

Seeds

of Learning

Learning by the numbers

Introducing young children to math

Even without formal math lessons, preschoolers can pretty quickly figure out that three cupcakes are better than one or that a big truck won't fit in a small toy chest.

As they mature, young children begin to grasp mathematical concepts such as "more and less" or "bigger and smaller" – even without formal math lessons.

Using day-to-day activities, parents can introduce and reinforce key math concepts that will help their children get ready for more structured learning both in and out of the classroom.

Starting Early

We use math every day in so many ways that you and your children are probably already busy learning about math without realizing it. Every time your child balances on the seesaw with another child or builds a block tower to match her own height, she is demonstrating a basic understanding of math.

Each time you fill the coffee maker with water or balance your checkbook, you are using math in a practical way, as well. The key is to start thinking about

how math is such a normal part of your life and to work that into our children's lives.

Not sure what that might look like? Here are some suggestions:

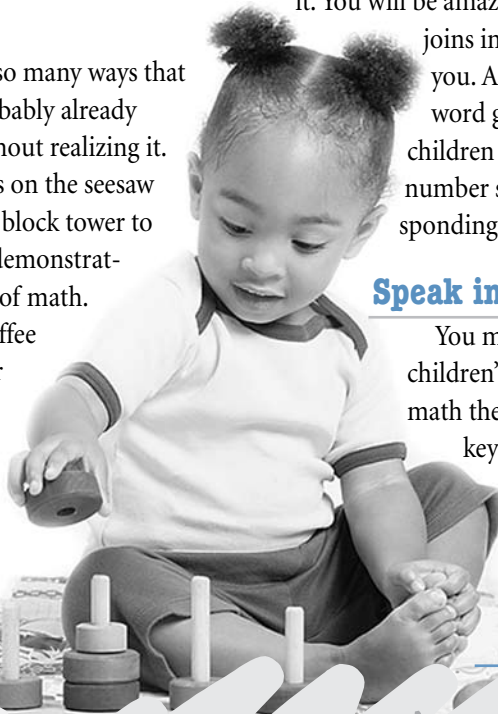
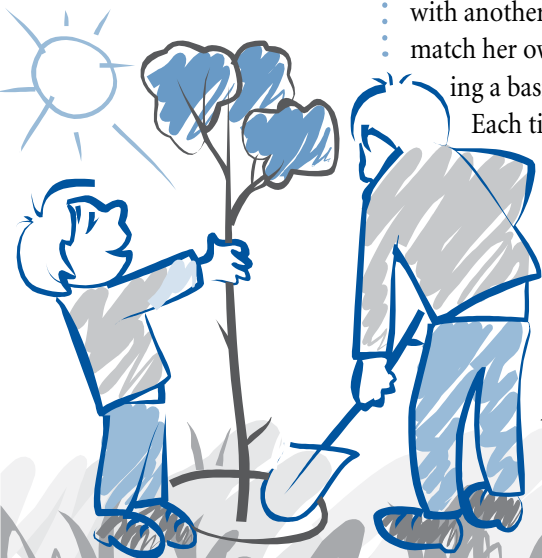
Turn Up Your Game

Smaller children are often interested in games, toys, and food, but have short attention spans. So use candies, cookies, cheese slices, or toys your child likes to gradually teach number knowledge and counting. You can also make candy necklaces and ask them to count the number of pieces on it. You will be amazed at how quickly he or she joins in repeating the numbers with you. Although this will mostly be a word game at first, by age three, most children begin to understand that the number said is associated with a corresponding amount of a certain object.

Speak in Numbers

You may not realize it, but lots of children's songs and rhymes incorporate math themes (think "Five Little Monkeys" or "This Old Man"). Each time you ask your child if he wants you to cut his sandwich in half or you count out loud as you stack blocks on top of one another, you are

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teaching him the words he will use to understand math concepts. Expand your child's math vocabulary by making a game out of listing all the words that mean "big" (enormous, huge, gigantic) or "little" (small, tiny, minuscule).

Sort It Out

Make a game out of sorting and classifying objects. Toys can be lined up shortest to tallest. Socks, mittens, gloves, and shoes can be dumped into piles and sorted into pairs or by color or type.

Keep Your Eyes Open

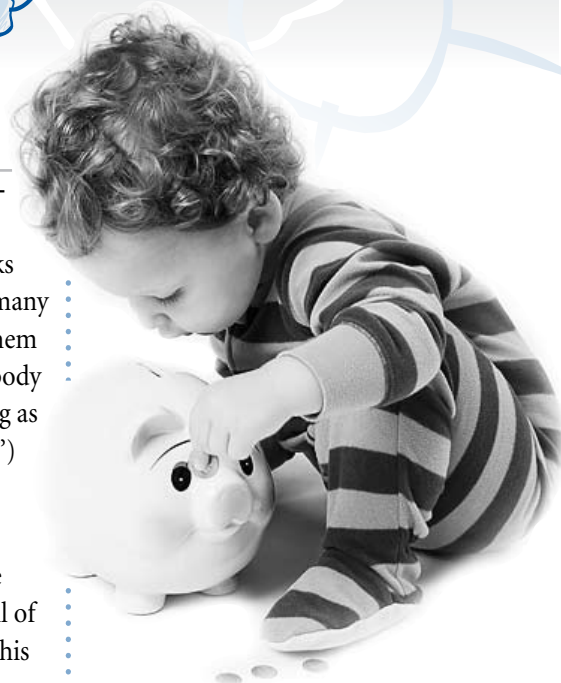
Look for numbers and shapes in the world around us. Car rides and walks to the playground are a great time to look for and identify street sign shapes or places where numbers pop up in the neighborhood and along the road. For some added fun, go on a shape hunt in your yard. Provide a list of drawn shapes for your children and have them try to find as many as they can.

Play the Game

Pre-school children usually love to help. Channel their kindness and have them set the table. But when they do, have them count out the number of items (all the forks, spoons, etc.) on it and set a place for each family member. After you eat, work off the meal with a game of Follow the Leader, using giant, medium and baby steps (For example, tell your child to take five giant steps forward and three baby steps sideways). This teaches both size differences and knowledge of numbers.

Other suggestions include:

- **Measuring objects in unconventional ways.** Use a line of Goldfish crackers to measure a spoon or stack blocks beside your child to determine how many blocks tall she is. You can also have them measure objects outside using their body parts. ("Find something this is as long as your foot or both arms outstretched.")
- **Teach estimation** by providing a variety of different sized containers for water play in the tub or use in the snow. ("How many drinking cups full of snow do you think it will take to fill this bucket?")
- **Count your pennies.** Empty your change purse or dump a handful of coins from the change jar into a pile and help your child sort them by color, size and (with older children) type. Also, give your child spare change to save. Help him count the number of coins as you put them in a jar or piggy bank.
- **Buy a few board games.** Many board games and card games are fun ways to teach children about numbers and basic math concepts such as counting, problem-solving and patterns. Although decks of cards designed for children can be cute and colorful, most popular children's card games can be played with an inexpensive deck of playing cards. For a comprehensive list of rules for children's card games go to <http://thehouseofcards.com/rules.html> or check out the book *Card Games for Children* by Len Collins.
- **Play "Mystery Number."** It's the game where you say, "I'm thinking of a number. And when I add four to it, I get nine." This actually introduces your child to basic algebra, because it's like saying " $x + 4 = 9$."



- **Make flashcards fun.** Buy some construction paper and make your own cards. Have your children draw a number on one side and the corresponding number of objects on the other. It could be suns, moons, cookies, or jellybeans. The important thing is having the children be as creative as they want with their drawings.
- **If you're teaching number recognition, form numbers in Play Doh or write them in sugar or sand.** All you need is a pan to pour sugar in and you can either dump it out when you're done or use it again.
- **Teach your child about measuring with cups and tablespoons while you cook.** Ask them to help you count how many cups of flour you're adding to the cake batter.
- **Play a game with your child where you try to toss six pom-poms into a hula hoop,** suggests Dr. Juanita Copley from the University of Houston. "Help him count how many of the pom-poms land inside the hoop and how many land outside. Your child will see that numbers can be broken into parts and that leads to an understanding of basic addition," she said.

Math & *children's* books

Joyce Laiosa, a federal Youth Services librarian, has helped coordinate Go Figure!, a national traveling exhibition that was created by the Minnesota Children's Museum and the American Library Association and offers creative and fun hands-on math activities using children's literature. She says that one of the best ways to introduce math concepts is with the tools that we frequently use – children's books.

"We want to start children out as early as possible with the concept that math isn't just for math class... it's everywhere," said Laiosa. "Literature is a fun way to get children to start thinking about math in ways other than by counting on their fingers."

Laiosa says that a book doesn't have to be directly about numbers to teach math concepts. In fact, some of the best tools are those where the learning is subtler.

Following is a list of books that can be used to encourage children's math knowledge. These books are all appropriate for preschoolers. Books specifically geared to babies and toddlers are indicated with an asterisk*.

Number Sense:

Ten, Nine, Eight
by Molly Garrett Bang*

Roar! A Noisy Counting Book
by Pamela Duncan Edwards*

Can You Count Ten Toes?: Count to 10 in 10 Different Languages
by Lezlie Evans

Ten Red Apples by Pat Hutchins

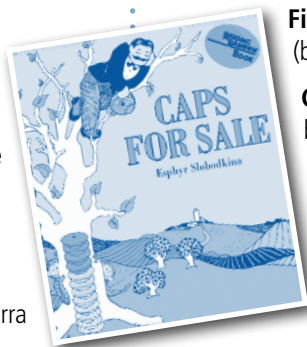
Eating Fractions
by Bruce McMillan

Monster Math by Anne Miranda

Uno, Dos, Tres: One, Two, Three
by Pat Mora

One Hundred Hungry Ants
by Elinor Pinczes

Counting Crocodiles by Judy Sierra



Mouse Count by Ellen Stoll Walsh *

Emily's First 100 Days of School
by Rosemary Wells

Patterns:

The Quilt by Ann Jonas - Children can make their own "quilt" squares by gluing different shapes of colored paper into patterns of their own design or by copying familiar quilt patterns.

The Very Hungry Caterpillar by Eric Carle*

Piggie Pie by Margie Palatini

Five Little Ducks
(book and tape) by Raffi*

Caps for Sale
by Esphyr Slobodkina

I Went Walking
by Sue Williams*



Size:

The Biggest, Best Snowman by Margery Cuyler - Rolling and stacking balls of snow for snow people is a great way to learn about size and to help develop your child's upper body strength, which is necessary for gross and fine motor skill development.

Clifford, the Small Red Puppy
by Norman Bridwell *

George Shrinks by William Joyce

Goldilocks and the Three Bears
by James Marshall

Big and Little by Margaret Miller*

Joseph Had a Little Overcoat
by Simms Taback

Shape:

Frog and Toad Are Friends: The Lost Button by Arnold Lobel - For children who no longer put objects in their mouths, buttons are wonderful for sorting by size, shape and color.

Color Zoo by Lois Ehlert*

Circle Dogs by Kevin Henkes*

Shapes by Jan Pienkowski*

It Looked Like Spilt Milk
by Charles Shaw*

Shapes, Shapes, Shapes by Tana Hoban

Problem Solving:

Quack and Count by Keith Baker

Sheila Rae's Peppermint Stick
by Kevin Henkes*

Jump, Kangaroo, Jump!
by Stuart Murphy

If You Hopped Like a Frog
by David Schwartz

Bunny Money
by Rosemary Wells



Seeds of Learning



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Winter 2011: **Learning by the numbers**

Math by the SEASONS

Math in the pumpkin patch

If you and your child make the annual trip to the pumpkin farm, she may already notice the differences between pumpkins. You can easily make an activity where your child explores the differences between two pumpkins. You'll need two pumpkins of different size, a measuring tape, paper, pencil, two bowls, a knife, and large spoon to scoop out the seeds. Ask your child to make observations about the large pumpkin. He can draw a picture of the pumpkin; note its color, size, shape, texture, and weight. Also, make sure he notes the weight before and after taking the seeds out. Try also introducing the use of a measuring tape to determine circumference. Write all the observations down under the heading "large pumpkin." Then, do the same with the small pumpkin. When you're done, you can take it further by looking for the largest and smallest pumpkins in your neighborhood.

Counting in a winter wonderland

Nature is a wonderful place for seeing symmetry (objects such as ladybugs, leaves and snowflakes all appear the same on both sides), identifying shapes, and finding numbers. Did you know that all snowflakes have six sides and their own unique design (with a few exceptions)? Try to find them during the next snowfall.

Here is a fun winter-themed activity that teaches children about counting and patterns:

Snowflake marshmallows

What you will need: One bag each of large and small marshmallows and toothpicks.

Have children stick six toothpicks into a large marshmallow (like the spokes of a wheel). Use small marshmallows to decorate the lengths of each toothpick. Don't forget the hot chocolate!

Parents: Keep Informed Sign Up For South Colonie's School News Notifier Today

Don't forget to take a moment and sign up for South Colonie's "School News Notifier" (SNN), a system designed to help keep parents more in touch with what is happening at South Colonie Central Schools. SNN is an opt-in email alert system for which parents and residents can sign up to receive email alerts from the district. With SNN, district officials have the power to send updates and reminders about district activities or information about school closings and delays. Users can choose to receive any or all of the alerts, and they can unsubscribe at any time. Sign up today by clicking on the SNN icon on the South Colonie web site.



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