

# CARES Program

December 2007

## Creative Pathways to Math

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Children possess and build mathematical competencies from their first year and keep on learning mathematical ideas throughout their preschool years and beyond. This is not surprising. Mathematics helps children make more sense of their physical and social worlds. “That doesn’t fit me—I grew too big!” “No fair! She has more than I do!”

Young children invent mathematical ideas and strategies. For example, take 5-year old Alex: Alex’s brother, Paul is 3. Alex bounds into the classroom and announces, “When Paul is 6, I’ll be 8; when Paul is 9, I’ll be 11; when Paul is 12, I’ll be 14.”

Teacher: My word! How on earth did you figure all that out?”

Alex: “It’s easy. You just go “three-FOUR-five” [saying the “four” very loudly and clapping hands at the same time], you go “six-SEVEN [clap]-eight,” you go “nine-TEN [clap!]-eleven”...

This small but remarkable dialogue reflects the potential all young children have to learn—and even to create—mathematics.

### You Hold the Key!

You can structure the classroom environment so that the potential for mathematics surrounds children. Show them the math in their everyday activities and plan special activities that focus on mathematics. Support their curiosity and offer appropriate challenges. You can:

- provide lots of unit blocks, along with time to use them.
- ask a child to get just enough scissors for every child who is in the group.
- challenge children to guess and check how many steps it is to the playground.
- sit down with children in large and small groups to pose, solve, and discuss mathematical problems.

It’s also important to make sure mathematically oriented materials such as blocks are readily available. Notice that moment when building mathematical language and concepts requires intervention. For example, when two children each claim that his building is the largest, you might discuss how one is “taller” but the other is “wider” (or “contains more blocks”). You may decide to add materials after observing children. For example, when you see children comparing the length of two rugs, make sure that connecting cubes, string, and other objects that might be used for measuring are close by.

### Math Around the Room

You can help children connect their informal knowledge to their budding explicit knowledge of mathematics. For example, children might be able to manipulate blocks to find that adding one block to a group of three blocks results in a group of four blocks. Later, they can be asked to do similar problems even when the three blocks are hidden. Eventually, they will be able to “count on.” Asked what two more than three is, they might say, “Threeeeeee... four... five. Five!”

Children should also be encouraged to connect mathematics topics to each other. For example, children connect number to geometry by counting the sides of shapes, using rows and columns to understand number combinations, or measuring the length of a rug. This helps strengthen concepts in these areas as well as beliefs about mathematics as a coherent system.

Our world can be better understood with mathematics. Early childhood is a good time for children to become interested in counting, sorting, building shapes, patterning, measuring, and estimating. Quality preschool mathematics is not elementary arithmetic pushed down onto younger children. Instead, it invites children to experience mathematics as they play in, describe, and think about their world.

Source:

*Douglas H. Clements, Ph.D., with Julie Sarama, Ph.D.  
Scholastic Early Childhood Today 2003*

## Literacy Links to Math

Linking mathematics to literacy and other areas strengthens both. Most good mathematics activities also develop language and vocabulary. For example, when children are lining up, teachers can build in many opportunities to develop an understanding of mathematics. Children wearing something red can be asked to get in line first, those wearing blue to get in line second, and so on. Or, children wearing both something red and sneakers can be asked to head up the line.

Understanding stories involves mathematical understandings, such as conditionals (if/then), classification, patterning, order, and number. Think of the numbers, size relationships, sequences, and repetitious patterns in "Goldilocks and the Three Bears" and other favorite stories. It's no wonder that research shows that early mathematical experiences, especially geometric ones, result in later improvements in language and literacy, as well as general intelligence.

### 7 CREATIVE WAYS TO TEACH MATH

Here are some activities for your classroom to add a bit of sparkle and creativity. As children work, ask critical questions such as "Did you try this?" "What would have happened if...?" "Do you think you could...?" to enhance children's understanding of mathematical ideas and vocabulary.

1. **Use dramatizations** - Invite children to pretend to be in a ball or box, feeling the faces, edges, and corners and to dramatize simple arithmetic problems such as: Three frogs jumped in the pond, then one more. How many are there in all?
2. **Use children's bodies** - Suggest that children show how many feet, mouths, and so on they have. Then invite children to show numbers with fingers, starting with the familiar, "How old are you?" to showing numbers in different ways.
3. **Use children's play** - Engage children in block play that allows them to do mathematics in numerous ways, including sorting, seriating, creating symmetric designs and buildings, making patterns, and so forth.

## Learning About Math—PLAYFULLY!

Play is often about mathematics.

Nearly half of all the episodes of children's natural play observed by researchers included mathematics. This included:

- classification (putting away blocks in categories)
- magnitude ("This isn't big enough to cover the table.")
- enumeration (a boy says, "Look! I got 100!" and he and a friend count to check that estimate)
- dynamics (child stretches dough with her hand and makes a flat, circular shape)
- pattern and shape (a boy puts a double unit block on the rug, two unit blocks on the double block, and continues to build a symmetrical structure)
- spatial relations (telling a location or direction)

Source:

Douglas H. Clements, Ph.D., with Julie Sarama, Ph.D.  
*Scholastic Early Childhood Today 2003*



4. **Use children's toys** - Encourage children to use "scenes" and toys to act out situations such as three cars on the road, or; later in the year; two monkeys in the trees and two on the ground.
5. **Use children's stories** - Share books with children that address mathematics but are also good stories. Later, help children see mathematics in any book.
6. **Use children's problem-solving abilities** - Ask children to describe how they would figure out problems such as getting just enough scissors for their table or how many snacks they would need if a guest were joining the group.
7. **Use a variety of strategies** - Bring mathematics everywhere you go in your classroom, from counting children at morning meeting to setting the table, to asking children to clean up a given number of items.

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*Scholastic Early Childhood Today 2003*

## CARES Program



### Substitute Reimbursement Forms-

Do you need a substitute while you take care of school-related activities pertaining to the CARES program?

Request for Reimbursement Forms are now available at the CARES office. Please call 530.295.2327 for more info. or feel free to stop by and pick one up.

### Adult Basic Education Classes-

Do you need assistance with basic Math, Reading and/or Writing? If you are interested and/or need more information, please contact Carolyn Zachry, Adult Education Coordinator for the EDCOE. **530.622.7130. ext 411**

### Mid-year CARES meeting-

Western Slope participants  
Thursday, January 17, 2008  
6 - 9pm @ EDCOE in B-1, B-2, and B-3

### Choices for Children-

Interested in Choices for Children events on the Western Slope? Please visit their new website and click on El Dorado County, then Events Calendar!  
[www.choices4children.org](http://www.choices4children.org)

### Upcoming CPIN Meetings -

Wednesday, February 13, 2008  
10am-2:30pm  
Sacramento COE, Mather Room

Wednesday, May 14, 2008  
10am-2:30pm  
Sacramento COE, Mather Room

These meetings are structured for administrators and directors or teacher leaders responsible for providing professional development to teachers. The priorities are state-funded preschool programs. However, Head Start and early childhood educators from the private sector are welcome. If you would like to attend a meeting and/or need more info, please call 916.228.2506

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