



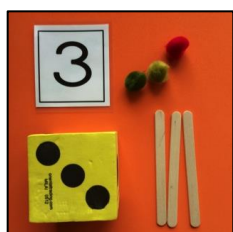
# MATH TODAY

## 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.

## Numbers to 5

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



### Sorting by size

*This group has big bears.  
That group has small bears.*

### 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 New York State 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).

### Words and Key Terms

#### Matching/Sorting

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

#### Other Vocabulary and Terms

- Count
- How many?
- Line
- Number

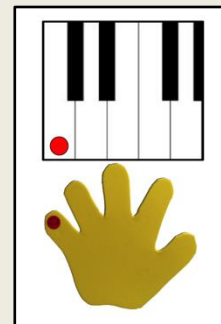
## How to Help at Home

- 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.”

## 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.





### Sample Chant


(from Module 1, Lesson 4)


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


#### I Have 2 Chant

 I have 2.  
1, 2.

 I have 2.  
1, 2.

 I have 2.  
1, 2.

 I have 2.  
1, 2.

 I have 2.  
1, 2.

Yahoo! And so do you!

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

### 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 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.



# MATH TODAY

## 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.

### 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.

### 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.



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

### Words and Key Terms

## How to 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 by \_\_\_\_\_

### 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)

## 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.

### Sample Song

(from Module 1, Lesson 29)

#### 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!

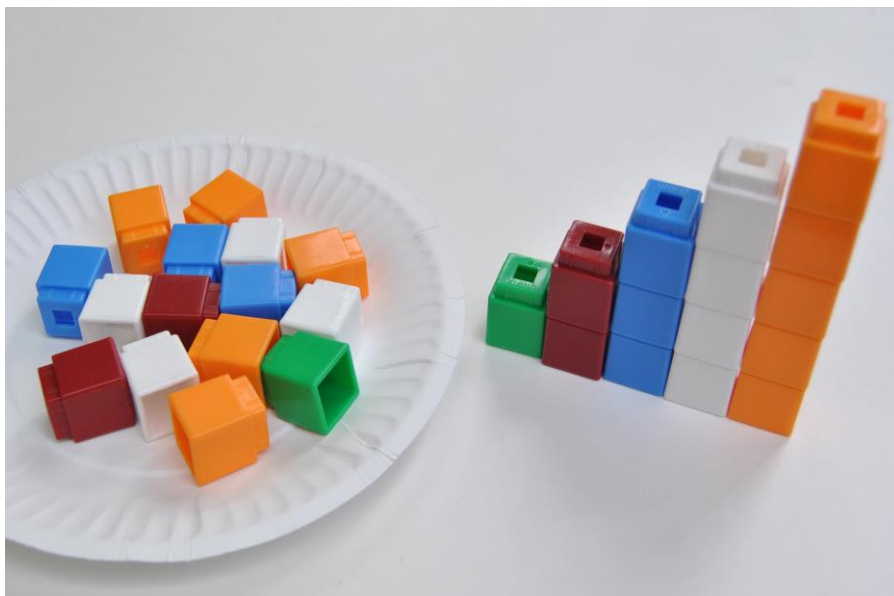
Repeat with numbers 2–5:

2...tie a shoe  
3...climb a tree  
4...shut the door  
5...take a dive

*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.*

### 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.

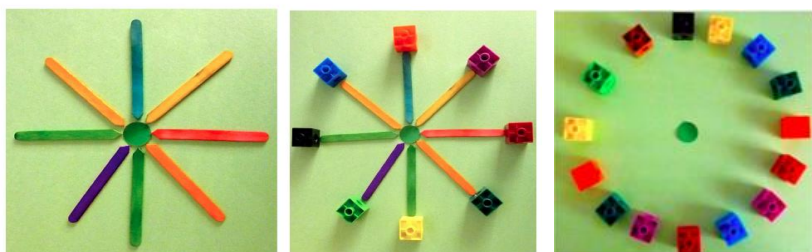
This understanding sets the stage for children to understand adding 1 and subtracting 1, which they will begin to explore at the end of the year. It is also a prerequisite skill for the *counting on* strategies used in Grade 1.



# MATH TODAY

## 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.

### 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.

### 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 learn to touch and count groups of up to 10 objects and identify numerals to 10.

## How to 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 Suggested Words and Key Terms off to the side 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?”

## Suggested Words and Key Terms

### Vocabulary

- |             |               |
|-------------|---------------|
| ▪ Circle    | ▪ Straight    |
| ▪ Corner    | ▪ Triangle    |
| ▪ Face      | ▪ Top         |
| ▪ Rectangle | ▪ Bottom      |
| ▪ Roll      | ▪ Up          |
| ▪ Round     | ▪ Down        |
| ▪ Shape     | ▪ In front of |
| ▪ Side      | ▪ Next to     |
| ▪ Slide     | ▪ Behind      |
| ▪ Square    | ▪ Over        |
| ▪ Stack     | ▪ Under       |



## Spotlight on Math Models

### Constructing Shapes

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

#### Sample Application Problem (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.*

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

Children 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."

Children then 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 (e.g., 3 and 2 can be put together to make 5). This part-whole relationship of numbers is an important step in understanding addition.



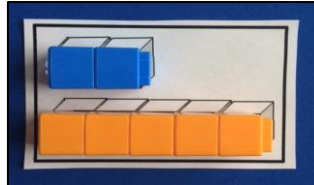
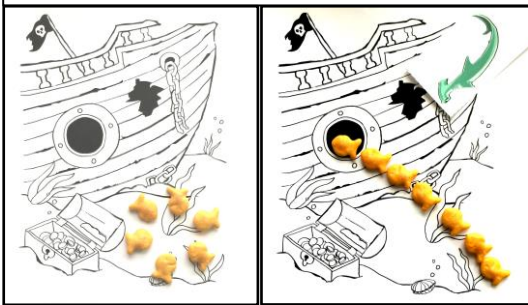
Grade PK • Module 3 • Topics A–D

# MATH TODAY

## Counting to 10

In the first half of Module 3, students build on their work with numbers to 5 as they explore groups of 6, 7, and 8 objects. Children learn to touch and count up to 8 objects arranged in different ways (e.g., in a straight line or in rows) and extend their ability to make tallies, recognize numerals, and count on their fingers the Math Way (from left to right). Additionally, students strengthen their understanding of *1 more* and discover different ways to take apart numbers (e.g., 7 cubes can be broken up into 5 cubes and 2 cubes).

(Below) Students touch and count objects arranged in lines and circles.



(Above) Students learn to take apart 7 by matching linking cubes to a Partners of 7 Puzzle piece.

### 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.

### Looking Back

In Module 2, we identified, described, and built shapes.

### Looking Ahead

In Topics E–H of Module 3, we will explore 0, 9, and 10. We will spend the most time with 10 since it is foundational to understanding place value.

## Words and Key Terms

## How to Help at Home

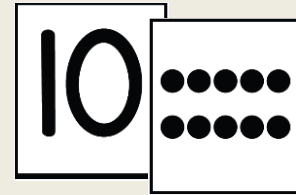
- Touch and count up to 8 objects together. During playtime, count up to 8 toy cars. Move the cars into a line or a circle and count again.
- Buy or make a set of numerals from 1 to 8 (paper, foam, or magnets work well). Show a number on your fingers. Ask, “Which number shows how many fingers I am holding up?” Switch roles and let your child show a number on his fingers.
- Ask for help with counting during everyday experiences. While cooking, say, “I need 6 mushrooms. Can you count out 6 mushrooms for me?”
- Continue to sing songs that involve counting forward or back, such as “The Ants Go Marching,” “This Old Man,” “Eight Little Ducks Went Out to Play,” or “Eight Little Monkeys Jumping on the Bed.”

### Terminology

- Counting the Math Way
- Eight (8)
- How many?
- Number path
- One more/larger
- One less/smaller
- Pair
- Seven (7)
- Six (6)
- Tally mark

## Spotlight on Math Models

Children will use key mathematical models throughout their elementary years. One of these models is the 5-group, a tool Pre-Kindergarten students will use to show and work with numbers 1–10.



### Sample Chant

(from Module 3, Lesson 12)

#### One Potato, Two Potato

Students say the “One Potato, Two Potato” rhyme to help their teacher count the potatoes she will slice to make french fries:



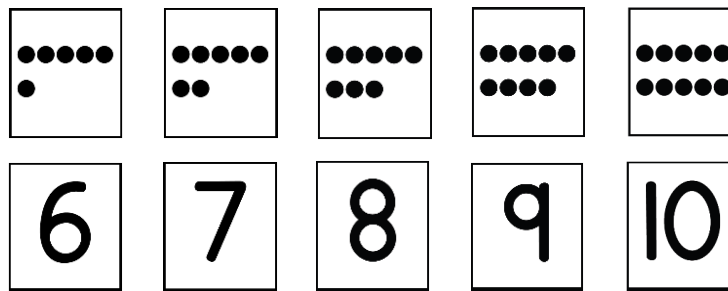
One potato, two potato,  
Three potato, four,  
Five potato, six potato,  
Seven potato, more.

The teacher then asks, “What does *more* mean?” She adds another potato to the group and says, “What is 7 and 1 *more*? Let’s count!”

*This task reviews counting up to 7 objects, as well as the concept of 1 more. In the lesson that follows, students build on this understanding to relate 7 and 1 more to 8.*

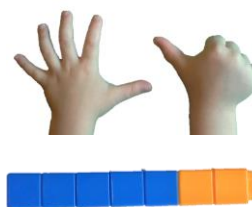
### 5-Groups

Five is a key number in helping children understand 6, 7, 8, 9, and 10. 5-groups organize these numbers as 5 and some more (e.g., 6 is 5 and 1 more, or  $5 + 1$ ). One easy way to see this relationship is with dots lined up in groups of 5 as pictured below. These make it easy to see each number in relation to 5 ( $5 + 1$ ,  $5 + 2$ ,  $5 + 3$ ,  $5 + 4$ ,  $5 + 5$ ). Without experience with 5-groups, children have little understanding of numbers 6–10 other than a general sense that the numbers are getting larger.



Why is this important? The patterns that you see in the dot cards above can be used as tools for solving addition and subtraction problems in Kindergarten and Grade 1. For example, you can easily see that  $8 - 3 = 5$  and  $8 - 5 = 3$ . You can also see that 8 needs 2 more to make 10.

Dots are not the only way to show 5-group formations. Fingers clearly show the relationship between 5 and the numbers 6–10 (5 fingers on one hand and some more fingers on the other hand). A color change at 5, or organization of objects or drawings in groups of 5, can also help children see this important relationship.



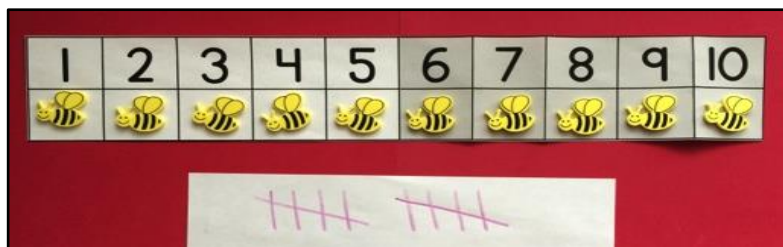




# MATH TODAY

## Counting to 10

In the second half of Module 3, students build on their previous number work as they explore groups of 0, 9, and 10 objects. More time is spent with 10, since it is important for understanding place value in later grades. Children learn to touch and count up to 10 objects arranged in different ways (e.g., in a straight line or in a circle) and extend their ability to make tallies, recognize numerals, and count on their fingers the Math Way (from left to right). Students strengthen their understanding of *1 more* and discover different ways to take apart numbers (e.g., 10 cubes can be broken up into 9 cubes and 1 cube).



At the Pollen Café, students place bee customers in their seats on the number path and learn to identify the total number of bees both by counting and using the corresponding numerals on the number path. The teacher models how to make tallies before students practice on their own.

### 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.

### Looking Back

In the first half of Module 3, we expanded on our work with numbers to 5 to explore 6, 7, and 8.

### Looking Ahead

In Module 4, students will learn to compare as they explore length, weight, and capacity. They will also strengthen their understanding of numbers as they compare sets of up to 5 objects.

## Words and Key Terms

### Terminology

- Counting the Math Way
- Counting in a circle
- Counting in a line
- Counting in rows
- How many?
- Nine (9)
- Number path
- One more/larger
- One less/smaller
- Put together
- Take apart
- Tally mark
- Ten (10)
- Zero (0)

## How to Help at Home

- Touch and count up to 10 objects together. During playtime, count up to 10 blocks, lining them up as you count. Stack the blocks and count again. The number of blocks stays the same!
- Look for numerals when walking, driving, or taking the bus. “I see the number 10. Let’s clap 10 times!”
- At snack time, line up 10 blueberries and ask your child to count them. Each time she eats a berry, have her touch and count how many are left.
- Use the illustrations in picture books to count as you read together. “I wonder how many vegetables Mr. McGregor planted in his garden. Let’s count them!”
- Share information about your child’s counting with the teacher. If you notice that your child is skipping a number while counting, communicate that in a note to the teacher.

# Spotlight on Math Models

Children will use key mathematical models throughout their elementary years. One of these models is the number path, a tool Pre-K students will use to connect counting and numbers 1–10.



## Sample Activity (from Module 3, Lesson 29)

### Pollen Café

As waiters at the Pollen Café, students place bee customers in special seats on the number path. Then, they tally the orders for flowers.



Children bring back the correct number of flowers and give each bee a snack.

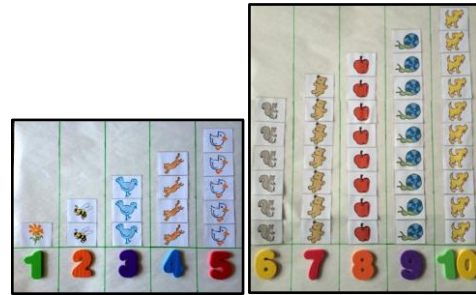


*This task reviews counting up to 9 objects and introduces tallying to 9. The number path supports children in counting and matching their count to a numeral.*

## Number Path

The number path is used in Pre-K, Kindergarten, and Grade 1 to help children work with numbers and visualize the number sequence. The number path starts at 1 and has a single space for each number. A color change at 5 shows the relationship between 5 and the numbers 6, 7, 8, 9, and 10.

Starting in Module 1, children began to see the number path to 5 using stairs that show the total number at each step (as pictured on right). In this module, children continue to build the number path to 10, noticing that each number in the sequence is 1 larger.



In Module 3, children work with the path in a new way, placing one object in each space on the number path. Children also see that the last number said (and the last space filled) tells the number of objects counted. For example, in the image of the sheep below, the student can touch and count the sheep and come to understand that the numeral 6 tells the total number of sheep.



In Kindergarten and Grade 1, students will learn to use the number path to solve addition and subtraction problems.



# MATH TODAY

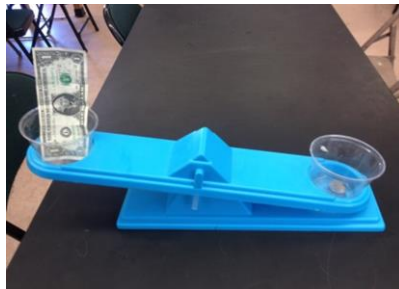
## Comparison of Length, Weight, Capacity, and Numbers to 5

In Topics A–C of Module 4, students compare and explore lengths, weights, and capacities. For example, students learn to line up the endpoints when comparing length, use a balance scale to compare weight, and pour sand into containers of different sizes and shapes as they compare capacity.



(Above) Children make clay snakes that are longer than a crayon.

(Below) Students use a balance scale to compare the weight of a quarter and a dollar.



### Key Standards

- Describe and compare measurable attributes of length, weight, and volume.
- Compare numbers.
- Identify *first* and *last* related to order or position.

### Looking Back

In Module 3, students used what they learned about numbers to 5 to explore numbers 6–10 and 0. Using 5 as a starting point, they learned that 6 is one more than 5. They counted up to 10 objects in different arrangements, made tallies, and learned to recognize numerals to 10. Students also practiced counting *1 more* and explored different ways to take apart numbers.

### Looking Ahead

In Topics D–G of Module 4, students identify first and last and compare sets of up to 5 objects.

## How to Help at Home

- Play I Spy while walking or driving. Look for objects of different length or weight. “I spy something heavy and round.” (A rock!) “I spy something tall and green.” (A tree!) “I spy something shorter than a foot.” (A worm!)
- Use blocks to build *trains* of different lengths. Ask, “Which train is shorter?” Say, “Let’s try to build another train the same length!”
- Explore capacity with water play. Set out containers of different sizes and shapes. Ask, “Which container do you think can hold the most water?” or “Do you think all the water in your cup will fit in this bowl?” Pour water back and forth among the containers and make observations.
- Continue to find opportunities to count in everyday experiences. “I wonder how many steps there are. Let’s count as we walk up them!”

## Suggested Words and Key Terms

- |                     |                             |
|---------------------|-----------------------------|
| ▪ About the same as | ▪ Greater than/less than    |
| ▪ Are there enough? | ▪ Heavy/light               |
| ▪ Balance           | ▪ Heavier than/lighter than |
| ▪ scale             | ▪ Length                    |
| ▪ Big/small         | ▪ Less                      |
| ▪ Compare           | ▪ Longer than/shorter than  |
| ▪ Exactly           | ▪ More                      |
| ▪ Extra             | ▪ More than/less than       |
| ▪ Fewer             | ▪ Tall/short                |
| ▪ First/last        |                             |

## Spotlight on Math Models

Children will use key mathematical models throughout their elementary years. One of these models is the linking cube tower/train, a tool Pre-K students will use to compare length and numbers.

### Sample Counting Vignette

(From Module 4, Lesson 9)

#### Ice Cream



**Teacher:** I'm going to count and make a mistake on purpose. Instead of saying a number, I'll say "ice cream!" Isn't that silly? Listen closely and see if you can tell what number I should've said.

1, 2, ice cream!

**Students:** 3.

**Teacher:** Very good. Listen again: 1, 2, 3, 4, ice cream!

**Students:** 5.

**Teacher:** Excellent. This one will be a bit of a challenge. Ready? 1, 2, ice cream, 4, 5.

*At this point in the year, students are steadily gaining mastery of the counting sequence. This activity challenges them to detect an error in the familiar order of numbers. Teachers work within a range that is comfortable for all students, and slowly build up.*

### Linking Cube Tower and Linking Cube Train



The linking cube tower and train are powerful tools that are used through Grade 2. In the first half of Module 4, students simply hold the towers (linking cubes situated vertically) next to each other to make *longer than*, *shorter than*, and *same as* statements. Informally, students notice that each tower is built from equal units, an important measurement concept setting the foundation for the ruler, number line, and fractions.

Toward the end of this module, students use the linking cube trains (linking cubes situated horizontally) to compare numbers. They count the cubes, and then build each train. From their work comparing towers and trains, they can say, "5 is more than 3."

Because young children commonly use the words *big* and *small* to describe most objects, this module focuses on teaching students vocabulary that allows them to be more precise in their description of objects. Learning and using comparative statements like *longer or shorter than*, *heavier or lighter than*, and *more or less than* with objects is a bridge to comparison of number—*greater or less than*. Using number towers and trains is one of the first concrete steps in this process.





# MATH TODAY

## Comparison of Length, Weight, Capacity, and Numbers to 5

The second half of Module 4 begins with an exploration of *first* and *last* when objects are counted in linear, array, circular, and scattered arrangements. Students use the language of comparison they began to develop when working with length, weight, and capacity as they compare sets of up to 5 objects. This module culminates with students counting to compare sets of objects, “4 cats is more than 3 cats” and finally, numbers, “4 is greater than 3.”



(Above)

Students compare game pieces.

(Below)

Attaching number to sets gradually leads students to compare numbers alone.



### Key Standards

- Compare numbers.
- Identify *first* and *last* related to order or position.

### Looking Back

In the first half of Module 4, students compared and explored length, weight, and capacity.

### Looking Ahead

In Module 5, students will learn to write numbers to 5, explore addition and subtraction stories, and count to 20.

### Suggested Words and Key Terms

- Are there enough?
- Compare
- Equal to
- Exactly enough
- Exactly the same
- Extra
- Fewer
- Fewer than
- First
- Greater
- Greater than
- How many?
- Last
- Less
- Less than
- Match
- More
- More than
- Set
- The same as

## How to Help at Home

- Before counting some tomatoes with your child, decide which tomato to count first and which to count last. After counting, make a new decision and see that the count is the same!
- Count toys and compare sets during play. Ask, “How many cars do you have?” “How many trucks?” “I wonder if you have fewer cars or trucks. Let’s line them up and see!”
- When walking, make comparison statements, “My steps are longer than your steps.” “I take fewer steps than you to go places.” “I took 4 steps and you took 5 steps.” “4 is less than 5.”
- Read counting books or recite nursery rhymes and encourage the child to count images. By the end of Pre-Kindergarten, students should be able to count to 20 by rote (on their own), but if they can touch and count to 20, that’s terrific!



## Spotlight on Math Vocabulary

Children will use key mathematical vocabulary throughout their elementary years. The language of comparison (greater than and less than) is vocabulary Pre-K students will use to compare numbers.

### Sample Activity

(From Module 4, Lesson 20)

#### Clay Numeral 2

*Teacher:* Take your clay and roll it into a long, skinny, snake.

Students: (Manipulate clay.)

*Teacher:* Put your snake on the 2, starting at the star.



Students: (Use their clay to first make the curved part of the 2, and then the straight part.)

*Teacher:* If you finish early, use your finger to trace the 2, starting at the star.

*This activity anticipates writing numerals in Module 5 and is intended to familiarize students with correct numeral formation. In addition, students use their fine motor skills to manipulate the clay.*

### A Focus on Models of Comparison

In the first half of this module, children compared length, weight, and capacity. Now, they transition into comparing numbers by matching two groups of objects and considering if there are **enough**, **not enough**, or **more than enough**. For example, the model below shows the following statement to be true, “There are not enough crayons for each paper.”



The next step in comparing numbers is to match the objects in each group to find out if there are “**more** crayons **than** papers,” “**fewer** crayons **than** papers,” or “the **same** number of crayons **as** papers.” At this point, the students are counting and saying the number of each group, but making their comparison statement as they match the two groups of objects.

In the culminating lessons of this module, students attach a number card to each group of objects to make **greater than** or **less than** statements. For example, “3 is greater than 2” or “2 is less than 3.” Finally, students are shown a pair of number cards (up to 5) and are asked to make greater than or less than statements without objects. Then, they verify their statements by making linking cube towers/trains.

Working to compare by using the abstract (number cards) and the concrete (linking cube towers) develops students’ number sense as they relate numbers to each other. This point is emphasized, so when students work on comparison, they can answer questions such as, “How many **more** apples does Maria have **than** Armen?” A solid foundation is being carefully laid right now! Together, everyone can!



# MATH TODAY

## Addition and Subtraction Stories and Counting to 20

In the first half of Module 5, students write numerals 0–5 and count to 20. They explore addition and subtraction stories with numbers 0–5, a natural way for them to understand *adding to* and *taking from*. Stories are acted out, modeled with objects, drawn, or solved using pictures. Children ask and answer questions about the story, such as “How many in all?” or “How many are left?” They learn to distinguish the question from the story.

### Key Standards

- Know number names and the count sequence.
- Understand addition as *adding to* and understand subtraction as *taking from*.
- Understand simple patterns.

### Looking Back

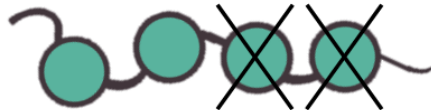
In Module 4, students compared length, weight, capacity, and numbers to 5. Students also counted to 15.

### Looking Ahead

In Topics D–F of Module 5, students will explore addition and subtraction stories using fingers, objects, and drawings. Students will also work with simple patterns.

(Above) Children learn to write numerals 0–5.

(Below) Students cross off pictures to solve a subtraction story: There are 4 beads on the necklace. Two beads come off. How many beads are left?



$$\begin{array}{r} 4 \text{ take away } 2 \text{ is } 2 \\ 4 \quad - \quad 2 = 2 \end{array}$$

## How to Help at Home

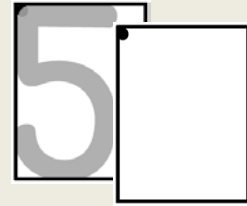
- Make up addition or subtraction stories during everyday experiences. During bath time, say, “You have 3 toys in the tub. Here is 1 more toy. How many toys do you have now?”
- Work on a grocery list together. Have your child write the number of items needed such as apples, boxes of cereals, or cartons of milk.
- Ask for help with counting during everyday experiences. While cooking, say, “I need 10 tomatoes. Can you count out 10 tomatoes for me?”
- When reading any book, have your child touch and count the number of objects in pictures, “1, 2, 3, 4, 5, 6, 7. There are 7 dogs!”

## Words and Key Terms

- Add
- All together
- Are left
- In all
- Put together
- Subtract
- Total
- Take away

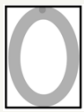
## Spotlight on Writing Numerals

Throughout the Pre-K year, children have learned to identify numerals and match them to a number of objects. Now, their fine motor skills have developed to the point where most children are ready to write. The standard in Pre-K is writing 0–5, advancing to writing numerals 6–20 in Kindergarten.

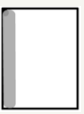


### Number Formation Chants

*Simple rhymes help children remember how to write each numeral. Some children will say the rhyme each time they write until the strokes become automatic.*



Curve from the top; be a hero!  
Close the loop and make a zero.



Top to bottom, then I'm done.  
I just wrote the number 1.



Half a moon, there's more to do;  
slide to the right, I wrote a 2.



Backwards C, backwards C,  
that is how I write a 3.



Down the side, to the right some more.  
Top to bottom, I've written 4.

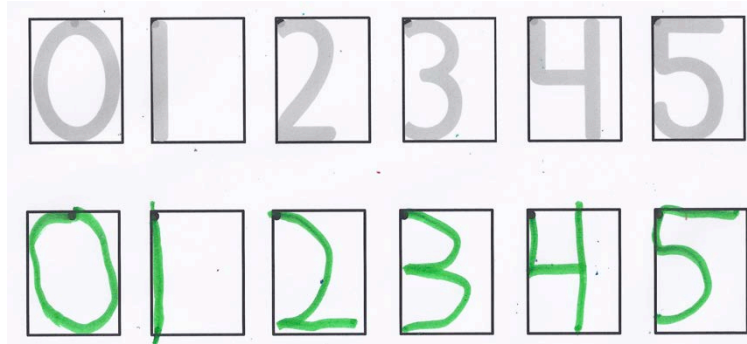


Down the side, around a hive.  
Give it a hat. I've written 5.

### Focus on Tools: The Writing Rectangle

The writing rectangle is a tool to help children write numerals systematically, to make handwriting easier for them in the future. Writing rectangles use a dot to show where to start the numeral. If children start from the dot and keep the numeral inside the rectangle, they will not reverse their numbers as readily (i.e., write them backwards).

Starting numbers and letters from the top is an important habit for your child to learn now. It will help her keep up when the writing demands increase in later grades. Numerals 1–5 all begin at the top left, with 0 starting in the center of the top side of the rectangle.



For some adults, it seems odd to start the 5 in the left corner and *add a hat* at the end. When in doubt, if children start at the left corner, they will be in the correct place for 7 out of 10 numerals (0, 8, and 9 are the exceptions). Starting the 5 at the left corner reinforces this idea.

At first, children will trace the numbers inside the writing rectangle with and without a writing instrument, and then write them without tracing. Students do eventually write numerals 0–5 without the writing rectangle, but this tool provides them with a structure to form numerals correctly from the start.



# MATH TODAY

## Addition and Subtraction Stories and Counting to 20

In the second half of Module 5, students continue to tell and solve addition and subtraction stories with numbers 0–5, now using fingers, cubes, math drawings, or numerals to represent the number of units (e.g., puppies) in the stories. For example, children solve, “Three puppies are playing. One puppy stops to rest. How many puppies are still playing?” using their fingers, cubes, or drawings of circles (see Spotlight on Math Models). In the final lessons, children replicate and extend patterns focusing on the repeating part of the pattern.

### Key Standards

- Know number names and the count sequence.
- Understand addition as *adding to* and understand subtraction as *taking from*.
- Understand simple patterns.

### Looking Back

In the first half of Module 5, children learned to write numerals 0–5. They used actions, objects, and drawings to solve addition and subtraction stories.

### Looking Ahead

In Kindergarten, children will begin the year building upon the sorting and classifying skills they learned in Pre-Kindergarten. They will count, write, and sequence numbers 0–10.



$$4 + 1 = 5$$



Join us for the Children's Math Theater to see our addition and subtraction stories come to life!

SAVE THE DATE:

### Words and Key Terms

- Add
- All together
- Are left
- In all
- Pattern
- Put together
- Repeat
- Subtract
- Total
- Take away

## How to Help at Home

- Make up addition or subtraction stories during everyday experiences. While grocery shopping, say, “There are 3 apples in the bag already. Let’s put in 2 more. How many apples do we have now?” (This encourages your child to use his fingers to represent the story since he can’t see the apples in the bag.)
- Look for patterns as you move through your community. Children will see patterns in buildings, fences, clothing, and art.
- Build varied patterns with your child whenever possible. This encourages spatial reasoning. For example, when serving dinner, put the components in a certain pattern, and then replicate that pattern on the other plates.

## Spotlight on Math Strategies

Drawings allow us to see mathematical situations and relationships in a way that helps make sense of the situation. The ability to represent a problem with a quick and abstract drawing will be key to children's math success throughout elementary school and beyond.

### Sample Activity

(from Module 5, Lesson 25)

#### Dribble and Pass

Students count to 20 while practicing a fun pattern (dribble, pass, dribble, pass...).



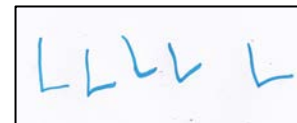
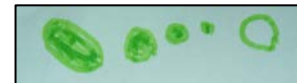
- T: Let's use a dribble and pass pattern with imaginary basketballs.
- T: First we'll dribble, and then we'll pass. Then we'll dribble, and then we'll...?
- S: Pass!
- T: You've got it! Now let's count the Say Ten way as we dribble and pass.
- T/S: 1 (dribble), 2 (pass), 3 (dribble), 4 (pass), 5 (dribble)...

*In the lesson that follows, students learn to identify and duplicate patterns using objects.*

### Focus on Tools: Math Drawings

Math drawings are different from the drawings children create for artistic expression. In an artistic drawing, children may focus on details, color, or the type of media used. Math drawings focus only on representing the situation efficiently so that children can make sense of the situation and find an accurate solution promptly.

The drawings on the right represent the following addition story: Four lizards are running. Another lizard starts to run. Now how many lizards are running? The image at the top shows a time-consuming, detailed drawing of the lizards. Below that is a math drawing using circles to represent the lizards (notice that the original lizards are shaded circles and the new lizard is an empty circle). Another math drawing uses the letter *L* to represent lizards. Children can use any of these drawings to solve the problem, but the last two drawings took less time and effort to create, allowing the focus to stay on solving the problem.



By comparing their drawings with those of other students, children learn to think flexibly, "How are our drawings the same? How are they not exactly the same? Did we come to the same answer?" They see many different perspectives and make connections between them. As they learn more problem-solving strategies in later grades, this flexible thinking helps them continue to see and understand multiple ways to solve a problem.