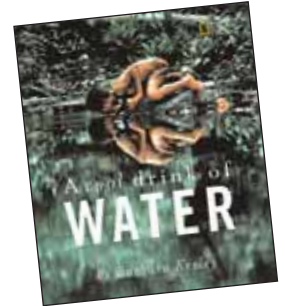
Learn More about Water

Read and Find Out!

Visit your library and look for these books. Ask your librarian for additional recommendations.

A Cool Drink of Water by Barbara Kerley
National Geographic, 2006

Color photographs show people around the world gathering, drinking, and sharing water.



What is Water? by Rebecca Olien
Capstone Press, 2005

Water is all around—but what is it? Find out the basic facts about this important resource.



Click and Explore!

Water Play: An online game pbskids.org/rogers

Click on **Games**. Then choose **Water Play**.

Watch a video, listen to a song, and then click on the faucet to fill the sink with water. Click on items to put them in the sink to see if they sink or float.

Kids Explore Water: Online videos pbskids.org/curiousgeorge

Click on **Video Clips**. Scroll to find the titles below.

Watch videos of kids exploring and making discoveries about water. Then, go outside and try some of the activities yourselves.

Sinking Stuff **A Boat that Floats** **Build a Current**



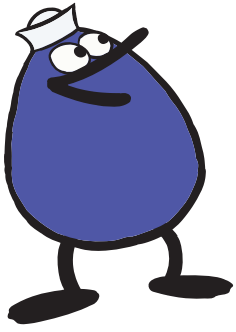
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PEEP and the Big Wide World™

Explore Plants with Your Child

Plants Outdoors

Take time to **look at plants** with your child. Look for big plants, like trees and bushes. Look for small plants growing on the ground and in sidewalk cracks.

Talk about what you see. You might say, *Let's see if we can find two plants that look the same. Can we find a plant with a fuzzy stem? What's the smallest plant we can find? Look at all the different shades of green! What other colors do you see?*

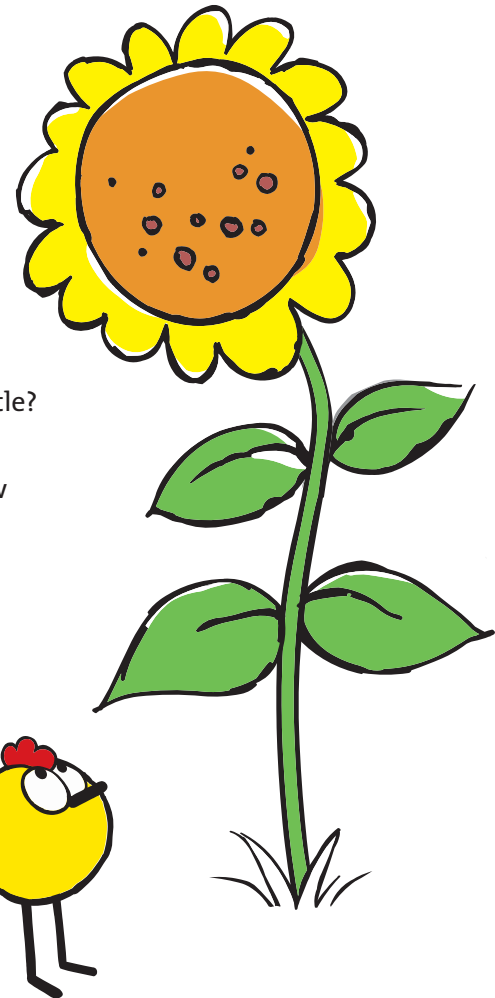
Help your child learn to **respect the environment**. Only collect parts of plants that have fallen on the ground (such as twigs, leaves, and nuts).

Plants We Eat

At the grocery store, let your child help choose **leaf vegetables** (like lettuce and spinach), **root vegetables** (like carrots and beets), and **vegetables that are actually fruits** (ones with seeds, like tomatoes and peppers).

The next time you're slicing fruits or vegetables, let your child **guess what sort of seeds are inside**. Will the seeds be big or little? Black or white? Will there be lots of seeds or just one?

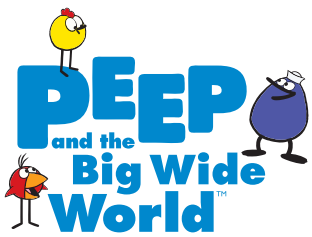
Send some seeds to school! Encourage your child to bring a few seeds from a favorite fruit or vegetable to share with the class.



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Learn More about Plants

Read and Find Out!

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A Fruit is a Suitcase for Seeds by Jean Richards
Millbrook Press, 2002

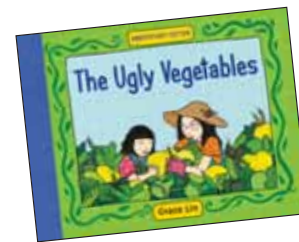
Discover the fascinating story of how seeds travel and grow.

One Bean by Anne Rockwell
Walker Books, 1999

See how a big, beautiful plant can grow from one small bean.

The Ugly Vegetables by Grace Lin
Charlesbridge, 1999

A girl wishes her mother would grow beautiful flowers instead of lumpy, bumpy Chinese vegetables.



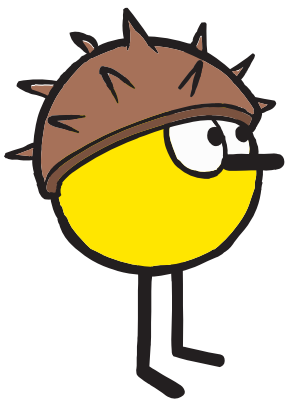
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Charlesbridge Publishing, Inc.

Click and Explore!

Round and Round: An online game peepandthebigwideworld.org

Click on **Games**, and choose the picture on the top row of Peep sitting on a brown background.

Explore how different plants and animals grow and change over time, including a sunflower, a cherry tree, a butterfly, a turtle, and a bird.



Radish Seeds An online video youtube.com

Type the words **“time lapse radish seeds sprouting”** in the white search box at the top of the page. Then, select **“time lapse radish seeds sprouting, tops and roots growing.”**

Watch radish seeds grow roots, stems, and leaves in a 46-second video clip set to music.



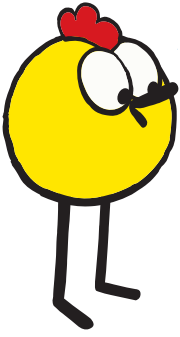
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PEEP and the Big Wide World™

Explore Color with Your Child

Color in the Kitchen

A patch of colored light. When you and your child are drinking cranberry or apple juice in a clear glass, hold the glass up to the light. Look for a patch of colored light where the light passes through the juice.

If you have a **flashlight**, try shining it through the glass of juice. Can you find the patch of colored light? Move the flashlight around and notice what happens to the colored light.

Color-ade. You and your child can make your own colorful drink with food coloring and water. Use a clear glass of water. Let your child pick a color and add a few drops of food coloring to the water. Watch the color slowly spread through the water.

Then have your child **pick a second color**. Before adding it to the water, you may want to ask, *What do you think will happen when you add (yellow) drops to the (red) water?* Try it and see. If you wish, then add some lemon juice and sugar to make colorful lemonade!

Out and About

Rainbow salad. The next time you are shopping, buy some fruits to make into a fruit salad. Ask your child, *Shall we make a rainbow fruit salad or an all-one-color fruit salad?* Can your child find a fruit for every color of the rainbow?

Or, if the decision is to make an all-one-color salad, how many different (red) fruits can your child find?

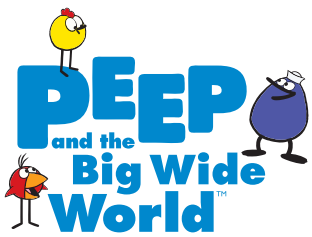
Color Walk. Go for a Color Walk with your child. Ask, *How many (blue) things do you see?* Your child can carry a notebook and make a mark for each blue object, or draw a picture list. Have a conversation about the many different types of blues you see. Ask, *Do you think that car is blue or green? What color would you call that door?*

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Learn More about Color

Read and Find Out!

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Growing Colors by Bruce McMillan
HarperCollins, 1988, 1994

From purple berries to yellow squash, fruits and vegetables come in all colors.



The Lion and the Little Red Bird by Elisa Kleven
Puffin Books, 1992

A bird makes friends with an artistic lion whose tail is a different color every day.



Spicy, Hot Colors by Sherry Shahan
August House, 2007

Gorgeous art and jazzy poetry introduce color words in both English and Spanish.



Click and Explore!

Paint Splat: An online game peepandthebigwideworld.org

Click on **Games**, then choose the picture of purple Quack standing in front of an orange and red background.

Help Quack mix paints to match the color card that Chirp is holding up. Click on the hose after each try to wash down the fence and get a new color card.

Mix and Paint: An online game pbskids.org/curiousgeorge

Click **Games**, then choose **Mix and Paint**.

Paint your own special picture by mixing colors in a paint-mixing machine.



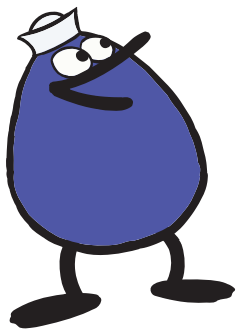
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PEEP and the Big Wide World™

Explore Sound with Your Child

What's That Sound?

Listen! What sounds do you hear around you? The refrigerator running? A clock ticking? As you follow the sound, ask your child: *What happens to the sound as we get closer? Does it get louder? Softer?* Then ask: *What happens to the sound when you cover and uncover your ears? Why do you think that happens?*

Take a Listening Walk. Go outside and tune into the sounds of nature, and people, and traffic. Play a “What’s that sound?” game. Have fun tracking down the sounds!

Night sounds. At bedtime, lie down together and listen for noises inside and outside. Try to guess what makes each sound. Whisper your guesses to each other. (This activity has the added bonus of taking some of the mystery out of scary nighttime sounds.)

Join the Band

Kitchen concert. Beat on pots and pails with your hands or a wooden spoon. Scrape your nails across the ridges on the edge of an aluminum pie plate or plastic container. Put a bottle cap—or several bottle caps—in a container with a lid and shake it. Play loudly. Play softly. What sorts of different sounds can you and your child make?

Musical glasses. Fill some drinking glasses with different amounts of water. Invite your child to tap the glasses gently with a spoon. Talk about what you hear: *What sound is this glass making? What sound is that one making? How are they different? What do you think we could do to get a different sound from this glass?*

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Learn More about Sound

Read and Find Out!

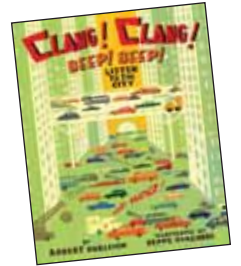
Visit your library and look for these books. Ask your librarian for additional recommendations.

Clang! Clang! Clang! Beep! Beep! Listen to the City

by Robert Burleigh

Simon & Schuster, 2009

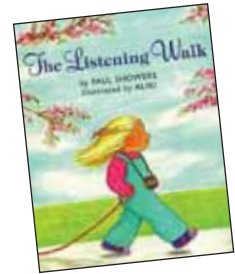
From morning to night, a little boy experiences all the exciting sounds of the city.



The Listening Walk by Paul Showers

Harper Collins, 1993

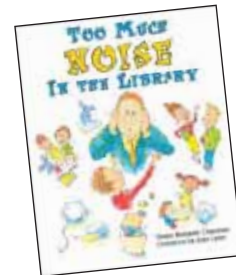
A father and child go for a walk and listen to the sounds they hear along the way.



Too Much Noise in the Library by Susan Chapman

Upstart Books, 2010

The mayor wants quiet in the library, until he realizes that a busy library needs to be a little noisy.



Click and Explore!

Sounds Like Fun!: An online game

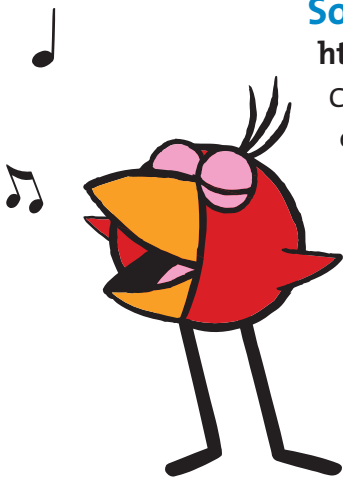
<http://www.peepandthebigwideworld.com/games/soundslikefun.html>

Click on **Games**, then choose the picture of the beaver on the top row. Click on each animal to turn its sound on or off. Mix sounds and rhythms together.

Beautiful Music pbs.org/parents/creativity

Click **Ideas & Exploration**, then choose **Pentatonic Scales**.

Play music on a keyboard. Push **RECORD** and then **PLAY** to listen to your tune.



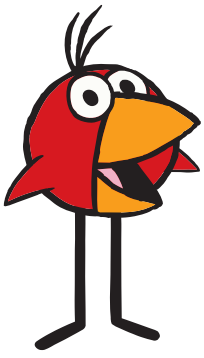
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PEEP and the Big Wide World™

Explore Ramps with Your Child

Out and About

Look for ramps. As you and your child walk around the neighborhood, see how many ramps you can find. Look for curb cuts in the sidewalk and entrance ramps to public buildings. Let your child try going up and down them. Talk about how ramps can make it easier for people in wheelchairs or with strollers to get around.

On the playground, let your child place objects on a slide (a toy animal, a leaf, a stick, a mitten, a ball, etc.) Talk about what happens. *I wonder why it moved like that. What do you think made this one move so fast? After experimenting a little, ask your child to predict what an object will do before placing it on the slide.*

In the House

Let it roll. Build a ramp with your child by propping up one end of a large picture book or a piece of cardboard. Together, collect things that you think will roll down the ramp—for example, a crayon, a toy car, a ball, a toilet paper roll. Encourage your child to experiment: *What could we do to the ramp to make the objects roll faster? How about more slowly?*

Tip and roll. Put a piece of paper in a shallow box or a disposable cake or pie pan. Dip a marble in paint, then place it in the box. Let your child tip the box back and forth, noticing which way the marble rolls and the paint tracks it leaves behind.



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Learn More about Ramps

Read and Find Out!

Visit your library and look for these books. Ask your librarian for additional recommendations.

Mama Zooms by Jane Cowen-Fletcher
Scholastic, 1993

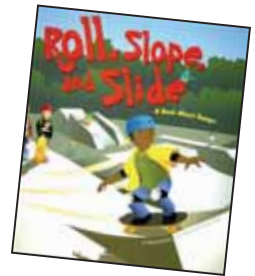
“Mama’s got a zooming machine and she zooms me everywhere.”
A little boy spends busy days zooming up hills, down ramps,
and around town with his mom, on her wheelchair.

Roll, Slope, and Slide: A Book about Ramps by Michael Dahl
Picture Window Books, 2006

From skateboard parks, to highway ramps, to ramps on moving vans,
this book takes a look at the many ways we use ramps everyday.

Rolling by Patricia Whitehouse
Heinemann, 2003

Explore things that roll and things that don’t. This book invites your
child to try a number of simple experiments with everyday objects.



Click and Explore!

Marble Drop: An online game pbs.org/parents/creativity

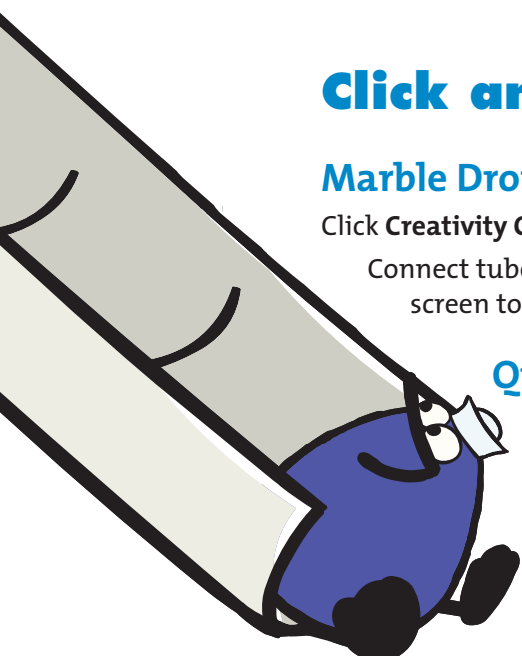
Click **Creativity Challenge**, then choose **Marble Drop**.

Connect tubes to make a pathway that will transport a marble down and across the
screen to the bowl on the bottom right.

Quack’s Apples: An online game peepandthebigwideworld.org

Click on **Games**, and then click on the picture in the top row of Quack with
the apples by his feet.

Click on the sticks on the ground to help Quack roll the apples into
the water.



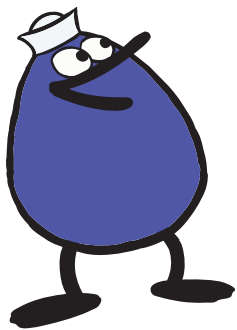
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PEEP and the Big Wide World™

Explore Patterns with Your Child

Out and About

Walk with me. As you and your child walk to school or the bus, create a repeating pattern, such as two long steps and one short step, or skip-jump-skip. Remember to start out slowly and repeat the pattern several times so your child can follow along. How many different patterns can you create?

Find a pattern. Together, go on a nature or a city walk and look for repeating patterns. Do the cracks in the sidewalk repeat in a pattern? Do the traffic signals light up in a pattern of red-yellow-green? Toss a rock in a pond and watch the rippling circles form in a pattern that repeats over and over.

In the House

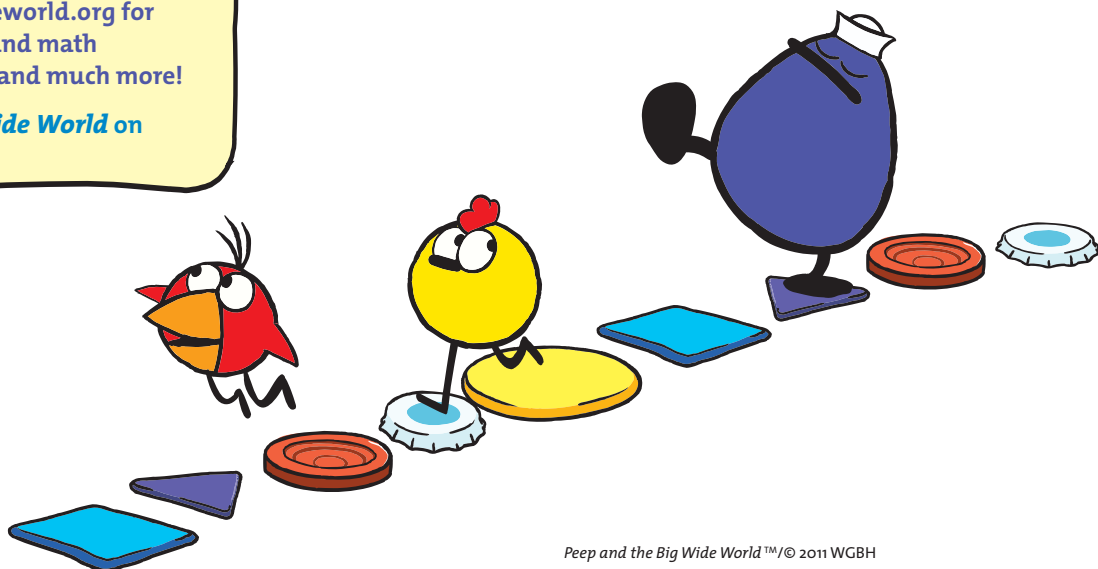
Bead necklace. Make a necklace with your child using different colored beads and string. Have your child put the beads into “like” piles (red with red, blue with blue), and then decide on a pattern: *Which color should go first? And after that? Now let's repeat the colors in the same order to make a pattern!*

Set the table! Have your child place a napkin beside each plate. Say: *Look, we've created a dish-napkin, dish-napkin pattern!* Talk about the silverware as you add it: *Let's put the fork first and then the spoon. Let's do it again.* Ask your child to predict the pattern for the last setting: *Where does Grandma's plate go?. Where should we put her napkin?*

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Learn More about Patterns

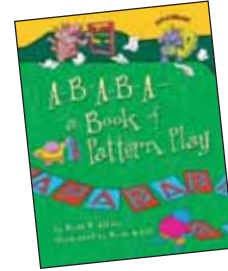
Read and Find Out

A-B-A-B-A: A Book of Pattern Play

by Brian P. Cleary and Brian Gable

Millbrook Press, 2010

Playful cats make repeating patterns out of letters, colors, numbers—and themselves!



Dance Away

by George Shannon

Greenwillow Books, 1982

Rabbit loves to dance: left two three kick, right two three kick, left skip, right skip, turn around!



Lots and Lots of Zebra Stripes: Patterns in Nature

by Stephen R. Swinburne

Scholastic, 1998

Colorful photographs show different kinds of patterns found in animals, plants, and other forms in nature.



Click and Explore!

Look What I Can Do!

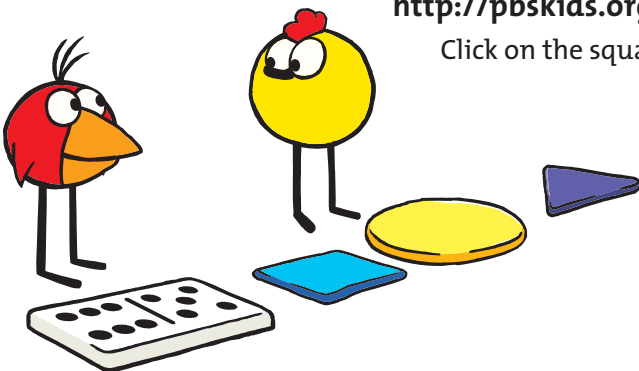
<http://pbskids.org/boohbah/lwicd.html>

Create a dance with a pattern of different dancing moves.

Pattern Player

<http://pbskids.org/cyberchase/games/patterns/>

Click on the squares to make a pattern you can see and hear.



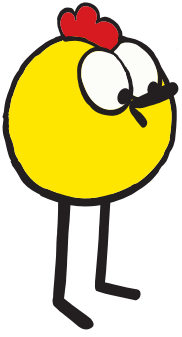
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PEEP and the Big Wide World™

Explore Measuring with Your Child

Out and About

Big steps, little steps. On the sidewalk or driveway, use chalk to measure your foot and your child's foot. Ask: *Whose foot is bigger? Whose foot is smaller?* Count how many steps it takes to get to a destination, putting one foot in front of the other, heel-to-toe. Talk about the results: *Why do you think you made more steps and I made fewer steps?* Don't be surprised if your child thinks you made more steps because your feet are bigger!

Rocks and pebbles. Fill a small bag with an item you find outside, such as rocks. Talk about what you are doing: *Let's find some big rocks to fill this bag.* Empty the bag and put the items in a pile. Then choose something smaller, such as pebbles. Ask: *Do you think we'll need more little pebbles than big rocks to fill up the bag?* Empty the bag again and compare the two piles.

In the House

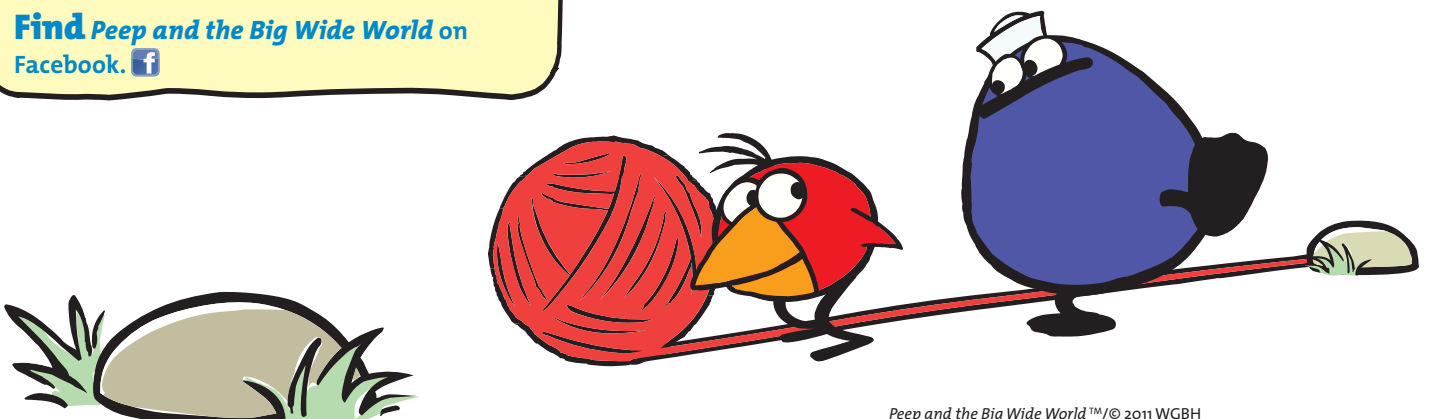
Tall, taller, tallest. Talk about how much your child has grown since he or she was a baby. *When you were born, you were about as long as that backpack. You are so much bigger and taller now!* Using paper towel rolls, measure how tall your child is. Then measure favorite stuffed animals. Use words like tall/taller and short/shorter as you talk about what you discover.

Make it, bake it. Choose a simple recipe or ready-made mix. Read the ingredients list with your child and talk about what you'll need for measuring: teaspoons, tablespoons, cups. Have your child help you measure each ingredient. *We need one cup of milk and one teaspoon of cinnamon. Look, a teaspoon is just a small amount.*

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Learn More about Measuring

Read and Find Out

Biggest, Strongest, Fastest by Steve Jenkins
Houghton Mifflin, 1995

From tiny to gigantic, slow to speedy, this book shows the different sizes of animals around the world.



How Tall, How Short, How Far Away? by David A. Adler
Holiday House, 1999

Explore how different measuring units and systems were created.



Measurement by Sara Pistoia
The Child's World, 2007

From carrots to dogs, everyday objects are measured in all kinds of ways.



Click and Explore!

Measuring Up

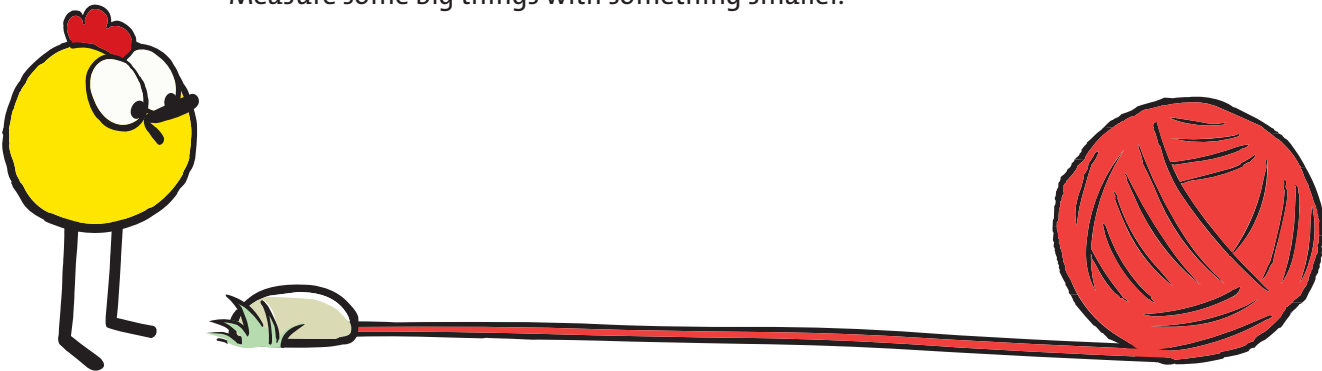
http://pbskids.org/clifford/games/measuring_up.html

Help Clifford choose the biggest, shortest, thinnest things.

How Tall?

http://pbskids.org/curiousgeorge/games/how_tall/how_tall.html

Measure some big things with something smaller.



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