

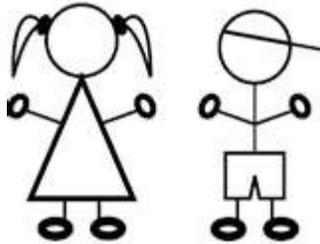


Family Learning Kits
Preschool Math Backpack
School Readiness Council
Bristol, CT



Caregivers and Parents Do Make a Difference in a Child's School Success!

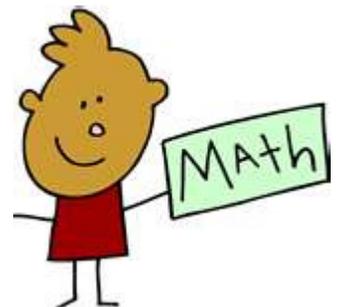
Your home is a great place to begin to explore math ideas with your preschool child to help encourage a love for doing mathematics. Incorporating fun activities in daily routines will help your child see the usefulness and importance of math in everyday life and help build a strong foundation for success in kindergarten and beyond. This booklet contains fun games and activities that you can do with your child to uncover math in the world around you.



Some Helpful Tips to Keep in Mind

When exploring the games and activities in this booklet with your child, remember they are meant to be fun. The following list offers suggestions on how to make working with your child at home a positive experience:

- show that you believe in your child; let your child know he/she can succeed,
- encourage your child to take a risk by trying something new, and
- point out where you use math in your everyday life.



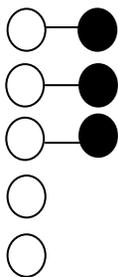
Math Background: Counting

Counting is one of the first ways preschool children use numbers. Counting involves two stages. First, children must be able to say a series of number names in order. For example, children must be able to recite “one, two, three, four, five, six, seven, eight, nine, ten.” Songs or poems are often used to help students learn the order of number names. Note that the number names from eleven to nineteen are a little more difficult to learn since they don’t follow a regular pattern like numbers in the twenties or thirties.

In the second stage of counting, children must match one and only one number name to each item being counted. To help children develop this counting skill, they can touch, move or point to each object as the number names are spoken. The last number name spoken represents the total number of objects and tells how many there are in all.

When children understand that a number tells “how many,” they are ready to use the number symbols (1, 2, 3, 4, 5, 6, 7...) to represent quantities. Preschoolers need many opportunities to practice matching numbers to the quantities they represent.

Once preschool children are able to successfully count how many objects are in a group, they can begin to compare two groups to see which one has more, which one is less, or whether the groups have the same amount.



Five is more than 3.

Fun Number Games and Activities



Rhymes and Songs: Preschool children enjoy listening, singing and saying rhymes and songs. Counting rhymes and songs are not only fun to act out, but help young children learn basic math concepts. Teach your child the following counting rhyme to help him/her learn the number names in order.

Oliver, Oliver, Oliver Twist!

Bet you a penny, you can't do this!
Number One, wiggle your tongue;
Number Two, touch your shoe;
Number Three, touch your knee;
Number Four, touch the floor;
Number Five, look alive;
Number Six, wiggle those hips;
Number Seven, reach to heaven;
Number Eight, stand up straight;
Number Nine, walk the line;
Number Ten, start over again.

(Adapted from Juanita Copley, 2005)

Say the above rhyme with your child several times. As he/she becomes confident saying the number names in order, ask him/her to show the numbers on fingers as the number names are being said. Start with only the numbers one through five. When your child seems comfortable, continue with the remaining numbers to ten.



To challenge your preschool child, you may also introduce counting backwards using the rhyme, “Five Little Monkeys.”

Five Little Monkeys

Five little monkeys (hold up five fingers)
jumping on the bed
one fell off
and the doctor said
“no more monkeys
jumping on the bed.”



Four little monkeys...
(repeat from the beginning counting backwards by one)

Ask your child to hold up the correct number of fingers to show how many monkeys are on the bed at the beginning of the rhyme. Then have him/her count down to one with you as you say the rhyme together.

(Adapted from *Helping Your Child Learn Math*, 1999)

Do you remember any counting rhymes and songs that you enjoyed when you were a child? Have your child ask other family members, such as grandparents, what rhymes they learned to help them count.

“*One, Two, Buckle My Shoe*” is an old favorite.



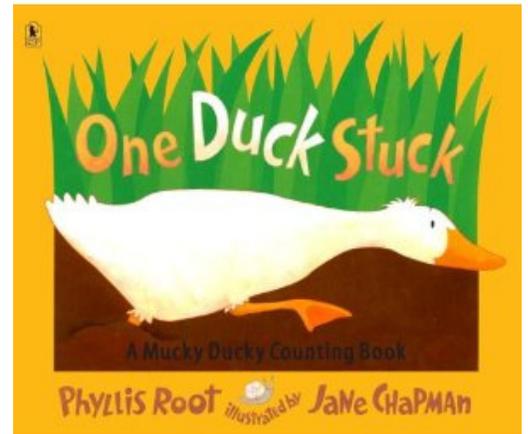
1, 2, buckle my shoe

*One, two, buckle my shoe.
Three, four, shut the door.
Five, six, pick up sticks.
Seven, eight, shut the gate.
Nine, ten, a big fat hen.*

(Adapted from *Early Childhood Math*, 2006.)

Counting Books: Counting books help young children connect numbers and the quantities they represent. Reading counting books often will help your child learn to recognize numbers and practice counting in a fun and enjoyable way.

One Duck Stuck by Phyllis Root is one example of a counting book and can be found in your preschool math backpack. Reading this book not only helps build important math ideas, but introduces your child to rich language and many rhyming words. This helps build important reading skills too!



As you read this book and other counting books with your child...

- Encourage him/her to practice counting by saying one number name for each item counted on a page.
- Have your child point to the items as he/she counts them.
- If your child is having difficulty keeping track of which items have already been counted, have him/her place a small object such as a “squished” marble (found in your preschool math backpack) on top of each item as it is being counted.
- When finished counting, ask your child to tell you how many there are in all. This will help your child recognize that the last number name said when finished counting tells “how many” there are in all.

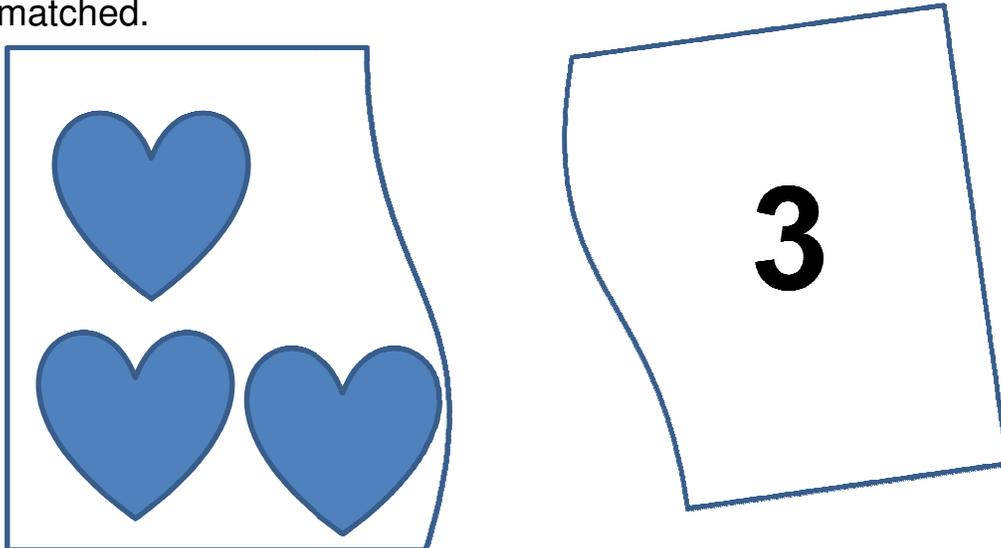
Guide your child to notice the numbers that represent how many items are on a counting book page. Encourage your child to trace over the number with his/her finger as you say its name.

Number Puzzle Game: This game is a fun way to help your child learn which number matches a given quantity. The game cards can be easily made using a few index cards or pieces of card stock.

- On the left side of the card, draw a group of objects.
- On the right side of the card, write the correct number that matches the group of objects on the left.
- Then make an irregular cut down the center of the cards to create a two-piece puzzle.
- Make several puzzle cards for numbers that are appropriate for your child, making sure the irregular cuts you make on the cards are different for each puzzle.
- When finished, mix up the puzzle pieces and spread them out on a table.

Next, play the game with your child. The object of the game is to match numbers with the correct group of objects.

- Have your child select a puzzle piece that has a group of objects drawn on it and count how many objects are shown.
- Encourage your child to place a “squished” marble on top of each object as it is counted to help keep track.
- Then have your child find the correct number puzzle piece that matches the amount just counted.
- Ask him/her to then place the two puzzle pieces together to check to see if indeed they are a match.
- If your child is correct, he/she gets to keep the puzzle cards. If incorrect, have your child place the cards back down on the table.
- Take turns with your child until all the puzzle pieces have been matched.



Number Hunt: Take your child on a walk around your neighborhood, through a park, or just around the rooms in your home. As you walk, ask your child to hunt for numbers. For example, say to your child, “I spy seven!” Then point to an object that has that number written on it. Ask your child to find it.

Another way to play the game is to point to a place that has a group of objects that matches the number you called out. Have your child hunt for that group of items and count them to prove the amount is correct.

Take turns with your child hunting for various numbers. By noticing that numbers are all around us, you are helping your child learn that numbers are important and they are used for many different purposes.

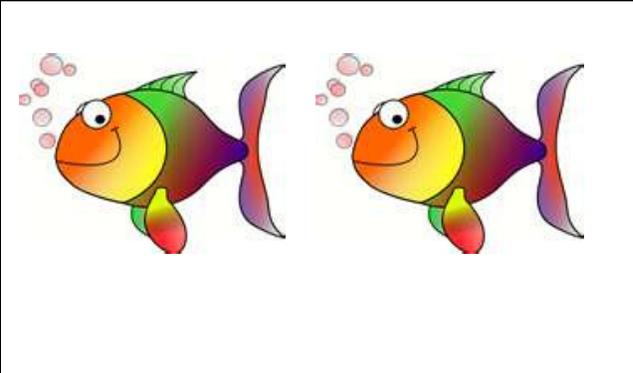
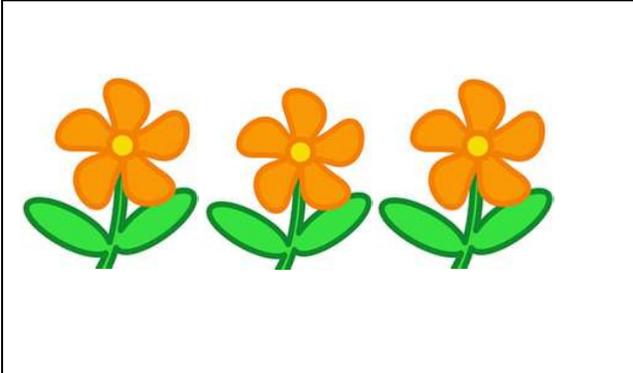
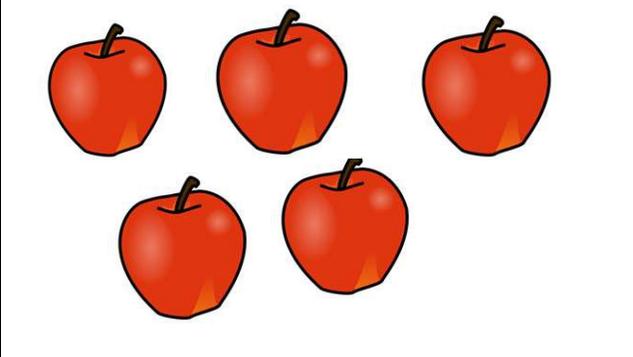
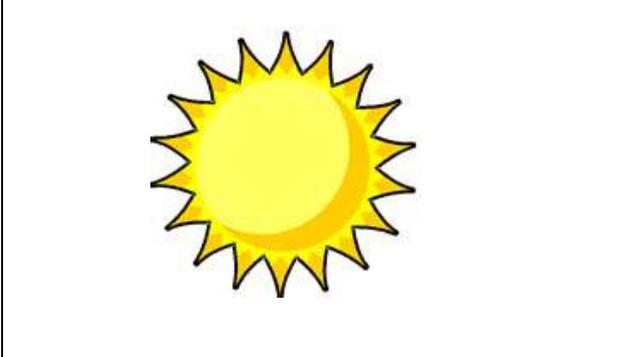
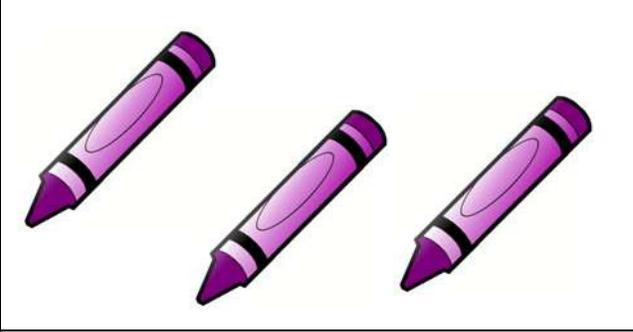
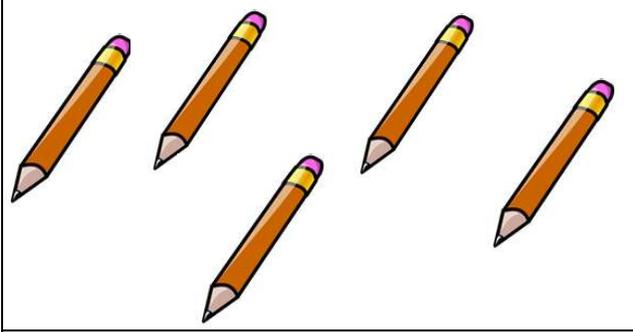
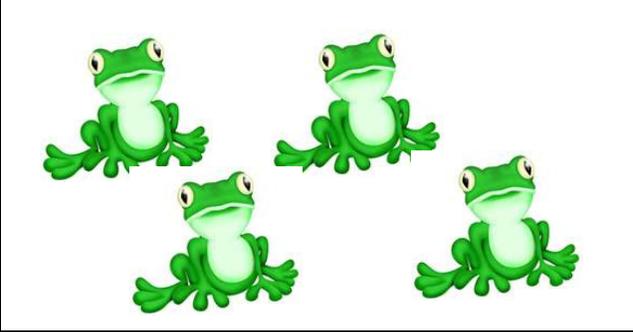


Number Matches: This game is designed to help your child practice counting by matching cards that have the same number of objects. To play this game, you will need to cut out the cards shown on the next page.

- Place the cards on a table face down. Arrange the cards in two rows so that there are five cards in each row.
- Take turns turning over two cards. Count the number of objects on each card.
- If your two cards have the same number of objects, you make a match and get to keep the cards.
- If your two cards do not match, look carefully to remember where the cards are located. Then turn them face down again in the same place.
- On your next turn, try again to find a match.
- Continue taking turns until all the cards have been matched.

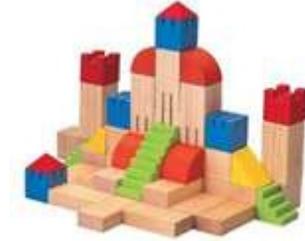
When your child is ready, you can create additional pairs of cards for the numbers 5-10 to make the game more challenging.

(Adapted from *Family Math for Young Children*, 1997)

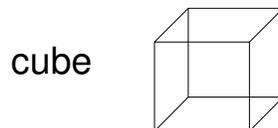
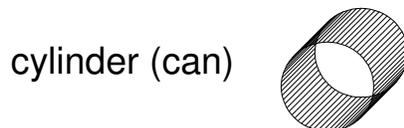
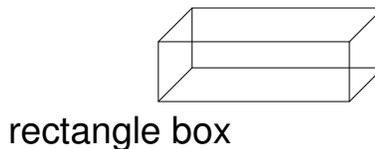
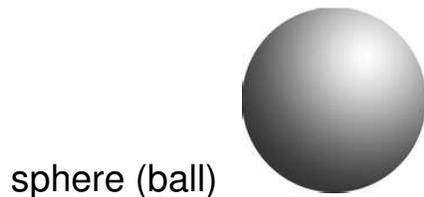
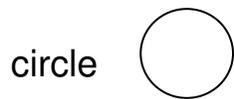


Math Background: Geometry (Shapes and Space)

Young children like to explore the world around them. As they do, they begin to see that many familiar objects in their world are made up of shapes. In fact, shapes are everywhere. Preschool children learn to name, describe, draw and build shapes.



Some familiar shapes students learn in preschool include:



To help your child learn more about shapes,

- ask your child to count the number of sides and the number of corners (angles) on shapes,
- look for many different types of examples for each of the shapes - ask your child what is the same about them and what is different, and
- have your child find out which shapes roll and which ones slide.

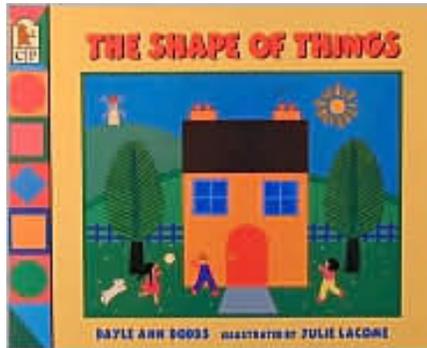
In addition to learning about shapes, young children also learn words that help them describe and locate objects in their world. Some examples of these words include *up*, *down*, *on*, *off*, *under*, *above*, *between*, *next to*, *inside* and *outside*. It is helpful to use these words often when talking with your child and have him/her act out their meaning.

“John is standing **next to** Katie.”



Fun Geometry Games Activities

Books about Shapes: Reading books about shapes helps your child learn where they can be found in the real world.

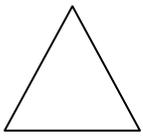
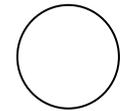
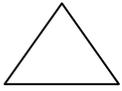
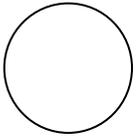


The Shape of Things by Dayle Ann Dodds is a wonderful book that provides exciting shape adventures for you and your child. This book can be found in the preschool math backpack. As you read this book with your child, try some of the following activities:

- Have your child find examples of shapes in the pictures found in the book. Together, count how many examples of a each shape your child found.
- Ask your child to trace over the shape with his/her finger, counting the number of sides and/or the number of corners (angles) as the shape is traced.
- Encourage your child to describe the shape patterns found along the top and bottom of each page.
- Have your child find several items in your home that are the same shape as one of the shapes shown in the book.
- Make paper cutouts of the various shapes shown in the book. Have your child create pictures or drawings using the shapes and tell what the shapes represent in the pictures. Collect the pictures to create your child's very own book about shapes.

An Important Note: The last shape shown in *The Shape of Things* book by Dayle Ann Dodds is the “diamond” shape. While it is a commonly used term, diamond is not a real math term. The real name for the diamond shape is rhombus (pronounced *rom-bus*). We encourage you to introduce the name rhombus to your child when discussing this shape, rather than the term diamond.

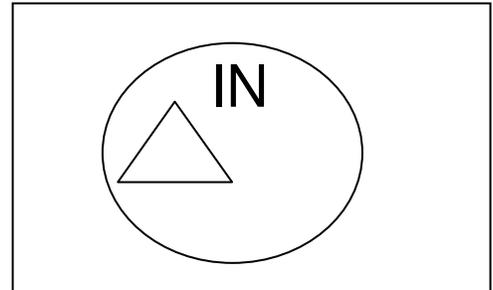
Shape Sort: This exciting sorting game will help your child notice how shapes are the same and how they are different. To play the game, you will need the set of Attribute Blocks found in the preschool math backpack and a piece of paper marked with an “In” space as shown below. The piece of paper will serve as a sorting mat.



- Select any 6 shapes from the set of Attribute Blocks and place them around the sorting mat.
- If playing the game for the first time, you should go first.
- Decide how you will sort the shapes.
- Pick up one of the 6 shapes and tell whether it belongs in or out and why.

For example, you might choose the small red triangle and say, “This shape is ‘in’ because it is a triangle.”

- Next, have your child take a turn picking up a shape and help him/her decide if it belongs “in” or “out” of the sorting circle. Ask, “Is your shape a triangle?” If yes, the shape is “in” and should go inside the sorting circle. If no, then the shape is “out” and belongs on the outside of the sorting circle.
- Continue taking turns until all of the 6 shapes are correctly sorted.



As your child becomes more comfortable with sorting, you can increase the number of shapes to be sorted. The following list shows examples of a few different ways the shapes may be sorted:

- big or not big
- small or not small
- triangle or not triangle
- square or not square
- circle or not circle
- yellow or not yellow
- blue or not blue



For children who are ready for an extra challenge, have them sort the shapes using two sorting rules. For example, this shape is “in” because *it is red* and *it is a circle*. Sorting activities should not be limited to just shapes. Children can do this activity with many household items, such as kitchen utensils, toys, clothes from the laundry, old keys, etc. The sorting possibilities are endless!

(Adapted from *Family Math for Young Children*, 1997)

Mystery Shape Bag: This hands-on game helps children practice describing shapes.

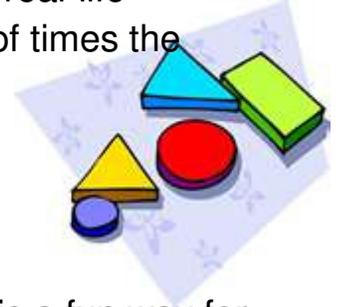
To get ready to play the game, you will need a small paper bag and 2 large squares, 2 large triangles, 2 large circles, and 2 large rectangles from the set of Attribute Blocks found in the preschool math backpack. Place 1 large square, 1 large triangle, 1 large circle, and 1 large rectangle in the small paper bag. Place the other shapes in front of you and your child.

How to Play the Game:

- Have your child feel inside the bag without looking and hold onto a shape.
- Your child must then feel the shape, tell what it is like (such as it has 3 sides and 3 corners), and then name the shape without looking.
- Next, you select the shape your child described from shapes that have been placed in front of you.
- Then have your child pull the shape from the bag. Compare the two shapes to see if they match.
- The shape is then returned to the bag and you switch roles with your child.
- When your child is comfortable playing the game with 4 shapes, add additional shapes from the set of Attribute Blocks to make the game more challenging.



Shape Hunt: Have your child select a shape from the set of Attribute Blocks found in the preschool math backpack. Then take your child on a walk around your neighborhood or around your home to find real-life examples of the shape he/she selected. Count the number of times the shape was found on your walk.



“Simon Says”: Playing “Simon Says” together as a family is a fun way for preschool children to gain experience with math concepts. While playing this game, use words such as *on*, *off*, *up*, *down*, *next to*, *besides*, *under*, and *over* to help your child describe and locate the position of objects in the world around him/her. This game can be played indoors as well as outdoors.

Explain how to play "Simon Says."

- Tell your family that you will give directions for them to follow.
- If you say "Simon says" first, they should do it.
- If you do not say "Simon says" first, they should not do it.
- Encourage them to listen carefully. If they don't follow the directions, they will be out of the game.

Next, play the game.

- For example, say, “Simon says place your foot **under** the table.” Check to make sure everyone has followed the directions correctly.
- Call out other directions, such as, “Simon says stand **next to** the refrigerator.” Once in a while, give directions without saying “Simon says.”
For example, you might say, “Put your hand on top of your head.”
- Any family member who puts his/her hand on top of his/her head should be called out of the game since “Simon says” was not said.
- Continue to play the game until there is one person left. That person is the winner of the game and he/she gets to have a turn being Simon for the next game.

Math Background: Patterns

Patterns

Patterns are all around us. They can be found in nature, at home, in buildings, in songs and in stories. Preschool children enjoy looking for patterns. Being able to recognize patterns is an important skill that will help your child learn new ideas more quickly as they enter elementary school and beyond.

A repeating pattern is a very common type of pattern that your child may notice. It has a “core” part that repeats over and over again. For example, in the shape pattern shown below, the core part that repeats over and over again has been underlined.

Repeating Pattern:



Different Examples of Repeating Patterns:

Movement Patterns: *snap, clap, snap, clap, snap, clap...*

stand up, sit down, stand up, sit down, stand up, sit down...

Color Patterns: *red, blue, red, blue, red, blue, red, blue....*

white, orange, white, orange, white, orange...

Sound Patterns: *loud, soft, loud, soft, loud, soft...*

buzz, ring, buzz, ring, buzz, ring...

Texture Patterns: *hard, soft, hard, soft, hard soft...*

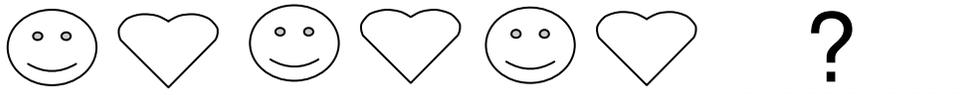
smooth, rough, smooth, rough, smooth, rough...

Fun Pattern Games and Activities

Pattern Hunt: To explore patterns in the real world, take your child on a pattern hunt to search for a variety of patterns. Encourage your child to notice a variety of patterns, including color, shape, sound, movement, and texture patterns.

Ask your child to describe the patterns he/she finds. You may want to take along a camera and take pictures of the patterns your child discovers.

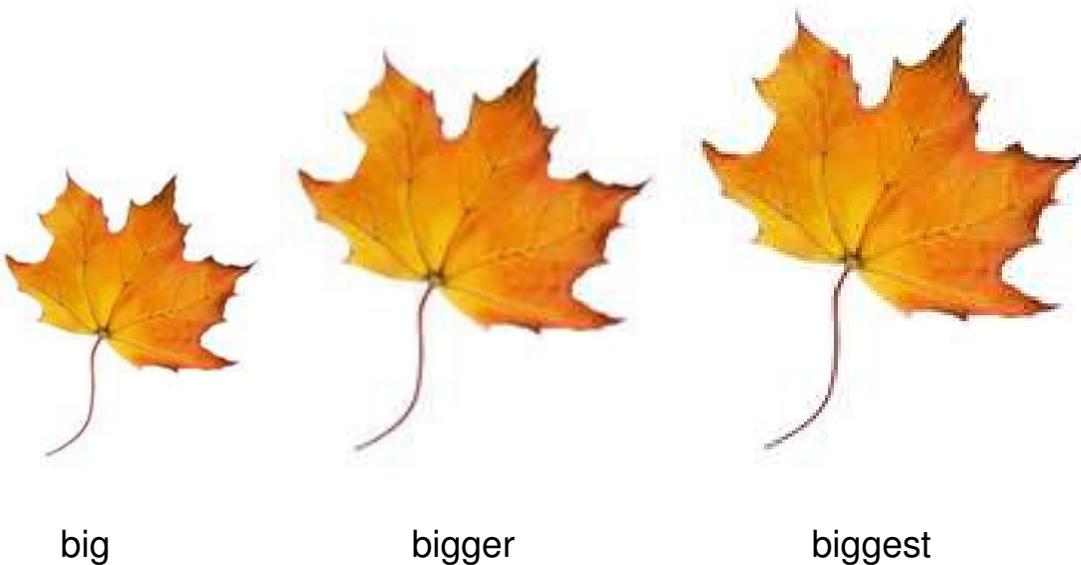
What Comes Next? To play this game, you will need to create a repeating pattern. Make sure that the “core” part of the pattern repeats at least 3 times. Ask your child to describe the pattern. Then have your child continue the pattern. Switch roles with your child and have him/her create a pattern for you to continue.



Math Background: Measurement

Many young children are naturally curious about finding out which cookie is biggest, who is taller, which rock is heavier, or which caterpillar they found in the yard is “fattest”. When these questions come up, they can become wonderful opportunities to help your child learn about measurement.

Often, children begin to learn how to measure by placing objects side-by-side or on top of each other to compare them. Asking your child to put a collection of objects in order by size, length, or weight, helps them learn important measurement ideas. Encourage your child to use words such as *big, bigger, biggest, small, smaller, smallest, light, lighter, lightest, long, longer, longest, heavy, heavier, heaviest, short, shorter, shortest, tall, taller, tallest, wide, wider, widest, and thin, thinner, thinnest* to describe the comparisons they are making.



Fun Measurement Games

“Size Them Up!”

Together with your child, look around your home or backyard for a collection of 3 similar objects. Ask your child put the objects in order by size or weight.

Some examples of objects you may find include:

leaves	sticks	rocks
spoons	socks	plates
cups	shoes	pots
books	canned goods	shirts

Ask your child some questions about the way he/she ordered the objects such as, “Which is the tallest?” “Which is shortest?” “How do you know?”

When your child is comfortable putting 3 objects in order, challenge him/her to try ordering 4 or 5 objects.

Measurement Hunt: Have your child select an object found in your home. Next, go on a measurement hunt with your child to find an object that is *longer* or *shorter* than his/her object. Ask your child to show you how he/she knows the object is longer or shorter. Take turns with your child hunting for objects.

Another way to play this game is to hunt for objects that are heavier or lighter than your child’s object.



“The flashlight is taller than my pencil.”

Math Resources

The following is a list of books to enjoy with your preschool child that have math connections.

Anno, Mitsumasa. *Anno's Counting Book*.

Anno, Mitsumasa. *Anno's Counting House*.

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

Carle, Eric. *The Grouchy Ladybug*.

Carle, Eric. *The Secret Birthday Message*.

Carle, Eric. *The Very Hungry Caterpillar*.

Crews, Donald. *Ten Black Dots*.

Crimi, Carolyn. *Outside, Inside*.

Dee, Rub. *Two Ways to Count to Ten*.

Ehlert, Lois. *Color Zoo*.

Ehlert, Lois. *Fish Eyes*.

Feelings, Muriel. *Moja Means One: Swahili Counting Book*.

Hoban, Tana. *Circles, Triangles, and Squares*.

Hoban, Tana. *Is It Red? Is It Yellow, Is It Blue?*

Hoban, Tana. *Is It Rough? Is It Smooth, Is It Shiny?*

Pomerantz, Charlotte. *The Half Birthday Party*.