

LEARNING TO GROW

CENTER ON THE FAMILY ♥ UNIVERSITY OF HAWAII

Learning about Math Everyday

Did you know that young children begin to grasp informal ideas of “everyday math” starting at a very early age? For example, when your child asks for “more,” or turns a puzzle piece around to make it fit into its space, or points out which toy is bigger, she is showing some understanding of math concepts. “Everyday math” involves much more than counting, adding, and subtracting. It includes basic skills such as sorting and classifying, comparing quantities, and recognizing shapes, patterns and sizes. When you watch and listen to your child throughout the day, you will see the many ways she is learning and using “everyday math.”

As with any other type of learning, young children learn math concepts when they can build on what they already know. You can enrich your child’s learning by commenting and expanding on what she discovers or by asking questions that encourage her thinking and language skills. Children learn new concepts when they are able to manipulate real objects and learn through hands-on, direct experiences that are meaningful to them.



This newsletter will focus on ways of introducing math concepts to your infant, toddler, or preschooler. In addition, some suggestions of age-appropriate activities and materials that promote learning of math concepts are provided.

In This Newsletter:

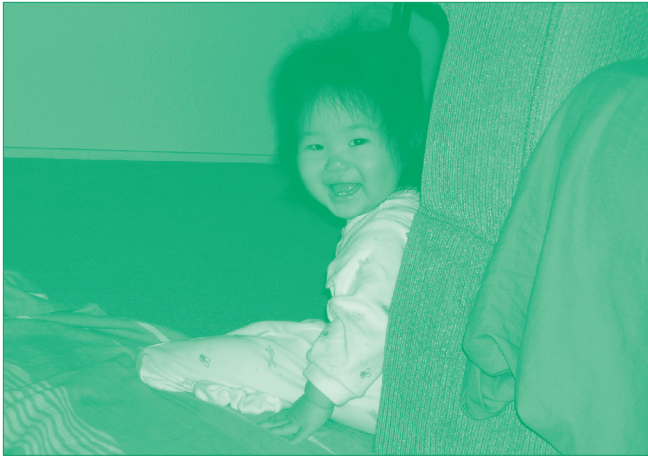
To support you in fostering your child’s healthy development and school readiness, this newsletter includes:

- ♥ Age-specific information and suggestions about activities to do with your infant, toddler, or preschooler,
- ♥ Featured activities for each age group,
- ♥ **How This Helps:** a summary of your child’s development by doing these activities together,
- ♥ **Community Resources:** for more information, and
- ♥ **Suggested Books:** a list of books to read with your child.



Infants

At this stage, your baby's learning consists of a series of discoveries. You may see her dropping objects to see what happens or repeatedly shaking a rattle to listen to the sound it makes. As she starts to crawl, she may explore her surroundings by crawling in and out of boxes or filling and dumping items from containers of various sizes. These behaviors show that she is curious about what happens to objects and that she notices her actions have an effect on other things in her environment.



You may find that games such as peek-a-boo or pop-up toys are intriguing to your child. Make these games interesting and fun by adding counting or rhythm to it. For example, you may say, "one, two, three, peek-a-boo" as you play peek-a-boo with her. Count and talk about the size and shape of the objects she drops, picks up, or puts in her box. Sing counting song as she shakes her rattle.

The following materials can be used with your child to build her understanding of math concepts:

- ♥ **Lightweight rattles, rattling bracelets, or easy-to-hold plastic keys** help focus her attention on what her hands are doing and the sounds that she is hearing. Jingle the rattle in a rhythmic pattern and watch her eyes try to follow the path of the rattle as you count and shake it back and forth.
- ♥ **Soft, squeezable toys** that stimulate the senses. Introduce easy to grasp items that have sounds, textures, or pop-up features. Have her reach for the object, count "one, two, three" then throw it up in the air and watch it fall, or hold each object and talk about its size and shape.

Activity for Infants: *Dump and Pour*

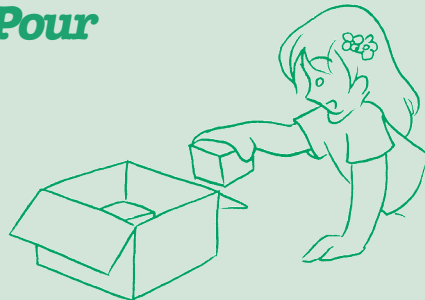
Materials:

- A plastic bowl or box that is small enough for your child to pick up
- Safe items like blocks or measuring spoons that she can grasp

What to Do:

1. Show your child how to fill the bowl or box with the safe items.
2. Then, show her how to turn over the bowl or box to dump out the items.
3. Encourage her to copy you. Give her positive encouragement as she does so.
4. Count the items as she puts them in. If you speak more than one language, count in different languages. For example, "uno, dos, tres" (Spanish).
5. Talk about what she is doing and what happens when she turns the bowl or box over.

(See page 5 for information on how doing these kinds of activities with your child helps her development and school readiness.)



Toddlers

Have you ever seen your toddler build a tower with blocks and hear her say, “Mine is the biggest!” or that Daddy got “more” cereal than her, or that there are a “million billion stars in the sky?” Observations and descriptions such as these show her beginning understanding of simple math concepts.

You may hear your child use more “math” language whenever she is talking (e.g., size, shape, quantity, comparisons.) In addition to using “math” language in her conversations, she may show that she can apply the concepts in everyday situations. For example, she may correctly place shapes in a shape box, associate quantities with small numbers (e.g., gives two bananas when asked for “two”), and distinguish what does and does not fit in certain spaces (e.g., size and shape of puzzle pieces). You can extend her learning by playing “I Spy” games that help her identify items based on their description. Using descriptive words such as “big,” “small,” “round,” “square,” “three,” “four,” etc., will not only help her learn math concepts, but will also help her learn to be descriptive about things in her surroundings.

In addition, the following materials can be used with your child to build her understanding of math concepts:

♥ **Simple children’s books** with bright colors and few words (cloth, vinyl, and cardboard are the best). Point to, talk, and count items you see on each page. Help her be able to describe items by asking, “Is it small or big? Round or square? Ask comparison questions such as “Is the red ball bigger or smaller than the blue ball?”

♥ **Puzzles** that have few pieces and made of thick, easy-to-manipulate blocks of wood. Have your child describe features of the puzzle and talk about the way she is turning each piece around to fit into the puzzle. Encourage her attempts at putting each piece in its place.



Activity for Toddlers: *Count It!*

Materials: None

What to Do:

1. Play guessing game with counting. You can make a guessing game about almost anything:
 - ♥ How many steps does it take to go to another room at home, e.g., from the kitchen to the bedroom?
 - ♥ How many blocks does it take to fill a container?
 - ♥ How many chopsticks are in the drawer?
 - ♥ How many pages are in this book?
 - ♥ How many cubes of tofu are on the plate?
2. Ask your child to guess; then count them out together with her. If you speak more than one language, count in a different language.

(See page 5 for information on how doing these kinds of activities with your child helps her development and school readiness.)

Preschoolers

Preschool aged children are increasingly more intentional in seeking new knowledge and experiences. When they ask questions, they are seeking answers about how things work or why things happen. When you provide answers to her questions, ask



her questions, and encourage her to find answers either on her own or together with you, you are promoting her learning and development.

Your child is building on the concepts that she learned in her infant and toddler years, refining her understanding by being more precise. For example, you may see that she notices incremental differences of size (e.g., tall, taller, tallest) or that she uses tools to measure items, objects, and quantities. In addition, she shows understanding of more complex concepts such as patterns, partial amounts, and volume.

The following materials can be used with your child to build her understanding of math concepts:

- ♥ **Pattern making toys**, such as stringing beads, peg board, or magnetic board

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Activities for Preschoolers: *How Many Cups?*

Materials:

- Different-sized plastic containers with wide openings e.g., yogurt or peanut butter jars
- Measuring cups
- A large bowl of water
- Food coloring (optional)



What to Do:

1. Label each container “small,” “medium,” or “large.” Let your child experiment with pouring cups of water into the different-sized containers.
2. Ask her questions such as, “How many cups of water do you think it would take to fill this large container?” Then, using the same-size measuring cup throughout, count the number of cups of water he pours into the container.
3. Ask her to use the same measuring cup to fill one of the smaller containers. Count with her how many cups it takes. Compare the number with the previous one.
4. Then ask her to use a smaller or larger measuring cup. Ask, “Do you think you will need more cups of water to fill this same container?” Count the number of cups it takes to fill the container and compare it to the previous number.
5. If you have food coloring available, add a few drops to the water

(See page 5 for information on how doing these kinds of activities with your child helps her development and school readiness.)

How This Helps

The activities suggested in this newsletter help promote many different aspects of development.

Physical Development

- ♥ Use and strengthen small muscles
- ♥ Develop eye-hand coordination

Social and Emotional Development

- ♥ Feel important and good about herself
- ♥ Learn to interact with others

Language and Literacy Development

- ♥ Increase her observation, listening and understanding skills, and her attention span
- ♥ Build verbal skills and vocabulary

Cognitive Development

- ♥ Develop early math skills like quantifying, comparing, sorting, grouping, and ordering
- ♥ Recognize math concepts like numbers, sizes, shapes, and sequences

Kids in the Kitchen

Cooking teaches valuable lessons. As you do this recipe with your child, show her how to safely handle the items and allow her to do as much as she is capable of. Ask questions throughout the process to encourage her thinking skills. Make sure to wash your hands and your child's hands before preparing any food.

Kabocha Cupcakes

Adapted from: <http://www.williams-sonoma.com/recipe/kabocha-cupcakes-with-vanilla-cream-cheese-frosting.html>

Ingredients:

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|--|-----------------------|
| 1 Kabocha squash (approximately 2 lbs) | 1 ½ cups flour |
| ¼ cup water | 1 tsp baking soda |
| ½ cup oil | ½ tsp ground cinnamon |
| 1 cup granulated sugar | ¼ tsp ground cloves |
| 2 eggs | ¼ tsp salt |
| 1 T vanilla extract | ¼ cup low fat milk |

Instructions:

1. Preheat an oven to 350°F. Line a standard 12-cup muffin pan with paper liners.
2. Cut the squash in half crosswise and place, cut side down, in a baking pan with the water. Bake until very soft when pressed, 45 minutes to 1 hour.
3. Let kabocha cool, then ask your child to help scoop out the seeds with a spoon.
4. Together, scrape the flesh from the peel and place it into a bowl.
5. Mash the kabocha with a fork or puree until smooth; measure out 1 cup. Talk about how the mixture changes.
6. In a large bowl, whisk together the oil, granulated sugar, eggs, vanilla and the 1 cup squash puree until smooth.
7. In a small bowl, stir together the flour, baking soda, cinnamon, cloves and salt.
8. Stir the flour mixture into the squash mixture, followed by the milk, until well blended.
9. Spoon the batter into the prepared muffin cups, filling each one about two-thirds full. Bake for 18 to 20 minutes. Remove the cupcakes from the pan and let cool completely on a wire rack.

Preschoolers (continued from page 4)

with shapes, that allows her to identify and create her own pattern. Talk about the different features of the toy. Start a pattern and have her complete it. Ask her to talk about why she chose each piece to be part of the pattern.

- ♥ **Sand and water toys**, such as boats, funnels, pails, and scoops allows her to explore size, weight, and measurement. Ask her to make predictions about what will happen when she moves the sand or water from one container to another of a different size or shape, or what might happen when she puts an object in a bucket of water.

Community Resources

National Network for Child Care <http://www.nncc.org/Curriculum/toys.html>

Guidelines and ideas for choosing age appropriate materials for young children.

Ready at Five Partnership [http://www.readyatfive.org/raf/for-parents/parent-tips.html#Mathematical Thinking](http://www.readyatfive.org/raf/for-parents/parent-tips.html#MathematicalThinking) (ParentTips)

ParentTips series is designed especially for parents of young children. Look for tips in all areas of development, including mathematical thinking.

Suggested Books

Recommended by Read to Me International www.readtomeintl.org.
For more books, visit the public library www.librarieshawaii.org.



Infants and Toddlers

Ten Little Fingers and Ten Little Toes by Mem Fox

"As everyone knows, nothing is sweeter than tiny baby fingers and chubby baby toes." Teach baby to count as you point to each finger and each toe in this delightfully illustrated book about children everywhere.

10 Little Rubber Ducks by Eric Carle

Ten little rubber ducks get washed to sea. "In this poignant and funny story...readers [take] an exciting voyage of discovery." Children learn both cardinal (one, two three...) and ordinal numbers (first, second, third) in this happy-ending story.

Preschoolers

One Lucky Duck by Alison Maloney

"One unlucky duck is sad." He has lost his quack. In this predictable story, various farm animals tell unlucky duck that he doesn't make their sound until 10 dappled ducks teach him to say, "Quack!"

Two Old Potatoes by John Coy

When a girl is ready to trash two old potatoes, Dad suggests that they plant the potato pieces. Both father and daughter spend May through September preparing the soil, planting the potato pieces, weeding, watering and finally, HARVESTING their crop. This is an excellent book to start youngsters on gardening and learning about self sufficiency.

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