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

Unit 4: Understanding Addition and Subtraction	Duration: 19-20 Days

Unit Overview - FOCUS:
 	
In this unit, students develop their understanding of addition and subtraction as they represent and solve story problems.
 	
Previously, students built their counting skills and represented quantities in a group with their fingers, objects, drawings, and numbers. Here, they relate counting to the result of two actions: putting objects together or taking objects away. Students enact addition by counting the total number of objects in two groups, and subtraction by counting what remains after some objects are taken away. (The word "total" is used here instead of "sum" to reduce potential confusion with the word "some" or part of a whole.)
 	
 
 	
Students then make sense of stories without questions and later solve story problems of two types—Add To, Result Unknown and Take From, Result Unknown. Students represent the problems in different ways, by acting them out, drawing, using numbers, or using objects. Connecting cubes should be accessible in all lessons for students who wish to use them, including for cool-downs. All story problems should be read aloud by the teacher, multiple times if needed.
 	
Students are also introduced to expressions, a symbolic way to represent addition and subtraction. Initially, the teacher records the process of adding and subtracting using words such as "5 and 3" or "4 take away 1." Later, students see that "5 and 3" and "4 take away 1" can be expressed by and ,
	Topic Titles:
	
	● **Section A: Count to Add and Subtract**
	  ● Understand addition as putting together and subtraction as taking from.
	● **Section B: Represent and Solve Story Problems**
	  ● Represent and solve Add To, Result Unknown and Take From, Result Unknown story problems within 10.
	● **Section C: Addition and Subtraction Expressions**
	  ● Find the value of addition and subtraction expressions within 10.
	  ● Relate addition and subtraction expressions to story problems.

respectively. They learn that these expressions are read “5 plus 3” and “4 minus 1.” (Students are not expected to read expressions out loud or to use precise language at this point.) Later in the section, students connect expressions to pictures and story problems. They find the value of addition and subtraction expressions within 10. In a future unit, students will compose and decompose numbers up to 10 and solve other types of addition and subtraction problems.	

Coherence: How does this unit build on and connect to prior knowledge and learning?

In Unit 2, students learned to count groups of up to 10 objects and built on their counting skills and concepts. They were able to answer “how many” questions and represent how many with a written number.

Previously, students built their counting skills and represented quantities in a group with their fingers, objects, drawings, and numbers. Here, they relate counting to the result of two actions: putting objects together or taking objects away. Students enact addition by counting the total number of objects in two groups, and subtraction by counting what remains after some objects are taken away.

Essential Questions:	**Enduring Understanding:**
1. How can counting relate to addition and subtraction? 2. What are different strategies to solve addition and subtraction story problems?	**Identifying the type of story problem can help us answer questions like “how many” or “how many left.”** By determining what information is missing in the problem, we can determine what operation is needed. The action in the story problem can help us relate addition and subtraction in order to find the missing information. We use our prior knowledge of number sense to solve story problems. **Strategies like acting it out or drawing the problem can help us understand what actions are taking place and what we need to do to find the missing information**. We can use other strategies to solve the problem such as using drawings, using objects, or using our fingers. These strategies can help keep track of which objects or images have been counted. Writing an expression helps us describe the story problem mathematically.

<table>
<tr>
<td>What Students Will Know:
Addition is putting together and subtraction as taking from
We can represent story problems using addition and subtraction
There are different strategies to retell a story problem
Objects or drawings can represent a story problem
An expression can represent a story problem
Different strategies can be used to solve addition and subtraction expressions ie. using fingers, objects or drawings
A count sequence can be used to determine the total when adding 1</td>
<td>What students will do:
Keep track of which objects or images have been counted.
Count to find the total or difference.
Students count more or fewer than 8 dots.
Add or take away objects to represent addition and subtraction.
Accurately retell a story problem in their own words.
Understand the action in a story problem and act it out or demonstrate it with objects or drawings.
Use objects or drawings to represent a story problem.
Explain how objects or drawings represent a story problem.
Create their own addition or subtraction story problem.
Explain how an expression connects to a drawing or story problem.
Fill in an expression to represent a drawing.
Use fingers, objects, or drawings to find the value of an expression.
Count all to determine the total when 0 or 1 are added.
Use knowledge of the count sequence to determine the total when 1 is added.</td>
<td>Unit Specific Vocabulary:
Math Libs
Number Mat
Subtraction Towers
Number race
Math stories
Shake and Spill
Roll and Add
Counting Sequence

Academic Vocabulary:
Add
Subtract
Count
Group
Connecting Cubes
Pattern Blocks
Five Frame
Put together
Take away
Story problem
Expression
Add to
Take from
Plus
Minus
Retell
Counters
Drawing</td>
</tr>
<tr>
<td>Entry Level Assessment and Connection to Unit:</td>
<td colspan="2">Unit Materials, Resources and Technology:
Unit 4 Teacher Guide
Illustrative Mathematics
Instructional Routines and Math Language Routines
Glossary - Student-friendly
Required Materials
IM en Español</td>
</tr>
</table>

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- **Pacing Guide and Dependency Diagrams K-5**

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<tr><td colspan="2">

Opportunities for Interdisciplinary Connections:
Grandma's Purse by Vanessa Brantlet-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

</td></tr>
<tr><td>

Any links, attachments and resources:

Instructional Routines Document

Family Support Materials

</td><td>

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

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</table>

Topic # 1: Section A	Topic Name: Section A - Count to Add and Subtract	Duration: Recommended: 5 days (5 lessons)

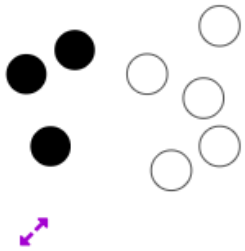
Topic Description:

In this section, students learn to see adding as putting together two groups and counting the total number of objects, and subtracting as taking away a number of objects from a group and counting what remains.

They represent combining and removing physical objects. No stories or contexts are used here so that students can focus on the actions of putting together, adding to, and taking from. The language “add,” “put together,” “subtract,” and “take away” is used throughout the section to describe addition and subtraction.

Students learn to interpret a phrase such as “5 and 3” to mean combining two groups (5 in one group and 3 in the other) and a phrase such as “5 take away 3” to mean finding what remains after removing 3 objects from a group of 5. They also hear language that describes the result of those actions, such as: “5 and 3 is 8” and “5 take away 3 is 2.” No symbolic notation is used at this point.

Students also encounter and count groups of images in scattered configurations for the first time. This task highlights the need to keep track of what has been counted.



To keep track of the dots in this example, students may count all the black dots first and then the white dots or cross off dots as they count. They may also count in no particular order. Students see that although they may count the dots in a different order, they arrive at the same total.

Section Learning Goals

- Understand addition as putting together and subtraction as taking from.

Competencies Addressed:

Understanding and Applying Number Sense:

NS.1: I can tell the number of objects using counting and instant visual recognition **K.CC.B.4-5**

NS.3: I can count to 100 by ones and tens and can count from a given number within 20. **K.CC.A.1-2**

NS.4: I can name and write numbers 0-20 to represent a group of objects. **K.CC.A.3**

Operations and Algebraic Thinking

OA.1: I can represent addition within 10 and fluently add within 5. **K.OA.A.1, K.OA.A.4, K.OA.A.5**

OA.2: I can represent subtraction within 10 and fluently subtract within 5. **K.OA.A.1, K.OA.A.5**

OA.3: I can solve addition and subtraction word problems within 10. **K.OA.A.2**

Essential Question and Enduring Understanding Addressed in this Topic:

Essential Question:
How can counting relate to addition and subtraction?

Enduring Understanding:
Identifying the type of story problem can help us answer questions like "how many" or "how many left." By determining what information is missing in the problem, we can determine what operation is needed. The action in the story problem can help us relate addition and subtraction in order to find the missing information. We use our prior knowledge of number sense to solve story problems.

In this Topic, students will know:

- Addition is putting together and subtraction is taking from
- We can represent addition and subtraction story problems
- We can relate addition and subtraction expressions to story problems to help us determine unknown information

Topic Vocabulary:
Math Libs
Number Mat

Academic vocabulary:
Add
Subtract
Count
Track
Group
Connecting Cubes
Pattern Blocks

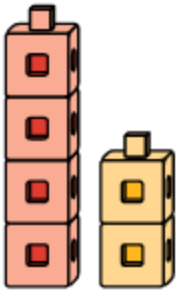
	Five Frame Put together All together Take away
In this Topic, students will be able to: ● Keep track of which objects or images have been counted. ● Count to find the total or difference. ● Students count more or fewer than 8 dots. ● Add or take away objects to represent addition and subtraction.	**Plan for Student Reflection:** Student Journal Prompts and Reflection Practices Grade K Unit 4 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 1**: Which centers from previous units can be used to support students in practicing counting groups of objects? **Lesson 2**: Reflect on how you can reinforce the work done in today's lesson outside of math class. When can you ask students questions involving finding the total of two groups of objects or images? **Lesson 3**: How does the work of this lesson and the previous lesson lay a foundation for solving addition story problems? **Lesson 4**: 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

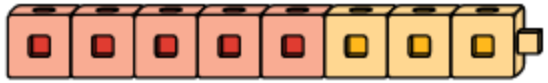
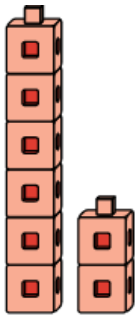
	class understand the value of hearing the ideas of every mathematician? **Lesson 5**: What evidence have students given that they understand the actions of addition and subtraction? What language do they use or associate with each operation?

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 - Count to Add and Subtract	**Grade Level and Unit: Kindergarten, Unit 4**
Description of Task: Students will model subtraction up to 5 using counters and five frames.	**Purpose of Task:** The purpose of this task is for students to represent the action of subtraction with objects. The task will give students the chance to explain their thinking through the use of manipulatives.
Background of Students/Learning Progression: In this unit, students continue to develop their understanding of addition and subtraction as they represent and solve story problems. Previously, students counted groups of up to 10 objects, recognized and wrote numbers 1–10, and connected numbers to quantities.Many students may approach these activities the same way that they answered “how many” questions in previous units—by putting the 2 groups of objects together and then counting all of the objects.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification
Getting Started: In this lesson that make up Topic 1 - Section A of Unit 4, students will: ● Be shown groups of objects that are composed of smaller parts in different ways. They will then be asked which does not belong and why.	



Section A

IM Lesson	L1: Count 2 Groups of Objects	L2: Count 2 Groups of Images	L3: Count 2 Groups of Scattered Images	L4: Add With Objects	L5: Subtract With Objects
Learning Cycle Model	**Making Meaning**	**Making Meaning**	**Making Meaning**	**Investigation**	**Create and Produce**
Naugatuck Math Competency	K.NS.1, K.OA.1, K.OA.2	K.NS.1, K.OA.1, K.OA.2	K.NS.1, K.NS.3	K.NS.1, K.NS.2, K.OA.1, K.OA.3	K.NS.1, K.OA.1, K.OA.2
Math Practice Standards	-	MP 6	MP 6	-	-
Lesson Purpose	The purpose of this lesson is for students to count 2 groups of objects to find the total, within 10.	The purpose of this lesson is for students to count 2 groups of images to find the total, within 10.	The purpose of this lesson is for students to count to find the total number of images in 2 scattered groups.	The purpose of this lesson is for students to use objects to show the action of addition.	The purpose of this lesson is for students to represent the action of subtraction with objects.
Vocabulary Focus	Add, count, total, “how many”, altogether	Add, altogether, “how many”, total	Count, total, track	Addition, total, altogether, put together	Take away, subtraction, subtract
Lesson Materials/ Resources	Lesson 1 Slides Teacher Presentation Materials Student Pages	Lesson 2 Slides Teacher Presentation Materials Student Pages	Lesson 3 Slides Teacher Presentation Materials Student Pages	Lesson 4 Slides Teacher Presentation Materials Student Pages	Lesson 5 Slides Teacher Presentation Materials Student Pages

	Activity 1: ● Each group of 2 needs a bag of up to 10 pattern blocks with a mix of squares and triangles (a different number of triangles and squares). **Activity 2:** ● Each student needs a tower with up to 5 connecting cubes.	**Warm-Up:** ● Questions About Us Chart 5-Frame **Activity 1:** ● Each student needs a set of Dots on 5-Frame Card **Activity 2:** ● Slides **Activity 3:** Intro Roll and Add (Stage 1) ● Connecting Cubes ● Roll and Add Dot Images Mat (Stage 1) ● Roll and Add Recording Sheet (Stage 1)	**Activity 1:** ● Slides **Activity 2:** ● Slides **Cool Down:** ● Cool Down Page	**Warm-Up:** ● Questions About Us Chart 5-Frame ● Enough 5-Frames to make a chart with a space for each student to answer the survey question. **Activity 1:** ● Each student needs at least 10 counters and access to 5-Frames **Activity 2:** Intro to 5-Frames (Stage 1) ● Number Mat 1–5 ● 5-Frames ● 5-frames Stages 1 and 2 Recording Sheet ● 10 Counters per group of 2	**Activity 1:** ● Each student needs at least 10 counters **Activity 2:** Intro 5-Frames (Stage 2) ● Number Mat 1–5 ● 5-Frames ● 5-frames Stages 1 and 2 Recording Sheet ● 10 Counters per group of 2
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse.** **See Checkpoint A Document, Checkpoint A Teacher Guide, and Grade K Unit 4 I Can Self Assessment**				
					Section A- Practice Problems
Centers Materials	Math Libs Match Mine	Math Libs Match Mine	Roll and Add (Stage 1) Math Libs Match Mine	Roll and Add (Stage 1) Math Libs Match Mine	5-Frames (Stage 1) Roll and Add (Stage 1) Math Libs Match Mine

Making Meaning:

Lesson 1: Count 2 Groups of Objects

- The purpose of this lesson is for students to count 2 groups of objects to find the total, within 10.
- Lesson 1 Slides
- Teacher Presentation Materials

Lesson 2: Count 2 Groups of Images

- The purpose of this lesson is for students to count 2 groups of images to find the total, within 10.
- Lesson 2 Slides
- Teacher Presentation Materials

Lesson 3: Count 2 Groups of Scattered Images

- The purpose of this lesson is for students to count to find the total number of images in 2 scattered groups.
- Lesson 3 Slides
- Teacher Presentation Materials

Investigation:

Lesson 4: Add With Objects

- The purpose of this lesson is for students to use objects to show the action of addition.
- Lesson 4 Slides
- Teacher Presentation Materials

Activities in Lesson 4 best represent investigation as students are introduced to the process of manipulating counters and using a five frame. These skills will be utilized in the create and produce section of the task.

Create and Produce:

Lesson 5: Subtract With Objects

- The purpose of this lesson is for students to represent the action of subtraction with objects.
- Lesson 5 Slides
- Teacher Presentation Materials

In lesson 5, Activity 2, students will learn stage 2 of the 5-frames center. Students represent subtraction with objects. Students begin with 5 counters on a 5-frame, take some counters away, and figure out how many counters are left.

Activity 2: Introduce 5-Frames, Subtract

- Lesson 5 Slides
- Teacher Presentation Materials

Monitor students as they work with a partner utilizing the manipulatives appropriately.
Listen for students using the precise vocabulary “take away”.

Communicate and Present:

Invite students to share their recording sheet with other partners. Have them read and explain the expressions that they could possibly have from the game they played.

Lesson 5: Subtract with Objects

- The purpose of this lesson is for students to represent the action of subtraction with objects.
- Lesson 5 Slides
- Teacher Presentation Materials

In lesson 5, Activity 2, students will learn stage 2 of the 5-frames center. Students represent subtraction with objects. Students begin with 5 counters on a 5-frame, take some counters away, and figure out how many counters are left.

This activity will give students the chance to explain their thinking through the use of manipulatives.

Reflection:

- IM Reflection Practices
- Grade K Unit 4 I Can Self Assessment

Notes: Follow lessons in numerical order.

Complete File with Resources and Task:

Topic # 2: Section B	Topic Name: Section B - Represent and Solve Story Problems	Duration: Recommended: 8 days (8 lessons)

Topic Description:

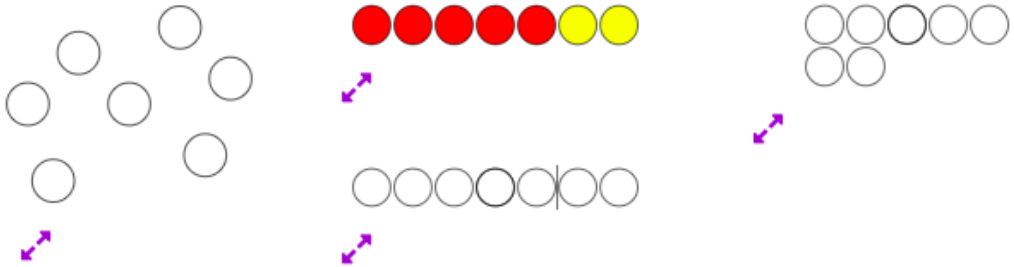
In this section, students represent and solve story problems with playgrounds and parks as contexts. The types of problems are limited to Add To, Result Unknown and Take From, Result Unknown.

Students begin by acting out and representing stories that don't include a question. Questionless story problems encourage students to think about the context and the action in the story without feeling pressure to solve the problem.

There were 5 students jumping rope at recess.

2 more students came out to play with them.

As questions are posed, students represent the problems with objects, math tools, drawings and numbers, and focus on explaining how their representation connects to the story. While they may represent a problem in any way that makes sense to them, students notice that organized drawings or objects make it easier to see the connections.



Students are also introduced to the concept of 0 representing a count of no objects. This idea may be abstract to students, so it is introduced in a Take From, Result Unknown story problem, where taking objects away leaves no remaining objects.

The term "expression" is introduced here. Students begin to see expressions as a way to record quantities being combined or removed. For instance, as a student describes what happens with their counters, the teacher writes the words "7 take away 3" and says "7 take away 3" and "7 minus 3." Students are not expected to interpret expressions at this time.

Section Learning Goals

- Represent and solve Add To, Result Unknown and Take From, Result Unknown story problems within 10.

Competencies Addressed:

Understanding and Applying Number Sense:

NS.1: I can tell the number of objects using counting and instant visual recognition. **K.CC.B.4-5**

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**

NS.4: I can name and write numbers 0-20 to represent a group of objects. **K.CC.A.3**

Operations and Algebraic Thinking

OA.1: I can represent addition within 10 and fluently add within 5. **K.OA.A.1, K.OA.A.4, K.OA.A.5**

OA.2: I can represent subtraction within 10 and fluently subtract within 5. **K.OA.A.1, K.OA.A.5**

OA.3: I can solve addition and subtraction word problems within 10. **K.OA.A.2**

Essential Question and Enduring Understanding Addressed in this Topic:

Essential Question:
What are different strategies to solve addition and subtraction story problems?

Enduring Understanding:
Strategies like acting it out or drawing the problem can help us understand what actions are taking place and what we need to do to find the missing information. We can use other strategies to solve the problem such as using drawings, using objects, or using our fingers. These strategies can help keep track of which objects or images have been counted. Writing an expression helps us describe the story problem mathematically.

In this Topic, students will know:

- We can relate addition and subtraction expressions and actions to story problems
- We can use different strategies to retell a story problem
- Objects or drawings can represent a story problem

Topic Vocabulary:
Subtraction Towers
Represent

Academic vocabulary:
Story problem
5-frame
Expression
Connecting cubes
Addition
"+"
Add to
Plus

	Subtraction Take from "-" Minus Retell Counters Solve More Fewer Compare
In this Topic, students will be able to: ● Accurately retell a story problem in their own words. ● Understand the action in a story problem and act it out or demonstrate it with objects or drawings. ● Use objects or drawings to represent a story problem. ● Explain how objects or drawings represent a story problem. ● Create their own addition or subtraction story problem.	**Plan for Student Reflection:** Student Journal Prompts and Reflection Practices Grade K Unit 4 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**: As students worked in their small groups today, whose ideas were heard, valued, and accepted? How can you adjust the group structure tomorrow to ensure each student's ideas are a part of the collective learning? **Lesson 7**: As students used objects to represent stories, what evidence did you see that students are making connections between the objects and the

	things in the story that the objects are representing? **Lesson 8**: If you were to teach this lesson over again, which activity would you redo? How would your proposed changes support student learning? **Lesson 9**: Which students had opportunities to share their work and thinking during whole-class discussion? How did you select these students? **Lesson 10**: In the next lesson, all students will be asked to produce a drawing to represent and solve a story problem. How does the work in this lesson and previous lessons lay the foundation for students to create their own drawings? **Lesson 11:** How did the student work that you selected impact the direction of the discussion? What student work might you pick next time if you taught the lesson again? **Lesson 12:** Think about a time you recently made a mistake during math class. How did you leverage your mistake to show students that mistakes are just learning in progress? **Lesson 13:** 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?

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 - Represent and Solve Story Problems	**Grade Level and Unit: Kindergarten, Unit 4**
Description of Task: Students will create addition or subtraction story problems, based on the picture provided or their own topics. The types of problems are limited to Add To, Result Unknown and Take From, Result Unknown. As questions are posed, students represent the problems with objects, math tools, drawings and numbers, and focus on explaining how their representation connects to the story. While they may represent a problem in any way that makes sense to them, students notice that organized drawings or objects make it easier to see the connections.	**Purpose of Task:** The purpose of this task is for students to represent and solve story problems with playgrounds and parks as contexts.
Background of Students/Learning Progression: In this section, students continue to develop their understanding of how to represent and solve story problems with playgrounds and parks as contexts. The types of problems are limited to Add To, Result Unknown and Take From, Result Unknown. Previously, students used manipulatives to represent the actions of addition and subtraction. In this section, students will take what they know about addition and subtraction to explore and eventually develop their own story problems. They will also be using objects and drawings to represent these stories, similar to the activities they have interacted with in the previous lessons.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification
Getting Started: Lesson 6; Activity 1: Students will be prompted with the following picture and given an opportunity to share with a partner: ● "Look at this picture of children. Imagine what you think is happening in the picture. Tell your partner a story about what is happening in the picture."	

Section B

IM Lesson	L6 : Tell and Act Out Stories	L 7: Use Objects to Represent Stories	L 8: Represent and Solve Story Problems	L9 : Solve Story Problems	L 10: Compare Drawings	L 11: Drawings to Represent Story Problems	L12: Compare Addition and Subtraction Story Problems	L13: Create Story Problems
Learning Cycle Model	**Making Meaning**	**Making Meaning**	**Making Meaning**	**Making Meaning**	**Making Meaning**	**Investigation**	**Investigation**	**Create and Produce**
Naugatuck Math Competency	K.NS.1, K.OA.1, K.OA.2, K.OA.3	K.NS.1, K.OA.1, K.OA.2, K.OA.3	K.OA.1, K.OA.2, K.OA.3	K.NS.1, K.NS.4, K.OA.1, K.OA.2, K.OA.3	K.NS.1, K.OA.1, K.OA.2, K.OA.3	K.OA.3	K.NS.3, K.OA.3	K.NS.1, K.NS.4, K.OA.1, K.OA.2, K.OA.3
Math Practice Standards	-	MP 2, MP 6	MP 5	MP 2	MP 2, MP 6	MP2, MP 5	MP 2	MP 4
Lesson Purpose	The purpose of this lesson is for students to tell and act out addition and	The purpose of this lesson is for students to use objects to demonstrate	The purpose of this lesson is for students to represent and solve story	The purpose of this lesson is for students to solve story problems in a way that makes	The purpose of this lesson is for students to compare drawings that	The purpose of this lesson is for students to draw a picture to represent	The purpose of this lesson is for students to solve and compare Add To, Result	The purpose of this lesson is for students to create an addition or

	subtraction stories.	the actions of addition and subtraction in stories.	problems in a way that makes sense to them.	sense to them and to understand how objects and drawings represent a story problem.	represent story problems.	and solve a story problem.	Unknown and Take From, Result Unknown story problems.	subtraction story problem.
Vocabulary Focus	Addition, subtraction, "+", "-"	Addition, subtraction, "+", "-"	Represent, solve, "take away"	Represent, solve, more, fewer	Compare	Compare	Compare	Addition, subtraction
Lesson Materials/ Resources	Lesson 6 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● Slides **Activity 2:** ● Slides **Activity 3:** Intro Subtraction Towers (Stage 1) ● Each group of 2 needs 10 connecting cubes ● Number	Lesson 7 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● 7 objects such as toys, dolls, etc.. ● Each student needs a bag of 10 two-color counters ● Playing on the Playground **Activity 2:** ● Each	Lesson 8 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● Slides **Activity 2:** ● Container of connecting cubes or two-color counters ● Crayons	Lesson 9 Slides Teacher Presentation Materials Student Pages **Activities 1 and 2:** ● Container of connecting cubes or two-color counters ● Markers **Activity 3:** Intro Math Fingers (Stage 3) ● Math Fingers Recording Sheet (Stage 3)	Lesson 10 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Enough 5-Frames to track each student's answer ● Questions About Us Chart 5-Frame ● Chart paper **Activity 1:** ● Container of connecting cubes or two-color	Lesson 11 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● Container of connecting cubes or two-color counters **Activity 2:** ● Students' pictures from Activity 1 **Cool Down:** ● Cool Down Page	Lesson 12 Slides Teacher Presentation Materials Student Pages **Activities 1 and 2:** ● Container of connecting cubes or two-color counters	Lesson 13 Slides Teacher Presentation Materials Student Pages **Warm-Up:** ● Enough 5-Frames to track each student's answer ● Questions About Us Chart 5-Frame **Activities 1 and 2:** ● Container of connecting cubes or

	Mat 1–5	student needs a bag of 10 two-color counters **Activity 3:** Intro to Math Stories (Stage 2) ● Each group of 2 needs 10 two-color counters ● Math Stories Background (Stage 2)			counters **Activity 2:** ● Slides **Activity 3:** Intro Bingo (Stage 3) ● Each group of 2 gets 2 connecting cubes, 10 two-color counters ● Dot Mat 1-5 ● Bingo Gameboard			two-color counters **Activity 3:** New variation of Math Stories (Stage 2) ● Math Stories Stage 2 Recording Sheet ● Math Stories Stage 2 Backgrounds
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse.** **See Checkpoint B Document, Checkpoint B Teacher Guide, and Grade K Unit 4 I Can Self Assessment**							
								Section B - Practice Problems
Centers Materials	5-Frames (Stage 1 and Stage 2) Build Shapes (Stage 1 and Stage 2) Counting Collections (Stage 1)	Subtraction Towers (Stage 1) 5-Frames (Stage 1 and Stage 2) Build Shapes (Stage 1 and Stage 2)	Math Stories (Stage 1 and 2) Subtraction Towers (Stage 1) 5-Frames (Stage 1 and Stage 2)	Math Stories (Stage 1 and 2) Subtraction Towers (Stage 1) 5-Frames (Stage 1 and Stage 2) Build Shapes (Stage 1 and Stage 2)	Math Fingers (Stages 1-3) Math Stories (Stage 1 and 2) Subtraction Towers (Stage 1) 5-Frames (Stage 1 and Stage 2)	Bingo (Stages 1-3) Math Fingers (Stages 1-3) Math Stories (Stage 1 and 2) Subtraction Towers (Stage 1)	Bingo (Stages 1- 3) Math Fingers (Stages 1-3) Math Stories (Stage 1 and 2) Subtraction Towers (Stage 1)	Bingo (Stages 1-3) Math Fingers (Stages 1-3) Math Stories (Stage 1 and 2) Subtraction Towers (Stage 1)

		Counting Collections (Stage 1)	Build Shapes (Stage 1 and Stage 2) Counting Collections (Stage 1)	Counting Collections (Stage 1)	Counting Collections (Stage 1)	5-Frames (Stage 1 and Stage 2) Counting Collections (Stage 1)	5-Frames (Stage 1 and Stage 2) Counting Collections (Stage 1)	5-Frames (Stage 1 and Stage 2) Counting Collections (Stage 1)

Making Meaning:

Lesson 6: Tell and Act Out Stories

- The purpose of this lesson is for students to tell and act out addition and subtraction stories.
- Lesson 6 Slides
- Teacher Presentation Materials

Lesson 7: Use Objects to Represent Stories

- The purpose of this lesson is for students to use objects to demonstrate the actions of addition and subtraction in stories.
- Lesson 7 Slides
- Teacher Presentation Materials

Lesson 8: Represent and Solve Story Problems

- The purpose of this lesson is for students to represent and solve story problems in a way that makes sense to them.
- Lesson 8 Slides
- Teacher Presentation Materials

Lesson 9: Solve Story Problems

- The purpose of this lesson is for students to solve story problems in a way that makes sense to them and to understand how objects and drawings represent a story problem.
- Lesson 9 Slides
- Teacher Presentation Materials

Lesson 10: Compare Drawings

- The purpose of this lesson is for students to compare drawings that represent story problems.

- Lesson 10 Slides
- Teacher Presentation Materials

Investigation:

Lesson 11: Drawings to Represent Story Problems

- The purpose of this lesson is for students to draw a picture to represent and solve a story problem.
- Lesson 11 Slides
- Teacher Presentation Materials

Activities in Lesson 11 best represent investigation as students are asked to create drawings that represent story problems. They will have the opportunity to practice this skill with the ability to use objects to also represent the problems. Using both strategies will be helpful to students to connect their prior learning to the activities in this lesson.

Lesson 12: Compare Addition and Subtraction Story Problems

- The purpose of this lesson is to solve and compare Add To, Result Unknown and Take From, Result Unknown story problems.
- Lesson 12 Slides
- Teacher Presentation Materials

Activities in Lesson 12 best represent investigation as students are given an opportunity to focus on the action in each story and how it determines whether they need to add or subtract to solve the problem.

Create and Produce:

Lesson 13: Create Story Problems

- The purpose of this lesson is for students to create an addition or subtraction story problem.
- Lesson 13 Slides
- Teacher Presentation Materials

In Lesson 13, Activities 1, students will create addition or subtraction story problems, based on the picture provided or their own topics.

Activity 1: Create a Story Problem

- Lesson 13 Slides
- Teacher Presentation Materials

Monitor students as they work through their story problems. Assess which students may need assistance in choosing a subject or refer back to the picture.

<table>
<tr><td colspan="2">Listen to students using the precise vocabulary such as:“more,” “joined,” “went away,” “take away,” and “less.”</td></tr>
<tr><td>Communicate and Present:
Invite students to share their story with a partner that uses the same subject as them, however using the opposite operation.

Lesson 13: Create Story Problems
● The purpose of this lesson is for students to create an addition or subtraction story problem.
● Lesson 13 Slides
● Teacher Presentation Materials

In Lesson 13, Activity 2, students will have the opportunity to compare the action in addition and subtraction problems. Students will then solve their partner’s story problem.</td><td>Reflection:
● IM Reflection Practices
● Grade K Unit 4 I Can Self Assessment</td></tr>
<tr><td>Notes: Follow lessons in numerical order.</td><td>Complete File with Resources and Task:</td></tr>
</table>

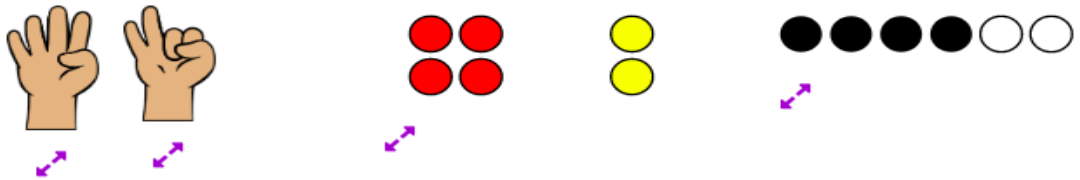
Topic # 3: Section C	Topic Name: Section C - Addition and Subtraction Expressions	Duration: Recommended: 5 days (5 lessons)

Topic Description:

In this section, students formally work with expressions for the first time. They match expressions such as and to story problems and drawings and articulate why an expression represents a given problem or drawing. While students fill in addition and subtraction expressions, they are not expected to produce expressions independently in this section.

Students then transition from expressions that represent story problems or drawings to expressions without a context. To find the value of expressions, students may add or subtract in a way that makes sense to them, reasoning with fingers, objects, or drawings.

With repeated experience, students begin to notice regularity when adding and subtracting (MP8). For instance, they see that adding 1 results in the next number in the count sequence and that adding 0 results in the same number.



Section Learning Goals

- Find the value of addition and subtraction expressions within 10.
- Relate addition and subtraction expressions to story problems.

Competencies Addressed: **Understanding and Applying Number Sense:** NS.1: I can tell the number of objects using counting and instant visual recognition. **K.CC.B.4-5** 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** NS.4: I can name and write numbers 0-20 to represent a group of objects. **K.CC.A.3** **Operations and Algebraic Thinking** OA.1: I can represent addition within 10 and fluently add within 5. **K.OA.A.1, K.OA.A.4, K.OA.A.5** OA.2: I can represent subtraction within 10 and fluently subtract within 5. **K.OA.A.1, K.OA.A.5** OA.3: I can solve addition and subtraction word problems within 10. **K.OA.A.2**	**Essential Question and Enduring Understanding Addressed in this Topic:** **Essential Question:** How can counting relate to addition and subtraction? What are different strategies to solve addition and subtraction story problems? **Enduring Understanding:** **Identifying the type of story problem can help us answer questions like "how many" or "how many left."** By determining what information is missing in the problem, we can determine what operation is needed. The action in the story problem can help us relate addition and subtraction in order to find the missing information. We use our prior knowledge of number sense to solve story problems. **Strategies like acting it out or drawing the problem can help us understand what actions are taking place and what we need to do to find the missing information**. We can use other strategies to solve the problem such as using drawings, using objects, or using our fingers. These strategies can help keep track of which objects or images have been counted. Writing an expression helps us describe the story problem mathematically.
In this Topic, students will know: ● An expression can represent a story problem ● Different strategies can be used to solve addition and subtraction expressions ie. using fingers, objects or drawings ● We can use a count sequence to determine the total when adding 1	**Topic Vocabulary:** Number race Math stories Shake and Spill Roll and Add

	Counting Sequence **Academic vocabulary:** Expression Story problems Addition Subtraction Drawing Connecting Cubes Counters Joined Take Away “How Many”
In this Topic, students will be able to: ● Explain how an expression connects to a drawing or story problem. ● Fill in an expression to represent a drawing. ● Use fingers, objects, or drawings to find the value of an expression. ● Count all to determine the total when 0 or 1 are added. ● Use knowledge of the count sequence to determine the total when 1 is added.	**Plan for Student Reflection:** Student Journal Prompts and Reflection Practices Grade K Unit 4 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 14**: What opportunities are you giving students to reflect on their understanding of the mathematical content? **Lesson 15**: Revisit the norms you established as a class about doing mathematics. Which norms are working and which might need revision? Are there

	any norms you or your students might want to add? **Lesson 16**: In a previous unit, students represented numbers in multiple ways, including using their fingers, objects, and drawings. How did students work with representing numbers prepare them to find the value of expressions in this lesson? **Lesson 17:** The standards ask students to count on from a given number (K.CC.A.2) and to understand that each successive number names refers to a quantity that is one larger (K.CC.B.4.c). How will the work in this lesson support students in counting on from a given number? **Lesson 18**: 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 the next unit?

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 - Addition and Subtraction Expressions	**Grade Level and Unit: Kindergarten, Unit 4**
Description of Task: Students will create an addition or subtraction expression and a matching story problem. Students will use their prior learning of story problems and problem solving strategies to practice addition and subtraction skills.	**Purpose of Task:** The purpose of this task is for students to connect an addition or subtraction expression to a matching story problem.
Background of Students/Learning Progression: In this unit, students continue to develop their skills in solving addition and subtraction expressions and problems. Previously, students worked through story problems with addition and subtraction. They've learned different strategies to solve those story problems which will relate to solving mathematical expressions.	**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 3 - Section C of Unit 4**, students will be asked: ● What stories can you tell about the picture? Can we create an expression to match that story?	

Section C

IM Lesson	L14 : Expressions and Story Problems	L 15: Expressions and Drawings	L 16: Find the Value of Expressions	L 17: Add 0 and 1	L18 : Tell Story Problems for Expressions
Learning Cycle Model	**Making Meaning**	**Making Meaning**	**Making Meaning**	**Investigation**	**Create and Produce**
Naugatuck Math Competency	K.NS.3, K.OA.1, K.OA.2, OA.3	K.NS.4, K.OA.1, K.OA.2, OA.3	K.OA.1, K.OA.2, K.OA.3	K.NS.1, K.NS.4, K.OA.1, K.OA.2, K.OA.3	K.NS.3, K.OA.1, K.OA.2, K.OA.3
Math Practice Standards	-	MP 7	-	MP 7, MP 8	MP 4
Lesson Purpose	The purpose of this lesson is for students to connect expressions to story problems.	The purpose of this lesson is for students to connect expressions to drawings.	The purpose of this lesson is for students to find the value of addition and subtraction expressions in a way that makes sense to them.	The purpose of this lesson is for students to notice patterns when 0 and 1 are added to a number.	The purpose of this lesson is for students to create story problems to match expressions and fill in expressions to match story problems.

Vocabulary Focus	Expressions, addition, subtraction, represent, “+”, “-”	Expressions, addition, subtraction, represent, “+”, “-”	Expressions, addition, subtraction, represent, “+”, “-”	Expressions, addition, subtraction, represent, “+”, “-”	Expressions, addition, subtraction, represent, “+”, “-”
Lesson Materials/ Resources	Lesson 14 Slides Teacher Presentation Materials Student Pages **Activities 1 and 2:** ● Each group of 2 gets a container of connecting cubes or counters	Lesson 15 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● Slides **Activity 3:** Intro Shake and Spill (Stage 3) ● Each group of 2 needs 10 two-color counters. ● Each group of 2 needs access to a yellow crayon and a red crayon. ● Cups ● Shake and Spill Stage 3 Recording Sheet Kindergarten	Lesson 16 Slides Teacher Presentation Materials Student Pages **Activity 1:** Intro Roll and Add (Stage 2) ● Give each group of students a number mat, container of connecting cubes or two-color counters. ● Give each student a recording sheet. ● Number Mat 1-5 ● Roll and Add Stage 2 Recording Sheet **Activity 2:** ● Each group of 2 gets a container of connecting cubes or counters **Cool Down:** ● Cool Down Page	Lesson 17 Slides Teacher Presentation Materials Students Pages **Activity 1:** ● Each group of 2 gets a container of connecting cubes or counters ● Add 0 and 1 Mat **Activity 2:** ● Slides **Activity 3:** Intro to Find the Value of Expressions (Stage 1) ● Each group needs a container of connecting cubes or counters ● Find the Value of Expressions within 10 Cards (Stage 1) ● Find the Value of Expressions within 10 Recording Sheet (Stage 1)	Lesson 18 Slides Teacher Presentation Materials Student Pages **Activity 1:** ● Each student needs their student page **Activity 2:** ● Students’ pages from activity 1
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse.**				

	See Checkpoint C Document, Checkpoint C Teacher Guide, and Grade K Unit 4 I Can Self Assessment Section C Practice Problems End of Unit Assessment End of Unit Assessment Teacher Guide				
Centers Materials	Number Race (Stage 1) Math Stories (Stage 1 and 2)	Number Race (Stage 1) Math Stories (Stage 1 and 2)	Number Race (Stage 1) Math Stories (Stage 1 and 2) Shake and Spill (Stages 1,2 and 3)	Number Race (Stage 1) Math Stories (Stage 1 and 2) Shake and Spill (Stages 1,2 and 3) Roll and Add (Stages 1 and 2)	Number Race (Stage 1) Math Stories (Stage 1 and 2) Shake and Spill (Stages 1,2 and 3) Roll and Add (Stages 1 and 2) Find the Value of Expressions (Stage 1)

Making Meaning:

Lesson 14: Expressions and Story Problems

- The purpose of this lesson is for students to connect expressions to story problems.
- Lesson 14 Slides
- Teacher Presentation Materials

Lesson 15: Expressions and Drawings

- The purpose of this lesson is for students to connect expressions to drawings.
- Lesson 15 Slides
- Teacher Presentation Materials

Lesson 16: Find the Value of Expressions

- The purpose of this lesson is for students to find the value of addition and subtraction expressions in a way that makes sense to them.
- Lesson 16 Slides

- Teacher Presentation Materials

Investigation:

Lesson 17: Add 0 and 1

- The purpose of this lesson is for students to notice patterns when 0 and 1 are added to a number.
- Lesson 17 Slides
- Teacher Presentation Materials

Activities in Lesson 17 best represent investigation as students relate their counting skills and knowledge of the counting sequence to addition expressions when adding 0 and 1.
For example, students may notice, through repeated reasoning, the pattern that the number stays the same when 0 are added and that the total is the next counting number when 1 is added

Create and Produce:

Lesson 18: Tell Story Problems for Expressions

- The purpose of this lesson is for students to create story problems to match expressions and fill in expressions to match story problems.
- Lesson 18 Slides
- Teacher Presentation Materials

In lesson 18, Activity 1, students will think of either an addition or subtraction expression. Then they will tell a story problem to match the expression. They can draw pictures or write words to show what is happening in their stories.

Activity 1:

- Lesson 18 Slides
- Teacher Presentation Materials

Monitor students as they start creating their expressions and story problems. Remind students that their story problems should end with a question and encourage students to use pictures to represent their story problems.
Listen for students using the precise vocabulary in their story problems that match their expressions, such as “joined”, “take away”, “how many”.

Communicate and Present:
Invite students to share their story problems through a class gallery walk. As half of the class walks around and listens to their peer’s story problems, they will figure out which expression matches the story problem.

Reflection:

- IM Reflection Practices
- Grade K Unit 4 I Can Self Assessment

Lesson 18: Tell Story Problems for Expressions ● The purpose of this lesson is for students to create story problems to match expressions and fill in expressions to match story problems. ● Lesson 18 Slides ● Teacher Presentation Materials In lesson 18, Activity 2, students will share story problems and figure out which expression matches a given story problem.	
Notes: **Follow lessons in numerical order.**	**Complete File with Resources and Task:**