

## Welcome to the World of Pre-K Math!

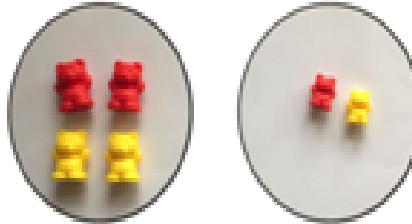
Throughout the year, you will receive letters highlighting the age-appropriate mathematical ideas that your preschooler is learning. These ideas are foundational to the way we understand and analyze the world. Each letter includes a summary of what your child is learning, key vocabulary terms, and ways you can provide support and make connections at home.

### + How You Can Help at Home:

- Have your child help with household chores that require matching or sorting, such as matching socks in the laundry, organizing shoes, or collecting utensils for meals. As your child matches objects, ask questions like, “How do they match?”
- Play I Spy together to continue developing vocabulary around size, shape, color, and texture. For instance, seeing a banana, you might say, “I spy something yellow and smooth.”
- Identify and count parts of your body, noticing if there is a matching body part (1 ear, 2 ears) or just 1 body part (1 nose).
- Touch and count three objects together. At the grocery store, count, “1, 2, 3. We need 3 apples.”

### Numbers to Five

In the first half of Module 1, children match and sort objects based on their attributes (e.g., color, size, use).



**Sorting by size**  
*This group has big bears.*  
*That group has small bears.*

### Words and Key Terms:

#### Matching/Sorting:

*Different*  
*Exactly the same*  
*Group*  
*Match*  
*Size*  
*Sort*  
*The same, but...*

#### Other Vocabulary /Terms:

*Count*  
*How many?*  
*Line*  
*Number*

### Key Standards:

- Know number names and the count sequence*
- Count to tell the number of objects*
- Sort objects and count the number of objects in each category*

For more information about the Prekindergarten Foundation for the Common Core, visit:

[http://www.p12.nysed.gov/ciai/common\\_core\\_standards/pdfdocs/nyslsprek.pdf](http://www.p12.nysed.gov/ciai/common_core_standards/pdfdocs/nyslsprek.pdf)

## Numbers to Five

Along the way they are shown as many as three objects and asked, “How many?” Touching one object at a time, they count to find the total, and match the count to a numeral.



## Spotlight on Math Models

A math model is a way to represent math concepts such as numbers, relationships between numbers, measurement, or geometry. In Pre-K, students use physical models, such as counting the Math Way on fingers, as well as math drawings to engage with math concepts in a way that is appropriate for young children.



*A Story of Units* has key mathematical models that will be used throughout a student’s elementary years. Introducing children to appropriate models in Pre-K sets a foundation for success in elementary school and beyond.

## Counting the Math Way

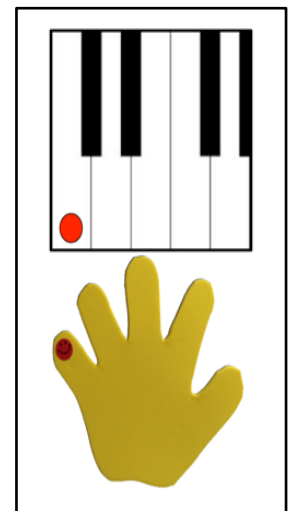
In the second half of Module 1, children learn to count from 1 to 5 the Math Way, starting with the left pinky finger and moving toward the thumb.

In counting the Math Way, students see the number of fingers increase as they count from 1 to 5, moving from left pinky to thumb without interruption. Counting in this way orients the count from left to right, in exactly the same way that the number line is usually drawn. Unfortunately, the traditional way of counting by starting with the index finger and ending with the thumb does not give a sense of direction consistent with written math conventions.

Counting the Math Way provides a foundation for understanding the number path and number line, which by convention, usually are drawn so that they increase from left to right. This builds number sense and prepares children for future work with addition and subtraction.

Children begin counting the Math Way using the piano template pictured above, dropping their fingers as they count. Throughout the year, students will learn to lift their fingers to count the Math Way.

In Module 3, students count from 6 to 10 the Math Way, beginning with the right thumb through to the right pinky. By the end of the year, Pre-K students count to 10 on their fingers, moving from the left pinky to the right pinky.



## Read on to learn a little bit about *Eureka Math*, the creators of *A Story of Units*:

*Eureka Math* is a complete, PreK-12 curriculum and professional development platform. It follows the focus and coherence of the Common Core State Standards (CCSS) and carefully sequences the progression of mathematical ideas into expertly crafted instructional modules.

This curriculum is distinguished not only by its adherence to the CCSS; it is also based on a theory of teaching math that is proven to work. That theory posits that mathematical knowledge is conveyed most effectively when it is taught in a sequence that follows the “story” of mathematics itself. This is why we call the elementary portion of *Eureka Math* “*A Story of Units*.” The sequencing has been joined with methods of instruction that have been proven to work, in this nation and abroad. These methods drive student understanding beyond process, to deep mastery of mathematical concepts.






### Sample Chant:

(Example from Module 1, Lesson 4)

Students point to the parts of the body as they say the chant.

In this activity, students extend their understanding of matching to recognize that they have two parts of their body that are “the same but....”

**I Have 2 Chant**

	I have 2. <u>1, 2.</u>
	I have 2. <u>1, 2.</u>
	I have 2. <u>1, 2.</u>
	I have 2. <u>1, 2.</u>
	I have 2. <u>1, 2.</u>
Yahoo! And so do you!	

## Numbers to 5

In the second half of Module 1, children touch and count groups of up to five objects arranged in different ways. They learn to match their count to a numeral 1-5. Children also see patterns in the counting sequence. When counting forward, they see each number is 1 more: One. One more is 2. Two. One more is 3.



We will count the number of people in our families. Please send a photograph of your family for our project.

### + How You Can Help at Home:

- Touch and count up to five objects together. At snack time, say, “1, 2, 3, 4, 5. You have 5 crackers.” Move the crackers into a line or a circle and count again.
- Buy or make a set of numerals 1-5 (paper, foam, or magnets work well). When getting dressed, ask, “Which number shows how many shoes you are wearing?”
- Point out and name numerals in everyday experiences. While riding an elevator, ask, “Which button has the number 4?”
- Sing songs that involve counting forward or back, such as “The Ants Go Marching,” “This Old Man,” “Five Little Ducks Went Out to Play,” or “Five Little Monkeys Jumping on the Bed.”

**REMINDER: Send in family photo by:**

### Looking Back

We learned to sort and practiced touching and counting groups of up to three objects.

### Looking Ahead

In Module 2, children identify, describe, and build shapes.

### Words and Key Terms:

#### Vocabulary:

After  
Count  
Group  
Line  
Number  
Sort

#### New Terminology:

1 more  
1 less  
The Math Way (count on fingers from left pinky to right pinky)  
How many?  
Mark (show start of counting path)

### Key Standards:

- Know number names and the count sequence
- Count to tell the number of objects
- Understand that each successive number name refers to a quantity that is 1 larger

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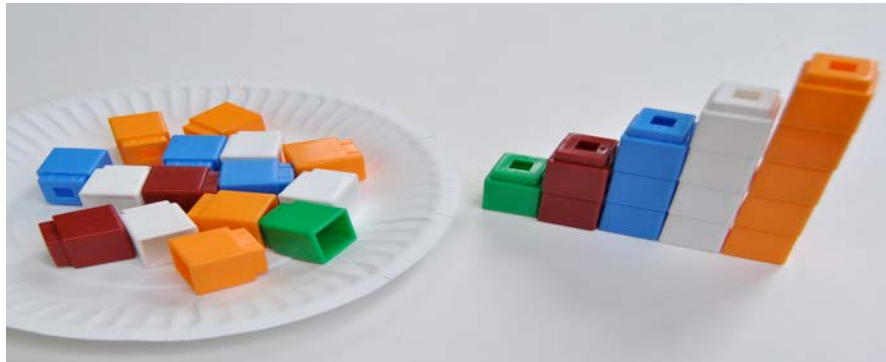
[http://www.p12.nysed.gov/ciai/common\\_core\\_standards/pdfdocs/nyslsprek.pdf](http://www.p12.nysed.gov/ciai/common_core_standards/pdfdocs/nyslsprek.pdf)

## Spotlight on Math Models

A *Story of Units* has key mathematical models that are used throughout a student's elementary years. One of these models is the number stair, a tool students use to model the patterns of 1 more and 1 less in the count sequence.

### Number Stairs

Students have already used number towers (joined linking cubes) to work with numbers 1 to 5. At the end of Module 1, children create number towers for numbers 1 to 5 and place them in order to create number stairs.



Number stairs make it easy for children to see that each successive number in the count sequence is 1 more: “One. One more is 2. Two. One more is 3...” Conversely, as they count back from 5 (5, 4, 3, 2, 1) children see the *1 less* pattern represented in the number stairs.

This understanding sets the stage for children to understand adding 1 and subtracting 1, which they will begin to explore at the end of the year. It is also a prerequisite skill for the *counting on* strategies used in Grade 1.

### Sample Song:

(Example from Module 1, Lesson 29)

*By participating in a story situation in which ants join the group one by one, students begin to experience a growth pattern, or a pattern of 1 more, in a fun way.*

### The Ants Go Marching

The ants go marching 1 by 1.  
Hoorah! Hoorah!  
The ants go marching 1 by 1.  
Hoorah! Hoorah!  
The ants go marching 1 by 1;  
The little one stops to suck his thumb,  
And they all go marching down, to the ground,  
To get out of the rain.  
BOOM! BOOM! BOOM!

Repeat with numbers 2-5:  
2...tie a shoe  
3...climb a tree  
4...shut the door  
5...take a dive

## Shapes

In Module 2, children explore two- and three-dimensional shapes and objects. They identify these shapes by first noticing the characteristics, “This shape has four straight sides and four corners!” After this analysis, they learn the names, “It’s a *rectangle*!” Position words such as *next to* help them to make statements like, “The blue rectangle is *next to* the orange square.”

Students build a circle with craft sticks and realize that all the points on a circle are the same distance from the center.



### + How You Can Help at Home:

- Have a shape scavenger hunt. Look for circles, rectangles, squares, or triangles in the world around you. Use language to describe and name each shape. “Look! Our door has four *sides* and four *corners*. It looks like this rectangle!”
- Practice position vocabulary by playing Simon Says. “Simon says put your toy car *above* the table. Simon says put your hands *on* your head.”
- Build a model with 3-D objects in your home, using the Words and Key Terms as much as possible in conversations with your child to practice math vocabulary and explore how shapes work together. Ask questions to analyze solid shapes. “How can we *stack* this can of soup on this box of cereal? We don’t want it to *roll off*!” “Does this ball have any *flat faces*? Do you think we could stack something on top of it?”

### Looking Back

In Module 1, students learned to sort and practiced touching and counting groups of up to 5 objects.

### Looking Ahead

In Module 3, children will learn to touch and count groups up to 10 objects and identify numerals to 10.

### Words and Key Terms:

<i>Circle</i>	<i>Stack</i>
<i>Corner</i>	<i>Straight</i>
<i>Face</i>	<i>Triangle</i>
<i>Flat</i>	<i>Top</i>
<i>Pointy</i>	<i>Bottom</i>
<i>Rectangle</i>	<i>Up</i>
<i>Roll</i>	<i>Down</i>
<i>Round</i>	<i>In front of</i>
<i>Shape</i>	<i>Next to</i>
<i>Side</i>	<i>Behind</i>
<i>Slide</i>	<i>Over</i>
<i>Square</i>	<i>Under</i>

### Key Standards:

- Describe real world objects using shape names and position words*
- Correctly name shapes regardless of size*
- Analyze, compare, and sort two-dimensional and three-dimensional shapes and objects*
- Create and build shapes*

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## Spotlight on Math Models

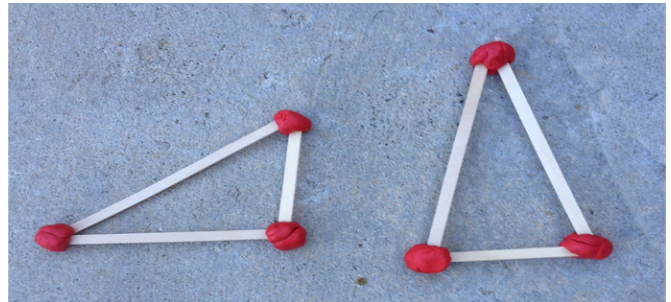
### Constructing Shapes

Students will have hands-on experiences with characteristics like sides and corners as they construct two-dimensional shapes

## Key mathematical models are used throughout a student's elementary years

Students begin their exploration of shapes by sorting various examples of triangles, rectangles (including squares), and circles. They learn to name the shapes, think about their parts, or attributes (e.g., sides and corners), and relate those parts to the whole shape. "This triangle has three sides and three corners."

Then they use straws and balls of clay to construct the shapes they learned about. By using different lengths of straws and varying the orientation of their shapes, children begin to build an understanding of defining attributes. (For example, some triangles are wide and some are narrow, but any closed shape with three sides and three corners is a triangle.)



Children understand shapes better when they can physically create them. This activity also shows them the idea that new shapes can be created by combining parts of other shapes, which relates to the concept of addition (3 and 2 can be put together to make 5). This part-whole relationship of numbers is an important step in understanding addition.

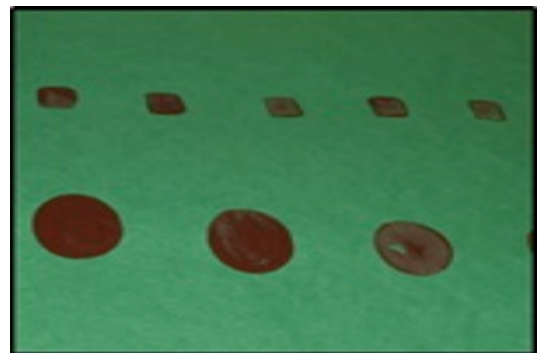
### Sample Application Problem:

(Example from Module 2, Lesson 10)

#### Mr. McGregor's Garden

"Mr. McGregor is very angry. Someone has been walking through his garden. Let's be detectives and see if we can find the shapes that made this mess!"

Children look at a group of foam solids (e.g., a cylinder, a cube, and a sphere) and guess which shapes may have made each "footprint." They explain why they think the object they chose might be the culprit and then test to see if the face matches.



*Note: This activity allows children to use their new understanding of the relationship between 2-D and 3-D shapes to guess the culprit and test their hypothesis. This requires them to carefully observe the solids and explain their reasoning.*