NEW MILFORD PUBLIC SCHOOL
New Milford, Connecticut

Grade 2 Mathematics

May 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	6	6-9
2	4	10-13
3	6	14-17
4	3	18-21
5	3	22-25
6	6	26-29
7	2	30-33
8	4	34-37
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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): Corby Kennison and Stephanie Zappone Unit 1	Course/Subject: Mathematics Grade Level: 2 # of Weeks: 6

Identify Desired Results
Common Core Standards

Standards in Unit
- (2.OA.1) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- (2.OA.2) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- (2.NBT.5) Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- (2.NBT.9) Explain why addition and subtraction strategies work, using place value and the properties of operations.

Standards Only in Classroom Routines
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- (2.MD.8) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
- Mathematical operations are used in solving problems in which a new value is produced from one or more values. - Counting finds out the answer to "how many" in objects/sets. - Computation involves taking apart and combining numbers using a variety of approaches.	- How can models and pictures help us solve mathematical problems? - Why is it important to understand place value? - How do different models for addition and subtraction help to efficiently find sums and differences?

Expected Performances
What students should know and be able to do

Students will know the following:
- This unit focuses on counting and comparing quantities, composing and decomposing numbers, and understanding the operations of addition and subtraction.

- Students develop strategies for comparing, combining, and doubling quantities, as well as taking one quantity away. They also achieve fluency with three sets of addition combinations (10s, + 1, + 2).
- Students are introduced to several year-long classroom routines that offer regular practice with composing and decomposing numbers; developing visual images of quantities; counting, collecting, and analyzing data; and telling time.

Students will be able to do the following:
- Count a set of objects up to 60 in at least one way.
- Determine the difference between two numbers (up to 45).
- Interpret addition and subtraction story problems (read a story problem and determine what needs to be figured out).
- Have at least one strategy for solving addition and subtraction (as removal) story problems.
- Demonstrate fluency with the Plus 1, Plus 2, and Make 10 addition combinations.
- Understand what it means to double a quantity.

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 **Orchestrate class discussions** • Focus discussions on important mathematics and student strategies • Elicit participation by all students over the course of several discussions	• Explore math tools and routines to be used throughout the year: the number line, the hundred chart, "today's number" • Students cover a variety of geometric shapes with pattern blocks and count to find the number of each • Partners use up to 30 multi-link cubes to create 3-D structures; they exchange with a partner to determine the number of cubes. • Determine the number of pockets in the classroom: collect, count, represent, discuss, interpret and compare data • Partners play money games i.e. Collect 25 cents

- Facilitate student to student discourse

Encourage students to represent and discuss their thinking strategies

Use Classroom Routines to provide on-going practice and review

- How Many Pockets?
  - Estimate, collect, count, represent, interpret, and compare numerical data
  - Count quantities in more than one way
- Quick Images
  - Visualize shapes and relationships
  - Use ten-frames to analyze relationships to 20
  - Identify coins and their values
- What Time is It?
  - Tell time to the hour and half-hour
  - Represent times on analog clock
- Today's Number
  - Generate equivalent expressions for a number
  - Develop fluency for addition and subtraction
  - Write equations using expanded form and standard notation

- Play games to practice addition strategies i.e. Tens Go Fish, Plus 1 and Plus 2 Bingo, Make Ten
- Use strategies to determine the "other part of 10"
- Solve addition and subtraction story problems, represent the response using pictures, numbers, and words
- Discuss solution strategies
- Play games that focus on the addition fact strategy using doubles. i.e. Double it! and Doubles Arrays
- Read *Two of Everything: A Chinese Folktale* In the story, everything that that falls into the "magic pot" doubles the quantity.
- Solve "magic pot" problems to practice the doubling strategy.

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** - Find different ways to cover a shape - Count/record sets of objects - Identify and work with coin equivalencies - Combinations that make 10 - Interpret and solve addition and subtraction story problems and record solutions **Other Formative Assessments** Counting Pennies - Each student counts out 60 pennies.

| | • Ask student how to double check the count.
Enough for the Class?
• Determine the number of items in different containers and indicate if there would be enough of the item to give one to each student in the class.
• Determine the difference between the number of items and the number of students in the class.
• Show how you figured it out.
End of Unit Assessment
• Second grader classes are recycling cans. One class collected 17 cans and one class collected 16 cans. How many cans did they collect? Show your work. Write an equation. |

Suggested Resources

- Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
- K-5 Math Teaching Resources, online
- Howard County Math Wiki, Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison and Stephanie Zappone Unit 2	Course/Subject: Mathematics Grade Level: 2 # of Weeks: 4 weeks

Identify Desired Results
Common Core Standards

Standards in the Unit
- (2.G.1) Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
- (2.G.2) Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
- (2.OA.4) Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Standards Only in the Classroom Routines
- (2.OA.1) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- (2.OA.2) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
• Objects can be described and compared using their geometric attributes.	• How can two- and three-dimensional shapes be sorted and compared? • What strategies can be used to compose and decompose two and three-dimensional shapes? • How are geometric properties used to solve problems in everyday life?

Expected Performances
What students should know and be able to do

Students will know the following:
- Students will identify two- and three-dimensional shapes and focus on the properties of rectangles and rectangular prisms.
- Students will achieve fluency with the doubles addition combinations.

Students will be able to do the following:
- Identify the number of sides of a polygon.
- Identify the number of rows and the number of squares in each row in an array.
- Identify rectangles as four-sided shapes with four right angles.
- Identify the number of faces on a rectangular prism and show which faces are congruent.
- Demonstrate fluency with addition combinations: double combinations to 10 + 10.

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
- How Many Pockets?
  - Estimate, collect, count, represent, interpret, and

Learning Activities:
- Use geoblocks and real-world 3-d objects to describe/identify 2-d attributes of each 3-d shape.
- Match 3-D shapes (geoblocks) to its 2-D representation.
- Sort 3-D shapes by attributes.
- Build geoblocks using combinations of smaller geoblocks.
- "Fill" 2-d shapes with pattern blocks in more than one way.
- Identify, name and sort polygons by number of sides.
- Sort and describe quadrilaterals. Create a class poster of shapes sorted into categories based on attributes such as shapes with 4 sides and 4 "square corners" and shapes with 4 sides but not 4 "square corners."
- Order rectangles by size and discuss if they can be ordered in more than one way.
- Use color tiles to build, describe and represent various rectangles.
- Determine how many different rectangles can be built from a designated number of color tiles.
- Construct a rectangular prism from

compare numerical data
    • Count quantities in more than one way
• Quick Images
    • Visualize shapes and relationships
    • Use ten-frames to analyze relationships to 20
    • Identify coins and their values
• What Time is It?
    • Tell time to the hour and half-hour
    • Represent times on analog clock
• Today's Number
    • Generate equivalent expressions for a number
    • Develop fluency for addition and subtraction
    • Write equations using expanded form and standard notation
	rectangles.
	• Visualize and describe images "flashed" on the Smart Board.
	• Continue to play games i.e. Double It and Double Arrays to practice facts using the "doubles" strategy.

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** • Sort shapes by number of sides • Use features of 3-D shape to match geoblocks to 2-D representations; sketch representations of 3-D shapes • Sort 3-D shapes by different attributes; visualize and identify 3-D shapes by touch • Identify "shapes within shapes" i.e. a pattern block trapezoid can be covered by 3 pattern block triangles – no gaps or overlaps • Examine the structure of an array by building and describing rectangles using color tiles • Create different rectangles using a determined number of color tiles • Compare and describe attributes of rectangular prisms

Other Formative Assessments • Is It a Rectangle? Determine if a shape is a rectangle or not. Tell why or why not. Shapes include parallelogram with no right angles, right trapezoid, "cross," rectangle. **End of Unit Assessment** • Make a rectangular array (rectangle) using 18 color tiles. Describe the rectangle with pictures, words, and equations (example: 6+6+6 = 18).

Suggested Resources

- Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
- K-5 Math Teaching Resources, online
- Howard County Math Wiki, Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison and Stephanie Zappone Unit 3	Course/Subject: Mathematics Grade Level: 2 # of Weeks: 6

Identify Desired Results
Common Core Standards

Standards in the Unit
- (2.OA.1) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- (2.OA.2) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- (2.NBT.2) Count within 1000; skip-count by 5s, 10s, and 100s.
- (2.NBT.4) Compare 2 three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
- (2.MD.8) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Standards Only in the Classroom Routines
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
- Flexible methods of computation involve grouping numbers in strategic ways. - Understanding place value can lead to number sense and efficient strategies for computing with numbers.	- What are efficient methods for finding sums and differences? - What models could you use to show your math thinking and strategies? - How can you use what you know about addition to help you when solving subtraction problems?

Expected Performances
What students should know and be able to do

Students will know the following:
- Students solve problems with multiple addends and consider whether order matters in addition. For example, does 7 + 4 + 3 + 6 = 7 + 3 + 4 + 6?
- Students revisit addition and subtraction story problems, investigate even and odd numbers, and begin to make sense of counting by groups and place value (tens and ones).

- Work on addition combinations continues as students achieve fluency with the Near Doubles.

Students will be able to do the following:
- Use known combinations to add several numbers in any order.
- Interpret and solve subtraction (removal) and unknown change story problems with totals to 45.
- Define even and odd numbers in terms of groups of two or two equal groups.
- Recognize and identify coins and their value.
- Count on to break apart numbers up add two or more numbers up to a total of 45.
- Interpret and solve problems about the number of tens and ones in a quantity.
- Demonstrate fluency with addition combinations: near doubles and subtraction facts related to the doubles i.e. $14 - 7 = 7$.

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
 Orchestrate class discussions
 • Focus discussions on important mathematics and student strategies
 • Elicit participation by all students over the course of several discussions
	• Use known combinations to add two or more numbers in problems i.e. How Many Pockets?, and games, i.e. Close to 20
	   • Discuss strategies to solve and represent
	 • Add number strings mentally and with a calculator in Beat the Calculator. Which is quicker?
	 • Use "story problem protocol"
	   • Visualize the problem
	   • What do I know?
	   • What am I trying to find out?
	   • How can I represent my thinking?
	   • Discuss solution strategies and various representations
	 • Solve a story problems with a variety of structures
	   • Add to, result unknown
	   • Subtract from, result unknown

- Facilitate student to student discourse

Encourage students to represent and discuss their thinking strategies

Use Classroom Routines to provide on-going practice and review

- How Many Pockets?
  - Estimate, collect, count, represent, interpret, and compare numerical data
  - Count quantities in more than one way
- Quick Images
  - Visualize shapes and relationships
  - Use ten-frames to analyze relationships to 20
  - Identify coins and their values
- What Time is It?
  - Tell time to the hour and half-hour
  - Represent times on analog clock
- Today's Number
  - Generate equivalent expressions for a number
  - Develop fluency for addition and subtraction
  - Write equations using expanded form and standard notation

- Put together/take apart, addend unknown
- Add to, change unknown
- Take from, change unknown
- Solve addition and related subtraction story problems
  - Discuss how they are related
- Play "unknown change" games e.g. Cover Up.
- Represent story problems using equations and write story problems to match equations
- Use context of partners to investigate ideas about even and odd.
  - Develop class definition for odd and even
- Create class charts to describe what we know about: Partners and Teams (any number that can be divided into groups of 2 can also be made into 2 equal groups), Even Numbers and Odd Numbers
  - Use charts to investigate conjectures about odd and even numbers
  - Determine how to convince someone that something is (or is not) always true
  - (Save Charts for Unit 8)
- Learn, play, and discuss Collect 50 cents
- Count collections of objects in different ways (by 2s, 5s, and 10s)
- Using real-world contexts i.e. number of feet or fingers in the room, counting nickels/dimes, count by 2s, 5s, and 10s
- Find all the ways to represent a 2-digit number (23 is 2 tens and 3 ones or 23 ones)

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** • Add a string of number in at least 2 different ways • Solve and represent addition and subtraction problems • Determine if numbers such as 26 or 29 are even or odd • Count and combine coins • Organize collections into groups of tens and ones and determine the total **Other Formative Assessments** • Solve story problem and show your work ($25 + 14$; $22 - ? = 14$) • Write story problems. (__ + 10 = 25; __-12=12) • Write a story problem to match equations i.e. $23 - ? = 17$; $? = 19 + 14$ • Even or Odd? Explain if 26 is even or odd. Explain if 29 is even or odd. **End of Unit Assessment** • There were 25 children and 18 adults in a bike race. How many people were in the race? • If 10 pencils fit in a box, how many boxes can you fill with 58 pencils? Show your work.

Suggested Resources

• Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
• K-5 Math Teaching Resources, online
• Howard County Math Wiki, Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison and Stephanie Zappone Unit 4	Course/Subject: Mathematics Grade Level: 2 # of Weeks: 3

Identify Desired Results
Common Core Standards

Standards in Unit
- (2.MD.10) Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.
- (2.NBT.5) Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Standards Only in Classroom Routines
- (2.OA.2) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- (2.NBT.2) Count within 1000; skip-count by 5s, 10s, and 100s.
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- (2.MD.8) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
• Data displays describe and represent data in alternative ways. • Graphs convey data in a concise way.	• Why display data in different ways? • How does the type of data influence the choice of display?

Expected Performances
What students should know and be able to do

Students will know the following:
- Students engage in all the phases of data analysis as they pose questions, collect and sort information, and make representations of data as a way of sharing their findings with others.
- Students work with Venn diagrams and line plots, and they read and interpret a variety of representations of numerical and categorical data.
- Students are also assessed on fluency with the +10 addition combinations.

Students will be able to do the following:
- Use a Venn Diagram to sort data by two attributes.
- Identify categories for a set of categorical data and organize the data into chosen

categories.

- Order and represent a set of numerical data.
- Describe a numerical data set.
- Read and interpret a variety of representations of numerical and categorical data.
- Compare two sets of numerical data.
- Demonstrate fluency with Near Doubles combinations.

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
 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
 • How Many Pockets?
   • Estimate, collect, count, represent, interpret, and compare numerical data
	• Play "Guess My Rule" by sorting people by a secret rule
	   • Create a bar graph to represent data
	   • Read and interpret data on the bar graph
	 • Sort a set of data by two attributes
	 • Generate class data about favorite weekend activity
	   • Sort the data in 2 different ways
	 • Collect data about the number of pockets in the class and how many teeth have been lost
	   • Compare 2 different representations of the data
	   • Describe the data
	   • Develop a plan to collect, same data from a different class
	   • Represent and compare the two data sets
	 • Represent data on line plots

- Count quantities in more than one way - Quick Images - Visualize shapes and relationships - Use ten-frames to analyze relationships to 20 - Identify coins and their values - What Time is It? - Tell time to the hour and half-hour - Represent times on analog clock - Today's Number - Generate equivalent expressions for a number - Develop fluency for addition and subtraction - Write equations using expanded form and standard notation	

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** - Sort set of data according to attributes - Sort set of data according by two attributes - Sort and represent a set of data into multiple categories: bar graphs and Venn diagrams **Other Formative Assessments** - Favorite Foods – Organize, represent, and analyze a set of data about classmate's favorite foods **End of Unit Assessment** - Represent and interpret set of numerical data - Read and interpret line plots - Sort data by two rules using Venn diagram

Suggested Resources
• Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
• K-5 Math Teaching Resources, online
• Howard County Math Wiki, Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison & Stephanie Zappone Unit 5	Course/Subject: Mathematics Grade Level: 2 # of Weeks: 2-3

Identify Desired Results
Common Core Standards

Standards in the Unit
- (2.OA.3) Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- (2.OA.4) Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
- (2.NBT.2) Count within 1000; skip-count by 5s, 10s, and 100s.
- (2.NBT.5) Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Standards Only in Classroom Routines
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- (2.MD.8) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
- (2.NBT.3) Read and write numbers to 1000 using base ten numerals, number names, and expanded form.
- (2.G.1) Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
• Patterns can grow and repeat. • Patterns can be generalized.	• What is the repeating and/or increasing unit in the pattern? • What strategies can be used to continue a sequence?

Expected Performances
What students should know and be able to do

Students will know the following:
- Students describe and represent ratios, use tables to represent and predict change, and work with numeric sequences as they construct and describe patterns.

- Students extend repeating patterns and determine which element of the pattern will be in a particular position.

Students will be able to do the following:
- Explain what the numbers in a table represent in a constant ratio situation (involving ratios of 1:2, 1:3, 1:4, 1:5, and 1:6).
- Complete and extend a table to match a situation involving a constant ratio.
- Extend a repeating pattern and determine what element of the pattern will be in a particular position (e.g., the 16th position) if the patterns keeps going.
- Demonstrate fluency with Plus 10 combinations.

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 **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**	• Construct cube buildings in which each cube represents a "room" on a "floor" • Keep the ratio of rooms to floors the same in the building (i.e. 3 cubes per floor, 4 floors per building) • Figure out the total number of rooms in the building when the number of floors and the number of rooms on one floor is known • Create a table to represent the relationships between the number of floors and number of rooms for each building. Connect the numbers in the table to the situation they represent. • Discuss how different looking buildings can be represented by the same chart • Use the patterns in the charts to predict the number of floors in 10 buldings • Use pattern blocks to show the relationship between the number of hexagons and the number of triangles needed to cover (1

- How Many Pockets?
  - Estimate, collect, count, represent, interpret, and compare numerical data
  - Count quantities in more than one way
- Quick Images
  - Visualize shapes and relationships
  - Use ten-frames to analyze relationships to 20
  - Identify coins and their values
- What Time is It?
  - Tell time to the hour and half-hour
  - Represent times on analog clock
- Today's Number
  - Generate equivalent expressions for a number
  - Develop fluency for addition and subtraction
  - Write equations using expanded form and standard notation

hexagon is covered by 6 triangles; 2 hexagons is covered by 12 triangles, etc.)
- Record data in a table
- Explore relationships between other pattern block shapes
- Describe what is the same about situations that look different but can be represented by the same table
- Begin to generalize relationships by looking at the charts – How is Building A with 3 rooms per floor like the Hexagon and Rhombus chart (3 rhombus cover 1 hexagon)
- Construct, describe, and represent cube train patterns
- Describe the number sequences associated with each color in the cube train (including even and odd)
- Use the number sequences to predict what color a specific position in the cube train will be

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** • Figure out the number of rooms in a 5 floor bulding when there are 3 rooms per floor • Complete a table to show relationships between the number of floors and number number of rooms in their cube buildings • Determining the relationships between pattern blocks and represent them in a table • Make repeating patterns with cubes and detremine what color is associated with particular shapes **Other Formative Assessments** Understanding Tables Assessment • Build a building to match when the number of floors and rooms are

	known
	- Create a "floor plan" for the building
	- Complete a chart tht is missing information
	- Use the patterns to predict the number of floors in 10 buldings
	End-of-Unit Assessment
	Nickel Jar Assessment
	- Complete a table about a jar in which 5 cents is placed each day. Determine/predict how much money will be in the jar on the 10th
	Shape Pattern Assessment
	- Determine what the 11th and 16th shape will be in an AB pattern.

Suggested Resources
- Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al - [K-5 Math Teaching Resources](), online - [Howard County Math Wiki,]() Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison and Stephanie Zappone Unit 6	Course/Subject: Mathematics Grade Level: Grade 2 # of Weeks: 6 weeks

Identify Desired Results
Common Core Standards

Standards in the Unit

- (2.OA.2) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- (2.OA.3) Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- (2.NBT.1) Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
  a. 100 can be thought of as a bundle of ten tens — called a "hundred."
  b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones)
- (2.NBT. 2) Count within 1000; skip-count by 5s, 10s, and 100s.
- (2.NBT. 5) Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- (2.NBT.6) Add up to four two-digit numbers using strategies based on place value and properties of operations.
- (2.NBT.9) Explain why addition and subtraction strategies work, using place value and the properties of operations.
- (2.MD.6) Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
- (2.MD.8) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Standards Only in Classroom Routines

- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- (2.G.1) Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Enduring Understandings Generalizations of desired understanding via essential questions	Essential Questions Inquiry used to explore generalizations
• Mathematical operations are used in solving problems in which a new value is produced from one or more values. • Algebraic thinking involves choosing, combining, and applying effective strategies for answering quantitative questions. • Understanding place value can lead to number sense and efficient strategies for computing with numbers.	• Which strategies could you use to add and subtract two-digit numbers? • What models could you use to show your math thinking and strategies? • In what ways can operations affect numbers? • How can different strategies be helpful when solving a problem? • How does a digit's position affect its value?

Expected Performances
What students should know and be able to do

Students will know the following:
- Students continue to build their understanding of place value (ones, tens, hundreds) as they compose and decompose numbers into tens and ones and work with contexts and models for the Base-10 number system.
- Students apply their work with place value as they play games that involve composing and decomposing 100 and solve addition and subtraction problems to 100.
- Students continue work on developing coin equivalencies and combinations, developing visual images of numbers, and telling time.

Students will be able to do the following:
- Write an equation that represents an addition or subtraction situation.
- Determine the difference between a number and any multiple of 10 up to 100.
- Count by 2s, 5s, and 10s up to 110.
- Add multiples of 5 up to 100.
- Know coin equivalencies for nickel, dime, and quarter.

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-lessons - 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 strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to solve 2-digit addition and subtraction story problems. - Represent solutions with equations - Name, discuss, compare, develop *efficient* solution strategies - Use tools to model and represent addition and subtraction problems: cubes, the number line, and hundred chart - Play place value games i.e. Roll-a-Square, Unroll-a-Square, Guess My Number on the 100 Chart, Rebuild the 100 Chart, Guess My Number on the 200 Chart, Plus or Minus 10 or 100 on the 200 Chart; Guess My Number 1-1000. - Add multiples of 5 and 10 and move those amounts on the 100 Chart in game, Get to 100. - Work with money equivalencies including games: Collect $1.00 and Spend $1.00 - Solve money problems and represent solutions on the number line and/or 100 chart. - Skip count by 2s, 5s, and 10s. Connect counting by 5s and 10s to counting by nickels and dimes.

Assessments	
Performance Task(s) Authentic application to evaluate student achievement of desired results	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** • Represent and solve 2-digit addition story problems using more than one efficient strategy • Represent and solve 2-digit subtraction story problems using more than one efficient strategy • Look for and use patterns to find missing numbers in and move around a 100 and 200 chart • Use coin equivalencies for adding amounts up to $1.00 **Other Formative Assessments:** • How Many More? Jake has 46 stickers. How many more to get 60? Write an equation. Show your work. Sally has 76 marbles. How many more to get to 100? Write an equation. Show your work. **End of Unit Assessment** • Class Store. There is a class store with items in which the prices are in multiples of 5 cents. Using the price list, determine two different ways that you can spend $1.00. Determine the amount left if the entire dollar was not spent.

Suggested Resources

- Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
- K-5 Math Teaching Resources, online
- Howard County Math Wiki, Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison and Stephanie Zappone Unit 7	Course/Subject: Mathematics Grade Level: 2 # of Weeks: 2 weeks

Identify Desired Results
Common Core Standards

Standards in Unit
- (2.G.3) Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Standards Only in Classroom Routines
- (2.NBT.2) Count within 1000; skip-count by 5s, 10s, and 100s.
- (2.NBT.5) Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- (2.G.1) Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
• Fractions express a relationship between two numbers.	• How can fractions be modeled, compared, and ordered?

Expected Performances
What students should know and be able to do

Students will know the following:
- Students investigate what fractions are and the many ways they can be represented and used.
- Students identify fractions of a single object ($\frac{1}{2}$ of a square, $\frac{1}{4}$ of a rectangle, $\frac{1}{3}$ of a circle, etc.) as well as find fractions of a set ($\frac{1}{2}$ of 12).
- Students begin to learn how fractions are expressed in words and represented using fraction notation.
- Students will recognize that fractional parts of a whole region do not need to be the same shape to be the same size.

Students will be able to do the following:

- Identify $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ of a region.

- Find $\frac{1}{2}$ of a set of objects.

- Recognize that a fraction divides the whole into equal parts.

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
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
  • How Many Pockets?
    • Estimate, collect, count, represent, interpret, and
	• Solve story problems involving finding halves of objects (sandwiches) and sets (balloons)
	• Find halves of geoblocks (3-D solids)
	• Determine if rectangles are divided into halves – or just into 2 parts
	• Solve problems of sharing half of the contents of a picnic basket: Share 5 pieces of cheese, 3 sandwiches, 9 strawberries, 15 peanuts, 21 crackers, 27 blueberries, etc.
	• Fold squares to show halves, thirds, and fourths in more than one way
	  • Discuss/prove that different *shaped* halves (thirds, fourths) of the same whole are equivalent to each other
	• Fold circles to show halves, thirds, and fourths
	• Create flags showing halves, thirds, and fourths
	• Solve story problems about sharing sets i.e. buttons

- compare numerical data - Count quantities in more than one way - Quick Images - Visualize shapes and relationships - Use ten-frames to analyze relationships to 20 - Identify coins and their values - What Time is It? - Tell time to the hour and half-hour - Represent times on analog clock - Today's Number - Generate equivalent expressions for a number - Develop fluency for addition and subtraction - Write equations using expanded form and standard notation	

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: Real World Role: Audience: Situation: Product or Performance: Standards for Success:	**Ongoing Formative Assessments: Observing Students** - Find halves of regions, sets, solids - Determine which number of balloons can be shared evenly - Identify which parts of rectangles are halves and which are 2 parts - Work with mixed numbers to determine fair shares (picnic context) - Find halves, thirds, and fourths of circles - Notice it is not a "slice straight down" for thirds **Other Formative Assessments** - Partition a rectangle into fourths - Partition a circle into thirds **End of Unit Assessment** - Identify one-half, one-third, and one-fourth of rectangles - Determine if 2 friends can fairly share 16 pens - Determine if a flag is divided into thirds. Explain your reasoning.

Suggested Resources
• Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
• K-5 Math Teaching Resources, online
• Howard County Math Wiki, Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison and Stephanie Zappone Unit 8	Course/Subject: Mathematics Grade Level: Grade 2 # of Weeks: 4 weeks

Identify Desired Results
Common Core Standards

Standards in Unit

- (2.OA.1) Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- (2.OA.2) Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- (2.OA.3) Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- (2.NBT.1) Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
  a. 100 can be thought of as a bundle of ten tens — called a "hundred."
  b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones)
- (2.NBT.2) Count within 1000; skip-count by 5s, 10s, and 100s.
- (2.NBT.5) Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- (2.NBT.6) Add up to four two-digit numbers using strategies based on place value and properties of operations.
- (2.NBT.7) Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
- (2.NBT.9) Explain why addition and subtraction strategies work, using place value and the properties of operations.
- (2.MD.6) Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
- (2.MD.8) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Standards Only in Classroom Routines
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Enduring Understandings Generalizations of desired understanding via essential questions	Essential Questions Inquiry used to explore generalizations
• Mathematical operations are used in solving problems in which a new value is produced from one or more values. • Algebraic thinking involves choosing, combining, and applying effective strategies for answering quantitative questions. • Understanding place value can lead to number sense and efficient strategies for computing with numbers.	• Which strategies could you use to add and subtract two- and three-digit numbers? • What models could you use to show your math thinking and strategies? • In what ways can operations affect numbers? • How can different strategies be helpful when solving a problem? • How does a digit's position affect its value?

Expected Performances What students should know and be able to do

Students will know the following:
- Students continue to build their understanding of place value (ones, tens, hundreds) as they compose and decompose numbers into tens and ones and work with contexts and models for the Base-10 number system.
- Students apply their work with place value as they play games that involve composing and decomposing 100 and solve addition and subtraction problems to 100.
- Students continue work on developing coin equivalencies and combinations, developing visual images of numbers, and telling time.

Students will be able to do the following:
- Write an equation that represents an addition or subtraction situation.
- Determine the difference between a number and any multiple of 10 up to 100.
- Count by 2s, 5s, and 10s up to 110.
- Add multiples of 5 up to 100.
- Know coin equivalencies for nickel, dime, and quarter.
- Demonstrate fluency with 9 as an addend.

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
- How Many Pockets?
  - Estimate, collect, count, represent, interpret, and compare numerical data
  - Count quantities in more than one way
- Quick Images
  - Visualize shapes and relationships
  - Use ten-frames to analyze relationships to 20
  - Identify coins and their values
- What Time is It?
  - Tell time to the hour and half-hour
  - Represent times on analog clock
- Today's Number
  - Generate equivalent expressions for a number

Learning Activities:

- Explore what happens when 2 odd numbers, 2 even numbers, and an odd and even number are added
  - Work towards making general statements about odd and even numbers
  - Consider evidence, develop ideas based on evidence, and test ideas by looking at examples and counter-examples
- Develop addition strategy for adding 9 by adding 10 and subtracting 1
  - Play Plus 9 or 10 Bingo
- Pinch paper clips from a box of 100 clips and solve related story problems
  - Solve the problem using efficient strategies i.e. "take away in parts" or "think addition"
  - Determine the number of clips left in the box
  - Represent the situation on a 100 chart, number line
  - Discuss and defend efficient subtraction strategies
- Visualize, retell, and model subtraction story problem situations
  - Represent efficient strategies with cubes and on the number line
  - Discuss solution strategies
- Solve story problems with double digit numbers using more than one strategy
  - Keep one addend whole, add the other in parts
  - Represent strategies on number lines, with equations, and with pictorial representations
  - Discuss/defend strategies
- Represent 3-digit numbers in expanded form and with place value models
- Compare two 3-digit numbers
- Solve and represent addition and

• Develop fluency for addition and subtraction • Write equations using expanded form and standard notation	subtraction story problems with 3-digit numbers

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** • Work towards making general statements about adding even and odd numbers • Test ideas about adding even and odd numbers using examples and counter-examples • Use strategies to subtract from 100 • Solve and reperesent addition and subtraction story problems using strategies **Other Formative Assessments** • Solve addition story problems using more than one efficient strategy • Solve subtraction story problems using more than one efficient strategy **End of Unit Assessment** • Explain why adding 2 even numbers equals an even number • Explain why adding 2 odd numbers equals an even number • Explain why adding an even and an odd number equals an odd number • Solve 2 digit plus 2 digit addition story problem. Write the equation. Show your thinking. • Write a story problem that represents 52 + 39 • Solve an addition story problem with 3 digit numbers • Solve a subtraction story problem using efficient strategies

Suggested Resources

- Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
- K-5 Math Teaching Resources, online
- Howard County Math Wiki, Grade 2

New Milford Public Schools

Committee Member(s): Corby Kennison and Stephanie Zappone Unit 9	Course/Subject: Mathematics Grade Level: 2 # of Weeks: 4 weeks

Identify Desired Results
Common Core Standards

Standards in Unit
- (2.MD.1) Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- (2.MD.2) Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
- (2.MD.3) Estimate lengths using units of inches, feet, centimeters, and meters.
- (2.MD.4) Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
- (2.MD.5) Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
- (2.MD.6) Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
- (2.MD.9) Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

Standards Only in Classroom Routines
- (2.MD.7) Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- (2.NBT.5) Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- (2.MD.8) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
• Measurement processes are used in everyday life to describe and quantify the world. • The choice of measurement tools depends on the measureable attribute and the degree of precision desired. • Understanding place value can lead to number sense and efficient strategies for computing with numbers.	• Why does "what" we measure influence "how" we measure/ • How do units within a system relate to each other? • What strategies help estimate measurements? • When is an estimate more appropriate than an actual measurement? • How can place value understanding and properties of operations be used to add and subtract?

Expected Performances
What students should know and be able to do

Students will know the following:
- Students investigate linear measurement as it applies to length and distance.
- Students work with a variety of linear units, including standard units of inches, feet, yards, centimeters, and meters.

Students will be able to do the following:
- Identify sources of measurement error.
- Recognize that the same count of different-sized units yields different lengths.
- Recognize that, when measuring the same length, larger units yield smaller counts.
- Measure objects using inches and centimeters.
- Use a ruler to measure lengths longer that one foot.

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
- How Many Pockets?
  - Estimate, collect, count, represent, interpret, and compare numerical data
  - Count quantities in more than one way
- Quick Images
  - Visualize shapes and relationships
  - Use ten-frames to analyze relationships to 20
  - Identify coins and their values
- What Time is It?
  - Tell time to the hour and half-hour
  - Represent times on analog clock
- Today's Number
  - Generate equivalent expressions for a number

Learning Activities:
- Estimate lengths using indirect comparisons by finding items that are about the same length as several strips of adding machine tape
- Scavenger Hunt: find objects that are about the same length as several pre-cut paper strips
  - Measure objects using 2 different strips (6-inch and 3-inch)
- Measure different lengths with a variety of non-standard units
  - Identify strategies for accurate measurements
- Measure and compare jumps noticing that the *length* of the units impacts the *number* of units used to measure.
  - Find the difference between jumps
- Create a measuring tool – inch-bricks derived from a fantasy story about the "Land of Inch"
  - Use the context of the story to solve measurement problems found in the Land of Inch
- In small groups create a map of the Land of Inch marking off distances
  - King's Castle to his garden-15 inch-bricks
  - King's Castle to Princess' Castle – 25 inch-bricks
  - King's Castle to Pim's House-28 inch-bricks
- Measure objects in the classroom and determine benchmark measurements for 1 inch and a foot
- Estimate and measure lengths that are about 1 meter and 1 cm long
- Measure a variety of objects in inches and in centimeters and compare/discuss their relationships

• Develop fluency for addition and subtraction • Write equations using expanded form and standard notation	

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** • Measuring by iterating a single unit • Estimating measures • Work with a 1:2 ratio when measuring with 3" and 6" strips • Use tools appropriately to measure jumps, objects **Other Formative Assessments** A Measurement Disagreement • Two children measure the teacher's desk. Sally said it was 8 units. Jake said it was 15 units. Name 3 possible reasons why they could get different measures. • Measure objects in centimeters • Measure objects in inches **End of Unit Assessment** Measuring Lines • Measure 1 line twice – with inches and centimeters. Explain why one has a larger number. • Measure an object longer than a 12 inches

Suggested Resources

- Teaching Student-Centered Mathematics, K-2 by Van de Walle, et. al
- K-5 Math Teaching Resources, online
- Howard County Math Wiki, Grade 2