Course Title: Mathematics	Full Year	Required
Course Description: The mathematical work for kindergarten is partitioned into 8 units: ● Math in Our World ● Numbers 1–10 ● Flat Shapes All Around Us ● Understanding Addition and Subtraction ● Composing and Decomposing Numbers to 10 ● Numbers 0–20 ● Solid Shapes All Around Us ● Putting it All Together In these materials, particularly in units that focus on addition and subtraction, teachers will find terms that refer to problem types, such as Add To, Take From, Put Together or Take Apart, Compare, Result Unknown, and so on. These problem types are based on common addition and subtraction situations, as outlined in Table 1 of the Mathematics Glossary section of the Common Core State Standards.		
Additional Course Information: The big ideas in Kindergarten include: ● Representing and comparing whole numbers, initially with sets of objects; ● Understanding and applying addition and subtraction; and ● Describing shapes and space. ● Deeply understanding the concept that counting up is an addition process (+1/adding one more) More time in kindergarten is devoted to numbers than to other topics.	**Core Resources:** **Illustrative Mathematics** **Instructional Routines and Math Language Routines** **Glossary - Student-friendly** **Required Materials** **IM en Español** **Developing a Mathematical Community** **Counting on Counting Collections Blog**	**Are there any attachments at the course level that teachers will need?** Scope and Sequence - This document should be reviewed at the start of the year and each unit for information on language routines, expectations, and possible misconceptions. Pacing Guide and Dependency Diagrams K-5

<table>
<tr><th>Unit 1: Math in Our World</th><th>Duration: 23 to 24 days</th></tr>
<tr><td>Unit Overview - FOCUS:

In this unit, students explore mathematical tools and notice numbers and quantities around them, while teachers gather information about students' counting skills and understanding of number concepts.

Students enter kindergarten with a range of counting experiences, concepts, and skills. This unit is designed to be accessible to all learners regardless of their prior experience. To that end, no counting is required for students to engage in the activities in the first three sections, though students may choose to count. Students also have opportunities to work with math tools and topics related to geometry, measurement, and data through a variety of centers.

In the last section, students count collections of objects and groups of people, answering "how many of _____ are there?" questions. These questions reinforce the idea that counting is a way to tell how many objects there are. Students are expected to count up to 10 objects by the time they begin the next unit, which will focus more deeply on numbers 1–10.</td><td>Topic Titles:
● Section A: Explore Our Math Tools
○ Explore and use math tools.
○ Share mathematical ideas with a partner.
● Section B: Recognize Quantities
○ Recognize and name groups of up to 4 objects and images without counting.
● Section C: Are There Enough?
○ Answer "are there enough" questions.
● Section D: Counting Collections
○ Count groups of up to 10 objects.</td></tr>
<tr><td colspan="2">Coherence: How does this unit build on and connect to prior knowledge and learning?
Kindergarteners enter school with a variety of experiences. The unit is designed to give students time to learn the structures and routines for centers, to create norms for classroom learning, and to begin to build a mathematical community. The content and timing of the lessons at the beginning of the unit are calibrated to make this possible.

To gather information about students' counting and number concepts, consider asking individual students to count a small group of objects and observing the skills or understandings listed in the provided checklist. The end-of-unit assessment, a one-on-one interview, is another opportunity to find out what students know and can do. This assessment is not necessary for those who have demonstrated the skills on the checklist throughout the unit.</td></tr>
<tr><td>Essential Questions:

1. What tools, strategies and questions will best help me learn the language of numbers?</td><td>Enduring Understanding:

Students recognize numbers and quantities in their world: Students start their exploration of number sense through language - bigger/smaller, more/less, greater/fewer. They work with tangible objects and engage in comparison to understand concepts of quantity. Numbers are a</td></tr>
</table>

	new language to Kindergarteners, and like any new language, acquiring the comprehension of numbers first involves the ability to decode them - recognizing numbers and understanding two vital concepts: first, that numbers hold value; second, that numbers are another way to describe the world around us.	
What Students Will Know: ● Number names ● Count sequence ● Number symbols (1, 2, 3, etc) ● Order of numbers in the count sequence ● Purpose of connecting cubes, counters, five-frames, geoblocks, pattern blocks ● The same quantity can be arranged in many different ways	**What students will do:** ● Count groups of up to 10 objects ● Recognize and name groups of up to 4 objects and images without counting ● Recognize numbers and quantities in their world ● Explore and use math tools ● Share mathematical ideas with a partner ● Represent a number of objects with a written number ● Understand that the last number name said tells the number of objects counted, no matter the order in which they were counted ● Pair one object with only one number name in counting sequence ● Understand that each successive number name refers to a quantity that is one larger ● Count to answer “how many?” ● Answer "are there enough" questions. ● Say the count sequence to 10. ● Say one number for each object. ● Answer how many without counting again. ● Recognize and name groups of 1, 2, or 3 objects or images without counting. ● Recognize and name groups of 4 objects or images without counting. ● Show quantities on fingers. ● Identify groups with the same number of objects (for groups of up to 4 objects).	**Unit Specific Vocabulary:** Math Community **Academic vocabulary** Connecting cubes Geoblocks Counters Pattern Count Number

Entry Level Assessment and Connection to Unit:

Counting and Comparing Numbers

Task: Each pair of students will receive 5 objects. They must come to a conclusion about how they will play with the objects fairly and equitably. **When they engage in this task, they will be Responsible Citizens, Problem Solvers and Communicators.**

Purpose: This task will assist in understanding students' different ways of knowing about counting and cardinality in order to plan for instruction and address misconceptions.

Unit Materials, Resources and Technology:

- **Unit 1 Teacher Guide**
- **Illustrative Mathematics**
- **Instructional Routines and Math Language Routines**
- **Glossary - Student-friendly**
- **Required Materials**
- **IM en Español**
- **Pacing Guide and Dependency Diagrams K-5**

Opportunities for Interdisciplinary Connections:

Grandma's Purse by Vanessa Brantley-Newton
My Heart Fills with Happiness by Monique Gray Smith
Pablo's Tree by Pat Mora
Saturday by Oge Mora
There is a Bird on Your Head by Mo Willems
Last Stop on Market Street by Matt de la Pena
Miss Bindergarten Gets Ready for Kindergarten by Joseph Slate
Big Red Lollipop by Rukhsana Khan
Count on Me by Miguel Tanco
The Girl with the Parrot on Her Head by Daisy Hirst

Any links, attachments and resources:

Instructional Routines Document

Family Support Materials

Planning Ideas:

Components of a Typical IM Lesson

What To Know About IM When Planning

Where to Find the Mathematical Practices in the Units

	Assessing the Mathematical Practices

Topic # 1 (Section A)	Topic Name: Section A - Exploring Tools and Sharing Ideas	Duration: Recommended: 5 days (5 lessons)

Topic Description:

In this section, students build a shared understanding of what it means to do math and to be a part of a mathematical community, where everyone's contributions are valued. They collaborate to create norms for their work together. They are also encouraged to share their ideas and listen to others', make connections between their work and their home life, and to see themselves as productive mathematical thinkers.

Students also interact with the tools that they will use in math activities and centers throughout the year. They have the opportunity to freely explore the tools and think of their mathematical purposes before choosing a tool for use in structured activities later in the section and in centers.

Consider taking the time in this section to formatively assess students' counting concepts and skills, observing students or asking them to count small groups of objects while they work, and using the Sections A-D Checkpoint document from the teacher resource pack.

Section Learning Goals

- Explore and use math tools.
- Share mathematical ideas with a partner.

Competencies Addressed:	Essential Question and Enduring Understanding Addressed in this Topic:
Understanding and Applying Number Systems **K.NS.1** I can tell the number of objects using counting and instant visual recognition. (K.CC.B.4-5) **K.NS.2** I can compare quantities and numbers. (K.CC.C.6-7) **K.NS.3** I can count to 100 by ones and by tens and can count from a given number within 20. (K.CC.A.1-2) **K.NS.4** I can name and write numbers 0-20 to represent a group of objects. (K.CC.A.3) **Reasoning With Geometry** **K.G.3** I can analyze and compare two-and three-dimensional shapes in order to describe their	**Essential Question** What tools, strategies and questions will best help me learn the language of numbers? **Enduring Understanding** **Students recognize numbers and quantities in their world:** Students start their exploration of number sense through language -

<table>
<tr>
<td>attributes. (K.G.B.4)
K.G.4 I can build and create simple shapes to form larger shapes. (K.G.B.5-6)

Measurement and Data
K.MD.1 I can describe and compare measurable attributes (K.MD.A.1-2)
K.MD.2 I can classify objects and count the number of objects in each category. (K.MD.B.3)</td>
<td>bigger/smaller, more/less, greater/fewer. They work with tangible objects and engage in comparison to understand concepts of quantity. Numbers are a new language to Kindergarteners, and like any new language, acquiring the comprehension of numbers first involves the ability to decode them - recognizing numbers and understanding two vital concepts: first, that numbers hold value; second, that numbers are another way to describe the world around us.</td>
</tr>
<tr>
<td>**In this Topic, students will know:**

● Number names
● Number symbols (1, 2, 3, etc)
● Order of numbers in the count sequence
● Purpose of connecting cubes, counters, five-frames, geoblocks, pattern blocks</td>
<td>**Topic Vocabulary:**

Academic vocabulary
Norms
Number
Sequence
Quantity
Connecting cubes
Counters
Five-frame
Geoblock
Pattern block</td>
</tr>
<tr>
<td rowspan="2">**In this Topic, students will be able to:**

● Count to 10 in correct sequence
● Say one number for each object when counting
● Answer “how many?” without counting again
● Recognize and name groups of 1, 2, or 3 objects or images without counting
● Recognize and name groups of 4 objects or images without counting
● Show quantities on fingers
● Identify groups with the same number of objects (for groups of up to 4 objects)</td>
<td>**Plan for Student Reflection:**

Student Journal Prompts and Reflection Practices

Grade K Unit 1 I Can Self Assessment</td>
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<tr>
<td>**Plan for Teacher Reflection:**</td>
</tr>
</table>

	● Reviewing formative assessments ● Developing scaffolds ● Collaborative scoring ● PLCs ● Planning for small groups **Teacher Journal Reflection Questions:** **Lesson 1**: What part of the lesson went really well today in terms of students' learning? What did you do that made that part go well? **Lesson 2:** Reflect on who participated in math class today. What assumptions are you making about those who did not participate? How can you leverage each of your students' ideas to support them in being seen and heard in tomorrow's math class? **Lesson 3:** Unlike talking, listening is a difficult thing to observe. At what points in the lesson did you observe students listening to one another's ideas today in class? What indicators do you have that they were listening and making sense of what was being said? **Lesson 4:** Students shared their thinking multiple times in this lesson. What have you noticed about the language students use? What support can you offer to students who struggle to communicate their ideas orally? **Lesson 5:** Reflect on how comfortable your students are asking questions of you and of each other. What can you do to encourage students to ask questions?

Topic 1 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

Task Title: Topic 1 - Exploring Tools and Sharing Ideas	**Grade Level and Unit: Kindergarten, Unit 1**
Description of Task: Students will select and use a math tool of their choice to build shapes and objects, considering patterns, color, and number in order to create a recognizable object.	**Purpose of Task:** The purpose of this task is for students to recognize, describe and explain the purpose of different types of math tools, and then to use a specific tool to construct an object that clearly uses patterning (even sides, symmetry) and counting to make their creation look as recognizable as possible.
Background of Students/Learning Progression: Kindergarten students have had a variety of experiences before they come to school. Some have gone to preschool, others have attended daycare centers, and they have experienced mathematics education - formally or informally - in a variety of settings. Students will have varying experiences with numbers, number recognition, and counting.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification

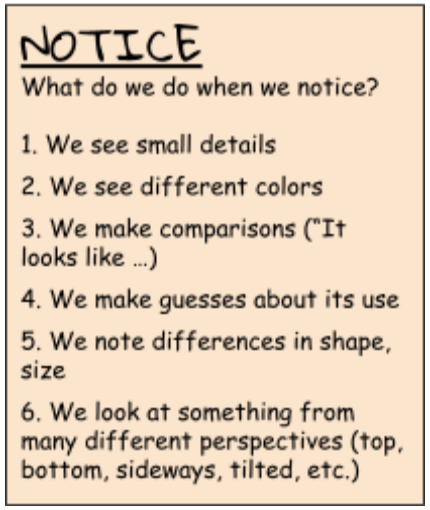
Getting Started:

In the lessons that make up Topic 1 (Section A) of Unit 1, students will be asked to "notice" and "wonder" about five different types of math tools (pattern blocks, geoblocks, cubes, counters, five-frames). In order to effectively participate, students will need to understand what it means to notice and what it means to wonder.

First, write the word NOTICE on half a sheet of chart paper and ask students, "What does it mean to notice something?" Write down their responses, using found objects to illustrate a point - like a pencil, a crayon, etc.

Next, write the word WONDER on the other half of the chart paper and ask students, "What does it mean to WONDER about something?" Like with the word "notice," record their ideas. Some answers they might come up with:

- What I am thinking
- Questions I want to ask
- Ideas I might have



Now, let's practice using this picture that you can display on the whiteboard or hand out to students in pairs to have them look at it together.

First, give them a few minutes to look and ask what they notice. They should notice colors, shapes, sizes, etc.

Next, give them a few minutes to talk about what they wonder. Record their questions.

Now that they have noticed and wondered, what can they say about this picture? For example, they might say that this is a town, or a group of buildings, or they may identify what one of the structures is based on a feature (the one with the blue triangle and blue walls is a church because …)

Learning Cycle Model Process

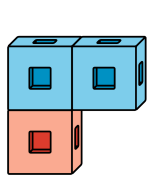
Section A

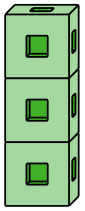
IM Lesson	L1: Explore Connecting Cubes	L2: Explore Pattern Blocks	L3: Explore Two-Color Counters and 5-frames	L4: Explore Geoblocks	L5: Explore Math Tools
Learning Cycle Model	**Making Meaning**	**Making Meaning**	**Making Meaning**	**Making Meaning**	**Investigate & Create and Produce**
Naugatuck Math Competency	K.NS.1, K.NS.2, K.NS.3, K.NS.4, K.G.3, K.G.4, K.MD.1, K.MD.2	K.NS.1, K.NS.2, K.NS.3, K.NS.4, K.G.3, K.G.4, K.MD.1, K.MD.2	K.NS.1,K.NS.2, K.NS.3, K.NS.4, K.MD.2	K.NS.1, K.NS.2, K.NS.3, K.NS.4, K.G.3, K.G.4, K.MD.1, K.MD.2	K.NS.1,K.NS.2, K.NS.3, K.NS.4, K.G.3, K.G.4, K.MD.1, K.MD.2
Math Practice Standards	-	MP 6	MP3	MP 4, 6	MP 2, 3, 6
Lesson Purpose	The purpose of this lesson is for students to explore connecting cubes. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills.	The purpose of this lesson is for students to explore pattern blocks. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills.	The purpose of this lesson is for students to explore two-color counters and 5-frames. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills.	The purpose of this lesson is for students to explore geoblocks. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills. These lessons are designed for students to explore math tools so that they can manipulate numbers and	The purpose of this lesson is for students to explore math tools.

				quantities while building number sense.	
Vocabulary Focus	Math Tools Connecting Cubes	Pattern Blocks	Counters 5 Frames	Geoblocks	
Lesson Materials/ Resources	Lesson 1 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Each group of 2 needs 20 connecting cubes of a variety of colors **Activity 1:** Intro to Connecting cubes (Stage 1) ● Cubes from above	Lesson 2 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Each group of 2 needs a handful of pattern blocks **Activity 1:** Intro to Pattern Blocks (Stage 1) ● Each group of 2 needs a container of pattern blocks	Lesson 3 Slides Teacher Presentation Materials Student Pages **Activity 1:** Intro to Pattern Blocks (Stage 2) ● Colored Counters ● 5-Frames	Lesson 4 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Each group of 2 needs variety of Geoblocks **Activity 1:** Intro to Geoblocks (Stage 1) ● Each group of 2 needs a container of Geoblocks **Activity 2:** Intro to Geoblocks (Stage 2) ● Each group of 2 needs a container of Geoblocks, solid shapes (cylinders, spheres, and cones) ● Build to Match Geoblocks (Stage 2)	Lesson 5 Slides Teacher Presentation Materials Student Pages **Activity 1** Intro to Connecting Cubes (Stage 2), ● Build to Match Connecting Cubes Cards (Stage 2) ● Each group of 2 needs container of connecting cubes **Activity 2** Intro to Pattern Blocks (Stage 2) ● Pattern Blocks Mat (Stage 2) ● Each group of 2 needs a container of pattern blocks
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse.** **See Checkpoint A Document (Monitoring Sheet), Checkpoint A Teacher Guide, and Grade K Unit 1 I Can Self Assessment**				
Centers Materials	None	None	None	None	Pattern Blocks (stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2)

Making Meaning:

What are connecting cubes, Geoblocks, pattern blocks, five-frames and counters? Students will make meaning of these math tools and uncover their purpose. Students will also become accustomed to using manipulatives and tools to examine, explore and use numbers as a way to describe objects.





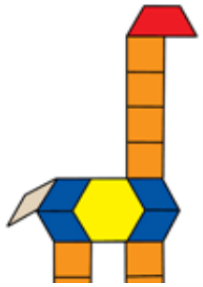
- Teacher presentation materials

Lesson 1: Connecting Cubes

- The purpose of this lesson is for students to explore connecting cubes. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills.
- Teacher presentation materials
- Lesson 1 Slides

Lesson 2: Pattern Blocks

- The purpose of this lesson is for students to explore pattern blocks. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills.
- Teacher presentation materials
- Lesson 2 Slides

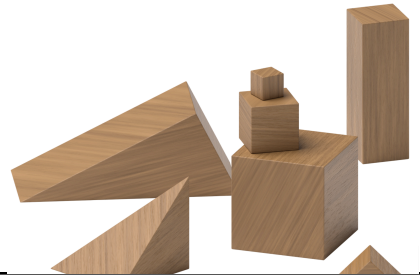


Lesson 3: 2-Color Counters and 5-Frames

- The purpose of this lesson is for students to explore two-color counters and 5-frames. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills.
- Teacher presentation materials
- Lesson 3 Slides
- Activities and Directions

Lesson 4: Explore Geoblocks

- The purpose of this lesson is for students to explore geoblocks. Teachers also have an opportunity to gather formative assessment data about students' counting concepts and skills.
- These lessons are designed for students to explore math tools so that they can manipulate numbers and quantities while building number sense.



- Teacher presentation materials
- Lesson 4 Slides
- Activities and Directions

Checkpoints: These documents for the above lessons provide teachers with a template for collecting data and information on student understanding of skills and concepts.

Investigation:
In Lesson 5, students put all of their math tools together in order to find the tools that work best for them and in particular situations.

The Warm-Up and Activities 1 and 2 ONLY:

- These pieces of Lesson 5 acquaint students with using math tools to build specific structures or create specific patterns. They will communicate with their partners about why a particular activity was a favorite and listen as their partner reciprocates.
- Teacher presentation materials: Warm-Up and Activities 1 and 2 only, **pages 1-4**
- Handouts/student materials
    - Connecting Cubes Build to Match
    - Stage 2 Mat

Activities 1 and 2 best represent investigation as students are putting all their tools together in order to conceptualize how the different tools can be used to communicate different ideas. For example, geoblocks can be used to represent objects students see most everyday - a house, a school bus, a car. They can manipulate the blocks to create representations of familiar objects.

The blocks - and cubes, counters, etc. - also represent one-to-one correspondence and a visual way to establish counting and determine needs to be counted vs. what has already been counted. These tools can also visually represent the idea that quantities aren't always equal and different quantities look different. For example, 8 blocks in one pile looks dramatically different than 3 blocks in a pile. Students are beginning to understand how numbers "look" and can be quantified, visualized, and represented in ways that are meaningful to the student.

At this point, students who cannot make sense of objects using one-to-one correspondence should receive more time to practice and demonstrate their understanding to the teacher.

Create and Produce:

During Activity 3, students will choose from a variety of activities that focus on using math tools to create patterns, objects, or buildings. Invite students to work at the center of their choice for about 10 minutes a center. Monitor for students who create objects, patterns, or buildings the class can describe during the synthesis (Communicate and Present).

Activity 3:

- Teacher presentation materials: Activity 3 only, **pages 4-6**
- Center documents (Supplied in your kit)

Monitor students in centers, checking for their understanding of using the math tools to count, create reflections (if making a house or an object with equal or mirrored sides) and patterns, and count efficiently. Once students have demonstrated their proficiency with the math tools, pull them into small groups to assess their understanding.

Assessment:
Provide each student with a blank sheet of white paper and ask them to select the math tool of their choice - blocks, cubes, counters, etc.

They are going to draw an object on the paper that they will later recreate in 3-dimensions with the math tool of their choice. Encourage students to create something they have not already done in centers and during activities.

- Step 1: Draw a picture of something they would like to build
- Step 2: Select the math tool they will use to create it.
- Step 3: Before they build, ask the student how they are planning to make the object. Why did they select that math tool? How does this tool help you to best build this object?
- Step 4: Have students build their object. During the build or after the build, ask them how it is going, and if what they were imagining is what they are creating. What problems are they encountering and how are they solving them? They may do this organically, and you can collect the data as you observe it. You can also ask them to explain why they decided to create the object or a part of the object in a particular way.
- Step 5: Once their object is built, ask students if they think they used more than 10 blocks/cubes/etc. or fewer than 10 blocks/cubes/etc. Using counters, represent the number 10 and ask students to tell you how many counters you have. Select a color of a block or cube that they used and count it with them. Ask them to show you how much that number represents with counters. (For example, the student used 6 orange blocks. Ask them to use the counters to show you how much six is.)

Record any notes or observations that you will use to help you determine where the student is in their progression of learning regarding K.CC.B.4-5, Understanding and Applying Number Systems: I can tell the number of objects using counting and instant visual recognition.

Communicate and Present: After the Warm-up and activities are complete, students should take time to synthesize, communicate, and present what they have learned. Each lesson includes **a lesson synthesis** (page 9) that assists the teachers with ways to help students incorporate new insights gained during the activities into their big-picture understanding. Teachers can use this time in any number of ways, including posing questions verbally and calling on volunteers to respond, asking students to respond to prompts in a journal, asking students to add on to a graphic organizer or concept map, or adding a new component to a persistent display like a word wall or a standards wall.	**Reflection:** In their math journals/notebooks, have students draw each math tool they explored in this Topic and write down/paste what it is. For example, they will draw connecting cubes and then could either copy the words or cut and paste the term from a list. ● List of terms to cut and paste ● IM Reflection Practices
Notes: Follow all lessons in numerical order.	**Complete File with Resources and Task:** Task-Based Learning Plan Format for Topic 1

Topic # 2 (Section B)	Topic Name: Section B - Recognize Quantities	Duration: Recommended: 4 days (4 lessons)

Topic Description:
In this section, students continue to explore numbers and quantities in their classroom, focusing on small groups of objects or images they can quantify without counting. They match groups that have the same number of images and notice that the same quantity can be arranged in many different ways. Students continue to develop the language to express these ideas and to listen to ideas of their peers.

Students are sometimes asked to show quantities up to 5 on their fingers. This is a chance to formatively observe if students are comfortable showing quantities on their fingers (any way is acceptable). For example, they may put up 4 fingers to show how many objects there are before saying the number word "four."

This section provides continued opportunity to formatively assess students' counting concepts and skills.

Section Learning Goals

- Recognize and name groups of up to 4 objects and images without counting.

Competencies Addressed:

Understanding and Applying Number Systems

K.NS.1 I can tell the number of objects using counting and instant visual recognition. (K.CC.B.4-5)
K.NS.2 I can compare quantities and numbers. (K.CC.C.6-7)
K.NS.3 I can count to 100 by ones and by tens and can count from a given number within 20. (K.CC.A.1-2)
K.NS.4 I can name and write numbers 0-20 to represent a group of objects. (K.CC.A.3)

Essential Question and Enduring Understanding Addressed in this Topic:

Essential Question
What tools, strategies and questions will best help me learn the language of numbers?

Enduring Understanding
Students recognize numbers and quantities in their world: Students start their exploration of number sense through language - bigger/smaller, more/less, greater/fewer. They work with tangible objects and engage in comparison to understand concepts of quantity. Numbers are a new language to Kindergarteners, and like any new language, acquiring the comprehension of numbers first

	involves the ability to decode them - recognizing numbers and understanding two vital concepts: first, that numbers hold value; second, that numbers are another way to describe the world around us.
In this Topic, students will know: ● Number names ● Number symbols (1, 2, 3, etc) ● Order of numbers in the count sequence ● Purpose of connecting cubes, counters, five-frames, geoblocks, pattern blocks ● The same quantity can be arranged in many different ways	**Topic Vocabulary:** **Academic vocabulary** Norms Number Groups Sequence Quantity Different Connecting cubes Counters Five-frame Geoblock Pattern block
In this Topic, students will be able to: ● Say the count sequence to 10. ● Say one number for each object. ● Answer how many without counting again. ● Recognize and name groups of 1, 2, or 3 objects or images without counting. ● Recognize and name groups of 4 objects or images without counting. ● Show quantities on fingers. ● Identify groups with the same number of objects (for groups of up to 4 objects).	**Plan for Student Reflection:** Student Journal Prompts and Reflection Practices Grade K Unit 1 I Can Self Assessment **Plan for Teacher Reflection:** ● Reviewing formative assessments ● Developing scaffolds ● Collaborative scoring ● PLCs ● Planning for small groups

	● **Teacher Journal Reflection Questions:** **Lesson 6:** Think about who volunteered to share their thinking with the class today. Are the same students always volunteering, while some students never offer to share? What can you do to help the class understand the value of hearing the ideas of every mathematician? **Lesson 7:** Were you able to circulate and hear student thinking while students worked in centers? If so, what routines or structures helped students work independently? If not, what routines or structures can you establish to ensure that you are able to circulate and talk to students as they work? **Lesson 8:** When do your students feel successful in math? How do you know? **Lesson 9:** How did the work of matching groups with the same number of objects or images prepare students for the work in this lesson?

Topic 2 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

Task Title: Topic 2 - Recognize Quantities	**Grade Level and Unit: Kindergarten, Unit 1**
Description of Task: Students will create picture books that support the skill of subitizing as many as 4 objects at a time.	**Purpose of Task:** The purpose of this topic is for students to recognize groups of objects up to 4 without counting or relying on tools in order to develop the concept that numbers hold value, and that value can be represented in different ways (i.e., a number, a group of objects, etc.). Groups of objects can look differently - 3 groups of 1 vs. 1 group of 3 - but their value doesn't change.
Background of Students/Learning Progression: In this section, students continue to explore numbers and quantities in their classroom, focusing on small groups of objects or images they can quantify without counting. They match groups that have the same number of images and notice that the same quantity can be arranged in many different ways. Students continue to develop the language to express these ideas and to listen to ideas of their peers.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification
Getting Started: Give a pair of students several pattern blocks in different shapes and colors. For example, each pair could have: ● 4 triangles (red, yellow, blue, green) ● 2 squares (red, orange) ● 3 rectangles (yellow, blue, green) ● 1 hexagon (green) Ensure that each set has at least one color that is the same as a shape in another group. Ask students to sort these pattern blocks in any way they want so that the groups have a characteristic in common. Students could choose to sort by: ● Shape ● Color	

- Size
- Number of sides

Let the students come up with their own criteria for their sorts.

Once sorted for the first time, ask pairs to share how they sorted their shapes and how many they have in their groupings. While they are doing this, observe which groups/students count, use a number line, etc.

Ask students to sort again, this time using different criteria to create different groups. Ask them how many groups they have, and how many are in each group. Again, note which students count, use a number line, etc.

Learning Cycle Model Process
Section B

IM Lesson	**L6: Look for Small Groups**	**L7: Classroom Scavenger Hunt**	**L8: Different Groups, Same Quantity**	**L9: Create Picture Books**
Learning Cycle Model	**Making Meaning**	**Investigate**	**Investigate**	**Create and Produce**
Naugatuck Math Competency	K.NS.1, K.NS.2, K.NS.3, K.NS.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4
Math Practice Standards	MP 4, 6	MP 1, 2, 4, 6	MP 1, 6	MP 1
Lesson Purpose	The purpose of this lesson is for students to recognize and name small groups of objects and images without counting.	The purpose of this lesson is for students to recognize and name small groups of objects and images without counting.	The purpose of this lesson is for students to identify and match groups with the same number of objects or images without counting.	The purpose of this lesson is for students to recognize and represent groups of up to 4 objects and images without counting.
Vocabulary Focus	How many? Groups Norms	How many? Groups How do you know?	How many? How do you know? Groups Same Different	Same Different How many? How do you know? Groups

Lesson Materials/ Resources	Lesson 6 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Lesson Slides **Activity 1:** Intro to "How Many Do You See?" routine ● Lesson Slides **Activity 2:** Intro to Picture Books (Stage 1) ● Each group of 2 needs **picture books** that show quantities	Lesson 7 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Lesson Slides **Activity 1:** ● Lesson Slides **Activity 2:** ● Small groups of objects, such as 2 pencils or 3 books, scattered around the room	Lesson 8 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Lesson Slides **Activity 1:** ● Lesson Slides **Activity 2:** ● Each group of 2 will need a set of Different Groups, Same Quantity Cards	Lesson 9 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Lesson Slides **Activity 1:** ● Lesson Slides **Activity 2:** Intro to Picture Books (Stage 2) ● Each group of 2 needs colored pencils or crayons ● Picture Book Recording Sheet (Stage 2) OR ● small 8-page mini book
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse.** **See Checkpoint B Document, (Monitoring Sheet) Checkpoint B Teacher Guide, and Grade K Unit 1 I Can Self Assessment**			
Centers Materials	Pattern Blocks (Stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2)	Picture Books (Stage 1) Pattern Blocks (Stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2	Picture Books (Stage 1) Pattern Blocks (Stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2	Picture Books (Stage 1) Pattern Blocks (Stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2

Making Meaning

Lesson 6: Look for Small Groups

- The purpose of this lesson is for students to recognize and name small groups of objects and images without counting.
- Lesson 6 Slides

- Teacher Presentation Materials

In this lesson, you have three books that you can read with students in Activity 2:

- There is a Bird on Your Head by Mo Willems
- Pablo's Tree by Pat Mora
- Grandma's Purse by Vanessa Brantlet-Newton

Using stories as exemplars for subitizing and conceptualizing quantities will serve as models for the stories students will develop later in the Topic.

Investigation:

Lesson 7: Classroom Scavenger Hunt

- The purpose of this lesson is for students to recognize and name small groups of objects and images without counting.
- Lesson 7 Slides
- Teacher Presentation Materials

Lesson 8: Different Groups, Same Quantity

- The purpose of this lesson is for students to identify and match groups with the same number of objects or images without counting.
- Lesson 8 Slides
- Teacher Presentation Materials

These two lessons are connected as they are different approaches to observing quantities and matching those quantities to numbers. An important aspect of these two lessons is subitizing, where students should not rely on counting, but determining a quantity and then practice "seeing" that number as it is represented by objects.

Create and Produce:

Lesson 9: Create Picture Books

- The purpose of this lesson is for students to recognize and represent groups of up to 4 objects and images without counting.
- Lesson 9 Slides
- Teacher Presentation Materials

<table>
<tr><td colspan="2">Illustrative Math has a template for picture books where students will write numbers and draw quantities of objects that are generated because of their interests and experiences. You can also choose a different format or template for students, or no template at all - just the creation of a small blank book that they can design themselves. Here is a template for a small 8-page mini book made from a single sheet of paper. This video will show you how to fold it.</td></tr>
<tr><td>Communicate and Present:
When students have completed their books, have them gather in groups of 3 or 4 to read their books to their peers and share how they decided to make their book.

Back in a whole group, ask if some students would like to share their books. Ask the authors questions to make their thinking visible:
Why did you decide to draw pictures of _____ to represent the number ___?
How can you “see” the number of objects without counting?</td><td>Reflection:
In small group interviews with students, or in personal interviews, ask students how well they think they can tell the number of objects in a group without counting. Ask them what strategies they can use to help determine the number of objects without counting.</td></tr>
<tr><td>Notes: Follow lessons in numerical order</td><td>Complete File with Resources and Task:

Task-Based Learning Plan Format for Topic 2</td></tr>
</table>

Topic # 3: Section C	Topic Name: Section C - Are There Enough?	Duration: Recommended: 2 days (2 lessons)

Topic Description:

Section Learning Goals

- Answer "are there enough" questions.

In this section, students work on the concept of one-to-one correspondence. They match one object to one person or image to answer “are there enough” questions and to get enough objects. This matching skill will be useful in the next section and in future counting when students match one number word to one object.

“Are there enough” and “can you get enough” questions encourage students to mathematize situations. Look for ways to incorporate these prompts into other parts of the school day, for example, when classroom supplies are being distributed.

Competencies Addressed: **Understanding and Applying Number Systems** **K.NS.1** I can tell the number of objects using counting and instant visual recognition. (K.CC.B.4-5) **K.NS.2** I can compare quantities and numbers. (K.CC.C.6-7) **K.NS.3** I can count to 100 by ones and by tens and can count from a given number within 20. (K.CC.A.1-2) **K.NS.4** I can name and write numbers 0-20 to represent a group of objects. (K.CC.A.3)	**Essential Question and Enduring Understanding Addressed in this Topic:** **Essential Question** What tools, strategies and questions will best help me learn the language of numbers? **Enduring Understanding** **Students recognize numbers and quantities in their world:** Students start their exploration of number sense through language - bigger/smaller, more/less, greater/fewer. They work with tangible objects and engage in comparison to understand concepts of quantity. Numbers are a new language to Kindergarteners, and like any new language, acquiring the comprehension of numbers first involves the ability to decode them - recognizing numbers and understanding two vital concepts: first, that numbers hold value; second, that numbers are another way to describe the world around us.
In this Topic, students will know: ● Number names ● Number symbols (1, 2, 3, etc) ● Order of numbers in the count sequence ● Purpose of connecting cubes, counters, five-frames, geoblocks, pattern blocks ● The same quantity can be arranged in many different ways	**Topic Vocabulary:** **Academic vocabulary** Norms Number Groups Sequence Quantity Different Connecting cubes Counters Five-frame Geoblock Pattern block

<table>
<tr><td></td><td>“Are there enough?”</td></tr>
<tr><td rowspan="2">In this Topic, students will be able to:

● Say the count sequence to 10.
● Say one number for each object.
● Answer how many without counting again.
● Recognize and name groups of 1, 2, or 3 objects or images without counting.
● Recognize and name groups of 4 objects or images without counting.
● Show quantities on fingers.
● Identify groups with the same number of objects (for groups of up to 4 objects).</td><td>Plan for Student Reflection:

Student Journal Prompts and Reflection Practices

Grade K Unit 1 I Can Self Assessment</td></tr>
<tr><td>Plan for Teacher Reflection:

● Reviewing formative assessments
● Developing scaffolds
● Collaborative scoring
● PLCs
● Planning for small groups

Teacher Journal Reflection Questions:
Lesson 10: Reflect on how you can reinforce the work done in today’s lesson outside of math class. When can you ask students questions involving are there enough? How can you incorporate it into snack time, transitions, or when passing out materials?
Lesson 11: In a future unit, students will compare groups of objects and images. What do you notice in their work from today’s lesson that you might leverage in that future lesson?</td></tr>
</table>

Topic 3 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

Task Title: Topic 3 - Are There Enough?	**Grade Level and Unit: Kindergarten, Unit 1**
Description of Task: Students will complete and extend a story about making sure there is enough using their strategies from Lessons 10 and 11.	**Purpose of Task:** The purpose is for students to develop and practice one-to-one correspondence in the context of answering "are there enough" questions and as they make groups with enough objects.
Background of Students/Learning Progression: In this section, students work on the concept of one-to-one correspondence. They match one object to one person or image to answer “are there enough” questions and to get enough objects. This matching skill will be useful in the next section and in future counting when students match one number word to one object.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification
Getting Started: The Warm-Up to Lesson 10 provides the entry point for understanding how students can visualize numbers to determine if groups are equal and there are enough of one object to correspond with another object. The purpose of this “How Many Do You See” is for students to recognize and name small groups of dots and describe how they see them. In the synthesis, students orally describe how they see the dots. Use the dot image provided in the lesson to have students explore how many they see and, importantly, HOW they see them. How they see the dots is directly related to how they know how many there are. Students may notice that the images are the same, with one additional dot.	

Learning Cycle Model Process
Section C

IM Lesson	L10: Are There Enough?	L11: Get Enough
Learning Cycle Model	**Making Meaning**	**Investigate**
Naugatuck Math Competency	K.NS.1, K.NS.2, K.NS.3, K.NS.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4
Math Practice Standards	–	MP 1, 8
Lesson Purpose	The purpose of this lesson is for students to develop and practice one-to-one correspondence in the context of answering "are there enough" questions.	The purpose of this lesson is for students to develop and practice one-to-one correspondence as they make groups with enough objects.
Vocabulary Focus	How many? How do you know? Same Are there enough?	How many? How do you know? Enough
Lesson Materials/ Resources	Lesson 10 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Lesson Slides **Activity 1:** ● Lesson Slides **Activity 2:** ● Each group of 4 needs 4 pencils and 3 erasers.	Lesson 11 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Lesson Slides **Activity 1:** ● Lesson Slides **Activity 2:** ● Each group of 4 needs at least 8 pencils.
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse.** **See Checkpoint C Document (Monitoring Sheet) _Checkpoint C Teacher Guide, and Grade K Unit 1 I Can Self Assessment**	

Centers Materials	Picture Books (Stages 1 and 2) Pattern Blocks (Stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2)	Picture Books (Stages 1 and 2) Pattern Blocks (Stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2)

Making Meaning

Lesson 10: Are There Enough?

- The purpose of this lesson is for students to develop and practice one-to-one correspondence in the context of answering "are there enough" questions.
- Lesson 10 Slides
- Teacher Presentation Materials

This lesson focuses on the practice so that they are ready for the more complex work of visualizing equal groups in the Investigation.

Investigation:

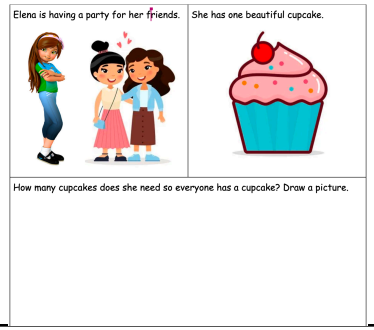
Lesson 11: Get Enough

- The purpose of this lesson is for students to develop and practice one-to-one correspondence as they make groups with enough objects.
- Lesson 11 Slides
- Teacher Presentation Materials

Create and Produce:

Students will put together what they have learned about one-to-one correspondence in Lesson 10 and look at creating equal groups.

This is an opportune time to reinforce what the word equal means. Equal means the same. This will be very important later on when students are looking at equations and understanding that one side of the equation must be THE SAME AS the other side. (Example: 3+2 IS THE SAME AS 5)



<table>
<tr><td colspan="2">This assessment will give students and the teacher an opportunity to demonstrate one-to-one correspondence in distinct ways so that the teacher can make appropriate groupings with students who need additional support.</td></tr>
<tr><td>Communicate and Present:

In small groups or pairs, have students share out how they completed the story. They should practice explaining their work and asking: “How did you solve the problem?”

Once small groups have met, bring students back to the whole group to share out the different ways their partner solved the problem.</td><td>Reflection:

Students should think about the different ways they saw people solve the problem. What was a different way that they could look at the problem?</td></tr>
<tr><td>Notes: Follow lessons in numerical order.</td><td>Complete File with Resources and Task:

Task-Based Learning Plan Format for Topic 3</td></tr>
</table>

Topic # 4: Section D	Topic Name: Section D - Counting Collections	Duration: Recommended: 6 days (6 lessons)

Topic Description:

Section Learning Goals

- Count groups of up to 10 objects.

In this section, students focus on counting up to 10 objects and answering "how many of _____ are there" questions.

They learn a new routine, Questions About Us, and consider the question "how many of us are here today?" The routine offers opportunities to highlight one-to-one matching and the idea of keeping track of what is being counted.

Students also count collections of objects from the classroom or from home. To initiate counting, ask "how many of _____ are there?" instead of saying "count the objects." This helps to reinforce counting as a way to quantify a collection and the idea of cardinality—that the last number called tells us how many there are.

Students may use counting mats, 5-frames, or other tools to help them count. Representing the numbers 6–10 on a 5-frame, for instance, helps students see the *5+n* structure of these numbers. (The 10-frame will be introduced in a future unit.)

Some students may be able to subitize, or recognize how many objects there are without counting. Those who can do so accurately should not be required to count individual objects. Consider differentiating the size of collections students count based on observations of students' counting.

Included in each lesson is an optional activity to support students in certain aspects of counting—verbalizing the count sequence, one-to-one tagging, and organizing objects to count.

Competencies Addressed:	Essential Question and Enduring Understanding Addressed in this Topic:
Understanding and Applying Number Systems **K.NS.1** I can tell the number of objects using counting and instant visual recognition. (K.CC.B.4-5) **K.NS.2** I can compare quantities and numbers. (K.CC.C.6-7) **K.NS.3** I can count to 100 by ones and by tens and can count from a given number within 20. (K.CC.A.1-2) **K.NS.4** I can name and write numbers 0-20 to represent a group of objects. (K.CC.A.3)	**Essential Question** What tools, strategies and questions will best help me learn the language of numbers? **Enduring Understanding** **Students recognize numbers and quantities in their**

Reasoning With Geometry **K.G.3** I can analyze and compare two-and three-dimensional shapes in order to describe their attributes. (K.G.B.4) **K.G.4** I can build and create simple shapes to form larger shapes. (K.G.B.5-6)	**world:** Students start their exploration of number sense through language - bigger/smaller, more/less, greater/fewer. They work with tangible objects and engage in comparison to understand concepts of quantity. Numbers are a new language to Kindergarteners, and like any new language, acquiring the comprehension of numbers first involves the ability to decode them - recognizing numbers and understanding two vital concepts: first, that numbers hold value; second, that numbers are another way to describe the world around us.
In this Topic, students will know: ● Number names ● Number symbols (1, 2, 3, etc) ● Order of numbers in the count sequence ● Purpose of connecting cubes, counters, five-frames, geoblocks, pattern blocks ● The same quantity can be arranged in many different ways ● The last number called tells us how many there are	**Topic Vocabulary:** **Academic vocabulary** Norms Number Groups Objects Sequence Quantity Different Tools Counting Mat Connecting cubes Counters Five-frame Geoblock Pattern block Collection

In this Topic, students will be able to:

- Say the count sequence to 10.
- Say one number for each object.
- Answer how many without counting again.
- Recognize and name groups of 1, 2, or 3 objects or images without counting.
- Recognize and name groups of 4 objects or images without counting.
- Show quantities on fingers.
- Identify groups with the same number of objects (for groups of up to 4 objects).

Plan for Student Reflection:

Student Journal Prompts and Reflection Practices

Grade K Unit 1 I Can Self Assessment

Plan for Teacher Reflection:

- Reviewing formative assessments
- Developing scaffolds
- Collaborative scoring
- PLCs
- Planning for small groups

Teacher Journal Reflective Questions:
Lesson 12: Each lesson in this section includes an optional activity with additional support in developing counting concepts. What have you observed that indicates whether or not students may benefit from these activities?
Lesson 13: In the next unit, students will count groups of images in different arrangements. How does the work in this lesson help prepare students to count images?
Lesson 14: In this lesson, students had access to a 5-frame and a counting mat to help them organize and count their collections. How did students use the 5-frame or counting mat to keep track of which objects have been counted? If they did not use the 5-frame or counting mat, how did they keep track of which objects have been counted?
Lesson 15: Who got to do math today in class

	and how do you know? Identify the norms or routines that allowed those students to engage in mathematics. How can you adjust these norms and routines so all students do math tomorrow? **Lesson 16:** As you finish up this unit, reflect on the norms and activities that have supported each student in learning math. List ways you have seen each student grow as a young mathematician throughout this work. List ways you have seen yourself grow as a teacher. What will you continue to do and what will you improve upon in Unit 2?

Topic 4 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

Task Title: Topic 4 - Counting Collections	**Grade Level and Unit: Kindergarten, Unit 1**
Description of Task: Students will count and build with a collection of connecting cubes.	**Purpose of Task:** The purpose is understanding that the last number tells us how many objects there are (cardinality) and that counting is about adding one more.
Background of Students/Learning Progression: In this section, students focus on counting up to 10 objects and answering "how many of _____ are there" questions. They learn a new routine, Questions About Us, and consider the question "how many of us are here today?" The routine offers opportunities to highlight one-to-one matching and the idea of keeping track of what is being counted. Students also count collections of objects from the classroom or from home. To initiate counting, ask "how many of _____ are there?" instead of saying "count the objects." This helps to reinforce counting as a way to quantify a collection and the idea of cardinality—that the last number called tells us how many there are.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification
Getting Started: Lesson 12 Warm-Up: The purpose of this warm-up is for students to experience part of the Questions About Us routine. Students continue to engage in this routine throughout the section, focused on answering "How many of us are here today?" In this activity students associate one number with one person as they count the students in the class. As students share answers to questions such as "How can we figure out how many of us are here?" and "Did I count the students correctly?" they are beginning to explain their reasoning and construct viable arguments (MP3). While the teacher counts the students in the class, students count along to practice the verbal count sequence.	

The Synthesis piece of the Warm-Up is essential: Bring 5 students to the front of the class. Demonstrate counting the students incorrectly by saying 2 numbers for 1 student.

This is a common issue for students when they begin engaging in one-to-one correspondence, and there is nowhere else in the Common Core State Standards or in the Naugatuck Competencies for students to master this concept.

Learning Cycle Model

Section D

IM Lesson	L12: How Many Are There? (Part 1)	L13: How Many Are There? (Part 2)	L14: Answer "How Many" Questions	L15: Explain How You Counted	L16: Represent Our Collections	L17: Connecting Cube Sculptures
Learning Cycle Model	**Making Meaning**	**Making Meaning**	**Investigate**	**Investigate**	**Investigate**	**Create and Produce**
Naugatuck Math Competency	K.NS.1, K.NS.2, K.NS.3, K.NS.4, K.G.3, K.G.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4,	K.NS.1, K.NS.2, K.NS.3, K.NS.4, K.G.3, K.G.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4	K.NS.1, K.NS.2, K.NS.3, K.NS.4
Math Practice Standards	MP 3, 5	MP 3, 5	MP 2, 5	MP 2, 5	MP 5	MP 4
Lesson Purpose	The purpose of this lesson is for students to count collections of objects. The focus is saying one number for each object.	The purpose of this lesson is for students to count collections of objects. The focus is keeping track of which objects have been counted.	The purpose of this lesson is for students to count collections of objects. The focus is understanding that the last number tells us how many objects there are (cardinality).	The purpose of this lesson is for students to count collections of objects. The focus is for students to show and explain how they counted to a partner.	The purpose of this lesson is for students to count collections of objects. The focus is on students representing how they counted.	The purpose of this lesson is for students to count and build with a collection of connecting cubes. The focus is understanding that the last number tells us how many objects there are (cardinality).
Vocabulary Focus	How many? Collection	How many? How do you know? Collection	How many? Collection Last number Egg carton	How many? Collection How do you know?	How many? Different Collection	How many? How do you know? Same Different Collection Last number

Lesson Materials/ Resources	Lesson 12 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● Each student needs 6 to 10 objects, a Counting Mat, and a 5-Frames page **Activity 3:** Intro Pattern Blocks (Stage 3) ● Each group needs a container of Pattern Blocks ● Pattern Block Directions (Stage 3)	Lesson 13 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● Each student needs 6 to 10 objects, a Counting Mat, and a 5-Frames page **Activity 2:** ● Each student needs 6 to 10 objects and a container	Lesson 14 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Chart paper **Activity 1:** ● Each student needs 6 to 10 objects, a Counting Mat, and a 5-Frames page **Activity 2:** ● Each student needs an egg carton or muffin tin (egg carton paper copy) **Activity 3:** Intro Connecting Cubes (Stage 3) ● Each group needs a container of connecting cubes ● Connecting Cubes Directions (Stage 3)	Lesson 15 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Chart paper **Activity 1:** ● Each student needs 6 to 10 objects, a Counting Mat, and a 5-Frames page **Activity 2:** ● Each student needs 6 to 10 objects, a Counting Mat	Lesson 16 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Chart paper ● Questions About Us 5-Frames ● 5-Frames (ie, if there are 24 students in the class, four 5-frames and 4 extra squares should be displayed) **Activity 1:** ● Each student needs 6 to 10 objects, a Counting Mat, and a 5-Frames ● Paper, crayons **Activity 2:** ● Each student needs an egg carton or muffin tin (egg carton paper copy) ● Each student needs 6 to 10 objects and a Counting Mat	Lesson 17 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Slides **Activity 1:** ● Each student needs 6 to 10 connecting cubes, a Counting Mat, and a 5-Frames page **Activity 2:** ● Each student needs 6 to 10 connecting cubes, a Counting Mat and a 5-Frames page
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse.** **See Checkpoint D Document, Checkpoint D Teacher Guide, and Grade K Unit 1 I Can Self Assessment**					

						End of Unit Assessment End of Unit Assessment Teacher Guide
Centers Materials	Picture Books (Stages 1 and 2) Pattern Blocks (Stages 1 and 2) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2)	Picture Books (Stages 1 and 2) Pattern Blocks (Stages 1-3) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2)	Picture Books (Stages 1 and 2) Pattern Blocks (Stages 1-3) Connecting Cubes (Stages 1 and 2) GeoBlocks (Stages 1 and 2)	Picture Books (Stages 1 and 2) Pattern Blocks (Stages 1-3) Connecting Cubes (Stages 1 -3) GeoBlocks (Stages 1 and 2)	Picture Books (Stages 1 and 2) Pattern Blocks (Stages 1-3) Connecting Cubes (Stages 1 -3) GeoBlocks (Stages 1 and 2)	None today

Making Meaning:

The conceptual underpinning of these two lessons is cardinality. It is important for students to take their time when they are counting objects so that they are correlating 1 number with one object (dots, blocks, cards, etc.) and not counting so fast that they are out of sync with their finger on the individual objects. This can cause issues later on when students engage with ten-frames and writing equations in that the numbers they add or subtract are incorrect because of the counting habit they have developed.

Lesson 12: How Many Are There? (Part 1)

- The purpose of this lesson is for students to count collections of objects. The focus is saying one number for each object.
- Lesson 12 Slides
- Teacher Presentation Materials

Lesson 13: How Many Are There? (Part 2)

- The purpose of this lesson is for students to count collections of objects. The focus is keeping track of which objects have been counted.
- Lesson 13 Slides
- Teacher Presentation Materials

Each lesson has an optional activity. This activity should be used with students who are not yet connecting the verbal count sequence with counting objects. This could be an opportunity for focused small group instruction during center time.

Monitor students closely during these lessons so that students don't double count or miss an object. Record and pull small groups for students whose counting habits are not accurate.

Investigation:

This series of lessons is more than a continuation of cardinality practice. Lesson 14 focuses on the concept that counting is about adding one more. This concept is vital for Kindergarten students as they move into first grade because they must have a clear understanding that the last number counted represents the quantity of objects. Students sometimes struggle with counting and understanding that real quantities are involved and numbers hold value.

Lessons 15 and 16 transition to a higher expectation that students can explain **how** they know. They must rationalize and defend their answers based on the evidence that the last number counted is representative of a value - a quantity that can be seen and manipulated.

Lesson 14: Answer "How Many" Questions

- The purpose of this lesson is for students to count collections of objects. The focus is understanding that the last number tells us how many objects there are (cardinality).
- Lesson 14 Slides
- Teacher Presentation Materials

Lesson 15: Explain How You Counted

- The purpose of this lesson is for students to count collections of objects. The focus is for students to show and explain how they counted to a partner.
- Lesson 15 Slides
- Teacher Presentation Materials

Lesson 16: Represent Our Collections

- The purpose of this lesson is for students to count collections of objects. The focus is on students representing how they counted.
- Lesson 16 Slides
- Teacher Presentation Materials

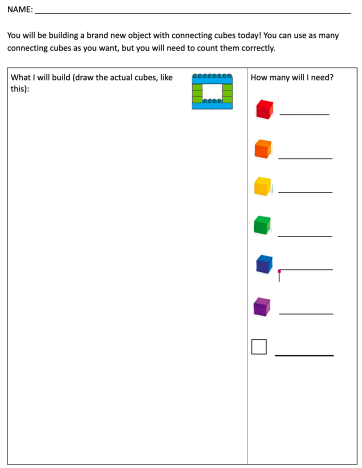
Create and Produce:

Lesson 17: Connecting Cube Sculptures

- The purpose of this lesson is for students to count and build with a collection of connecting cubes. The focus is understanding that the last number tells us how many objects there are (cardinality).

- Lesson 17 Slides
- Teacher Presentation Materials

Activity 1: The purpose of this activity is for students to count their collection **in a way that makes sense to them** and to answer "how many" questions without recounting the collection. Most students should be given collections with 6–10 connecting cubes. Based on formative assessment data collected in previous sections, adjust the number for individual students. Students are provided with counting mats and 5-frames to help them accurately count or organize their collections. Students use appropriate tools strategically as they choose which tools help them count their collections (MP5).


NAME: _____

You will be building a brand new object with connecting cubes today! You can use as many connecting cubes as you want, but you will need to count them correctly.

What I will build (draw the actual cubes, like this):

How many will I need?

This activity forms the basis for Activity 2, which is the activity upon which students will demonstrate their understanding of the cardinality concepts:

- The last number counted tells how many
- Numbers hold value
- Counting is adding one more

It is important that students can demonstrate their ability to count their collections and answer "how many" **however they see it and however it makes sense to them.** It is not about using a strategy that has been taught or conforming their thinking to the confines of given strategies. Comfort with math and mathematical concepts comes from the confidence they gain when they are able to figure something out for themselves and use a strategy that may be unique to them and how they perceive the mathematical world.

Activity 2: This activity is important for assessment of student understanding and therefore will be the way in which we gauge what students know and can do. The purpose of this activity is for students to create and share what they build with their connecting cubes and to share how many connecting cubes they have without recounting the collection.

Students will be creating their own builds with connecting cubes and what they envision will form the basis for the questions you will ask in order to understand how deeply they have internalized the cardinality concepts mentioned above. Students should plan their build using this organizer. You can use this organizer as a way to track data and record your observations.

Based on these observations and the students' responses, plan for small group instruction that focuses on subitizing and strategies to help with subitizing.

Communicate and Present:	**Reflection:**
Ask students to share their builds with another student. When they share, they should be able to talk about: • How many blocks they used of a certain color	See the organizer: When assessing students, ask them to reflect.

● How they can tell the number of blocks used without counting them ● Ask how the other student can tell how many without counting	● How can you use counting to tell how many? (The last number counted represents the quantity)
Notes: Follow lessons in numerical order.	**Complete File with Resources and Task:** Task-Based Learning Plan Format for Topic 4