Math / Grade 2

Unit 1

Course/Subject:	Grade:	Unit:	Suggested Timeline:
Math	2	Patterns and Geometry	**3 weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	**Unit 1: Patterns and Geometry** Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns Unit 4: Two-Digit Addition Unit 5: Money Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing Unit 9: Time Unit 10: Measurement

Unit Title	Geometry
Unit Summary	Students will be able to explore, sort, compare, and describe shapes to refine their understanding about their attributes. Students will also be able to develop foundational understandings about fractions as they engage in geometry investigations. (MP p. 313, 327)

Unit Essential Questions:

1. How can I identify, extend, and create a pattern?
2. How can I identify, extend and create a growing pattern?
3. What are the names of the 2-D and 3-D shapes?
4. What shapes do I see in my world?
5. What are the attributes of 2-D shapes? (sides, angles, corners)
6. What are the attributes of 3-D shapes? (face, edge, vertex, point)
7. How do I identify quadrilaterals?
8. How do I identify equal and equivalent shapes?
9. How can a 2-D shape be partitioned into equal parts? (halves, thirds, fourths)
10. How can I partition a shape, vertically and horizontally, to have equal parts?
11. How can I identify a fraction of a whole?

Key Understandings:

1. Shapes can be organized in patterns
2. Shapes can be 2-Dimensional and 3-Dimensional
3. 2-Dimensional and 3-Dimensional shapes have different attributes
4. Shapes can be categorized. (Quadrilaterals)
5. Shapes can be partitioned.
6. Partitioned shapes can be represented by fractions.

Focus Standards Addressed in the Unit
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.3.2.A.1	Analyze and draw two- and three-dimensional shapes having specified attributes.
2.G.A.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. (Sizes are compared directly or visually, not compared by measuring.)
CC.2.3.2.A.2	Use the understanding of fractions to partition shapes into halves, quarters, and thirds.
2.G.A.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
2.G.A.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.

Important Standards Addressed in the Unit:	

Misconceptions:	**Proper Conceptions:**
● Students may have difficulty understanding that a shape may have more than one name. For example, a rectangle is also a quadrilateral. (Categorize) ● Partitioning a circle into thirds by drawing 3 vertical or horizontal lines will make equal parts. ● A fourth is a larger equal share than a third	● A shape can have more than one name or can be put into a category. ● A circle can be partitioned into 3 equal parts. (i.e. peace sign) ● Thirds are a larger part of the whole than fourths (the whole is partitioned into fewer equal parts)

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**

Academic Vocabulary:

● repeating pattern ● growing pattern ● 2-Dimensional shape ● circle ● triangle ● square ● rectangle ● parallelogram ● trapezoid ● pentagon ● hexagon ● octagon ● polygon ● quadrilateral ● attribute ● corner ● side ● angle ● right angle	● 3-Dimensional shape ● sphere ● cone ● cylinder ● square pyramid ● rectangular prism ● cube	● equal ● equivalent ● whole ● parts ● partition ● half ● halves ● third ● fourth ● fraction

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Describing geometric shapes in context
- Written Responses

Additional Resources:

"Math in Practice: Teaching Second Grade," Modules 13 & 14
**Lemonade for Sale* (Stuart J. Murphy)
The Greedy Triangle by Marilyn Burns

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

Created By:

Amber Brillhart and Becky Gentzler

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			Math / Grade 2 **Unit 2**
Course/Subject: Math	**Grade:** 2	**Unit 2:** Place Value Review / Add and Subtract Strategies	**Suggested Timeline:** **4-5 weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes
Grade Level Units	Unit 1: Patterns and Geometry **Unit 2: Place Value/ Addition and Subtraction Strategies** Unit 3: Number Patterns Unit 4: Two-Digit Addition Unit 5: Money Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing Unit 9: Time Unit 10: Measurement

Unit Title	Place Value/Addition and Subtraction Strategies
Unit Summary	Place Value: Students will be able to identify the value of the tens and ones columns. Students will be able to build numbers to 20 using concrete models, drawings, and number representations. Addition and Subtraction: Students will be able to apply math fact strategies to gain fluency with basic addition and subtraction facts. Students will be able to use strategies to solve complex facts (using-ten strategy, using doubles strategy). Students will complete problem solvers with sums or differences within 20. (M.P. 41)

Unit Essential Questions:	**Key Understandings:**
1. How does this addition strategy help me find the sum? 2. How does this subtraction strategy help me find the difference? 3. How do I solve problems using my addition and subtraction strategies? 4. How do I use place value to determine the number of tens and ones? 5. How do I represent a number using tens and ones? 6. How do I make a fair trade from going from one place value to another? 7. How does *adding one or two* help me find the sum? 8. How does *taking away one or two* help me find the difference? 9. How does *adding zero* help me find the sum?	1. Numbers can be represented by tens and ones 2. Addition strategies help to learn addition 3. Subtraction strategies help to learn subtraction 4. Real world problems can be solved using addition and subtraction

10. How does *subtracting zero* help me find the difference? 11. How does taking away all help find the difference? 12. How does *adding 10* help me find the sum? 13. How does *taking 10* away help me find the difference? 14. How does *adding doubles* help me find the sum? 15. How does *thinking halves* help me find the difference? 16. Why do I need to know the facts of 10? 17. How does *making 10* help me find the sum? 18. How does *subtracting from 10* help me find the difference? 19. How does *using 10* help me find the sum? 20. How does *using doubles* help me add?	

Focus Standards Addressed in the Unit
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.1.2.B.1	Use place value concepts to represent amounts of tens and ones and to compare three digit numbers.
CC.2.2.2.A.2	Use mental strategies to add and subtract within 20.
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.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.
2.NBT.B.8	Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900
C.C.2.2.2.A.1	Represent and solve problems involving addition and subtraction within 100.
C.C.2.4.2.A.4	Represent and interpret data using line plots, picture graphs, and bar graphs

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students will develop automaticity with subtraction facts at the same rate as addition facts.	● Students will not develop automaticity with subtraction facts at the same rate as addition.

Knowledge & Concepts (Progression)	Skills & Competencies (Students will be able to…)	Dispositions & Practices
● Using place value, build one and two-digit numbers. ● Addition Strategies (relate to the subtraction strategies) **Ongoing Individualized Math Fact Assessments *(Mastering the Basic Math Facts in Addition and Subtraction)*	Place Value ● Identify ones and tens ● Trade ones for a new ten (fair trade) ● Build 2-Digit numbers using ones and tens (base-ten blocks, drawings, and numeric forms) Addition Strategies (Relate to Subtraction Strategies) ● Plus One and Plus Two, One Less and Two Less ● Adding Zero, Subtracting Zero and Difference of Zero ● Adding Ten, Taking Ten away ● Adding Doubles, Doubles Subtraction (thinking halves) ● Facts of Ten (ex. 7+3), Making Ten (ex. 9 + 6, think 10+5), Subtracting from Ten ● Using Ten (8+7 think break apart the 7 into 2+5 and think 8+2=10 +5 which equals 15.) ● Using Doubles (near doubles) ● Adding 3 addends	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision ● SMP 7: Utilize Structure ● SMP 8: Utilize Patterns NYCSD Profile of a Graduate ● Creativity-willingness to learn by trial and error ● Communication- listening to the point of view of others ● Courageous-persevere through challenges and have a mindset with intent to grow ● Critical Thinking- selecting the best strategy to solve a problem

Academic Vocabulary:

● tens ● ones ● add ● Identity Property ● Commutative Property ● sum ● addend ● equal ● equivalent ● plus ● minus ● part-part- whole ● subtract ● inverse ● difference	● Fact Strategies- ○ Plus or Minus 1/2 ○ Plus or Minus 0 ○ Difference of 0 ○ Adding 10/Subtracting 10 ○ Doubles ○ Halves ○ Making 10 ○ Subtracting from 10 ○ Using 10 ○ Near Doubles	

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment
- Fact Assessments

Interdisciplinary Connections:

- Science and Social Studies
  - Discussing place value of numbers in context
- Written Responses

Additional Resources:

- "Math in Practice: Teaching Second Grade," Module 2
- "Mastering the Basic Math Facts in Addition and Subtraction"
  - Children's Literature for each strategy
  - *Mouse Count* by Ellen Stoll Walsh - Plus One, Plus Two
  - *Gray's Rabbi*t by Alan Baker - Add Zero
  - *If You Give a Mouse a Cookie* by Laura Numeroff - Adding 10
  - *Don't Eat the Teacher!* by Nick Ward - Adding 10 (Connect to subtraction)
  - *Double the Ducks* by Stuart J. Murphy - Understanding Doubles
  - *Martha Blah Blah* by Susan Meddaugh - Understanding Doubles (Connect to subtraction)
  - *Ten Apples up on Top!* By Dr. Seuss - Making 10
  - *Diary of a Worm* by Doreen Cronin- Using 10s
  - *Fish Eyes* by Lois Ehlert - Using Doubles

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

O'Connell, Susan, SanGiovanni, John. (2011). *Mastering the Basic Math Facts in Addition and Subtraction*. Portsmouth, NH: Heinemann.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

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			Math / Grade 2 **Unit 3**
Course/Subject: Math	**Grade:** 2	**Unit 3:** Number Patterns	**Suggested Timeline:** **2 weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies **Unit 3: Number Patterns** Unit 4: Two-Digit Addition Unit 5: Money Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing Unit 9: Time Unit 10: Measurement

Unit Title	Number Patterns
Unit Summary	Students will be able to explore the concept of even and odd numbers, represent equal groups related to repeated addition and skip counting, and identify and create equal groups with arrays. (M.P. 68)

Unit Essential Questions:	**Key Understandings:**
1. What is an equal group and how can I create equal groups? 2. How do math tools help me see patterns when I am skip counting? 3. How do I skip count by 2's, 5's, 10's and 100's? 4. How do I skip count starting on an unfamiliar number? 5. How do I use an array? 6. How do I use repeated addition to create an equation for an array? 7. What does it mean if a number is even or odd? 8. What are the different rules for adding two addends together?	1. Numbers come before, after, between other numbers 2. Numbers can be represented by equal groups 3. Patterns help to skip count by 10, 5, 100, and 2 4. Numbers can be represented by arrays 5. Numbers can be odd or even 6. There are addend relationships

Focus Standards Addressed in the Unit

*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.1.2.B.2	Use place value concepts to read, write, and skip count to 1000.
2.NBT.A.2	Count within 1000; skip-count by 5s, 10s, and 100s.

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
CC.2.2.2.A.3	Work with equal groups of objects to gain foundations for multiplication.
2.OA.C.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.

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students may think that a number is even when it is represented in rows of equal length (3 groups of 5) ● Students will confuse the direction of rows and columns in an array	● A number can be odd when it is represented in rows of equal length ● Rows describe horizontal groups: Columns represent vertical groups

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Numbers before, after, between ● Equal Groups ● Skip Counting ● Arrays ● Odd and Even Numbers ● Identifying "Rules" Addends	● Numbers before, after, between: Identify numbers that come before, after, and between on a hundreds chart ● Equal Groups: Create Equal Groups using manipulatives and numbers ● Skip Counting Skip Count by 10 Skip Count by 5 Skip Count by 100 Skip Count by 2 (Remember to practice skip counting on numbers that are not always expected. Ex. start skip counting by 2 starting with 7.) ● Arrays (Rows and Columns) *Identify* - Ex. How many columns and how many rows? *Build* - Ex. 5 rows of 3 *Write repeated addition* - Ex. 3+3+3+3+3=15 OR 5+5+5= 15 ● Odd and Even ● Notice relationship of addends Odd + Odd = Even Even + Even = Even Odd + Even = Odd Even + Odd = Odd	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision ● SMP 8: Utilize Patterns NYCSD Profile of a Graduate ● Communication- using mathematical vocabulary ● Courageous-persevere through challenges and ask questions ● Competent-master core content ● Conscientious- self-motivated and hard working

Academic Vocabulary:

- before
- after
- between
- skip count
- repeated addition
- array
- even
- odd
- pairs
- equal groups
- equal rows
- equal columns

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Finding number patterns in context
- Written Responses

Additional Resources:

- "Math in Practice: Teaching Second Grade"
- *Math for all Seasons* by Greg Tang
- *Math Appeal* by Greg Tang
- *The Missing Mitten* by Stuart J. Murphy
- *One Odd Day* by Doris Fisher
- *My Even Day* by Doris Fisher
- *The Odds Get Even* by Pamela Hall
- BrainPop Jr.

***Even Steven and Odd Todd* (Kathryn Cristaldi)**
-*The Missing Mittens* (Stuart J. Murphy)
-*One Odd Day* (Doris Fisher)
-*My Even Day* (Doris Fisher)
-*The Odds Get Even* (Pamela Hall)

Works Cited:
National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

https://jr.brainpop.com/math/

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			Math / Grade 2 **Unit 4:**
Course/Subject: Math	**Grade:** 2	**Unit 4:** Two-Digit Addition	**Suggested Timeline:** **4 Weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns **Unit 4: Two-Digit Addition** Unit 5: Money Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing Unit 9: Time Unit 10: Measurement

Unit Title	Adding 2-Digit Numbers
Unit Summary	Students will be able to add 2-digit numbers using place value understandings, use and explain various strategies for adding 2-digit numbers, and add up to four 2-digit numbers with a focus on place value and the associative property. Students will be able to interpret bar graphs and picture graphs to solve 2-digit addition problems. (M.P. 133)

Unit Essential Questions:	**Key Understandings:**
1. How do I add 2-digit numbers? 2. How do I use tools to help me add 2-digit numbers? 3. How do I use strategies to help me add 2-digit numbers? 4. How does knowing equivalent amounts help me add? 5. How can I regroup ones as tens to help me add? 6. How do I rewrite a 2-digit horizontal equation vertically? 7. How do I choose a strategy to solve 2-digit addition problems? 8. How do I add multiple 2-digit numbers? 9. How do I interpret graphs to solve 2-digit problems?	1. 2-Digit numbers can be added with and without regrouping. 2. 2-Digit addition equations can be written vertically. 3. Addition problems with 2-digit numbers can be solved. 4. Multiple 2-Digit numbers can be added 5. Bar graphs and picture graphs can be interpreted.

Focus Standards Addressed in the Unit

*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.1.2.B.3	Use place value understanding and properties of operations to add and subtract within 1000.

2.NBT.B.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.
CC.2.4.2.A.4	Represent and interpret data using line plots, picture graphs, and bar graphs.
CC.2.2.2.A.1	Represent and solve problems involving addition and subtraction within 100.
2.OA.A.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.NBT.B.6	Add up to four two-digit numbers using strategies based on place value and properties of operations

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● When regrouping, students may think that the number moving to the next place value is only worth the amount of ones.	● The number being regrouped is worth that amount of tens. (i.e. 12 - The 1 is worth 10 when regrouping)

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Add 2-Digit numbers **without** Regrouping ● Problem Solving **without** regrouping ● Add a 2-Digit number to a 1-digit number **with** regrouping ● Add two 2-digit numbers **with** Regrouping ● Problem Solving **with** regrouping ● Add up to four 2-digit numbers **with and/or without** regrouping ● Bar Graph and Picture Graph	**No Regrouping** Using multiple tools (blocks, chips) ● Students add a 2-digit number with a 1-digit number (no regrouping) ● Teacher models vertical equation Using multiple strategies (open number line, partial sums, drawing tens and ones) ● Students add a 2-digit number with a 1-digit number (no regrouping) ● Teacher models vertical equation Rewrite horizontal equations vertically and solve Students add a 2-digit number with a 1-digit number (no regrouping) ● Problem Solve, using any strategy, with a 2-digit and a 1-digit number (no regrouping) **Regrouping 2 digit with 2 digit** Using multiple tools (blocks, chips) ● Students add a 2-digit plus a 1-digit number (regrouping)	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision NYCSD Profile of a Graduate ● Creativity- Willingness to learn by trial and error when choosing strategies ● Critical Thinking- Reflect, by reviewing completed work, for accuracy ● Contributing- Compassionate and empathetic to the needs and viewpoints of others ● Courageous- persevere when faced with a difficult task and self-advocate when in need of help and support

	● Students add two 2-digit numbers (regrouping) ● Teacher models vertical equation with regrouping Using multiple strategies (partial sums, open number lines, drawing tens and ones) ● Students add a 2-digit plus a 1-digit number (regrouping) ● Students add two 2-digit numbers (regrouping) ● Teacher models vertical equation with regrouping Rewrite horizontal equations vertically and solve ● Students add a 2-digit plus a 1-digit number (regrouping) ● Students add two 2-digit numbers (regrouping) Problem Solve using any strategy with a 2-digit and a 1-digit and also problem solve using two 2-digit numbers **Adding up to four 2-digit numbers with/without regrouping** **Interpret a bar graph and a picture graph**	

Academic Vocabulary:

● tens ● ones ● digit ● value ● equivalent ● Associative Property ● open number line ● addend ● sum ● regroup ● partial sums		

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Add numbers in context
- Written Responses

Additional Resources:
"Math in Practice: Teaching Second Grade," Modules 6 & 8

**A Fair Bear Share* (Stuart J. Murphy)

Works Cited:
National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

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Math / Grade 2

Unit 5

Course/Subject:	Grade:	Unit 5:	Suggested Timeline:
Math	2	Money	**2 Weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns Unit 4: Two-Digit Addition **Unit 5: Money** Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing Unit 9: Time Unit 10: Measurement

Unit Title	Money
Unit Summary	Students will be able to count sets of unlike coins, show different amounts of money using dollar and cent symbols, make change, and solve word problems related to money. (M.P. 264)

Unit Essential Questions:	**Key Understandings:**
1. How do I identify the names of the coins and write the value using money symbols? 2. How can I show equivalent amounts with dimes, nickels, and pennies? 3. How can I use skip-counting patterns to count the value of pennies, nickels, dimes, and quarters? 4. How can I use skip-counting patterns to count the value of a group of coins? 5. How can I make fair trades to show an amount of money in different ways? 6. How do I use coins to make the value of one dollar? 7. How do I make change? 8. How can I use strategies to solve problems involving money?	1. Coins have names and values and symbols. 2. Skip counting helps to find total value of same value coins. (Quarters, Dimes, Nickels, Pennies) 3. Skip counting and counting on helps to find total value of different value coins. (Quarters, Dimes, Nickels, Pennies) 4. Coins can be used to make equivalent amounts. (fair trade) 5. Money can be counted using dollar bills and half dollar coins. 6. A difference between money amounts helps to make change. 7. Money amounts can be used to solve realistic problems.

Focus Standards Addressed in the Unit

*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*

CC.2.4.2.A.3:	Solve problems and make change using coins and paper currency with appropriate symbols.
2.MD.C.8	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ (dollars) and ¢ (cents) symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students arrange the coins from the largest to the smallest coin to count. ● When counting a set of mixed coins, a penny is counted as more than one cent. ● When problem solving, students add the number of coins given to find the total value.	● Students will understand the value of the coins and arrange them from greatest to least value to count. ● When counting a set of mixed coins, a penny is counted as one more than the previous value. ● When problem solving, students understand the value of an amount of coins given to determine the total value.

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Identify Coin Names and Value- Including cent and dollar symbols ● Equivalent Coins ● Skip Count to Find Total Amount of Same Valued Coins (Quarters, Dimes, Nickels, Pennies) ● Skip Count/Counting On to Find Total Value of Mixed Coins (Quarters, Dimes, Nickels, Pennies) ● Make equivalent amounts (fair trade) ● Count Money using dollar bills and half dollar coins ● Make Change ● Problem Solving Throughout	● Identify coin names and values (quarter, dime, nickel, penny) and also where to place the dollar sign and cent sign ● Make equivalent amounts (ex. 10 pennies = 1 dime) ● Skip Count using same coins (quarter, dime, nickel, pennies) ● Skip Count/Count On to find the total of a mixed set of coins-quarters, dimes, nickels, pennies (students order coins from greatest value to least value) ● Make equivalent amounts with coins (fair trade) ● Count money using dollar bills and half dollar coins ● Make change (count up) ● Problem Solving Throughout	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 3: Justify and Critique ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision NYCSD Profile of a Graduate ● Creativity- Willingness to to learn by trial and error when choosing strategies ● Critical Thinking- Reflect, by reviewing completed work, for accuracy ● Contributing- Compassionate and empathetic to the needs and viewpoints of others ● Courageous- persevere when faced with a difficult task and self-advocate when in need of help and support

Academic Vocabulary:		
● Coins ● Cent(s) ● Penny ● Nickel	● Dime ● Quarter ● Half dollar ● Dollar	● Bills ● Value ● $ ● ¢ ● decimal point

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
    - Use money in context
- Written Responses

Additional Resources:

"Math in Practice: Teaching Second Grade," Module 12

**The Penny Pot* (Stuart J. Murphy)

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

Created By:

Amber Brillhart and Becky Gentzler

Math / Grade 2

Unit 6

Course/Subject:	Grade:	Unit 6:	Suggested Timeline:
Math	2	Two-Digit Subtraction	**4 Weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns Unit 4: Two-Digit Addition Unit 5: Money **Unit 6: Two-Digit Subtraction** Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing Unit 9: Time Unit 10: Measurement

Unit Title	2- Digit Subtraction
Unit Summary	Students will be able to use strategies to subtract 2-digit numbers, using different methods. (open number lines, expanded form) to visualize the subtraction process. Students will be able to understand when regroupoing is necessary and use place value understanding to regroup, or rename, numbers. (M.P. 161)

Unit Essential Questions:	**Key Understandings:**
1. How does this subtraction strategy help me find the difference? 2. How do I subtract 2-digit numbers? 3. How do I use tools to help me subtract 2-digit numbers? 4. How do I use strategies to help me subtract 2-digit numbers? 5. How does knowing equivalent amounts help me subtract? 6. How can I regroup tens as ones to help me subtract? 7. How do I rewrite a 2-digit horizontal equation vertically? 8. How can I use addition to check subtraction? 9. How do I choose a strategy to solve 2-digit subtraction problems?	1. Subtraction strategies can be used to subtract 2-digit numbers. 2. 2 digit numbers can be subtracted with and without regrouping 3. 2 digit subtraction equations can be written vertically 4. Subtraction problems with 2-digit numbers can be solved.

Focus Standards Addressed in the Unit

*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*

CC.2.2.2.A.2	Use mental strategies to add and subtract within 20.
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.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.

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students subtract a larger number from a smaller number ● Students will subtract a higher number of ones from a lower number of ones ● Students do not understand of equivalency in regrouping	● Students will subtract a smaller number from a larger number ● Students will regroup where there are not enough ones ● Students will understand how to regroup

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Subtract 2-Digit numbers **without** Regrouping ● Problem Solving **without** regrouping ● Subtract a 2-Digit number to a 1-digit number **with** regrouping ● Subtract two 2-digit numbers **with** Regrouping ● Problem Solving **with** regrouping	● Identify and use the fact strategies to subtract one-digit numbers. (Ex. Subtract Doubles, Subtract Tens, etc.) **No Regrouping** ● Using multiple tools (blocks, chips,) Students subtract a 2-digit number with a 1-digit number (no regrouping) Teacher models vertical equation ● Using multiple strategies (open number line, partial sums, drawing tens and ones) Students subtract a 2-digit number with a 1-digit number (no regrouping) Teacher models vertical equation ● Rewrite horizontal equations vertically and solve Students subtracts a 2-digit number with a 1-digit number (no regrouping) ● Problem Solve, using any strategy, with a 2-digit and a 1-digit number (no regrouping) **Regrouping 2 digit with 2 digit** ● Using multiple tools (blocks, chips) Students subtract a 2-digit plus a 1-digit number (regrouping) Students subtract two 2-digit numbers (regrouping) Teacher models vertical equation with regrouping	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 3: Justify and Critique ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision NYCSD Profile of a Graduate ● Creativity- Willingness to to learn by trial and error when choosing strategies ● Critical Thinking- Reflect, by reviewing completed work, for accuracy ● Contributing- Compassionate and empathetic to the needs and viewpoints of others ● Courageous- persevere when faced with a difficult task and self-advocate when in need of help and support

	● Using multiple strategies (partial sums, open number lines, drawing tens and ones) Students subtract a 2-digit plus a 1-digit number (regrouping) Students subtract two 2-digit numbers (regrouping) Teacher models vertical equation with regrouping ● Rewrite horizontal equations vertically and solve Students subtract a 2-digit minus a 1-digit number (regrouping) Students subtract two 2-digit numbers (regrouping) ● Problem Solve using any strategy with a 2-digit and a 1-digit and also problem solve using two 2-digit numbers	

Academic Vocabulary:

● place value ● decompose ● equivalent ● subtract ● minus ● regroup		

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Subtract numbers in context
- Written Responses

Additional Resources:

- "Math in Practice: Teaching Second Grade," Modules 7 & 9

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

Created By:

Amber Brillhart and Becky Gentzler

Math / Grade 2

Unit 7

Course/Subject:	Grade:	Unit 7:	Suggested Timeline:
Math	2	Place Value Concepts with 3-Digit Numbers	**6 Weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns Unit 4: Two-Digit Addition Unit 5: Money Unit 6: Two-Digit Subtraction **Unit 7: Place Value Concepts with 3-Digit Numbers** Unit 8: Graphing Unit 9: Time Unit 10: Measurement

Unit Title	Place Value Concepts with 3 - Digit Numbers
Unit Summary	Place Value: Students will be able to understand how to read and write 3-digit numbers. They will also decompose numbers in different ways based on place value. 3-Digit Addition and Subtraction: Students will be able to compare 3-digit numbers based on place value. They will also compare 3-digit numbers using a variety of strategies like number lines or base-ten models. (M.P. 85 and 113)

Unit Essential Questions:

Unit EQ: How can I use place value concepts to add and subtract 3-Digit Numbers?

1. How do I use tools to represent 3-digit numbers?
2. How can I use expanded form to represent numbers?
3. How can I read and write numbers to 1,000?
4. How can I skip count to 1,000 using number patterns?
5. How can I use symbols (<, =, >) to compare 3-digit numbers?
6. How can I use place value to add and subtract 3-digit numbers without regrouping?
7. How can I use place value to add and subtract 3-digit numbers with regrouping?
8. How do I choose a strategy to solve 3-digit addition and subtraction word problems?

Key Understandings:

1. Each digit in a 3 digit number has a value.
2. 3 digit numbers can be written in expanded form.
3. Numbers can be read and written.
4. Patterns can be used to skip count numbers to 1000.
5. 3 digit numbers can be compared using < ,>, and =.
6. 3 digit numbers can be added and subtracted without regrouping.
7. 3 digit numbers can be added and subtracted with regrouping.
8. Addition and subtraction of 3-digit numbers can be used to solve problems.

Focus Standards Addressed in the Unit
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.1.2.B.3	Use place value understanding and properties of operations to add and subtract within 1000.
2.NBT.B.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.
CC.2.2.2.A.1	Represent and solve problems involving addition and subtraction within 100.
2.OA.A.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.
CC.2.1.2.B.1	Use place value concepts to represent amounts of tens and ones and to compare three digit numbers.
2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
CC.2.1.2.B.2	Use place value concepts to read, write, and skip count to 1000
2.NBT.A.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.

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students will read or represent the 3 digit numbers incorrectly when there is a 0 as one of the digits. ● Students will count by different units when extending 3 digit number patterns (hundreds, tens, and ones). ● Students will switch the numbers instead of the symbols when comparing 3 digit numbers.	● Students will correctly read and represent a 3 digit number where one of the digits is a 0 by using place value concepts. ● Students will extend skip counting patterns by the correct units (hundreds, tens, and ones). ● Students will compare 3 digit numbers using the correct symbol.

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Place Value Concepts (Expanded Form, Greater Than/Less Than, Values of Digits, Read and Write Numbers, Skip Counting) ● Adding and Subtracting 3 Digit Numbers with 1 Digit Numbers ● Adding and Subtracting 3 Digit Numbers with 2 Digit Numbers	**Place Value Concepts** ● Value of Digits within 3-Digit Number Recognize hundreds, tens, and ones Represent 3 digit numbers with base-ten blocks ● Expanded Form of a 3 Digit ● Read and write number using words	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 3: Justify and Critique ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision

● Adding and Subtracting 3 Digit Numbers with 3 Digit Numbers ● Adding and Subtracting 3 Digit Numbers with 1, 2, and 3 Digit Numbers (Regrouping)	● Extend skip counting patterns to 1,000 ● Greater Than and Less Than with 3 digit Numbers Focus on Hundreds Place Focus on Hundreds and Tens Place Focus on Hundreds, Tens, and Ones Place **No Regrouping-Adding and Subtracting (3 Digit with 1 digit)** ● Using multiple tools (blocks, chips,) Students add and subtract a 3-digit number with a 1-digit number (no regrouping) Teacher models vertical equation ● Using multiple strategies (open number line, partial sums, drawing tens and ones) Students add and subtract a 3-digit number with a 1-digit number (no regrouping) Teacher models vertical equation ● Rewrite horizontal equations vertically and solve Students add and subtract a 3-digit number with a 1-digit number (no regrouping) ● Problem Solve, using any strategy, with a 3-digit and a 1-digit number (no regrouping) **No Regrouping-Adding and Subtracting (3 Digit with 2 digit)** ● Using multiple tools (blocks, chips,) Students add and subtract a 3-digit number with a 2-digit number (no regrouping) Teacher models vertical equation ● Using multiple strategies (open number line, partial sums, drawing tens and ones) Students add and subtract a 3-digit number with a 2-digit number (no regrouping) Teacher models vertical equation ● Rewrite horizontal equations vertically and solve Students add and subtract a 3-digit number with a 2-digit number (no regrouping) ● Problem Solve, using any strategy, with a 3-digit and a 2-digit number (no regrouping) **No Regrouping-Adding and Subtracting (3 digit with 3 digit)** ● Using multiple tools (blocks, chips)	NYCSD Profile of a Graduate ● Creativity- Willingness to learn by trial and error when choosing strategies Critical Thinking- Reflect, by reviewing completed work, for accuracy ● Contributing- Compassionate and empathetic to the needs and viewpoints of others ● Courageous- persevere when faced with a difficult task and self-advocate when in need of help and support

	Students add and subtract a 3-digit number with a 3-digit number (no regrouping) Teacher models vertical equation ● Using multiple strategies (open number line, partial sums, drawing tens and ones) Students add and subtract a 3-digit number with a 3-digit number (no regrouping) Teacher models vertical equation ● Rewrite horizontal equations vertically and solve Students add and subtract a 3-digit number with a 3-digit number (no regrouping) ● Problem Solve, using any strategy, with a 3-digit and a 3-digit number (no regrouping) **Regrouping- Adding and Subtracting (3 digit with 1, 2 and 3 digit numbers)** ● Using multiple tools (blocks, chips) Students add and subtract a 3-digit plus 1, 2, or 3-digit number (regrouping) Students add and subtract two 3-digit numbers (regrouping) Teacher models vertical equation with regrouping ● Using multiple strategies (partial sums, open number lines, drawing tens and ones) Students add and subtract a 3-digit plus a 1, 2, or 3-digit number (regrouping) Students add and subtract two 3-digit numbers (regrouping) Teacher models vertical equation with regrouping ● Rewrite horizontal equations vertically and solve Students add and subtract a 3-digit and 1, 2, or 3-digit number (regrouping) Students add and subtract two 3-digit numbers (regrouping) ● Problem Solve using any strategy with a 3-digit and a 1, 2, and 3-digit and also problem solve using two 3-digit numbers	

Academic Vocabulary:		
● place value ● expanded form ● digit ● value ● hundreds	● tens ● ones ● greater than ● less than ● equal	

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
    - Understand place value of numbers in context
- Written Responses

Additional Resources:

- "Math in Practice: Teaching Second Grade," Module 4 (with Modules 6, 7, 8, & 9)

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

Created By:

Amber Brillhart and Becky Gentzler

Math / Grade 2

Unit 8

Course/Subject:	Grade:	Unit 8:	Suggested Timeline:
Math	2	**Graphing**	**2 Weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns Unit 4: Two-Digit Addition Unit 5: Money Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers **Unit 8: Graphing** Unit 9: Time Unit 10: Measurement

Unit Title	Graphing
Unit Summary	Students will be able to interpret the data shown in simple line plots, picture graphs, and bar graphs. Students will be able to create simple picture and bar graphs from student-generated data and data that has been given. Students will be able to solve addition and subtraction problems using data provided by bar graphs and picture graphs. (M.P. 289)

Unit Essential Questions: **Lesson EQ:**	**Key Understandings:**
1. How can I collect data to create a picture graph? 2. How can I analyze picture graphs? 3. How can I collect data to create bar graphs? 4. How can I analyze bar graphs? 5. How can I collect data to create line plots? 6. How can I analyze line plots?	1. Data can be represented and analyzed using picture graphs. 2. Data can be represented and analyzed using bar graphs. 3. Data can be represented and analyzed using line plots.

Focus Standards Addressed in the Unit

*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*

CC.2.4.2.A.4:	Represent and interpret data using line plots, picture graphs, and bar graphs.
2.MD.D.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

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students draw pictures in different sizes and may not line up correctly across the rows ● Students interpret data based on the length of the rows ● Students will reverse the quantity with the numbers on a line plot	● Students draw pictures with consistent spacing ● Students interpret the number of pictures in the graph ● Students will appropriately place the quantity at the correct location

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Data can be represented using picture graphs ● Data can be represented using bar graphs ● Data from graphs can be added and subtracted. ● Data can be represented using line plots.	**Graphs** ● Picture Graphs Students survey peers and create horizontal and vertical picture graphs based on collected data. Students analyze the picture graphs. ● Bar Graphs Students survey peers and create vertical and horizontal bar graphs. Students analyze the bar graphs. ● Line Plots Students will create a line plot with data provided. Students will analyze the line plot.	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 3: Justify and Critique ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision NYCSD Profile of a Graduate ● Creativity- Willingness to learn by trial and error when choosing strategies ● Critical Thinking- Reflect, by reviewing completed work for accuracy ● Contributing- Compassionate and empathetic to the needs and viewpoints of others ● Courageous- persevere when faced with a difficult task and self-advocate when in need of help and support

Academic Vocabulary:

● bar graph ● bars ● data ● key ● label	● picture graph ● pictures ● survey ● tally chart ● title ● line plot	

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
    - Understanding graphs in context
- Written Responses

Additional Resources:

"Math in Practice: Teaching Second Grade," Module 13

**Lemonade for Sale* (Stuart J. Murphy)

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

Created By:

Amber Brillhart and Becky Gentzler

Math / Grade 2

Unit 9

Course/Subject:	Grade:	Unit 9:	Suggested Timeline:
Math	2	Time	**3 Weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns Unit 4: Two-Digit Addition Unit 5: Money Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing **Unit 9: Time** Unit 10: Measurement

Unit Title	Time
Unit Summary	Students will be able to tell time to the hour, half hour, and 5 minute interval on a digital and analog clock. Students will be able to understand the difference between A.M. and P.M. (M.P.247)

Unit Essential Questions: **Unit EQ:**	**Key Understandings:**
1. How do I use the hour hand and minute hand to tell time to the hour? 2. How do I use the hour and minute hand to tell time to the half hour? 3. How do I use the hour and minute hand to tell time to the quarter hour? 4. How do I use the hour and minute hand to tell time to the nearest five minutes? 5. How do I determine an appropriate time using A.M. and P.M. based on the activity given? 6. How can I add and subtract time in hour and half hour intervals?	1. The hour hand and minute hand on an analog clock show different time. 2. Time can be represented in half and quarter hours. 3. Time can be represented in five minute increments. 4. Time can identified as A.M. or P.M. 5. Time can be added or subtracted in hour or half hour intervals.

Focus Standards Addressed in the Unit

*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*

CC.2.4.2.A.2	Tell and write time to the nearest five minutes using both analog and digital clocks.
2.MD.C.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students will confuse when A.M. and P.M. begins and stops based on when the sun rises or sets ● Students will confuse the hour hand and the minute hand	● Students will understand the correct transition between A.M. and P.M. based on 12:00 ● Students will correctly differentiate between the hour hand and minute hand

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Telling Time to the Hour ● Telling Time to the Half Hour ● Telling Time to the Quarter Hour ● Telling Time to the nearest 5 Min.	Telling Time to the Hour ● Identify time to the hour on an analog and digital clock ● Draw hands on analog clocks to show a given time to the hour Telling Time to the Half Hour ● Identify time to the half hour on an analog and digital clock ● Draw hands on analog clocks to show a given time (half past) Telling Time to the Quarter Hour ● Identify time to the quarter hour on an analog and digital clock ● Draw hands on an analog clock to show a given time (quarter till and quarter past) Telling Time to the Nearest 5 min. ● Identify time to the nearest 5 min. Interval on an analog and digital clock ● Draw hands on an analog clock to show time to the nearest 5 min. interval Identifying AM and PM ● Match AM digital times to pictures that represent AM activities *Be sure to include sleeping ● Match PM digital times to pictures that represent PM activities Problem Solving ● Solving problems by adding or subtracting to the hour or half hour intervals	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 3: Justify and Critique ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision NYCSD Profile of a Graduate ● Creativity- Willingness to learn by trial and error when choosing strategies ● Critical Thinking- Reflect, by reviewing completed work for accuracy ● Contributing- Compassionate and empathetic to the needs and viewpoints of others ● Courageous- persevere when faced with a difficult task and self-advocate when in need of help and support

	● Solve problems using both AM and PM times	

Academic Vocabulary:

● A.M. ● Analog clock ● Digital clock ● Half past ● Hour hand ● Minute hand	● O'clock ● P.M. ● Quarter after ● Quarter past ● Quarter to	

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Understanding time in context
- Written Responses

Additional Resources:

- "Math in Practice: Teaching Second Grade," Module 11

Math in Practice Literature Connection

**Rodeo Time* (Stuart J. Murphy)

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

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Math / Grade 2

Unit 10

Course/Subject:	Grade:	Unit 10:	Suggested Timeline:
Math	2	Measurement	**2 Weeks**

Grade Level Summary	In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.
Grade Level Units	Unit 1: Patterns and Geometry Unit 2: Place Value/ Addition and Subtraction Strategies Unit 3: Number Patterns Unit 4: Two-Digit Addition Unit 5: Money Unit 6: Two-Digit Subtraction Unit 7: Place Value Concepts with 3-Digit Numbers Unit 8: Graphing Unit 9: Time **Unit 10: Measurement**

Unit Title	Measurement
Unit Summary	Students will be able to measure and estimate length to the nearest unit. Students will be able to choose an appropriate tool and unit of measure depending on the measurement task. Students will be able to add or subtract to solve problems about length. (M.P. 219)

Unit Essential Questions:

Unit EQ:

1. How do I measure objects using non-standard units?
2. How do I use a ruler to measure objects in centimeters and inches?
3. How do I compare lengths of objects using centimeters and inches?
4. How do I determine how many inches are in a foot?
5. How do I use a measuring tape to measure objects in inches and feet?
6. How do I determine how many feet are in a yard?
7. How do I use a yardstick to measure the length and height of objects in yards?
8. How do I use a meter stick to measure the length and the height of objects in meters?
9. How do I compare lengths of objects using meters and yards?
10. How do I estimate lengths of objects in inches, feet, centimeters and meters?

Key Understandings:

1. Length can be measured and estimated to the nearest unit.
2. Appropriate tools can be chosen to measure length depending on the measurement task.
3. Measurement data can be displayed on a line plot.
4. Problems can be solved about length with addition and subtraction.

11. How do I add and subtract problems using the same unit of measurement?	

Focus Standards Addressed in the Unit
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "2" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.4.2.A.1	Measure and estimate lengths in standard units using appropriate tools.
2.MD.A.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2.MD.A.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.A.3	Estimate lengths using units of inches, feet, centimeters, and meters.
2.MD.A.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
CC.2.4.2.A.6	Extend the concepts of addition and subtraction to problems involving length.

Important Standards Addressed in the Unit:	
N/A	

Misconceptions:	**Proper Conceptions:**
● Students will become confused when reading a ruler with multiple hash marks ● Students will measure objects by not starting at zero ● When comparing lengths of objects, students will think inches will give a larger measurement because inches take up more space on a ruler	● Students will determine the length of an object by accurately reading a ruler ● Students will correctly place the ruler and measure from the zero to determine its length ● Students will be able to compare lengths of objects recognizing that there are more centimeters than inches when measuring the same object

Knowledge & Concepts (Progression)	**Skills & Competencies (Students will be able to…)**	**Dispositions & Practices**
● Non-Standard Measurement **TASK/INFORMAL ASSESSMENT** ● Measurement: Centimeters and Inches **TASK/INFORMAL ASSESSMENT** ● 12 inches = 1 Foot and 3 Feet = 1 Yard **TASK/INFORMAL ASSESSMENT** ● Measurement: Yards and Meters **TASK/INFORMAL ASSESSMENT** ● Estimate inches, feet, centimeters, and meters ● Addition and Subtraction with same unit of measurement	**Measurement Concepts** Non-Standard Measurement ● Use manipulatives, pencils, books, etc. to measure other objects Standard Measurement ● Use a ruler and measure the length and height of objects in centimeters ● Use a ruler and measure the length and height of objects in inches ● Compare the centimeter and inch measurements to determine why the centimeter measurement is larger than the inch measurement ● Determine how many inches are in a foot	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 2: Reason Abstractly and Quantitatively ● SMP 3: Justify and Critique ● SMP 4: Model with Mathematics ● SMP 5: Strategically use Tools ● SMP 6: Attend to Precision NYCSD Profile of a Graduate

	● Use a measuring tape to measure objects in inches and feet ● Determine how many feet are in a yard ● Use a yardstick to measure the length and height of objects in yards ● Use a meter stick to measure the length and height of objects in meters ● Compare meter and yard measurements to determine why the meter measurement is larger than the yard measurement ● Estimate an object in inches, feet, centimeters, and meters ● Problem Solving- Complete addition and subtraction problems using the same unit of measurement	● Creativity- Willingness to learn by trial and error when choosing strategies ● Critical Thinking- Reflect, by reviewing completed work for accuracy ● Contributing- Compassionate and empathetic to the needs and viewpoints of others ● Courageous- persevere when faced with a difficult task and self-advocate when in need of help and support

Academic Vocabulary:

● Benchmark ● Centimeter ● Compare ● Estimate ● Foot ● Hash marks ● Height (high)	● Inch ● Length (long) ● Line plot ● Measuring tape ● Meter ● Meter stick ● Number line	● Ruler ● Tools ● Units ● Width (wide) ● Yard ● Yardstick

Evidence: Assessments and Performance Task(s)

- Task/Informal Assessment
- Unit Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Understanding measurement in context
- Written Responses

Additional Resources:

- "Math in Practice: Teaching Second Grade," Module 10

Math in Practice Literature Connections
****Inch by Inch* (Leo Lionni)**
****Jim and the Beanstalk* (Raymond Briggs)**

Works Cited:

National Governors Association Center for Best Practices, Council of Chief State School Officers (2010). *Common Core State Standards Initiative: Mathematics Standards.*Washington, D.C.: National Governors Association Center For Best Practices, Council of Chief State School Officers.

Peet, A., O'Connell, S., SanGiovanni, J. (2016). *Math in Practice: Teaching Second Grade Math.* Portsmouth, NH: Heinemann.

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