

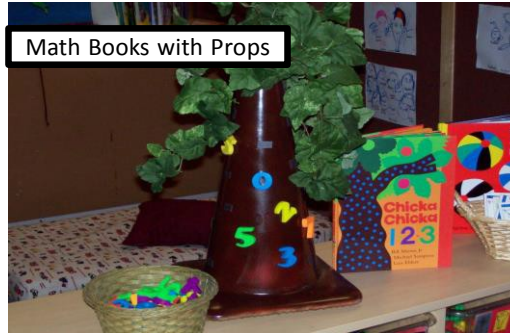


## Handout 1

# Creating a Mathematics Environment



Specific Math Center



Math Books with Props

Create a learning environment that helps young children learn about math by *exploring, interacting, and having meaningful conversations* about math.



Pocket Charts



Sensory Table



Calendar

Make sure that math materials are accessible to children in various areas throughout the classroom.

## Seize the Math Moment:

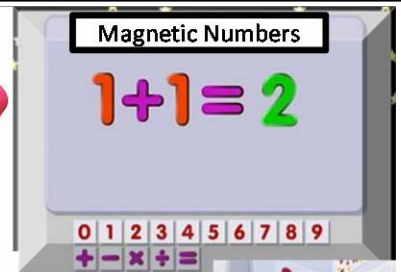
When children are curious and ask questions while exploring - take the time to discuss their questions using math vocabulary, expand their ideas, and challenge them to think deeper.



Math Puzzles



Number Activity Mat



Magnetic Numbers



Number Celebrations



Hands-On Counting Opportunities



Computer Area



Sandtray for Forming Number



Math Picture Books

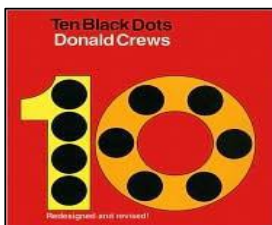


Block Area

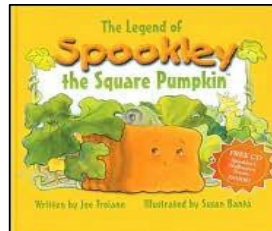
# Handout 9

## Picture Books for Math

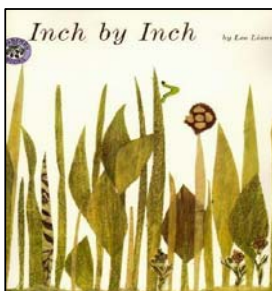
### Ideas for Math Read-Alouds



*Ten Black Dots*  
by  
Donald Crews



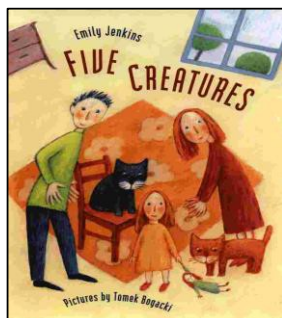
*The Legend of Spookley the Square Pumpkin*  
by  
Joe Troiano



*Inch by Inch*  
by  
Leo Lionni



*What Comes in 2's, 3's, & 4's?*  
by  
Suzanne Aker



*Five Creatures*  
by  
Emily Jenkins



#### Operations (Addition/Subtraction)

- ❖ *Domino Addition* (Long)
- ❖ *Candy Counting* (McCourt)

#### Operations (Multiplication/Division)

- ❖ *Amanda Bear's Amazing Dream* (Neuschwander)
- ❖ *A Grain of Rice* (Pittman)
- ❖ *The Doorbell Rang* (Hutchins)
- ❖ *One Hundred Hungry Ants* (Pinches)

#### Number Sense

- ❖ *Two of Everything* (Hong)
- ❖ *How Much is a Million?* (Schwartz)

#### Money

- ❖ *The Coin Counting Book* (Williams)

#### Geometry

- ❖ *The Greedy Triangle* (Burns)
- ❖ *Cubes, Cones, Cylinders, & Spheres* (Hoban)
- ❖ *Shapes, Shapes, Shapes* (Hoban)



#### Sorting

- ❖ *Sorting* (Pluckrose)
- ❖ *A Pair of Socks* (Murphy)

#### Estimating

- ❖ *Betch!* (Murphy)

#### Counting

- ❖ *Counting One Gorilla* (Morozumi)
- ❖ *Counting on Calico* (Tildes)

#### Time

- ❖ *Clocks & More Clocks* (Hutchins)

#### Measuring

- The Best Bug Parade* (Murphy)

#### Problem-Solving

- ❖ *Tyrannosaurus Math* (Markel)
- ❖ *The Grapes of Math* (Tang)

#### Patterns

- ❖ *Two Ways to Count to Ten* (Dee)

#### Graphing

- ❖ *Lemonade for Sale* (Murphy)
- ❖ *Tiger Math: Learning to Graph from a Baby Tiger* (Whitehead & Bickel)



# Handout 10

## Math Games

### Preschool Math Games



#### Muggins Math Games

<http://www.mugginsmath.com/>

"Muggins math board games and manipulatives are not only educational but make learning FUN! Built the old fashioned way with wooden boards and marbles, the games are great for family game night as well as for the classroom and after school programs. " (ages 4+)



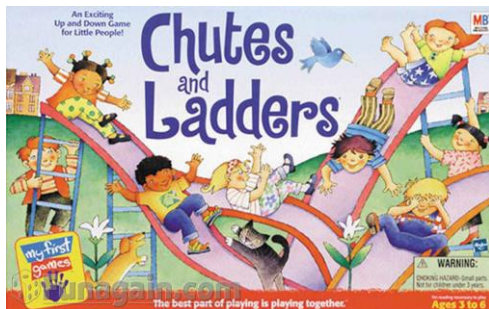
#### Mighty Mind

<http://mighty mind.com/3552/20312.html>

"Winner of the Parent's Choice Award, this game is for ages 3-6 and builds skills related to counting, categorizing, spatial relationships, and more."



Look for games that involve numbers, counting, shapes, spatial relationships and/or problem solving.



Mancala



# Handout 11

## Food for Thought



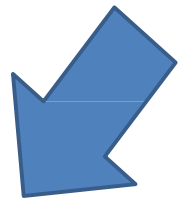
### Ants on a Log

Make ants on a log for a snack. Give children each a piece of celery. Have them spread peanut butter or cream cheese on the celery. Let them place raisins on top of the peanut butter or cream cheese to make ants on a log. Preschoolers will enjoy eating this healthy snack. Have them count the raisins (ants) or use this activity with adding and subtracting (example: “ $4 + 2 = 6$ ” “Joe had 4 ants on his log and 2 more ants marched onto the log, so now Joe has 6 ants on his log!”)



### Pretzel Math

Give each child some pretzel sticks and a piece of waxed paper or paper plate. Have the children try to make numbers out of the pretzels. Show them how to turn them into tally marks for counting activities. Use the pretzel sticks to create different math problems using math symbols (example:  $1 + 4 = 5$ )



### Snack Tips:

- Remember to check for food allergies
- Some foods (such as grapes) can be choking hazards for young children
- Teach young children how to wash their hands thoroughly with soap & water before creating their math snacks, as well as how to cover mouths when coughing or sneezing around snacks/snack supplies
- Children enjoy exploring math with their favorite and familiar snacks items; locate items in your own

# Handout 11

## Food for Thought (continued)

### Popular Trail Mix for Preschoolers

Give each child a paper cup, plastic sandwich bag or plain ice cream cone to hold the trail mix. In a large bowl have the children measure out the following ingredients: *1 cup Cheerios®*, *1 cup Goldfish® crackers*, *½ cup dried fruit* (such as raisins, dried cranberries or banana chips), *½ cup nuts* (check for nut allergies), *¼ cup sunflower seeds*, *1 cup M&M's® chocolate candies*, *1 cup peanut butter chips or butterscotch chips*, *½ cup of pretzels* and *¼ cup miniature marshmallows*. Stir all the ingredients together and spoon into each child's paper cup, plastic bag or cone. This is an excellent measuring activity for the children. Make sure the children use a variety of measuring tools. Use math measuring vocabulary words as you converse with them when adding the different ingredients. Try to use this activity after reading a picture book with the children (such as pretending the children are making "zoo food" after reading *Curious George Visits the Zoo* by M. Rey (1985).



### Simple Math Snack Ideas

- Counting food items and having the children create fun addition and subtraction story problems using "real-life" classroom math opportunities; graphs can be developed from food items as well.
- Involving the children in making butter, instant pudding or plastic bag ice cream; make sure you have them measure out the ingredients. They will enjoy jumping up and down to mix the ingredients.
- Make number and/or math symbol sandwiches; use cookie cutters of number/math symbol shapes to cut shapes out of bread slices.

### Ziploc® Ice Cream

- 1/2 cup milk
- 1 Tablespoon sugar
- 1/4 teaspoon vanilla or other flavor

1. Give each child a pint size Ziploc® bag. Add ingredients to pint size Ziploc® bag and securely zip shut.
2. Place that bag in larger Ziploc® bag.
3. Add ice chips to fill large bag 1/2 way with 6 Tablespoons of salt.
4. Zip the large bag shut and have the children shake, turn, toss, and mix the bag. In about 5-10 minutes the children will each have homemade ice cream.

Note: The children may want to wear mittens or gloves with this activity (as the bag gets very cold).

This is a fun measuring snack activity for young children – especially on a hot day.

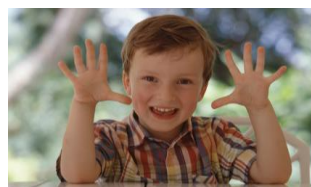


## Handout 12

# Math Songs, Rhymes, and Chants

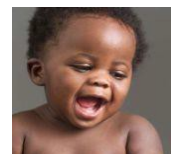
### Me Complete

I have ten little fingers and ten little toes  
Two little arms and one little nose,  
One little mouth and two little ears,  
Two little eyes for smiles and tears,  
One little head and two little feet,  
One little chin, that's me complete!



### Body Parts Pairs

Two things make a pair (hold up two fingers)  
And on me, I'll show you where (point to self)  
I have two ears, and I have two eyes (point to ears and eyes)  
Both are important to make me wise!  
I have two holes in my nose (point to nose)  
That lets me smell a beautiful rose (pretend to smell a rose)  
I have two hands that clap a beat (clap hands)  
I have two feet that are really neat! (Jump up and down)



**Early Mathematics: NAEYC Math-Related Children's Books, Songs, and Finger Plays for Preschoolers**

<http://www.naeyc.org/files/tvc/file/BooksSongsandFingerPlays.pdf>

### Penguin Family

One royal penguin . . . feeling very blue (hold up one finger) Called  
for his brother then there were two (hold up two fingers) Two  
royal penguins. . . swimming in the sea (swimming motion) Called  
for their sister then there were three (hold up three fingers) Three  
royal penguins waddle on the shore (waddle)  
Call for their mother, then there were four (hold up four fingers)  
Four royal penguins learning how to dive (Make diving motion)  
Call for their father, then there were five (hold up five fingers)



### Do You Know What Shape This Is?

(Tune: The Muffin Man)

Do you know what shape this is?  
What shape this is? What shape this is?  
Do you know what shape this is, I'm holding in my hand?



Teacher: Hold up a different shape each time; the children can name the shape.



## Handout 13

# Preschool Math Technology

### Computer Tips for Young Children

#### Math CD-Rom Suggestions:

- ❖ *Curious George Preschool Learning Games* (Simon & Schuster Interactive)
- ❖ *School Zone Preschool* (School Zone)
- ❖ *Huggly Saves the Turtles* (Scholastic)
- ❖ *How Many Bugs in a Box?* (Simon & Schuster)
- ❖ *"Flo": Return of the Water Beetles* (Digital Praise)

- ✓ Make sure children are able to reach the keyboard and mouse comfortably; feet need to touch the floor.
- ✓ Preview games first and introduce new games to the children.
- ✓ Provide game choices on the desktop – children will learn to locate and recognize choices.
- ✓ Provide sign-up sheets to monitor use and frequency of class computer.
- ✓ Use a timer with a set amount of time, so computer is not dominated by one student.
- ✓ If Internet is available check to make sure filter systems are in place.



# Handout 14

## Progress Monitoring

### Early Mathematics Progress Monitoring



✓ Observe math processing & keep notes for each child (record date of observation)

✓ Collect & date samples of work (include photos) relating to each of the key math areas

✓ Document children's knowledge of math concepts; include the following:

- |   |                                   |
|---|-----------------------------------|
| _____ number concepts   | _____ use of math manipulatives   |
| _____ one-to-one correspondence                                 | _____ measurement                 |
| _____ number recognition  | _____ data collection             |
| _____ forming numbers   | _____ graph (creating/analyzing)  |
| _____ counting  | _____ problem solving             |
| _____ shape recognition   | _____ use/integration of math     |
| _____ use of math vocabulary                                    | _____ concepts throughout the day |
| _____ patterns (recognizing, creating, extending, interpreting) |                                   |

✓ Use observations to plan specific goals/instruction for each child



### Early Mathematics Resources

NCTM Illuminations: Resources for Teaching Math

<http://illuminations.nctm.org/Lessons.aspx>

Click on pre-K box and specific math standards (select from Number & Operations, Algebra, Geometry, Measurement and Data Analysis & Probability); site provides activities, lesson plans, materials, questions for students, assessment options, extensions, teacher reflection support, and specific NCTM standards and expectations for young children for each of the specific math areas.

