GOMath!

Grade 2

Curriculum

Lower Township Elementary Schools
2015

Course Description:

In Grade 2, instructional time should focus on four critical areas: building fluency with addition and subtraction; extending understanding of base-ten notation; using standard units of measure; and describing and analyzing shapes.

Students develop fluency with addition and subtraction facts within 100. Students apply their understanding of addition and subtraction strategies, to solve problems within 1000, and apply understanding of place value with hundreds, tens, and ones. Students will be able to choose and apply methods learned to calculate sums and differences.

Students extend their understanding of the base-ten system. This includes ideas of counting by fives, tens; identifying multiples of hundreds, tens, and ones, as well as number relationships involving these units (addition, subtraction, and comparing). Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, ten, or ones, (e.g., 853 is 8 hundred + 5 tens + 3 ones).

Students recognize the need for standard units of measurement: Centimeter and Inch - They use rulers and other measurements tools with understanding that linear measure involves an iteration of units. Time – They use clocks with understanding time involves an iteration of units (hours, minutes, and seconds). Money – They use bills and coins with understanding that money measure involves an iteration of units (dollars and cents). They recognize that the smaller the unit, the more iteration they need to cover a given length. They recognize that the smaller the unit the more iterations they need to cover a given length. (e.g. when measuring a given length in centimeters and inches the total number of centimeters will be a longer value because it is a smaller unit.)

Students describe and analyze, and identify shapes by examining their sides and angles. Students investigate, describe, and reason breaking down and combining shapes to make other shapes through building, drawing, and analyzing two-dimensional and three-dimensional shapes. Students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Course Goals:

A. Operations and Algebraic Thinking - 2.OA

- Represent and solve problems involving addition and subtraction.
- Add and Subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

B. Number and Operations in Base Ten - 2.NBT

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

C. Measurement and Data – 2.MD

- Measure and estimate length in standard units.
- Relate addition and subtraction to length.
- Work with time and money.

D. Geometry – 2.G

- Reason with shapes and their attributes.

Course Enduring Understandings:

Ideas that have lasting value beyond the classroom. Consider, "what do we want students to understand and be able to use several years from now, after they have forgotten the details?"

A. Operations and Algebraic Thinking - 2.OA

- We can find missing numbers in a math sentence/equation or word problem using addition and subtraction.
- Solving addition and subtraction number sentences requires fluency, flexibility, and accuracy.
- Even numbers can be made into two equal groups; odd numbers leave one left over when we try to make two equal groups.

B. Number and Operations in Base Ten - 2.NBT

- Place value allows us to use 10 digits to express numbers up to and beyond 1000; the location of a digit in a number determines its value.
- Computation requires breaking apart and combining numbers. There is more than one way to solve a computation problem. We use place value to help us solve number sentences. We try out strategies to find out the most efficient and accurate method and represent the strategy using numbers and symbols.

C. Measurement and Data – 2.MD

- Measuring with a longer unit of measure will give a smaller number for length than measuring with a smaller unit of measure.
- When measuring tow objects with the same measuring tool, you can subtract the lengths to find out how much longer one is than the other.
- Being able to visualize the lengths of standard units (inch, foot, centimeter, meter) helps me estimate unmeasured lengths.
- We can use our knowledge of addition and subtraction to solve problems involving lengths.
- Being able to tell time and count money are critical life skills. Time and money can be measured and have value.
- Charts and graphs turn data into images that help us draw conclusions.
- Charts and graphs allow us to make visual displays of our collected data.

D. Geometry – 2.G

- Geometric shapes are named by their attributes.
- Circles and rectangles can be broken apart into halves, thirds, and fourths/quarters.

Common Core State Standards:

Grade 2 Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations in Base Ten

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 2.OA

Represent and solve problems involving addition and subtraction.

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.[1]

Add and subtract within 20.

2. Fluently add and subtract within 20 using mental strategies.[2] By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.

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.

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.

Number and Operations in Base Ten — 2.NBT

Understand place value.

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. Count within 1000; skip-count by 5s, 10s, and 100s.
3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.

5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6. Add up to four two-digit numbers using strategies based on place value and properties of operations.
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.
8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
9. Explain why addition and subtraction strategies work, using place value and the properties of operations.[3]

Measurement and Data 2.MD

Measure and estimate lengths in standard units.

1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
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.
3. Estimate lengths using units of inches, feet, centimeters, and meters.
4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

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.
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.

Work with time and money.

7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
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?*

Represent and interpret data.

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.
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[4] using information presented in a bar graph.

Geometry 2.G

Reason with shapes and their attributes.

1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[5] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
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.

21st Century Career Ready Practices:

Career Ready Practices	
1. Act as a responsible and contributing citizen and employee.	**X**
2. Apply appropriate academic and technical skills	**X**
3. Attend to personal health and financial well-being.	**X**
4. Communicate clearly and effectively and with reason.	**X**
5. Consider the environmental, social and economic impacts of decisions	**X**
6. Demonstrate creativity and innovation.	**X**
7. Employ valid and reliable research strategies.	**X**
8. Utilize critical thinking to make sense of problems and persevere in solving them.	**X**
9. Model integrity, ethical leadership and effective management.	**X**
10. Plan education and career paths aligned to personal goals.	**X**
11. Use technology to enhance productivity.	**X**
12. Work productively in teams while using cultural global competence.	**X**

Unit Names:

Operations and Algebraic Thinking
Numbers and Operations in Base Ten
Measurement and Data
Geometry

Materials :

GOMath! Houghton Mifflin Harcourt Program

Infusion of Technology :

8.1.P.A.1 Use an input device to select an item and navigate the screen
8.1.P.A.2 Navigate the basic functions of a browser.
8.1.P.A.3 Use digital devices to create stories with pictures, numbers, letters and words.
8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.

8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

Course Assessments:

District Grading Policy:
Chapter Tests
Homework/Classwork
Formative Assessments:
Classwork
Homework
Classroom observations
Questioning
Discussion
Individual whiteboards

Summative Assessments:
Chapter Assessments
End-of-year Assessment
Performance Assessment

Content Area:	Mathematics	Grade(s)	2
Unit Plan Title:	Operations and Algebraic Thinking		

Anchor Standard (ELA) or Domain (Math)

Operations and Algebraic Thinking - 2.OA

- **Represent and solve problems involving addition and subtraction.**
- **Add and Subtract within 20.**
- **Work with equal groups of objects to gain foundations for multiplication.**

Overview/Rationale

Students develop fluency with addition and subtraction facts within 100. Students apply their understanding of addition and subtraction strategies, to solve problems within 1000, and apply understanding of place value with hundreds, tens, and ones. Students will be able to choose and apply methods learned to calculate sums and differences.

Standard(s)

- **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, 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 2's; 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 10 columns; write an equation to express the total as a sum of equal addends.**
- **2.OA.B.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.C.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.**
- **MP1- Make sense of problems and persevere in solving them.**
- **MP2- Reason abstractly and quantitatively.**
- **MP3- Construct viable arguments and critique the reasoning of others.**
- **MP4- Model with mathematics.**
- **MP5- Use appropriate tools strategically.**
- **MP6- Attend to precision.**
- **MP7- Look for and make use of structure.**
- **MP8- Look for and express regularity in repeated reasoning.**

Technology Standard(s)

8.1.P.A.1 Use an input device to select an item and navigate the screen

8.1.P.A.2 Navigate the basic functions of a browser.

8.1.P.A.3 Use digital devices to create stories with pictures, numbers, letters and words.

8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).

8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.

8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).

8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.

8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.

8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.

8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

Standards for Mathematical Practice(s)

1. **Make sense of problems and persevere in solving problems.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

Essential Question(s)

- **How are even numbers and odd numbers different?**
- **Why can an even number be shown as the sum of two equal addends?**
- **How can you use patterns and strategies to find sums and differences for basic facts?**
- **How can you use doubles facts to find sums for near doubles facts?**
- **What are some ways to remember sums?**
- **How is the make a ten strategy used to find sums?**
- **How do you add three numbers?**
- **How are addition and subtraction related?**
- **What are some ways to remember differences?**
- **How does getting to 10 in subtraction help when finding differences?**
- **How are bar models used to show addition and subtraction problems?**
- **How are number sentences used to show addition and subtraction situations?**
- **How can acting it out help when solving a problem about equal groups?**
- **How can you write an addition sentences for problems with equal groups?**
- **How can drawing a diagram help when solving addition problems?**
- **How do you write a number sentence to represent a problem?**
- **How can drawing a diagram help when solving subtraction problems?**

- **How do you decide what steps to do to solve a problem?**

Enduring Understandings

- **We can find missing numbers in a math sentence/equation or word problem using addition and subtraction.**
- **Solving addition and subtraction number sentences requires fluency, flexibility, and accuracy.**
- **Even numbers can be made into two equal groups; odd numbers leave one left over when we try to make two equal groups.**

In this unit plan, the following 21st Century Career Ready Practices are addressed.

Career Ready Practices	
1. Act as a responsible and contributing citizen and employee.	**X**
2. Apply appropriate academic and technical skills	**X**
3. Attend to personal health and financial well-being.	**X**
4. Communicate clearly and effectively and with reason.	**X**
5. Consider the environmental, social and economic impacts of decisions	**X**
6. Demonstrate creativity and innovation.	**X**
7. Employ valid and reliable research strategies.	**X**
8. Utilize critical thinking to make sense of problems and persevere in solving them.	**X**
9. Model integrity, ethical leadership and effective management.	**X**
10. Plan education and career paths aligned to personal goals.	**X**
11. Use technology to enhance productivity.	**X**
12. Work productively in teams while using cultural global competence.	**X**

Student Learning Targets/Objectives

- **Represent and solve problems involving addition and subtraction by**
  - **using manipulatives, drawings, and mental images**
  - **tell and write number stories**
  - **show two or more ways to create the same total up to 100, in one and two steps, using objects or drawings, and record equations**
  - **using objects or drawings to find the addend that will make up to 100 when added to a given number, and record the answer with a drawing or equation**
  - **read, write, and solve equations using symbols to represent the unknown number in all positions**

- **Add and Subtract within 20 by**
  - **practicing (both orally and in writing) facts for addition and subtraction within 20**
  - **using fact families and/or fact triangles to practice facts**
- **Work with equal groups of objects to gain foundations for multiplication by**
  - **counting by 2's on the number grid**
  - **using a number line**
  - **using a calculator**
  - **using manipulatives and drawing to show that any group contains either an even or odd number of objects**
  - **exploring even numbers as a sum of two equal addends**
  - **exploring odd numbers as a sum of two equal addends plus or minus one**

Assessments

- Pre and Formative
  - Prerequisite Assessment
  - Lesson Quick Check
  - Mid-Chapter Checkpoint
  - Digital Personal Math Trainer
  - Math on the Spot Video
- Summative
  - Chapter 1 Test
  - Chapter 3 Test
  - Chapter 4 Test
  - Chapter 5 Test
- Other assessment measures
  - Show What You Know
  - Diagnostic Interview Task
  - Digital Personal Math Trainer
  - Performance Assessment Task
  - Chapter Review Test

Teaching and Learning Actions

Instructional Strategies *D*	**<u>Instructional Strategies</u>** - Breaking down the task - Providing step-by-step prompts - Daily testing - Repeated practice - Sequenced Review - Directed Questioning and Responses - Sequence Tasks from Easy to Difficult - Individual/Small-Group/Whole Class Instruction - Think Aloud - Peer Tutoring - Think-Pair-Share - Active Participation - Warm-Up Activities - Meaningful Real Life Connections - Modeling - Teachers demonstrates, student uses models to

	problem solve - Centers - Manipulatives – Concrete Experiences - Goal Setting - Mental Math - Pencil & Paper Skills - Calculator Use/Technology - Graphic Organizers - Make Predictions/Estimation - Writing Explanations - Scaffolding - Extended Form - Partial Sums/Carrying - Trade First - Borrowing - Differentiation Strategies **Strategies for Basic Math Facts** - Counting on - Doubles - Doubles + 1 - Making a 10 - Counting Back - Counting Up - Five Frame - Ten Frame - Breaking down the task - Providing step-by-step prompts - Think Aloud - Peer Tutoring - Think-Pair-Share - Twenty Frame - Draw a Picture - Act-It-Out - Guess and Check - Working Backwards - Multistep - Manipulatives – Concrete Experiences - Calculator Use/Technology - Graphic Organizers
Activities *D*	• Everyday Mathematics - Grade 2, Lessons – **1-4 Partner Study Routines** - explore number grid patterns, make a class number scroll **1-6 Math Boxes** - name parts of a total in Penny Plate, Penny Plate, Two-Fisted Penny Addition **1-8 Number Grids** - Number Grid game **1-9 Equivalent Names for Numbers**

- solve broken calculator problems MJ pg. 12

1-10 Counting Patterns

- IRA " Even Steven, Odd Todd", create and Odd/Even Anchor Chart, MJ 16 #4

1-11 Relations (<, >, =) and Home Links

- act as a pan balance for comparing numbers

1-12 Explorations: Exploring Temperatures, Base-10 Structures, and Dominoes

2-1 Addition Number Stories

- write addition number stories, solve number-grid puzzles MJ pg. 21-22

2-2 Review "Easy" Addition Facts

- MJ pg. 24, beat the calculator, Domino Top-It

2-3 Doubles Facts

- explore addition/subtraction facts table

2-4 Turn-Around Facts and +9 Shortcut

- MJ pg. 31, MM pg. 199, Beat the Calculator

2-5 Addition Strategies that use Addition Facts

- cut out fact triangles in MJ pg. 33

2-6 Subtraction from Addition

- use dominoes to generate related addition and subtraction facts MM pg. 33, Beat the Calculator, Domino Top-It

2-7 Fact Families

- identify fact families on triangles

2-8 Explorations: Exploring Weights, Scales, Equal Groups

- Exploration C, Beat the Calculator

2-11 "What's My Rule" Routines

- solve "What's My rule" problems

2-12 Counting Strategies for Subtraction

- count back and count up for subtraction, beat the Calculator, Difference game, Number-Grid Difference Game

2-13 Shortcuts for "Harder" Subtraction Facts

- MJ pg. 50 1a

3-6 Frames and Arrows having Two Rules

- solve Frame-and-Arrows problems involving money, read a bar graph

3-7 Making Change by Counting Up

- Digit game, High Roller

3-8 Coin Exchange

- make purchases and make change using fruit and vegetable stand nd vending machine posters

4-1 Change-to-More Number Stories

- solve Change-To-More Problems involving fish weights, MJ pg. 81

4-2 Parts-and-Total Number Stories

- solve Parts-and-Total problems about buying items at a snack bar, Addition Spin

4-3 Explorations: Exploring Temperature, Money, and Shapes

- MJ pg. 88, Addition Spin

4-4 Temperature Changes

- solve problems involving temperature change

4-5 Estimating Costs

- estimate to solve money problems, Name That Number

4-6 Shopping Activity

- solve problems involving shopping making change-use number combinations that do NOT require partial sums

4-7 Explorations: Exploring Length, Area, and Attributes

- sort attribute blocks to fit a rule

5-2 Points and Line Segments

- MJ pg. 113 Quiz

5-4 Explorations: Exploring Polygons, Arrays, and Attributes

- follow direction to make, figure on a Geoboard, find attribute blocks that differ by one or more attributes, Dollar Rummy

5-5 Quadrangles

- find similarities and differences among shapes, Name That Number

5-7 Pyramids

- Beat the Calculator

6-2 Comparison Number Stories

- solve comparison number stories, MJ pg. 134, Addition Top-It

6-4 Mixed Addition and Subtraction Stories

- solve addition and subtraction number stories, use a situation diagram to solve addition and subtraction stories, MJ pg. 141

6-6 Explorations: Exploring Arrays, Coins, and Division

- Three addends

6-7 Multiples of Equal Groups

- solve number stories involving equal groupings and equal sharing, MJ pg. 148

6-8 Multiplication-Array Number Stories

- solve number stories involving equal grouping and equal sharing

6-9 Multiplication with Arrays

- use arrays to model multiplication, MJ pg. 153

8-1 Equal Parts of One

- divide shapes into equal parts, TM pg. 605-Folding Squares

8-2 Explorations: Exploring Fractions, Multiplications and Division, and Volume

- find how many pattern blocks of one size cover a pattern block of another size

9-2 Linear Measures

- Name that Number

9-3 Fractional Units of Length

- MJ pg. 214, Equivalent Fraction Game

9-6 Explorations: Exploring Capacity, Area, and Measures

- Exploration B: Find Which Cylinder Holds More

9-9 Weight

- determine how many pennies weigh 1 ounce

	10-3 Money Amounts with Calculator - make strategy choices when playing Pick-a Coin, MJ pg. 239, Pick-A-Coin **10-4 Using a Calculator to Solve Problems with Money** - write and solve then-and-now comparison problems, MJ pg. 241-242, Pick-A-Coin **10-6 Making Change** - estimate and calculate how much change received when making purchases, MM pg. 310 **10-7 Explorations: Exploring Area, Polygons, and Geoboard Fractions** - find the areas of your hand and of your foot, make polygons using trapezoids **11-4 Multiples of Equal Groups** - make up and solve number stories involving multiples of equal groups, Array Bingo **11-6 Multiplication Facts** - MJ pg. 278, Name that Number **12-2 Review: Clock Skills** - solve number stories that involve specific times **12-5 Division from Multiplication** - solve number stories involving multiplication and division facts
Resources	

2.OA.A.1

GoMath! Grade 2:

- Lessons: 1.1-1.2, 3.8-3.9, 4.9-4.10, 5.9-5.11

2.OA.B.2

GoMath! Grade 2:

- Lessons: 3.1-3.7

2.OA.C.4

GoMath! Grade 2:

- Lessons: 3.10-3.11

MP1

GoMath! Grade 2:

- Lessons: 1.1, 3.1-3.4, 3.6, 3.8-3.11, 4.9-4.10, 5.9-5.11

MP2

GoMath! Grade 2:

- Lessons: 1.2, 3.5, 3.7, 3.9, 3.11, 4.9-4.10, 5.9-5.11

MP3

GoMath! Grade 2:

- Lessons: 1.1-1.2, 3.6, 3.8, 5.9-5.10

MP4
GoMath! Grade 2:

- Lessons: 1.1-1.2, 3.1, 3.6, 3.8-3.9, 3.11, 4.9-4.10, 5.9-5.11

MP5
GoMath! Grade 2:

- Lessons: 1.2, 3.3, 3.7-3.8, 3.10, 5.9

MP6
GoMath! Grade 2:

- Lessons: 1.1, 3.3-3.5, 3.7-3.8, 3.11, 4.10, 5.10

MP7
GoMath! Grade 2:

- Lessons: 1.1-1.2, 3.1-3.5, 3.7, 3.10

MP8
GoMath! Grade 2:

- Lessons: 1.2, 3.1-3.5, 3.7, 4.10,

Think Central

Personal Math Trainer

GoMath! Academy

Suggested Time Frame:	15 days

Content Area:	Mathematics	Grade(s)	2
Unit Plan Title:	Number and Operations in Base Ten		

Anchor Standard (ELA) or Domain (Math)

Number and Operations in Base Ten - 2.NBT

- **Understand place value.**
- **Use place value understanding and properties of operations to add and subtract.**

Overview/Rationale

Students extend their understanding of the base-ten system. This includes ideas of counting by fives, tens; identifying multiples of hundreds, tens, and ones, as well as number relationships involving these units (addition, subtraction, and comparing). Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, ten, or ones, (e.g., 853 is 8 hundred + 5 tens + 3 ones).

Standard(s)

- **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 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 hundred (and 0 tens and 0 ones.)**
- **2.NBT.2 Count within 1000;skip-count by 5's, 10's, and 100's.**
- **2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.**
- **2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.**
- **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 strateigies based on place value and properties of operations.**
- **2.NBT.7 Add and subtract within 100, 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 and hundreds.**
- **2.NBT.8 Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.**
- **2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.**
- **MP1- Make sense of problems and persevere in solving them.**
- **MP2- Reason abstractly and quantitatively.**
- **MP3- Construct viable arguments and critique the reasoning of others.**
- **MP4- Model with mathematics.**

- **MP5- Use appropriate tools strategically.**
- **MP6- Attend to precision.**
- **MP7- Look for and make use of structure.**
- **MP8- Look for and express regularity in repeated reasoning.**

Technology Standard(s)

8.1.P.A.1 Use an input device to select an item and navigate the screen

8.1.P.A.2 Navigate the basic functions of a browser.

8.1.P.A.3 Use digital devices to create stories with pictures, numbers, letters and words.

8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).

8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.

8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).

8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.

8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.

8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.

8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

Standards for Mathematical Practice(s)

1. **Make sense of problems and persevere in solving problems.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

Essential Question(s)

- **How do you use place value to find the values of numbers and describe numbers in different ways?**
- **How do you know the value of a digit?**
- **How do you describe a 2-digit number as tens and ones?**
- **What are different ways to write a 2-digit number?**
- **How can you show the value of a number in different ways?**
- **How dose finding a pattern help you find all the ways to show a number with tens and ones?**
- **How do you count by 1s, 5s, and 10s with numbers less than 100?**
- **How do you count by 1s, 5s, 10s and 100s with numbers less than 1,000?**
- **How can you use place value to model, write, and compare 3-digit numbers?**

- **How do you group tens as hundreds?**
- **How do you write a 3-digit number for a group of tens?**
- **How do you show a 3-digit number using blocks?**
- **How do you write the 3-digit number that is shown by a set of blocks?**
- **How do you know the values of the digits in numbers?**
- **How do you write 3-digit numbers using words?**
- **What are three ways to write a 3-digit number?**
- **How can you use blocks or quick pictures to show the value of a number in different ways?**
- **How do you use place value to find 10 more, 10 less, 100 more, or 100 less than a 3-digit number?**
- **How does place value help you identify and extend counting patterns?**
- **How can you make a model to solve a problem about comparing numbers?**
- **How do you compare 3-digit numbers?**
- **How do you use place value to add 2-digit numbers, and what are some different ways to add 2-digit numbers?**
- **How does breaking apart a number make it easier to add?**
- **How can you make an addend a ten to help solve an addition problem?**
- **How do you break apart addends to add tens and then add ones?**
- **When do you regroup in addition?**
- **How do you record 2-digit addition?**
- **How do you record the steps when adding 2-digit numbers?**
- **How do you record the steps when adding 2-digit numbers?**
- **What are two different ways to write addition problems?**
- **What are some ways to add 3 numbers?**
- **What are some ways to add 4 numbers?**
- **How do you use place value to subtract 2-digit numbers with and without regrouping?**
- **How does breaking apart a number make subtracting easier?**
- **When do you regroup in subtraction?**
- **How do you record the steps when subtracting 2-digit numbers?**
- **What are two different ways to write subtraction problems?**
- **How can you use addition to solve subtraction problems?**
- **What are some strategies for adding and subtracting 3-digit numbers?**
- **How do you draw quick pictures to show adding 3-digit addition?**
- **How do you break apart addends to add hundreds, tens, and then ones?**
- **When do you regroup ones in addition?**
- **When do you regroup tens in addition?**
- **How can making a model help when solving subtraction problems?**
- **When do you regroup hundreds in subtraction?**
- **How do you regroup when there are zeros in the number you start with?**

Enduring Understandings

- **Place value allows us to use 10 digits to express numbers up to and beyond 1000; the location of a digit in a number determines its value.**
- **Computation requires breaking apart and combining numbers. There is more than one way to solve a computation problem. We use place value to help us solve number sentences. We try out strategies to find**

out the most efficient and accurate method and represent the strategy using numbers and symbols.

In this unit plan, the following 21st Century Career Ready Practices are addressed.

Career Ready Practices	
1. Act as a responsible and contributing citizen and employee.	**X**
2. Apply appropriate academic and technical skills	**X**
3. Attend to personal health and financial well-being.	**X**
4. Communicate clearly and effectively and with reason.	**X**
5. Consider the environmental, social and economic impacts of decisions	**X**
6. Demonstrate creativity and innovation.	**X**
7. Employ valid and reliable research strategies.	**X**
8. Utilize critical thinking to make sense of problems and persevere in solving them.	**X**
9. Model integrity, ethical leadership and effective management.	**X**
10. Plan education and career paths aligned to personal goals.	**X**
11. Use technology to enhance productivity.	**X**
12. Work productively in teams while using cultural global competence.	**X**

Student Learning Targets/Objectives

- **Understand place value by**
  - **using place value charts and base ten blocks to represent up to three-digit numbers**
  - **using play paper money ($1, $10, & $100) to represent three- digit numbers**
  - **using base ten longs to represent 100, or $10 bills to represent 100**
  - **using base ten blocks or paper $100 bills to demonstrate that the number of hundred blocks is found in the hundreds place with zero tens and zero ones**
  - **skip count up to 1000 by 5's, 10s, and 100's, beginning at any multiple of 5, 10, or 100**
  - **read and write numbers to 1000 using base-ten numerals, number names, and expanded form**
  - **use >, <, and = symbols to record the results of comparing two three-digit numbers**
  - **using a place value chart, with and without base ten blocks**
- **Use place value understanding and properties of operations to add and subtract by**
  - **using one's cubes, ten's longs, hundred's flats, and thousand's cube to add and subtract**
  - **adding up to four sets of two-digit numbers – first starting out using place value manipulatives, then moving to pictorial models, then to abstract number sentence models**

- **using a number grid chart up to 1000 to add and subtract by ten or 100 from any given number**
- **adding and subtracting numbers through 1000 using words, pictures and number sentences to explain thinking**

Assessments

- Pre and Formative
  - Prerequisite Assessment
  - Lesson Quick Check
  - Mid-Chapter Checkpoint
  - Digital Personal Math Trainer
  - Math on the Spot Video
- Summative
  - Chapter 1 Test
  - Chapter 2 Test
  - Chapter 4 Test
  - Chapter 5 Test
  - Chapter 6 Test
- Other assessment measures
  - Show What You Know
  - Diagnostic Interview Task
  - Digital Personal Math Trainer
  - Performance Assessment Task
  - Chapter Review Test

Teaching and Learning Actions

Instructional Strategies	**<u>Instructional Strategies</u>** - Breaking down the task - Providing step-by-step prompts - Daily testing - Repeated practice - Sequenced Review - Directed Questioning and Responses - Sequence Tasks from Easy to Difficult - Individual/Small-Group/Whole Class Instruction - Think Aloud - Peer Tutoring - Think-Pair-Share - Active Participation - Warm-Up Activities - Meaningful Real Life Connections - Modeling - Teachers demonstrates, student uses models to problem solve - Centers - Manipulatives – Concrete Experiences - Goal Setting - Mental Math - Pencil & Paper Skills - Calculator Use/Technology - Graphic Organizers

	- Make Predictions/Estimation - Writing Explanations - Scaffolding - Extended Form - Partial Sums/Carrying - Trade First - Borrowing - Differentiation Strategies **Strategies for Basic Math Facts** - Counting on - Doubles - Doubles + 1 - Making a 10 - Counting Back - Counting Up - Five Frame - Ten Frame - Breaking down the task - Providing step-by-step prompts - Think Aloud - Peer Tutoring - Think-Pair-Share - Twenty Frame - Draw a Picture - Act-It-Out - Guess and Check - Working Backwards - Multistep - Manipulatives – Concrete Experiences - Calculator Use/Technology - Graphic Organizers
Activities *D*	Everyday Mathematics - Grade 2, Lessons – **1-1 Math Message and Number Sequences** - MJ pg. 27, find missing numbers on number lines, place value **1-2 Tools and Coins** - find values of coin combinations **1-3 Calendars and Clocks** - build a monthly calendar, display time using the tool-kit clock, create clock MM pg. 61 **1-5 Grouping by Tens - $1, $10, $100** - Addition Top-It, Money Exchange Game, Penny-Nickel Exchange **1-7 Working in Small Groups** - explore number grid patterns, make a class number scroll **1-8 Number Grids** - Number Grid game **1-9 Equivalent Names for Numbers** - solve broken calculator problems MJ pg. 12

1-10 Counting Patterns

- IRA " Even Steven, Odd Todd", create and Odd/Even Anchor Chart, MJ 16 #4

1-11 Relations (<, >, =) and Home Links

- act as a pan balance for comparing numbers

1-12 Explorations: Exploring Temperatures, Base-10 Structures, and Dominoes

2-1 Addition Number Stories

- write addition number stories, solve number-grid puzzles MJ pg. 21-22

2-3 Doubles Facts

- explore addition/subtraction facts table

2-5 Addition Strategies that use Addition Facts

- cut out fact triangles in MJ pg. 33

2-6 Subtraction from Addition

- use dominoes to generate related addition and subtraction facts MM pg. 33, Beat the Calculator, Domino Top-It

2-7 Fact Families

- identify fact families on triangles

2-9 Name Collections

- MJ pg. 41, Name That Number, Two-Fisted Penny Addition

2-11 "Whats My Rule" Routines

- solve "What's My rule" problems

2-12 Counting Strategies for Subtraction

- count back and count up for subtraction, beat the Calculator, Difference game, Number-Grid Difference Game

2-13 Shortcuts for "Harder" Subtraction Facts

- MJ pg. 50 1a

3-1 Numeration and Place Value

- Digit Game

3-2 Using Coins to Buy Things

- buy and sell things with coins on MJ pg. 57, Spinning for Money, Penny-Nickel Exchange, Penny-Dime-Dollar Exchange

3-4 Explorations: Exploring Numbers, Time, and Geoboards

- solve Magic Square Problems, create a clock book, give directions for duplicating shapes, Base-10 Exchange

3-7 Making Change by Counting Up

- Digit game, High Roller

4-2 Parts-and-Total Number Stories

- solve Parts-and-Total problems about buying items at a snack bar, Addition Spin

4-3 Explorations: Exploring Temperature, Money, and Shapes

- MJ pg. 88, Addition Spin

4-5 Estimating Costs

- estimate to solve money problems, Name That Number

4-6 Shopping Activity

- solve problems involving shopping making change-use number

combinations that do NOT require partial sums

4-8 Paper-and-Pencil addition Strategies

- pg. 291 TM Combining Groups, MJ pg 105, Fact Extension Game

4-9 The Partial-Sums Addition Algorithm

- Fact Extension Game

5-1 Explorations: Exploring Rules, Sharing, and Time

- figure out attribute rules, solve problems involving equal sharing, MJ pg. 112, Addition Spin

5-8 Line Symmetry

- MJ pg. 129, Fact Extension Game

6-1 Addition of Three or More Numbers

- write number models with 3 addends, MJ pg. 131

6-2 Comparison Number Stories

- solve comparison number stories, MJ pg. 134, Addition Top-It

6-4 Mixed Addition and Subtraction Stories

- solve addition and subtraction number stories, use a situation diagram to solve addition and subtraction stories, MJ pg. 141

6-5 Subtraction Strategies

- use manipulatives to model subtraction, Number Grid Difference Game, Base-10 Trading game

7-1 Patterns in Counting

- find number patterns on a grid, MJ pg. 161

7-2 Extending Complements of Ten

- Hit the Target

7-3 Mental Arithmetic: A Basketball Game

- MJ pg. 168, Basketball Addition

9-5 Measuring Longer Distances

- solve and write road-map number stories

10-3 Money Amounts with Calculator

- make strategy choices when playing Pick-a Coin, MJ pg. 239, Pick-A-Coin

10-8 Place Value

- Money Exchange Game

10-9 Place-Value Tools

- MM pg. 33, create place value books, MM pg. 330-336

10-11 Grouping with Parentheses

- solve parentheses puzzles, Soccer Spin

11-1 Addition Number Stories with Dollars and Cents

- find the cost of two items, MJ pg. 265

11-2 Subtraction Number Stories with Dollars and Cents

- find the change received from a purchase, compare costs

11-3 The Trade-First Subtraction Algorithm

- MJ pg. 269

12-2 Review: Clock Skills

- solve number stories that involve specific times

12-4 Practice Multiplication Facts

	- Name that Number
Resources	

2.NBT.A.1
GoMath! Grade 2:

- Lessons: 2.2-2.5

2.NBT.A.1a
GoMath! Grade 2:

- Lessons: 2.1

2.NBT.A.1b
GoMath! Grade 2:

- Lessons: 2.1,

2.NBT.A.2
GoMath! Grade 2:

- Lessons: 1.8-1.9

2.NBT.A.3
GoMath! Grade 2:

- Lessons: 1.3-1.7, 2.6-2.8

2.NBT.A.4
GoMath! Grade 2:

- Lessons: 2.11-2.12

2.NBT.B.5
GoMath! Grade 2:

- Lessons: 4.1-4.8, 5.1-5.8, 6.1

2.NBT.B.6
GoMath! Grade 2:

- Lessons: 4.11-4.12

2.NBT.B.7
GoMath! Grade 2:

- Lessons: 6.2-6.10

2.NBT.B.8

GoMath! Grade 2:

- Lessons: 2.9-2.10

2.NBT.B.9

GoMath! Grade 2:

- Lessons: 4.6, 5.3, 6.8

MP1

GoMath! Grade 2:

- Lessons: 1.3, 1.7-1.8, 2.2-2.5, 2.9, 2.11-2.12, 3.4, 4.1-4.10, 4.12, 5.1-5.2, 5.4, 5.6-5.11, 6.2, 6.5-6.10

MP2

GoMath! Grade 2:

- Lessons: 2.6-2.12, 4.7,4.9-4.10, 5.3, 5.5, 5.9-5.11, 6.1, 6.4, 6.6

MP3

GoMath! Grade 2:

- Lessons: 1.3-1.4, 1.6-1.8, 2.2, 2.5, 2.8, 2.11, 4.3, 4.6, 4.8, 4.11-4.12, 5.2, 5.6-5.10, 6.2-6.3, 6.5, 6.9

MP4

GoMath! Grade 2:

- Lessons: 1.3-1.4, 1.8, 2.1, 2.3-2.4, 2.8, 2.11, 4.1-4.2, 4.5, 4.9-4.11, 5.4, 5.9-5.11, 6.1, 6.3, 6.6

MP5

GoMath! Grade 2:

- Lessons: 1.3-1.9, 2.5, 2.10, 4.2, 4.4, 4.6, 5.1-5.3, 5.5, 5.8-5.10, 6.1

MP6

GoMath! Grade 2:

- Lessons: 1.3-1.5, 2.1, 2.5-2.12, 3.4, 4.1-4.8, 4.10-4.12, 5.1-5.5, 5.7-5.8, 6.1-6.10

MP7

GoMath! Grade 2:

- Lessons: 1.6-1.9, 2.1-2.10, 3.4, 4.4-4.5, 4.7-4.8, 5.3-5.4, 5.6-5.7, 6.9

MP8

GoMath! Grade 2:

- Lessons: 1.6, 1.8-1.9, 2.1-2.2, 2.4, 2.7, 2.12, 3.4, 4.1, 4.3, 4.6, 4.10-4.12, 5.1-5.2, 5.5, 5.8, 6.2-6.5, 6.7-6.10

Think Central

Personal Math Trainer

GoMath! Academy

Suggested Time Frame:	74 days

Content Area:	Mathematics	Grade(s)	2
Unit Plan Title:	Measurement and Data		

Anchor Standard (ELA) or Domain (Math)

Measurement and Data – 2.MD

- **Measure and estimate length in standard units.**
- **Relate addition and subtraction to length.**
- **Work with time and money.**

Overview/Rationale

Students recognize the need for standard units of measurement: Centimeter and Inch - They use rulers and other measurements tools with understanding that linear measure involves an iteration of units. Time – They use clocks with understanding time involves an iteration of units (hours, minutes, and seconds). Money – They use bills and coins with understanding that money measure involves an iteration of units (dollars and cents). They recognize that the smaller the unit, the more iteration they need to cover a given length. They recognize that the smaller the unit the more iterations they need to cover a given length. (e.g. when measuring a given length in centimeters and inches the total number of centimeters will be a longer value because it is a smaller unit.

Standard(s)

- **2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, metersticks, 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.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 ¢sumbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?***
- **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 a whole-number units.**
- **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.**
- **9.1.4.D.1 Determine various ways to save.**

Technology Standard(s)

8.1.P.A.1 Use an input device to select an item and navigate the screen
8.1.P.A.2 Navigate the basic functions of a browser.
8.1.P.A.3 Use digital devices to create stories with pictures, numbers, letters and words.
8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.

8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.
8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.
8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

Standards for Mathematical Practice(s)

- **MP1- Make sense of problems and persevere in solving them.**
- **MP2- Reason abstractly and quantitatively.**
- **MP3- Construct viable arguments and critique the reasoning of others.**
- **MP4- Model with mathematics.**
- **MP5- Use appropriate tools strategically.**
- **MP6- Attend to precision.**
- **MP7- Look for and make use of structure.**
- **MP8- Look for and express regularity in repeated reasoning.**

Essential Question(s)

- **How do you use the values of coins and bills to find the total value of a group of money, and how do you read times show on analog and digital clocks?**
- **How do you find the total value of a group of dimes, nickels, and pennies?**
- **How do you find the total value of a group of coins?**
- **How do you order coins to help find the total value of a group of coins?**
- **How do you choose coins to show a money amount in different ways?**
- **How can you show the value of one dollar with coins?**
- **How do you show money amounts greater than one dollar?**
- **How does acting it out help when solving problems about money?**
- **How do you tell time to the hour and half hour on a clock?**
- **How do you tell and show time to five minutes?**
- **What are the different ways you can read the time on a clock?**
- **How do you use A.M. and P.M. to describe times?**
- **What are some of the methods and tools that can be used to estimate and measure length?**
- **How can you use inch models to measure length?**
- **Why is using a ruler similar to using a row of color tiles to measure length?**
- **How do you estimate the lengths of objects in inches?**
- **How do you use an inch rules to measure lengths?**

- **How can drawing a diagram help when solving problems about length?**
- **Why is measuring in feet different from measuring in inches?**
- **How do you estimate the lengths of objects in feet?**
- **How do you choose a measuring tool to use when measuring lengths?**
- **How can a line plot be used to show measurement data?**
- **What are some of the methods and tools that can be used to estimate and measure length in metric units?**
- **How do you use a centimeter model to measure the lengths of objects?**
- **How do you use known lengths to estimate unknown lengths?**
- **How do you use a centimeter ruler to measure lengths?**
- **How is measuring in meters different from measuring in centimeters?**
- **How do you estimate the lengths of objects in meters?**
- **How do you find the difference between the lengths of two objects?**
- **How do tally charts, picture graphs, and bar graphs help you solve problems?**
- **How do you use a tally chart to record data from a survey?**
- **How do you use a picture graph to show data?**
- **How do you make a picture graph to show data in a tally chart?**
- **How is a bar graph used to show data?**
- **How do you make a bar graph to show data?**
- **How does making a bar graph help when solving problems about data?**

Enduring Understandings

- **Measuring with a longer unit of measure will give a smaller number for length than measuring with a smaller unit of measure.**
- **When measuring tow objects with the same measuring tool, you can subtract the lengths to find out how much longer one is than the other.**
- **Being able to visualize the lengths of standard units (inch, foot, centimeter, meter) helps me estimate unmeasured lengths.**
- **We can use our knowledge of addition and subtraction to solve problems involving lengths.**
- **Being able to tell time and count money are critical life skills. Time and money can be measured and have value.**
- **Charts and graphs turn data into images that help us draw conclusions.**
- **Charts and graphs allow us to make visual displays of our collected data.**

In this unit plan, the following 21st Century Career Ready Practices are addressed.

Career Ready Practices	
1. Act as a responsible and contributing citizen and employee.	**X**
2. Apply appropriate academic and technical skills	**X**
3. Attend to personal health and financial well-being.	**X**
4. Communicate clearly and effectively and with reason.	**X**
5. Consider the environmental, social and economic impacts of decisions	**X**
6. Demonstrate creativity and innovation.	**X**
7. Employ valid and reliable research strategies.	**X**
8. Utilize critical thinking to make sense of problems and persevere in solving them.	**X**
9. Model integrity, ethical leadership and effective management.	**X**
10. Plan education and career paths aligned to personal goals.	**X**
11. Use technology to enhance productivity.	**X**
12. Work productively in teams while using cultural global competence.	**X**

Student Learning Targets/Objectives

- **Measure and estimate length in standard units by**
  - **measuring the same object using two different units of measures and discuss why the number representing the length are different**
  - **measuring various lengths from very short to very long and have students pick the unit of measure that would make the most sense and explain why the unit was picked**
  - **given various objects to look at and touch, estimate the length in a given unit of measurement**
- **Relate addition and subtraction to length by**
  - **solving word problems involving length using numbers within 100, by using either addition or subtraction strategies**
  - **determine the difference between two lengths within 100, students will use the number line to determine the difference**
- **Work with time and money by**
  - **demonstrate time in both analog and digital format on prepared clocks**
  - **tell time using classroom clocks**
  - **count by fives up to 60, noting 15, 30, 45, and 60 in common terms as quarters and half**
  - **demonstrate dollar and cent values with manipulatives**

- **writing each denomination out, then adding them together or taking some value away**
- **relating value to money in terms of items having a price**
- **performing addition and subtraction of varied denominations**

Assessments

- Pre and Formative
  - Prerequisite Assessment
  - Lesson Quick Check
  - Mid-Chapter Checkpoint
  - Digital Personal Math Trainer
  - Math on the Spot Video
- Summative
  - Chapter 7 Test
  - Chapter 8 Test
  - Chapter 9 Test
  - Chapter 10 Test
- Other assessment measures
  - Show What You Know
  - Diagnostic Interview Task
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  - Performance Assessment Task
  - Chapter Review Test

Teaching and Learning Actions

Instructional Strategies *D*	**Instructional Strategies** - Breaking down the task - Providing step-by-step prompts - Daily testing - Repeated practice - Sequenced Review - Directed Questioning and Responses - Sequence Tasks from Easy to Difficult - Individual/Small-Group/Whole Class Instruction - Think Aloud - Peer Tutoring - Think-Pair-Share - Active Participation - Warm-Up Activities - Meaningful Real Life Connections - Modeling - Teachers demonstrates, student uses models to problem solve - Centers - Manipulatives – Concrete Experiences - Goal Setting - Mental Math - Pencil & Paper Skills - Calculator Use/Technology - Graphic Organizers - Make Predictions/Estimation - Writing Explanations

	- Scaffolding - Extended Form - Partial Sums/Carrying - Trade First - Borrowing - Differentiation Strategies **Strategies for Basic Math Facts** - Counting on - Doubles - Doubles + 1 - Making a 10 - Counting Back - Counting Up - Five Frame - Ten Frame - Breaking down the task - Providing step-by-step prompts - Think Aloud - Peer Tutoring - Think-Pair-Share - Twenty Frame - Draw a Picture - Act-It-Out - Guess and Check - Working Backwards - Multistep - Manipulatives – Concrete Experiences - Calculator Use/Technology - Graphic Organizers
Activities *D*	• Everyday Mathematics - Grade 2, Lessons – **1-3 Math Message and Number Sequences** - MJ pg. 27, find missing numbers on number lines, place value **1-3 Calendars and Clocks** - build a monthly calendar, display time using the tool-kit clock, create clock MM pg. 61 **1-4 Partner Study Routines** - explore number grid patterns, make a class number scroll **1-5 Grouping by Tens - $1, $10, $100** - Addition Top-It, Money Exchange Game, Penny-Nickel Exchange **1-6 Math Boxes** - name parts of a total in Penny Plate, Penny Plate, Two-Fisted Penny Addition **1-8 Number Grids** - Number Grid game **1-9 Equivalent Names for Numbers** - solve broken calculator problems MJ pg. 12 **2-1 Addition Number Stories**

- write addition number stories, solve number-grid puzzles MJ pg. 21-22

2-6 Subtraction from Addition

- use dominoes to generate related addition and subtraction facts MM pg. 33, Beat the Calculator, Domino Top-It

2-10 Frames-and-Arrows Routines

- determine a pattern in a number sequence and state the rule

3-2 Using Coins to Buy Things

- buy and sell things with coins on MJ pg. 57, Spinning for Money, Penny-Nickel Exchange, Penny-Dime-Dollar Exchange

3-5 Data Day: Pockets

- make a bar graph of pockets data or any other data you choose

3-6 Frames and Arrows having Two Rules

- solve Frame-and-Arrows problems involving money, read a bar graph

3-7 Making Change by Counting Up

- Digit game, High Roller

3-8 Coin Exchange

- make purchases and make change using fruit and vegetable stand nd vending machine posters

4-2 Parts-and-Total Number Stories

- solve Parts-and-Total problems about buying items at a snack bar, Addition Spin

4-3 Explorations: Exploring Temperature, Money, and Shapes

- MJ pg. 88, Addition Spin

4-4 Temperature Changes

- solve problems involving temperature change

4-5 Estimating Costs

- estimate to solve money problems, Name That Number

4-6 Shopping Activity

- solve problems involving shopping making change-use number combinations that do NOT require partial sums

4-7 Explorations: Exploring Length, Area, and Attributes

- sort attribute blocks to fit a rule

5-1 Explorations: Exploring Rules, Sharing, and Time

- figure out attribute rules, solve problems involving equal sharing, MJ pg. 112, Addition Spin

5-8 Line Symmetry

- MJ pg. 129, Fact Extension Game

6-1 Addition of Three or More Numbers

- write number models with 3 addends, MJ pg. 131

6-2 Comparison Number Stories

- solve comparison number stories, MJ pg. 134, Addition Top-It

6-3 Data Day: The Four Food Groups

- make a bar graph of favorite foods, solve comparison number stories

6-4 Mixed Addition and Subtraction Stories

- solve addition and subtraction number stories, use a situation diagram to solve addition and subtraction stories, MJ pg. 141

6-5 Subtraction Strategies

- use manipulatives to model subtraction, Number Grid Difference Game, Base-10 Trading game

6-6 Explorations: Exploring Arrays, Coins, and Division

- Three addends

6-7 Multiples of Equal Groups

- solve number stories involving equal groupings and equal sharing, MJ pg. 148

7-5 Explorations: Exploring Weights, Equal Sharing, and Patterns

- Exploration B: Share $5.00 equally among 4 children, Hit the Target

7-6 Data Day: Standing Jumps and Arm Spans

- Array Bingo

7-8 Frequency Distribution

- find the median length of standing jumps and arm spans of children in the class, Soccer Spin

8-1 Equal Parts of One

- divide shapes into equal parts, TM pg. 605-Folding Squares

9-1 Measuring with Yards and Meters

- find the length of our classroom

9-2 Linear Measures

- Name that Number

9-3 Fractional Units of Length

- MJ pg. 214, Equivalent Fraction Game

9-4 Perimeter

- solve perimeter questions, MJ pg. 216, Number Grid Difference Game

9-8 Capacity

- TM pg. 703, line plot favorite drinks

10-1 Money

- find different ways to pay for grocery item, MJ pg. 231, MJ pg. 229

10-3 Money Amounts with Calculator

- make strategy choices when playing Pick-a Coin, MJ pg. 239, Pick-A-Coin

10-4 Using a Calculator to Solve Problems with Money

- write and solve then-and-now comparison problems, MJ pg. 241-242, Pick-A-Coin

10-5 Estimating and Finding Exact Costs

- estimate the total cost of grocery items, find the exact cost of a purchase, MJ pg. 243

10-7 Explorations: Exploring Area, Polygons, and Geoboard Fractions

- find the areas of your hand and of your foot, make polygons using trapezoids

11-1 Addition Number Stories with Dollars and Cents

- find the cost of two items, MJ pg. 265

11-2 Subtraction Number Stories with Dollars and Cents

- find the change received from a purchase, compare costs

11-3 The Trade-First Subtraction Algorithm

- MJ pg. 269

	12-2 Review: Clock Skills - solve number stories that involve specific times **12-3 Timelines** - calculate and describe time intervals with equivalent names **12-6 Graphs: Comparing Speeds of Animals and People** - use a graph to find information on speeds of animals, find the median and range of distances in a data set **12-7 The Mode of a Set of Data** - find the mode of a data set, collect, display and analyze data, Addition Card Draw
Resources	

2.MD.A.1

GoMath! Grade 2:

- Lessons: 8.1-8.2, 8.4-8.8, 9.1, 9.3

2.MD.A.2

GoMath! Grade 2:

- Lessons: 8.6, 9.5

2.MD.A.3

GoMath! Grade 2:

- Lessons: 8.3, 8.7, 9.2, 9.6-9.7

2.MD.B.5

GoMath! Grade 2:

- Lessons: 8.5, 9.4

2.MD.B.6

GoMath! Grade 2:

- Lessons: 9.4

2.MD.C.7

GoMath! Grade 2:

- Lessons: 7.8-7.11

2.MD.C.8

GoMath! Grade 2:

- Lessons: 7.1-7.7

2.MD.D.9

GoMath! Grade 2:

- Lessons: 8.9

2.MD.D.9

GoMath! Grade 2:

- Lessons: 8.9

2.MD.D.10

GoMath! Grade 2:

- Lessons: 10.1-10.6

MP1

GoMath! Grade 2:

- Lessons: 7.1-7.2, 7.4, 7.7-7.8, 7.10-7.11, 8.3, 8.5, 8.7, 9.1-9.7, 10.1-10.4, 10.6

MP2

GoMath! Grade 2:

- Lessons: 7.1, 7.6, 7.11, 8.1, 8.4-8.7, 9.4, 9.7, 10.2, 10.4

MP3

GoMath! Grade 2:

Lessons: 7.3, 7.9, 7.11, 8.2, 8.8, 9.3, 9.7, 10.1-10.2, 10.5-10.6

MP4

GoMath! Grade 2:

- Lessons: 7.1, 7.3-7.7, 7.9, 8.5, 8.9, 9.4, 9.6-9.7, 10.1-10.3, 10.5-10.6

MP5

GoMath! Grade 2:

- Lessons: 7.8, 8.1, 8.2-8.4, 8.6, 8.8-8.9, 9.1, 9.3, 9.5-9.6, 10.6

MP6

GoMath! Grade 2:

Lessons: 7.1-7.11, 8.1, 8.2-8.9, 9.1-9.3, 9.5-9.7, 10.1-10.5

MP7

GoMath! Grade 2:

- Lessons: 7.1-7.2, 7.5-7.7, 7.11, 8.3, 8.7, 9.2, 9.5-9.6

MP8

GoMath! Grade 2:

Lessons: 7.2- 7.4, 7.8-7.10, 8.1, 8.4, 8.8, 9.1 **Think Central** **Personal Math Trainer** **GoMath! Academy**	
Suggested Time Frame:	49 days

Content Area:	Mathematics	Grade(s)	2
Unit Plan Title:	Geometry		

Anchor Standard (ELA) or Domain (Math)

Geometry – 2.G

- **Reason with shapes and their attributes.**

Overview/Rationale

Students describe and analyze, and identify shapes by examining their sides and angles. Students investigate, describe, and reason breaking down and combining shapes to make other shapes through building, drawing, and analyzing two-dimensional and three-dimensional shapes. Students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Standard(s)

- **2.G.1 Recognize and draw shapes having specified attribute, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilateral, 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.**
- **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.**

Technology Standard(s)

8.1.P.A.1 Use an input device to select an item and navigate the screen

8.1.P.A.2 Navigate the basic functions of a browser.

8.1.P.A.3 Use digital devices to create stories with pictures, numbers, letters and words.

8.1.P.A.4 Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).

8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.

8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).

8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.

8.1.2.C.1 Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools, and social media.

8.1.P.E.1 Use the Internet to explore and investigate questions with a teacher's support.

8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

Standards for Mathematical Practice(s)

1. **Make sense of problems and persevere in solving problems.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**

7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

Essential Question(s)

- **What are some two-dimensional shapes and three-dimensional shapes, and how can you show equal parts of shapes?**
- **What objects match three-dimensional shapes?**
- **How would describe the faces of a rectangular prism and the faces of a cube?**
- **How can you build a rectangular prism?**
- **What shapes can you name just by knowing the number of sides and vertices?**
- **How do you find and count angles in two-dimensional shapes?**
- **How do you use the number of sides and angles to sort two-dimensional shapes?**
- **How do you find the total number of same-size squares that will cover a rectangle?**
- **What are halves, thirds, and fourths of a whole?**
- **How do you know if a shape shows halves, thirds or fourths?**
- **How do you find a half of, a third of, or a fourth of a whole?**
- **How can drawing a diagram help when solving problems about equal shares?**

Enduring Understandings

- **Geometric shapes are named by their attributes.**
- **Circles and rectangles can be broken apart into halves, thirds, and fourths/quarters.**

In this unit plan, the following 21st Century themes and skills are addressed.

Career Ready Practices	
1. Act as a responsible and contributing citizen and employee.	**X**
2. Apply appropriate academic and technical skills	**X**
3. Attend to personal health and financial well-being.	**X**
4. Communicate clearly and effectively and with reason.	**X**
5. Consider the environmental, social and economic impacts of decisions	**X**
6. Demonstrate creativity and innovation.	**X**
7. Employ valid and reliable research strategies.	**X**
8. Utilize critical thinking to make sense of problems and persevere in solving them.	**X**
9. Model integrity, ethical leadership and effective management.	**X**
10. Plan education and career paths aligned to personal goals.	**X**
11. Use technology to enhance productivity.	**X**
12. Work productively in teams while using cultural global competence.	**X**

Student Learning Targets/Objectives

- **Reason with shapes and their attributes by**
  - **describing the number of faces, vertices, and edges in a solid figure**
  - **identifying the plane shapes that are made by tracing the flat surfaces of solid figures**
  - **using pattern blocks to make and trace shapes and count the number of sides and vertices**
  - **using equal size squares to fill columns and rows of a rectangle to find the total number needed to completely cover the rectangle**
  - **identify three-dimensional shapes, as it pertains to mathematics and everyday experiences.**
  - **breaking down shapes, and combining to create new shapes**

Assessments

- Pre and Formative
  - Prerequisite Assessment
  - Lesson Quick Check
  - Mid-Chapter Checkpoint
  - Digital Personal Math Trainer
  - Math on the Spot Video
- Summative

- Chapter 11 Test
- Other assessment measures
  - Show What You Know
  - Diagnostic Interview Task
  - Digital Personal Math Trainer
  - Performance Assessment Task
- Chapter Review Test

Teaching and Learning Actions

Instructional Strategies

D

Instructional Strategies

- Breaking down the task
- Providing step-by-step prompts
- Daily testing
- Repeated practice
- Sequenced Review
- Directed Questioning and Responses
- Sequence Tasks from Easy to Difficult
- Individual/Small-Group/Whole Class Instruction
- Think Aloud
- Peer Tutoring
- Think-Pair-Share
- Active Participation
- Warm-Up Activities
- Meaningful Real Life Connections
- Modeling - Teachers demonstrates, student uses models to problem solve
- Centers
- Manipulatives – Concrete Experiences
- Goal Setting
- Mental Math
- Pencil & Paper Skills
- Calculator Use/Technology
- Graphic Organizers
- Make Predictions/Estimation
- Writing Explanations
- Scaffolding
- Extended Form
- Partial Sums/Carrying
- Trade First
- Borrowing
- Differentiation Strategies

Strategies for Basic Math Facts

- Counting on
- Doubles
- Doubles + 1
- Making a 10
- Counting Back
- Counting Up
- Five Frame

	- Ten Frame - Breaking down the task - Providing step-by-step prompts - Think Aloud - Peer Tutoring - Think-Pair-Share - Twenty Frame - Draw a Picture - Act-It-Out - Guess and Check - Working Backwards - Multistep - Manipulatives – Concrete Experiences - Calculator Use/Technology - Graphic Organizers
Activities *D*	• Everyday Mathematics - Grade 2, Lessons – **3-4 Explorations: Exploring Numbers, Time, and Geoboards** - solve Magic Square Problems, create a clock book, give directions for duplicating shapes, Base-10 Exchange **4-3 Explorations: Exploring Temperature, Money, and Shapes** - MJ pg. 88, Addition Spin **5-1 Explorations: Exploring Rules, Sharing, and Time** - figure out attribute rules, solve problems involving equal sharing, MJ pg. 112, Addition Spin **5-4 Explorations: Exploring Polygons, Arrays, and Attributes** - follow direction to make, figure on a Geoboard, find attribute blocks that differ by one or more attributes, Dollar Rummy **5-5 Quadrangles** - find similarities and differences among shapes, Name That Number **5-6 3-Dimensional Shapes** - find similarities and differences among shapes **5-7 Pyramids** - Beat the Calculator **8-1 Equal Parts of One** - divide shapes into equal parts, TM pg. 605-Folding Squares, **8-2 Explorations: Exploring Fractions, Multiplications and Division, and Volume** - find as many pattern blocks of one size cover a pattern block of another size **8-3 Collection of Things** - find fractions of collections of things **8-4 Equivalent Fractions** - MM pg. 239-Color Code Fractions, cut out to overlap and see fraction equivalent **8-5 Equivalent Fractions Using Fraction Cards** - MJ pg. 203, MJ Activity pgs. 5-6, cut fractions, Equivalent Fraction Game

	8-6 Comparing Fractions - Equivalent Fraction Game, Fraction Top-It **8-7 Fraction Number Stories** - solve number stories involving fractions, MJ pg. 207 **9-6 Explorations: Exploring Capacity, Area, and Measures** - Exploration B: Find Which Cylinder Holds More **9-7 Area** - find the area and perimeter of various designs, MM pg. 284, Equivalent Fraction Game, Fraction Top-It **10-3 Money Amounts with Calculator** - make strategy choices when playing Pick-A-Coin, MJ pg.239, Pick-A-Coin **10-7 Explorations: Exploring Area, Polygons, and Geoboard Fractions** - find the area of your hand and foot, make polygons using trapezoids
Resources	

2.G.A.1

GoMath! Grade 2:

- Lessons: 11.1-11.6

2.G.A.2

GoMath! Grade 2:

- Lessons: 11.7

2.G.A.3

GoMath! Grade 2:

- Lessons: 11.8-11.11

MP1

GoMath! Grade 2:

- Lessons: 11.2-11.4, 11.8, 11.11

MP2

GoMath! Grade 2:

- Lessons: 11.1, 11.11

MP3

GoMath! Grade 2:

Lessons: 11.1, 11.3-11.4, 11.6-11.8, 11.10

MP4

GoMath! Grade 2:

- Lessons: 11.1- 11.6, 11.10-11.11

MP5
GoMath! Grade 2:

- Lessons: 11.2, 11.7, 11.9

MP6
GoMath! Grade 2:
Lessons: 11.1- 11.3, 11.5-11.6, 11.8-11.9-11.11

MP7
GoMath! Grade 2:

- Lessons: 11.3-11.5

MP8
GoMath! Grade 2:
Lessons: 11.7-11.8

Think Central

Personal Math Trainer

GoMath! Academy

Suggested Time Frame:	15 days