NEW MILFORD PUBLIC SCHOOLS
New Milford, Connecticut

Kindergarten Mathematics

September 2014

Approved by the Board of Education
September 9, 2014

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New Milford's Mission Statement

The mission of the New Milford Public Schools, a collaborative partnership of students, educators, family and community, is to prepare each and every student to compete and excel in an ever-changing world, embrace challenges with vigor, respect and appreciate the worth of every human being, and contribute to society by providing effective instruction and dynamic curriculum, offering a wide range of valuable experiences, and inspiring students to pursue their dreams and aspirations.

Pacing Guide

Unit #	Weeks	Pages
1	4	6-9
2	5	10-13
3	5	14-17
4	6	18-23
5	4	24-28
6	7	29-32
7	4	33-37

Key for Standards

MP 1 - Make sense of problems and persevere in solving them

MP 2 - Reason abstractly and quantitatively

MP 3 - Construct viable arguments and critique the reasoning of others

MP 4 - Model with mathematics

MP 5 - Use appropriate tools strategically

MP 6 - Attend to precision

MP 7 - Look for and make use of structure

MP 8 - Look for and express regularity in repeated reasoning.

New Milford Public Schools

Committee Member(s): Catherine Carr, Sarah Divine, Corby Kennison, Stephanie Zappone Unit Title: Unit 1	Course/Subject: Math Grade Level: Kindergarten # of Weeks: 4

Identify Desired Results

Common Core Standards

Standards in Unit

- (K.CC.1) Count to 100 by ones and by tens.
- (K.CC.3) Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
- (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality.
- (K.CC.4a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
- (K.CC.4b) Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- (K.CC.4c) Understand that each successive number name refers to a quantity that is one larger.
- (K.CC.5) Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration.
- (K.G.1) Describe objects in the environment using names of shapes, and describe the relative position of these objects using terms such as above, below, beside, in front of, behind, and next to.
- (K.G.2) Correctly name shapes regardless of their orientations or overall size.

Standards Only in Classroom Routines

- (K.MD.3) Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Counting is useful. It assigns a number name to an object or set of objects. • Numbers represent quantities of items and can be ordered from least to greatest. • Data displays describe and show	• What does a number mean? How many are there? • Why is data displayed in different ways? • How does geometry better describe objects?

data in different ways. • Geometric attributes (such as sides and corners) provide descriptive information about an object's properties.	

Expected Performances
What students should know and be able to do

Students will know the following:

- This unit focuses on counting and quantity by developing strategies for accurately counting a set of objects by ones.
- Students create an equivalent set and consider whether order matters when you count.
- Students begin to understand length.
- Students begin to develop an understanding of the magnitude and position of numbers.

Students will be able to do the following:

- Use a Ten-Frame to develop visual images of quantities up to 10
- Use numerals to represent quantities.
- Count a set of up to 10 objects/
- Describe which of two objects is longer
- Compare two quantities up to 10 to see which is greater.
- Represent quantities with pictures, numbers, drawings, objects and/or words.

Character Attributes

- Cooperation
- Respect
- Responsibility
- Perseverance

Technology Competencies

- None

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
Use a math workshop model with teacher-directed mini-lesson • to provide students with repeated experiences with concepts and skills • to provide time for teachers to work with small groups of students **Use games to develop concepts and practice skills** **Use student-centered activities and**	• Count on the calendar to find out what day it is • Identify special days on the calendar • Count and record the number of students in the class • Explore math materials i.e. pattern blocks, Geoblocks, Unifix cubes, color tiles, attribute blocks and buttons and their attributes • Compare math materials i.e. pattern

worthwhile math tasks
Use a variety of grouping structures
• Collaborative groups, partners, individuals
Orchestrate class discussions
• Focus discussions on important mathematics and student strategies
• Elicit participation by all students over the course of several discussions
• Facilitate student to student discourse
Encourage students to represent and discuss their thinking strategies
Use Classroom Routines to provide on-going practice and review
• Attendance
  • Develop strategies for counting accurately
  • Consider whether order matters when you count
  • Compare quantities
• Calendar
  • Use the calendar as a tool for keeping track of time
  • Develop strategies for counting accurately
• Today's Question
  • Collect, count, represent, describe, and compare data
	blocks, Geoblocks and Unifix cubes and their attributes
	• Create an attendance stick using Unifix cubes and count the number of students present in different way i.e as a group or individually
	• Count /group objects in counting jar
	• Create equivalent sets of counters
	• Describe math materials i.e. pattern blocks, Geoblocks, Unifix cubes, color tiles, attribute blocks and buttons
	• Play **Button Match Up** game to find at least one button attribute in common
	• Play **Attribute Block Match Up** game to find at least one block attribute in common.
	• Discuss and compare labeled attendance stick.
	• Answer daily question by writing their name on a chart
	• Record how many objects are in the counting jar on a piece of paper using pictures, numbers and or words
	• Sorts classmates according to at least one attribute
	• Sorts attribute blocks according to at least one attribute
	• Creating constructions with pattern blocks, Geoblocks and Unifix cubes.

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** • Use, describe and sort math manipulatives • Describe manipulative creations • Count objects and create a set • Respond to a question. **Other Formative Assessments** • Counting Jar Booklet or counting jar chart responses

Suggested Resources

- Russell, Susan Jo and Karen Economopoulos. (Second Edition, 2012) *Investigations in Number, Data, and Space, Kindergarten: Unit 1, Who Is In School Today?* Upper Saddle River, NJ: Pearson.
- Van de Walle, John, et al. *Teaching Student-Centered Mathematics: Developmentally Appropriate Instruction for Grades Pre-K-2*, Second Edition. Boston: Pearson, 2014.
- K-5 Math Teaching Resources, K-5 Math Teaching Resources, LLC. http://www.k-5mathteachingresources.com/ . May 9, 2014.
- Howard County Math Wiki, Kindergarten. June 23.2014.

New Milford Public Schools

Committee Member(s): Catherine Carr, Sarah Divine, Corby Kennison, Stephanie Zappone Unit Title: Unit 2	Course/Subject: Math Grade Level: Kindergarten # of Weeks: 5

Identify Desired Results

Common Core Standards

Standards in the Unit

- (K.CC.1) Count to 100 by ones and by tens.
- (K.CC.3) Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
- (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality.
- (K.CC.4a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
- (K.CC.4b) Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- (K.CC.4c) Understand that each successive number name refers to a quantity that is one larger.
- (K.CC.5) Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration.
- (K.CC.6) Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
- (K.CC.7) Compare two numbers between 1 and 10 presented as written numerals.
- (K.MD.1) Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- (K.MD.2) Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*
- (K.MD.3) Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Standards Only in the Classroom Routines

- (K.G.1) Describe objects in the environment using names of shapes, and describe the relative position of these objects using terms such as above, below, beside, in front of, behind, and next to.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Counting is useful. It assigns a number name to an object or set of objects. • Numbers represent quantities of items and can be ordered from least to greatest. • Measurement is used everyday to describe the world.	• What does a number mean? How many are there? • Why is data displayed in different ways? • What does "what" we measure influence "how" we measure?

Expected Performances
What students should know and be able to do

Students will know the following:
Students will be able to do the following:

- Count a set of up to 15 objects.
- Decide which of two objects is longer.
- Compare two quantities up to 10 to see which is greater.

Character Attributes

- Cooperation
- Respect
- Responsibility
- Perseverance

Technology Competencies

- None

Develop Teaching and Learning Plan

Teaching Strategies:

Use a math workshop model with teacher-directed mini-lesson

- to provide students with repeated experiences with concepts and skills
- to provide time for teachers to work with small groups of students

Use games to develop concepts and practice skills

Use student-centered activities and worthwhile math tasks

Use a variety of grouping structures

- Collaborative groups, partners, individuals

Learning Activities:

- Make a counting book for the numbers 1 through 6.
- Play game **Grab and Count** to count and record handfuls of objects.
- Count objects in counting jar and make a set of objects the same size
- Play game **Roll and Record** to count, become familiar with dot arrangements and practice writing the numbers from 1 to 6.
- Play game **Build It** to arrange counters on a ten-frame.
- Compare and create equivalent sets of objects or drawings

Orchestrate class discussions

- Focus discussions on important mathematics and student strategies
- Elicit participation by all students over the course of several discussions
- Facilitate student to student discourse

Encourage students to represent and discuss their thinking strategies

Use Classroom Routines to provide on-going practice and review

- Attendance
  - Develop strategies for counting accurately
  - Consider whether order matters when you count
  - Compare quantities
- Calendar
  - Use the calendar as a tool for keeping track of time
  - Develop strategies for counting accurately
- Today's Question
  - Collect, count, represent, describe, and compare data

- Count the contents of a sample inventory bag
- Measure objects in a collection by comparing them to a tower of ten cubes.
- Observe and comment on strategies classmates use to compare lengths of objects
- Count backwards from 10
- Count and compare handfuls of Unifix cubes and record work
- Play game **Compare** to decide which of two cards shows more.
- Find things in the classroom that are longer and shorter than towers of 10 cubes.
- Compare two quantities to determine which is more
- Figure out the number of letters in student names and use Unifix cubes to make name towers with one cube for each letter in the name
- Use individual name towers to compare the lengths of names in the class
- Order Unifix cube towers from fewest to most
- Play game **Ordering Cards** to compare two or more quantities to determine which is more.

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** • Count and represent quantities through pictures (including ten frames), words and numbers • Organize objects in counting bags, check their work and keep track of which objects they have counted. • Explain their reasoning and use unit vocabulary such as "shorter than" and "longer than"

	• Compare, record and order lengths and quantities **Other Formative Assessments** **End-Of-Unit-Assessment** Students will complete a math workshop with games/activities to be assessed on 3 benchmarks. Benchmarks include: Count a set of up to ten objects, decide which of two objects is longer, compare two quantities up to 10 to see which is greater. Students will complete a second math workshop. The activities/games for both workshops include: **Ordering Cards**, **Ordering Names**, **Grab and Count: Ordering**, and **Compare**.

Suggested Resources

- Russell, Susan Jo and Karen Economopoulos. (Second Edition, 2012) *Investigations in Number, Data, and Space, Kindergarten: Unit 2, Counting and Comparing.* Upper Saddle River, NJ: Pearson.
- Van de Walle, John, et al. *Teaching Student-Centered Mathematics: Developmentally Appropriate Instruction for Grades Pre-K-2*, Second Edition. Boston: Pearson, 2014.
- K-5 Math Teaching Resources, K-5 Math Teaching Resources, LLC. http://www.k-5mathteachingresources.com/ . May 9, 2014.
- Howard County Math Wiki, Kindergarten. June 23.2014.

New Milford Public Schools

Committee Member(s): Catherine Carr, Sarah Divine, Corby Kennison, Stephanie Zappone Unit Title: Unit 3	Course/Subject: Math Grade Level: Kindergarten # of Weeks: 5

Identify Desired Results

Common Core Standards

Standards in the Unit

- (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality.
- (K.CC.4a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
- (K.CC.4b) Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- (K.CC.4c) Understand that each successive number name refers to a quantity that is one larger.
- (K.CC.5) Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- (K.G.1) Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

(Types of patterns (AB, ABC, etc.) are not in the Common Core Standards. However, this unit provides a foundation for number patterns and skip counting, which is foundational in the Common Core in future grades.)

Standards Only in the Classroom Routines

- (K.MD.3) Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Patterns can be found in many forms. • Patterns can repeat. • Counting is useful. It assigns a number name to an object or set of objects.	• Where are patterns in nature, words, and numbers. • What is the repeating unit in the pattern? • What does a number mean?

Expected Performances
What students should know and be able to do

Students will know the following:

- The math focus of this unit is on describing, extending, constructing, and recording repeating patterns; determining what comes next in a given pattern, and beginning to think about the structure of repeating patterns.
- This unit develops ideas about patterns, sequences, and functions as part of an early algebra foundation.

Students will be able to do the following:

- Copy, construct, and extend simple repeating patterns, such as AB, ABC.
- Begin to identify the unit of a repeating pattern.

Character Attributes

- Cooperation
- Respect
- Responsibility
- Perseverance

Technology Competencies

- None

Develop Teaching and Learning Plan

Teaching Strategies:

Use a math workshop model with teacher-directed mini-lesson

- to provide students with repeated experiences with concepts and skills
- to provide time for teachers to work with small groups of students

Use games to develop concepts and practice skills

Use student-centered activities and worthwhile math tasks

Use a variety of grouping structures

- Collaborative groups, partners, individuals

Orchestrate class discussions

- Focus discussions on important mathematics and student strategies
- Elicit participation by all students over the course of several discussions
- Facilitate student to student discourse

Learning Activities:

- Take “Observation walk” to look carefully at an environment for patterns, shapes, etc.
- Draw what was noticed on “Observation walk”
- Play game **What’s Missing?** Game to help with observing and describing.
- Play game **Button Match-Up** and **Who Is in School Today?**
- Sort attribute blocks
- Play game **Can You Do What I Do?** to show patterning and help with observation
- Count objects in counting jar
- Compare and contrast button attributes
- Observe, make, and sort a cube train.
- Make and compare cube train patterns
- Construct and record patterns with

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Encourage students to represent and discuss their thinking strategies

Use Classroom Routines to provide on-going practice and review

- Attendance
  - Develop strategies for counting accurately
  - Consider whether order matters when you count
  - Compare quantities
- Calendar
  - Use the calendar as a tool for keeping track of time
  - Develop strategies for counting accurately
- Today's Question
  - Collect, count, represent, describe, and compare data
- Patterns on the Pocket Chart
  - Determine what comes next in a repeating pattern.
  - Describe repeating patterns

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pattern blocks, tiles, counters and cubes.

- Construct and describe pattern block snakes.
- Construct and describe one-two patterns
- Play game **What Comes Next?** to help with patterning and predicting
- Construct, describe and record patterns with two-color counters patterns
- Construct and describe patterns made with arrows.
- Play game **Add On** to help with addition and patterning.
- Extend patterns
- Share and explain patterns
- Play game **Break the Train** to help with counting the number of patterns
- Record game **Break the Train** game information
- Play game **How Many Cars?** To help with counting and making patterns
- Play game and record **12 Chips** to help students with different patterns
- Compare different kinds of patterns
- Complete student activity pages
- Complete Pattern Display

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<td colspan="2">Assessments</td>
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<td>Performance Task(s)
Authentic application to evaluate student achievement of desired results designed according to GRASPS
(one per marking period)</td>
<td>Other Evidence
Application that is functional in a classroom context to evaluate student achievement of desired results</td>
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Goal:

Role:

Audience:

Situation:

Product or Performance:

Standards for Success:

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Ongoing Formative Assessments: Observing Students

- Describe what they see on "observation walk"
- Find buttons that share an attribute
- Use different attributes to classify objects
- Communicate about attributes used to classify
- Count objects in a jar
- Sequence number names

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	• Make a train with 8-10 cubes • Make different patterns both repeating and non-repeating • Describe patterns made by students or teacher • Make patterns out of different math manipulatives • Record pattern block snakes • Determine what comes next in a pattern • Recognize when patterning mistakes have been made • Identify the unit of a pattern • Reconstruct a pattern once it has been broken • Create an equivalent • Represent contents of the jar • Compare and contrast counting jar numbers • Record variety of patterns **End of Unit Assessment** • Assessment Workshop- observe students to ensure all activities are being done correctly and that concepts are understood. • Pattern Display-discuss and review patterns collected throughout the unit.

Suggested Resources

- Investigations: What Comes Next?
- Russell, Susan Jo and Karen Economopoulos. (Second Edition, 2012) *Investigations in Number, Data, and Space, Kindergarten: Unit 3, What Comes Next?* Upper Saddle River, NJ: Pearson.
- Van de Walle, John, et al. *Teaching Student-Centered Mathematics: Developmentally Appropriate Instruction for Grades Pre-K-2*, Second Edition. Boston: Pearson, 2014.
- K-5 Math Teaching Resources, K-5 Math Teaching Resources, LLC. http://www.k-5mathteachingresources.com/ . May 9, 2014.
- Howard County Math Wiki, Kindergarten. June 23, 2014.

New Milford Public Schools

Committee Member(s): Catherine Carr, Sarah Divine, Corby Kennison, Stephanie Zappone Unit Title: Unit 4	Course/Subject: Math Grade Level: Kindergarten # of Weeks: 6

Identify Desired Results

Common Core Standards

Standards in the Unit

- (K.CC.1) Count to 100 by ones and by tens.
- (K.CC.3) Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
- (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality.
  (K.CC.4a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
  (K.CC.4b) Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
  (K.CC.4c) Understand that each successive number name refers to a quantity that is one larger.
- (K.CC.5) Count to answer “how many?” questions about as many as 20 things arranged in a line, rectangular array, circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
- (K.CC.6) Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g. by using matching and counting strategies.
- (K.CC.7) Compare two numbers between 1 and 10 presented as written numerals.
- (K.OA.1) Represent addition and subtraction with objects, fingers, mental images, drawings1, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
- (K.OA.2) Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- (K.OA.3) Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
- (K.OA.4) For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
- (K.MD.1) Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

- (K.MD.2) Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

Standards in the Classroom Routines

- (K.CC.1) Count to 100 by ones and by tens.
- (K.MD.3) Classify objects into given categories; count the number of objects in each category and sort the categories by count.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Counting is useful. It assigns a number name to an object or set of objects. • Addition and subtraction are used to solve problems. • Algebraic thinking involves choosing, combining, and applying effective strategies for working with numbers. • Measurement is used everyday to describe the world.	• What does a number mean? • How do operations affect numbers? How can different strategies be helpful when solving problems? • What does "what" we measure influence "how" we measure?

Expected Performances
What students should know and be able to do

Students will know the following:

- This unit develops ideas about counting and quantity, comparison, linear measurement, the composition of numbers and the operations of addition and subtraction.
- Objects can be measured using direct comparison and by using same length units.

Students will be able to do the following:

- Measure the length of an object by lining up multiple units.
- Count up to a set of 15 objects.
- Figure out what is one more or one fewer than a number.

Character Attributes

- Cooperation
- Respect
- Responsibility
- Perseverance

Technology Competencies

- None

Develop Teaching and Learning Plan

Teaching Strategies:

Use a math workshop model with teacher-directed mini-lesson

- to provide students with repeated experiences with concepts and skills
- to provide time for teachers to work with small groups of students

Use games to develop concepts and practice skills

Use student-centered activities and worthwhile math tasks

Use a variety of grouping structures

- Collaborative groups, partners, individuals

Orchestrate class discussions

- Focus discussions on important mathematics and student strategies
- Elicit participation by all students over the course of several discussions
- Facilitate student to student discourse

Encourage students to represent and discuss their thinking strategies

Use Classroom Routines to provide on-going practice and review

- Attendance
  - Develop strategies for counting accurately
  - Consider whether order matters when you count
  - Compare quantities
- Calendar
  - Use the calendar as a tool for keeping track of time
  - Develop strategies for counting accurately
- Today's Question
  - Collect, count, represent, describe, and compare data
- Patterns on the Pocket Chart
  - Determine what comes next in a repeating pattern.
  - Describe repeating patterns

Learning Activities:

- Play game **How Long Is Your Shoe?** to develop concept of length
- Discuss strategies to measure length of an object.
- Trace and measure objects such as sticks and shoes to help with length
- Measure objects using sticks and cubes.
- Complete counting jar activities. Count objects and group them.
- Compare and contrast lengths of different objects.
- Play game **Build It** to ensure concepts of numbers.
- Play game **Grab and Count: Two Handfuls** to reinforce connecting number numerals and quantities.
- Play **Collect 10 Together** to reinforce keeping track of growing sets and counting a set of objects up to 10.
- Discuss groups of objects being less than or greater than 10.
- Play **Build On** to reinforce finding the total after a small amount is added to a set and counting sets of objects.
- Play game **How Many Counters? How Many Cubes?** To reinforce counting a set of objects, connecting numbers to quantities and finding the total after adding a small amount.
- Play game **Roll and Record 2** to reinforce connecting number words, numerals and quantities and using numbers to represent quantities.
- Play game **Quick Images: Ten Frames** to reinforce using a ten-frame to develop visual images of quantities up to 10.
- Play game **Racing Bears** to reinforce counting spaces and moving on a game board and

	thinking strategically about moves on a game board. • Respond to story problem questions • Play game **Collect 15** together to reinforce keeping track of growing sets and counting a set of objects up to 10. • Discuss groups of objects being less than or greater than 15. • Play game **One More, One Fewer** to develop an understanding of more than and fewer than and to reinforce adding or subtracting one to/from numbers up to 10. • Act out story problems to reinforce the concept of story problems. • Play **Double Compare** to reinforce using a Ten-Frame to develop visual images of quantities up to 10 and comparing two quantities to determine which is more. • Complete "Quick Images: Ten-Frames" activity to reinforce using a Ten-Frame to develop visual images of quantities up to 10. • Play **Build It/Change It** to reinforce a set of a given size and adding to or subtracting from one quantity to make another quantity. • Complete activity "Six Tiles in All" to reinforce creating a set of a given size and recording an arrangement of a quantity. • Complete activity "Quick Images: Square Tiles" to reinforce developing and analyzing visual images for quantities up to 10 • Complete activity " Arrangements of 5 to 10 Tiles" to reinforce creating a set of a given size, decomposing numbers in different ways and recording an arrangement of a quantity. • Play game **Toss the Chips** to reinforce developing and analyzing visual images for quantities up to 10

	• Complete activity “Quick Images in Pairs” to reinforce developing and analyzing visual images for quantities up to 10. • Complete activity “Choosing Favorite Arrangements” to reinforce decomposing numbers in different ways.

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** • Use cubes, sticks and other manipulatives to measure the length of an object such as a shoe • Count objects in a jar and make an equivalent set • Record their measurements accurately • “figure out” the numbers on the number card • Count objects in different ways • Count two handfuls of objects to find a total • Represent their counting and adding of objects • Figure out how many more they need to make 5 or 10 • Find the total number of objects • Find the total after 1, 2, or 3 have been added • Find and write the total after two dot cubes have been rolled • Recognize dot patterns • Move the correct number of spaces on a game board • Determine the total after adding or subtracting • Combine two quantities • Determine which number is larger • Place the correct quantity on their Ten-Frame • Create equivalent sets

	• Make arrangements using the correct number of tiles • Name and describe their arrangements • Record an arrangement • Recognize combinations • Make sense of and analyze the visual images of quantities • Accurately copy of a pictured tile arrangement • Put pages in numerical order **End of Unit Assessment** • Students will complete an end of the unit math workshop. Students will measure the length of an object by lining up multiple units, count a set of objects up to 15, figure out what is one more or one fewer than a number • Students will complete a second end of the unit math workshop where they will complete "Choosing Favorite Arrangements" activity, **Quick Images in Pairs** game and **Toss the Chips** game. Teacher will observe students correctly playing these games to reinforce mathematical concepts.

Suggested Resources

- Russell, Susan Jo and Karen Economopoulos. (Second Edition, 2012) *Investigations in Number, Data, and Space, Kindergarten: Unit 4, Measuring and Counting.* Upper Saddle River, NJ: Pearson.
- Van de Walle, John, et al. *Teaching Student-Centered Mathematics: Developmentally Appropriate Instruction for Grades Pre-K-2*, Second Edition. Boston: Pearson, 2014.
- K-5 Math Teaching Resources, K-5 Math Teaching Resources, LLC. http://www.k-5mathteachingresources.com/ . May 9, 2014.
- Howard County Math Wiki, Kindergarten. June 23, 2014.

New Milford Public Schools

Committee Member(s): Catherine Carr, Sarah Divine, Corby Kennison, Stephanie Zappone Unit Title: Unit 5	Course/Subject: Math Grade Level: Kindergarten # of Weeks: 4

Identify Desired Results

Common Core Standards

Standards in the Unit

- (K.CC.3) Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
- (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality.
  (K.CC.4a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
  (K.CC.4b) Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
  (K.CC.4c) Understand that each successive number name refers to a quantity that is one larger.
- (K.CC.5) Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- (K.G.1) Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
- (K.G.2) Correctly name shapes regardless of their orientations or overall size.
- (K.G.3) Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
- (K.G.4) Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
- (K.G.5) Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
- (K.G.6) Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"

Standards in Classroom Routines

- (K.CC.1) Count to 100 by ones and tens
- (K.MD.3) Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Geometric attributes (such as sides and corners) provide descriptive information about an object's properties. • Counting is useful. It assigns a number name to an object or set of objects.	• How does geometry better describe objects? • What does a number mean?

Expected Performances
What students should know and be able to do

Students will know the following:

- In this unit, students will develop ideas about 2-D and 3-D shapes—their characteristics and attributes and the relationship between them.

Students will be able to do the following:

- Describe the overall size, shape, function, and/or features of familiar 2-D and 3-D shapes
- Construct 2-D and 3-D shapes
- Make 2-D and 3-D shapes by combining shapes.

Character Attributes

- Cooperation
- Respect
- Responsibility
- Perseverance

Technology Competencies

- None

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
Use a math workshop model with teacher-directed mini-lesson • to provide students with repeated experiences with concepts and skills • to provide time for teachers to work with small groups of students **Use games to develop concepts and practice skills** **Use student-centered activities and worthwhile math tasks** **Use a variety of grouping structures** • Collaborative groups, partners, individuals	• Look around classroom for both 2-D and 3-D shapes in everyday objects • Make shapes into a picture to reinforce developing language to describe and compare 2-D shapes and their attributes • Explore new materials such as pattern blocks, geoboards and clay • Explore “Shapes and Materials” to reinforce describing the attributes of triangles and squares • Complete activity “Making Clay Shapes” and “Share Our Clay Shapes” to reinforce developing language to describe and compare

Orchestrate class discussions
• Focus discussions on important mathematics and student strategies
• Elicit participation by all students over the course of several discussions
• Facilitate student to student discourse
Encourage students to represent and discuss their thinking strategies
Use Classroom Routines to provide on-going practice and review
• Attendance
  • Develop strategies for counting accurately
  • Consider whether order matters when you count
  • Compare quantities
• Calendar
  • Use the calendar as a tool for keeping track of time
  • Develop strategies for counting accurately
• Today's Question
  • Collect, count, represent, describe, and compare data
• Patterns on the Pocket Chart
  • Determine what comes next in a repeating pattern.
  • Describe repeating patterns
	2-D shapes and their attributes
	• Complete activity "Shapes on the Geoboard" to reinforce constructing 2-D shapes and developing language to describe and compare 2-D shapes and their attributes.
	• Complete "Pattern Block Pictures" activity to reinforce developing language to describe and compare 2-D shapes and their attributes
	• Complete activity "Shape Mural" to reinforce relating 2-d shapes to real-world objects, developing language to describe 2-d shapes and their attributes and constructing 2-D shapes
	• Complete activity "Pattern Block Puzzles" to reinforce finding combinations of shapes that fill an area and exploring relationships among pattern blocks
	• Complete online activity "Solving Puzzles" to reinforce finding combinations of shapes that fill an area and exploring relationships among pattern blocks
	• Play game **Fill the Hexagons** to reinforce finding combinations of shapes that fill an area and exploring relationships among pattern blocks
	• Count objects in a counting jar
	• Complete software activity "Quick Images" to reinforce exploring relationships among pattern blocks
	• Explore 3-D shape Geoblocks to reinforce exploring Geoblocks and their attributes and developing language to describe and compare different 3-D shapes and the faces of a single 3-D shape
	• Complete activity "Copying Cubes" to reinforce constructing 3-D shapes
	• Complete activity "making and Studying 3-D Shapes" to reinforce constructing 3-D shapes, comparing the faces of different 3-D shapes

	and the faces of a single 3-D shape and developing language to describe and compare 2-D and 3-D shapes and their attributes • Play **Geoblock Match-Up** to reinforce matching a 3-D block to a 2-D outline of one of the block faces, comparing the faces of different 3-D shapes and the faces of a single 3-D shape and developing language to describe and compare 2-D and 3-D shapes and their attributes • Complete activity "Build a Block" to reinforce combining 3-D shapes to make a given 3-D shape
Assessments	
Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** • Identify shapes in their environment • Familiarize themselves with a set of shapes • Decide which shapes to use to make a 2-D or 3-D shape • Talk about and describe shapes • Come up with attributes of different 2-D and 3-D shapes • Use and describe pattern blocks • Substitute some pattern blocks for others • Make shapes out of clay • Change the position of shapes • Create shapes and describe them on the Geoboards • Replicate designs made • Make pictures out of pattern blocks • Count objects correctly • Make an equivalent set • Record work • Find objects that are similar in shape to a set of geometric solids • Use and describe the Geoblocks • Use two or more Geoblocks to make

	other blocks • Find blocks with matching faces • Build an accurate copy of your cube construction • Prove that they have made an exact replica of a Geoblock using other Geoblocks **End of Unit Assessment** • Students will complete a math workshop with games/activities to be assessed on 3 benchmarks. Benchmarks include: Describe the overall shape, size, function and/or features of familiar 2-D and 3-D shapes, Construct 2-D and 3-D shapes, Make 2-D and 3-D shapes by combining shapes • Students will complete a second math workshop. The activities/games for both workshops include: "Build a Block", Geoblock Match-Up "Shapes Software", "Clay Shapes" "Copying Cubes", "Matching Faces"

Suggested Resources

- Russell, Susan Jo and Karen Economopoulos. (Second Edition, 2012) *Investigations in Number, Data, and Space, Kindergarten: Unit 5, Make a Shape, Build a Block.* Upper Saddle River, NJ: Pearson.
- Van de Walle, John, et al. *Teaching Student-Centered Mathematics: Developmentally Appropriate Instruction for Grades Pre-K-2*, Second Edition. Boston: Pearson, 2014.
- K-5 Math Teaching Resources, K-5 Math Teaching Resources, LLC. http://www.k-5mathteachingresources.com/ . May 9, 2014.
- Howard County Math Wiki, Kindergarten. June 23, 2014Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al

New Milford Public Schools

Committee Member(s): Catherine Carr, Sarah Divine, Corby Kennison, Stephanie Zappone Unit Title: Unit 6	Course/Subject: Math Grade Level: Kindergarten # of Weeks: 7

Identify Desired Results

Common Core Standards

Standards in the Unit

- (K.CC.3) Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
- (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality.
  (K.CC.4a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
  (K.CC.4b) Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- (K.CC.5) Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- (K.CC.6) Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
- (K.CC.7) Compare two numbers between 1 and 10 presented as written numerals.
- (K.OA.1) Represent addition and subtraction with objects, fingers, mental images, drawings[1], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
- (K.OA.2) Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- (K.OA.3) Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
- (K.OA.4) For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
- (K.OA.5) Fluently add and subtract within 5.
- (K.NBT.1) Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

- (K.MD.1) Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- (K.MD.3) Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Standards in the Classroom Routines

- (K.CC.1) Count to 100 by ones and by tens.
- (K.CC.2) Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Addition and subtraction are used to solve problems. Algebraic thinking involves choosing, combining, and applying effective strategies for working with numbers. • Understanding place value leads to number sense and efficient strategies for computing. • Data displays describe and show data in different ways.	• How do operations affect numbers? How can different strategies be helpful when solving problems? • How does a digit's position affect its value? • Why is data displayed in different ways?

Expected Performances
What students should know and be able to do

Students will know the following:

- The focus of this unit is on developing strategies for accurately counting a set of objects by ones and on making sense of and developing strategies to solve addition and subtraction problems with small numbers.
- Manipulatives, drawings, tools, and notation represent strategies and solutions to story problems.

Students will be able to do the following:

- Write the numerals and count sets to 20.
- Combine two small quantities.

Character Attributes

- Cooperation
- Respect
- Responsibility
- Perseverance

Technology Competencies

- None

Develop Teaching and Learning Plan

Teaching Strategies:

Use a math workshop model with teacher-directed mini-lesson

- to provide students with repeated experiences with concepts and skills
- to provide time for teachers to work with small groups of students

Use games to develop concepts and practice skills

Use student-centered activities and worthwhile math tasks

Use a variety of grouping structures

- Collaborative groups, partners, individuals

Orchestrate class discussions

- Focus discussions on important mathematics and student strategies
- Elicit participation by all students over the course of several discussions
- Facilitate student to student discourse

Encourage students to represent and discuss their thinking strategies

Use Classroom Routines to provide on-going practice and review

- Attendance
  - Develop strategies for counting accurately
  - Consider whether order matters when you count
  - Compare quantities
- Calendar
  - Use the calendar as a tool for keeping track of time
  - Develop strategies for counting accurately
- Today's Question
  - Collect, count, represent, describe, and compare data
- Patterns on the Pocket Chart
  - Determine what comes next in a repeating pattern.
  - Describe repeating patterns

Learning Activities:

- Build copies of square tile images shown quickly.
- Find different ways to arrange six tiles so that each tile shares one whole side with the tile next to it.
- Play games such as **Toss The Chips**, **Racing Bears, Collect 10 Together, Collect 15 Together, Collect 20 Together, Roll and Record** (with two dot cubes), **Double Compare**
- Make tile arrangements for any numbers from 5 through 10 where the tiles need to share an entire side with the tile next to them.
- Make a class book with the different ways to arrange 5-10 tiles.
- Inventory sets of related items
- Measure body parts with Unifix cubes and record results
- Find the total after 1, 2 or 3 is subtracted from a set of objects
- Act out story problems and discuss how they are similar and different
- Play **Build and Remove** to find the total after 1, 2 or 3 is subtracted from a set.
- Tell, discuss, solve and record story problems.
- Find combinations of five and six and use pictures, numbers or words to represent a solution or solutions to problems.

Assessments	
Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** • Tile arrangements follow the rules discussed • Describe their tile arrangements • Create equivalent sets • Recognize dot patterns • Subitize • Show the results of their inventory bags • Record measurements and solutions- numbers, pictures, notation or a combination • Recognize numbers up to 12. • Combine two quantities • Solve problems (count forward and backward, use the ten frame, mental math, model it using manipulatives, act it out, use number combinations) **End of Unit Assessment** • Students will complete an end of the unit math workshop. Students will write the number to 10, count a set of up to 20 objects and combine two small quantities. • Students will complete a second end of the unit math workshop where they will play the games, **Total of Six, Toss the Chips** and **Racing Bears**. The teacher will observe students correctly playing these games to reinforce mathematical concepts.

Suggested Resources

- Investigations: How Many Do You Have?
- Russell, Susan Jo and Karen Economopoulos. (Second Edition, 2012) *Investigations in Number, Data, and Space, Kindergarten: Unit 6, How Many Do You Have?* Upper Saddle River, NJ: Pearson.
- Van de Walle, John, et al. *Teaching Student-Centered Mathematics: Developmentally Appropriate Instruction for Grades Pre-K-2*, Second Edition. Boston: Pearson, 2014.
- K-5 Math Teaching Resources, K-5 Math Teaching Resources, LLC. http://www.k-5mathteachingresources.com/ . May 9, 2014.
- Howard County Math Wiki, Kindergarten. June 23, 2014Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al

New Milford Public Schools

Committee Member(s): Catherine Carr, Sarah Divine, Corby Kennison, Stephanie Zappone Unit Title: Unit 7	Course/Subject: Math Grade Level: Kindergarten # of Weeks: 4

Identify Desired Results

Common Core Standards

Standards in the Unit

- (K.CC.4) Understand the relationship between numbers and quantities; connect counting to cardinality.
  (K.CC.4a) When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
  (K.CC.4b) Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- (K.CC.5) Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- (K.MD.3) Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Standards in the Classroom Routines

- (K.CC.1) Count to 100 by ones and by tens.
- (K.CC.2) Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
• Data displays describe and show data in different ways.	• Why is data displayed in different ways?

Expected Performances
What students should know and be able to do

Students will know the following:

- The focus of this unit is on representing data, seeing the one-to-one correspondence between a set of data and a representation of the data set and carrying out a data investigation

Students will be able to do the following:

- Represent a set of data
- Use data to solve a problem.
- Sort a set of objects according to their attributes.

Character Attributes

- Cooperation
- Respect
- Responsibility
- Perseverance

Technology Competencies

- None

Develop Teaching and Learning Plan

Teaching Strategies:

Use a math workshop model with teacher-directed mini-lesson

- to provide students with repeated experiences with concepts and skills
- to provide time for teachers to work with small groups of students

Use games to develop concepts and practice skills

Use student-centered activities and worthwhile math tasks

Use a variety of grouping structures

- Collaborative groups, partners, individuals

Orchestrate class discussions

- Focus discussions on important mathematics and student strategies
- Elicit participation by all students over the course of several discussions
- Facilitate student to student discourse

Encourage students to represent and discuss their thinking strategies

Use Classroom Routines to provide on-going practice and review

- Attendance
  - Develop strategies for counting accurately
  - Consider whether order matters when you count
  - Compare quantities
- Calendar
  - Use the calendar as a tool for keeping track of time

Learning Activities:

- Make representations of the number of people in the class
- Complete activity “Pattern Block Grab” to reinforce counting and representing handfuls of objects
- Complete activity “How Many Eyes?” to reinforce two-to-one correspondence
- Complete activity “Counting Chairs” to reinforce using data to solve problems
- Complete activity “Eyes at Home” during Math Workshop to reinforce counting by groups of 2 and keeping track of quantities
- Complete activity “Sorting People” to reinforce identifying attributes and what is the same about a group of people or objects
- Complete activity “Sort self-portraits” to reinforce sorting according to like attributes.
- Play Attribute Match-Up,
- Complete activity “Boxes, Bottles and Cans” to reinforce sorting a set according to one attribute
- Complete activity “Attribute Dominoes” to reinforce how objects are the same and different
- Draw pictures of favorite lunch foods and sort them into categories
- Complete answers to “Do You Like…?” survey questions
- Decide on a “Do you Like…?” question and choose a method for

• Develop strategies for counting accurately
• Today's Question
  • Collect, count, represent, describe, and compare data
• Patterns on the Pocket Chart
  • Determine what comes next in a repeating pattern.
  • Describe repeating patterns
	recording students' responses

Assessments

Performance Task(s) Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Role: Audience: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** • Represent, keep track of and count the number of students in the class, the number of chairs in the class, the number of pattern blocks in a handful, the number of eyes in another student's home • If students notice relationships/patterns between the number of chairs/eyes and the number of people • Whether or not students are able to sort according to identified attributes • Whether students are able to create a sorting strategy that involves two mutually exclusive groups (e.g., has an attribute, does not have an attribute) • Whether students can come up with a "Do You Like..?" survey question and decide on a way to keep track of their responses **Count objects in the counting jar** • Create equivalent sets and record their work • Explain their strategy for solving problems.

	Other Formative Assessments • Students sort sets of containers in at least two ways and verbalize their reasons for grouping objects together. **End of Unit Assessment** • Students will complete a math workshop with the following activities: How Many are Here Today, Counting Jar and Attribute Dominoes. Teacher will observe students correctly playing these games to reinforce mathematical concepts.

Suggested Resources

- Russell, Susan Jo and Karen Economopoulos. (Second Edition, 2012) *Investigations in Number, Data, and Space, Kindergarten: Unit 7, Sorting and Surveys.* Upper Saddle River, NJ: Pearson.
- Van de Walle, John, et al. *Teaching Student-Centered Mathematics: Developmentally Appropriate Instruction for Grades Pre-K-2*, Second Edition. Boston: Pearson, 2014.
- K-5 Math Teaching Resources, K-5 Math Teaching Resources, LLC. http://www.k-5mathteachingresources.com/ . May 9, 2014.
- Howard County Math Wiki, Kindergarten. June 23, 2014Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al