

# Math and Science Resources For Teachers and Families

## Web Resources

[www.wested.org/desiredresults/training/form\\_drdp.htm](http://www.wested.org/desiredresults/training/form_drdp.htm)

Desired Results Developmental Profile – A tool for monitoring and supporting student development in mathematical concepts and other developmental areas.

[www.getreadytoread.org](http://www.getreadytoread.org)

This website has many early literacy activities. Click on '**GET GOING! Activities**' to get Skill-Building Activity Cards at a variety of levels. Resources include downloadable word lists, pictures and other resources to ensure educators and parents have all the tools they need to use the activity cards in the classroom and at home. These resources provide age-appropriate rhyming words, compound words and pictures that go with each activity. All you have to do is print the word lists and pictures from the links provided.

[www2.ed.gov/pubs/EarlyMath/activities1.html](http://www2.ed.gov/pubs/EarlyMath/activities1.html)

Math activities that encourage both math and oral language development that can be done throughout the day.

[www.mothersgooseprograms.org/math\\_science\\_resources.php](http://www.mothersgooseprograms.org/math_science_resources.php)

Lessons and units that integrate math, science and literature.

[www.pbs.org/teachers/earlychildhood/theme/themearchive.html](http://www.pbs.org/teachers/earlychildhood/theme/themearchive.html)

This website has an archive of math and science related themes with links to lesson ideas, websites, and books.

[www.pbs.org/parents/exploringscience](http://www.pbs.org/parents/exploringscience)

Resources and lessons for exploring science at home and at school.

[www.abc.net.au/countusin/default.htm](http://www.abc.net.au/countusin/default.htm)

Math Games - A variety of math activities can be downloaded in Windows or Macintosh format from this website.

[storybird.com](http://storybird.com)

A fun, easy, FREE way to create digital books alone or with your colleagues. Also fun for families to do at home.

[www.thinkfinity.org](http://www.thinkfinity.org)

A variety of interactive lesson plans and Internet resources already vetted by educators.

## Book and Music Recommendations and Resources

[www.pbs.org/parents/bookfinder](http://www.pbs.org/parents/bookfinder)

Search for books by age and theme.

[www.mothersgooseprograms.org/science\\_books\\_age\\_3\\_5.php](http://www.mothersgooseprograms.org/science_books_age_3_5.php)

Great book list for preschool science books.

[www.mothersgooseprograms.org/math\\_books\\_preschoolers.php](http://www.mothersgooseprograms.org/math_books_preschoolers.php)

Math book list for preschoolers.

[www.mothersgooseprograms.org/math\\_books\\_babies\\_toddlers.php](http://www.mothersgooseprograms.org/math_books_babies_toddlers.php)

Math book list for babies and toddlers.

[www.mothersgooseprograms.org/bi\\_building\\_construction\\_books.php](http://www.mothersgooseprograms.org/bi_building_construction_books.php)

Much of our environment is built - not just buildings, but roads, bridges, communication towers, etc. These structures are the result of science and mathematics being applied in the disciplines of design and engineering. Talking about and building with a variety of materials increases children's understanding of basic science and math concepts.

*Developing Number Concepts* series. Kathy Richardson. Dale Seymour Publications. 1999.

*The Eentsy, Weentsy Spider: Fingerplays and Action Rhymes*. Joanna Cole & Stephanie Calmenson. Mulberry Books. 1991.

*101 Science Poems and Songs For Young Learners*. Meish Goldish. Scholastic. 1996.

Math Books Recommended by Early Childhood: Where Learning Begins; National Institute on Early Childhood development and Education (US Dept. of Education)

Aker, Suzanne. *What Comes in 2s, 3s, & 4s?* Simon & Shuster.

Allen, Pamela. *Mr. Archimedes' Bath*. Lothrop, Lee, and Shepard Books.

Anno, Mitsumasa. *Anno's Counting Book*. Thomas Y. Crowell.

Anno, Mitsumasa. *Anno's Counting House*. Thomas Y. Crowell.

Anno, Mitsumasa. *Anno's Hat Trick*. Thomas Y. Crowell.

Anno, Mitsumasa. *Anno's Math Games*. Thomas Y. Crowell.

Asbjornsen, Peter Christen. *The Three Billy Goats Gruff*. Harcourt.

Bang, Molly. *Ten, Nine, Eight*. Greenwillow Books.

Barchers, Suzanne and Peter Rauen. *Storybook Stew: Cooking with Books Kids Love*.

Bufano, Remo. *Jack and the Bean Stalk*. Macmillan.

Carle, Eric. *My Very First Book of Numbers*. Philomel.

Carle, Eric. *1, 2, 3 To the Zoo*. Philomel.

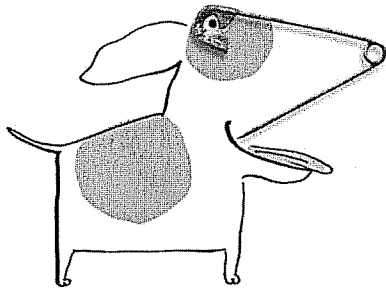
Carle, Eric. *The Grouchy Ladybug*. Philomel.

Carle, Eric. *Rooster Off to See the World*. Philomel.

Carle, Eric. Today's Monday. Philomel.  
 Carle, Eric. The Very Busy Spider. Philomel.  
 Carle, Eric. The Very Hungry Caterpillar. Philomel.  
 Children's Television Workshop. The Sesame Street Book of Shapes (Book of Numbers and Book of Puzzles). New York Preschool Press. Time-Life Books.  
 Christelow, Eileen. Five Little Monkeys Sitting in a Tree. Clarion Books.  
 Conford, Ellen. What's Cooking, Jenny Archer. Turtleback.  
 Cooke, Tom. Sesame Street Cookie Monster's Little Kitchen: A Chunky Book.  
 Crews, Donald. Ten Black Dots. Greenwillow Books.  
 Falwell, Cathryn. Feast for 10. Clarion Books.  
 Feelings, Muriel. Moja Means One: Swahili Counting Book. Dial.  
 Florian, Douglas. A Year in the Country. Greenwillow Books.  
 Galdone, Paul. Goldilocks and the Three Bears. Seabury Press.  
 Giganti, Paul Jr. How Many Snails? Greenwillow Books.  
 Heinst, Marie. My First Book of Numbers. Dorling Kindersley Inc.  
 Hoban, Tana. Exactly the Opposite. Macmillan Publishing Co., Inc.  
 Hoban, Tana. More than One. Macmillan Publishing Co., Inc.  
 Hoban, Tana. 1, 2 ,3. Macmillan Publishing Co., Inc.  
 Hoban, Tana. Round and Round and Round. Macmillan Publishing Co., Inc.  
 Hoban, Tana. Where is It? Macmillan Publishing Co., Inc.  
 Hughes, Shirley. Rhymes for Annie Rose. Lothrop, Lee, and Shepard Books.  
 Hughes, Shirley. The Nursery Collection. Lothrop, Lee, and Shepard Books.  
 Hulme, Joy N. Sea Squares. Hyperion Books for Children.  
 Hutchins, Pat. Clocks and More Clocks. Macmillan Publishing Co., Inc.  
 Hutchins, Pat. The Doorbell Rang. Macmillan Publishing Co., Inc.  
 Inkpen, Mick. Kipper's Book of Numbers. Red Wagon Books.  
 Pelham, David. Sam's Pizza: Your Pizza to Go. Dutton Books. Plummer, David and John Archambault. Counting Kittens. Silver Press.  
 Prelutsky, John. Read Aloud Rhymes for the Very Young. A. Knopf.  
 Tafuri, Nancy. Who's Counting. William Morrow & Co.  
 Ward, Cindy. Cookie's Week. G. P. Putman's Sons.

### Science Books

Judy Allen series – Are you a... Butterfly? Ant? Snail? Ladybug? Bee? Grasshopper? Dragonfly?  
 John Himmelman – A \_\_\_\_\_'s Life (Pill Bug, Luna Moth, etc...)  
 Jan Brett – The Umbrella, The Mitten (animals)  
 Lois Ehlert – Waiting for Wings, Planting a Rainbow, Chicka Chicka 123  
 Alike – My Feet, My Hands, I'm Growing!; My Five Senses; The Listening Walk – also many dinosaur titles  
 Ruth Heller – Chickens Aren't the Only Ones, Animals Born Alive and Well, The Reason for a Flower, How to Hide...(camouflage series)  
 Harper Collins' *Let's-Read-and-Find-Out Science* series



## Exploring Mathematics Everyday With Children



In your everyday work with children, try to identify math skills, processes and concepts that are developmentally appropriate. Weave the math concepts into learning centers, investigations, and book reading...

### ...by talking

In everyday conversation use appropriate mathematics vocabulary such as *sequence*, *solution*, shape names, positional words, directional words

Talk about the math in everyday situations: counting, problem solving, pattern recognition, the position of things, sequences and transitions

Wonder aloud about numbers of things, comparisons, problems and solutions

Look for and talk about numbers everywhere: on clocks, radios, clothing, appliances, signs, houses

Brainstorm solutions to everyday problems

Encourage children to use directions and positional language

### ...by investigating

Provide materials that encourage mathematics explorations: shapes, blocks, collections of small objects, items to fill and empty

Use concrete objects for counting, comparing, measuring, sorting

Use everyday situations in the indoor and outdoor environments to promote mathematics learning

Create patterns of objects, colors, shapes, words



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[www.mothergooseprograms.org](http://www.mothergooseprograms.org)

Look for and describe patterns in the indoor and outdoor environments: on book jackets, clothing, in a garden, on buildings

Make counting books

### **...with books**

Borrow or buy books that have explicit math content: counting, measuring, etc.

Read books that have repeated sequences of events, point out the events and give children an opportunity to make predictions "What happens next?"

Look for math words and concepts in all picture books

Make connections between shapes in books and shapes in the environment

Talk about the problems book characters are solving. Brainstorm other suggestions for solving those problems

### **...with tools and technology**

Have balances and standard and non-standard measuring tools available

Obtain computer programs that allow children to explore mathematics concepts

### **...through documentation**

Display graphs and charts to help children compare numbers and other mathematical thinking

Encourage children to represent their mathematical thinking with drawings and other projects

Record the outdoor temperature daily. When discussing the data, use words such as *colder than*, *warmer than*, *the same as*

Help children make drawings, charts, books and models of their math investigations



## **...by supporting mathematics in the home**

Make families aware of their children's interests, skills and abilities

Share books with specific math content: counting, shape and sorting books

Let families know that math is everywhere in the home environment

Share simple math activities with families

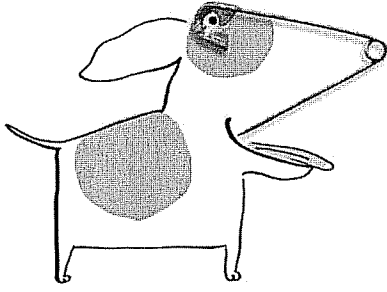


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## Exploring Science Everyday With Children



In your everyday work with children, try to identify science concepts that are developmentally appropriate. Weave the science concepts into learning centers, investigations, and book reading . . .

### **... by talking**

In everyday conversations use appropriate science vocabulary such as *observe, predict, estimate, count, experiment, compare*

Talk about natural phenomena: the weather, animal behaviors, plants, clouds, etc.

Talk about characters from books who have problems and about how they solve the problems

Wonder aloud and ask questions relating to current classroom activities: *Will we be able to see our shadows today?*

Encourage children to make estimations, predictions and hypotheses

Use proper vocabulary when talking about the world around you

Allow plenty of time to discuss the investigations you are doing

Talk about the questions children have about your indoor and outdoor environment

Talk about the changes you notice in: the weather, each other, the seasons, your neighborhood

Before transitions, ask: *What do you think will happen next?*

Look for patterns and sequences in everyday activities: *After we have a snack, what happens next?*

Ask questions about new experiences: *How is this different? How is this the same?*



Talk about the connections you see between and among different objects

### **...with books**

Borrow or buy books about science, including picture biographies of scientists and other reference books

Look at a reference book of insects, animals or trees noticing similarities and differences

Provide books that show children information about environments, diversity, growth, shadows, and other scientific ideas

Display books and science equipment in several places, not just in a science corner

Make predictions about what will happen in stories

Read game or other instructions aloud to children

After reading a book about growing plants, plant some seeds

Follow a recipe from a cookbook

Play a game based on a story, such as Shadow Tag when you read *Bear Shadow*

### **...with tools and technology**

Have hand lenses, balances and other science equipment available

Observe and talk about scientific and technological devices such as thermometers, calculators and computers

Measure objects with standard and non-standard units

Explore a tree trunk with a hand lens

Compare the weights of different objects by hand, then use a balance

Look up a weather forecast on the Internet



Use an eyedropper to mix colors

Make shadows with a flashlight

Check the temperature outside on cold and hot days

Imagine together what life was like before telephones or television

### **... through documentation**

Have fun making charts and lists and display them

Help children make drawings, models and books about their investigations

Describe and document changes that are taking place among the children, in the classroom and in the outdoor environment

Plant seeds, measure seedlings, make drawings at weekly intervals

Visit a special tree periodically throughout the year and document differences and similarities

### **... by supporting science in the home**

Make families aware of their children's interests, skills and abilities

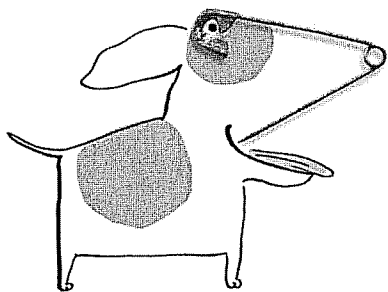
Publicize informal science opportunities in your community

Invite families on field trips

Make sure families know about the local science or children's museum

Tell families about investigations their children really enjoy





## Exploring Mathematics Everyday With Your Child



### **Talk together**

In everyday conversation use appropriate mathematics vocabulary such as positional words—*over, under, near, behind, in front of, underneath*; shape names—*circle, square, triangle*; and words such as *more than, less than, addition and subtraction*.

Wonder aloud about numbers of things. *Are there more apples or oranges in that bowl?*

Practice addition: *I have three balls and you have one. How many do we have?*

Practice subtraction: *You have four cookies. If you give me one, how many will you have left?*

Look for and talk about numbers everywhere—on clocks, signs, clothing, and appliances

Look for and talk about the shapes in your environment

Make predictions and estimations when doing everyday activities

### **Explore together**

Provide materials that encourage mathematics explorations: shapes, blocks, collections of small objects, items to fill and empty, standard and non-standard measuring tools

Obtain computer programs that allow your child to explore mathematics concepts

Practice meaningful counting: the number of plates on the table, the number of forks needed for dinner

Look for and describe patterns in the indoor and outdoor environments: on book jackets, clothing, in a garden, on buildings. Create patterns of objects, colors, shapes, and words

Sort everyday objects such as laundry, socks, toys and groceries

### **Read together**

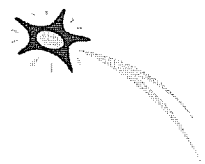
Borrow or buy books that have explicit math content: counting, measuring, etc.

Read books that have repeated sequences of events, point out the events and give children an opportunity to make predictions “What happens next?”

Look for math words and concepts in all picture books: numbers, patterns, and shapes

Make your own counting books

# Things to Do while You're Waiting: Math



*It's happening again! You're running errands with your children and suddenly you're stuck—in traffic, at the clinic, in the checkout line. Many parents find that playful learning activities can help reduce children's impatience when they have to wait.*

You can use waiting time to show your child that Math = Part of Life.

Math is much more than just counting, adding, and subtracting! Playing with math concepts helps children become confident mathematical thinkers. Here are some quick math questions, games, and activities to engage a child who has to wait.

- ✧ **Counting:** Use objects to help your child learn that each item we count corresponds to a number. "Let's put one can of beans on top of each cereal box." Ask each other questions like "How many trucks do you see?" "How many people are ahead of us in line, and how many will there be once the front person leaves?" Children like action rhymes that involve counting.
- ✧ **Sequences and patterns:** Order is important in math. Notice sequences with your child: "Looks like we're the second in line!" Find simple patterns together—the colors of floor tiles or the rhythms of people walking. Invite your child to make visual patterns using small objects around you.
- ✧ **Classifying:** This means sorting things according to different properties. Make a game of sorting objects with your child, such as coins or laundry. Or you might suggest, "Let's find all the people with hats" or "I'll spot red cars and you spot cars in your favorite color."
- ✧ **Spatial relations:** This has to do with shapes and locations of objects. You can "hunt" for shapes together: squares, triangles, rectangles, and circles. Use words like "on," "under," and "inside" to describe where you see the shapes. Drawing shapes in the air can also be fun.
- ✧ **Estimation and predictions:** Children often like to make educated guesses. "Will our laundry fit in two washers?" "Which is higher, a stack of five pennies or five dimes?" "How can you tell?" Make a guess first, and then check to see how close your guess came.
- ✧ **Measurement and time:** Investigate measurement together. "How many hands tall is this jar?" "Which is heavier, your coat or your boot?" "How many steps to the car?" Your child may like timing games: "How many times can you count to 10 before we are first in line?" "How long can you stand on one leg?"

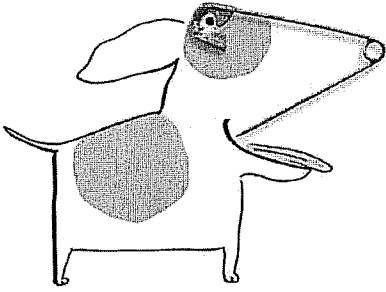
For related Web resources, see "Things to Do while You're Waiting: Math" at <http://illinoisearlylearning.org/tips.htm>.



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Internet: <http://illinoisearlylearning.org>

Illinois State Board of Education

For more tip sheets on other topics, please go to <http://illinoisearlylearning.org>



## Exploring Science Everyday With Your Child



As you and your child talk about and explore scientific processes, skills and content you'll be acting just like scientists.

### **Talk together**

Talk about natural phenomena: the weather, animal behaviors, plants, clouds, etc.

Talk about how characters in books solve their problems

Wonder aloud and ask questions relating to your activities

Encourage your child to make estimations, predictions and hypotheses

Allow plenty of time to discuss the investigations you are doing

Talk together about the questions you have about your indoor and outdoor environments

Talk about the changes you notice in the weather, each other, the seasons, etc.

Look for patterns and sequences in everyday activities: "After we have breakfast, what happens next?"

Ask questions about different objects and experiences: "How is this different? How is this the same?"

### **Read together**

Borrow or buy biographies of scientists and books about insects, trees, shadows and other scientific areas of interest

Make predictions about what will happen in stories

Read game or other instructions aloud with your child

Follow a recipe from a cookbook

Play a game based on a story, such as "Shadow Tag" when you read *Bear Shadow*

## **Make a science area in your home**

Have hand lenses, a balance, measuring tools and other science equipment available

Provide things from nature for your child to investigate such as seedlings, shells, leaves or rocks

Make sure there are plenty of project materials for your child to use:

paper, markers, play dough, modeling clay, pipe cleaners

paints for experiment and mixing colors

recycled materials for inventing and building

Make and display charts and lists

Help your child make drawings, models and books about your investigations

Visit your local children's museum and science or environmental center