Math / Grade 1

Unit 1

Course/Subject:	Grade:	Unit 1:	Suggested Timeline:
Math	1	Geometry	**2 - 3 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	**Unit 1: Geometry** Unit 2: Add and Subtract 1, 0, 2, and 10 Unit 3: Data and Graphing Unit 4: Add and Subtract Doubles and Making Ten Unit 5: Place Value Unit 6: Add and Subtract Two Digit Numbers Unit 7: Fractions Unit 8: Time Unit 9: Measurement

Unit Title	Geometry
Unit Summary	Students will learn to identify and explain flat and solid shapes using attributes. Students will combine flat shapes to create new shapes. Students will combine solid shapes to create new shapes.

Unit Essential Questions:	**Key Understandings:**
1. How can I use attributes to identify, compare, and create flat shapes? 2. How can I combine flat shapes to create new shapes? 3. How can I use attributes to identify, compare, and create solid shapes? 4. How can I combine solid shapes to create new shapes?	1. Students identify and compare flat shapes and explain their attributes. 2. Students can combine flat shapes to create new shapes. 3. Students can identify and compare solid shapes and explain their attributes. 4. Students can combine solid shapes to create new shapes.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.3.1.A.1	Compose and distinguish between two- and three-dimensional shapes based on their attributes.
1.G.1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

1.G.2	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Note: Students do not need to learn formal names such a "right rectangular prism.")

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● Students may confuse shape identification when the shapes are oriented differently.	● A shape can be turned or flipped in any direction but is still the shape based on its attributes.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Shapes can be sorted according to their defining geometric attributes such as the number of sides or closed/open figure (not by non-defining attributes such as color, size, orientation, etc.) ● Shapes can be composed and decomposed into other shapes. ● Distinguishing features of 2D and 3D shapes.	● Students can distinguish between defining attributes (e.g., triangles are closed and three sided) versus non-defining attributes (e.g., color, orientation, overall size) ● Students can build and draw shapes to possess defining attributes. ● Students can use two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) to create a composite shape, and compose new shapes from the composite shape. ● Students can use three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.	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 ● Communication ● Critical Thinking

Academic Vocabulary:

● Attribute	● Flat	● Roll
● Circle	● Hexagon	● Sides
● Composite Shape	● Octagon	● Solid
● Cone	● Pentagon	● Sphere
● Corners (or Vertices)	● Pyramid	● Square
● Cube	● Rectangle	● Stack
● Cylinder	● Rectangular prism	● Trapezoid
● Face	● Rhombus	● Triangle

● Figure		● Vertex (Vertices)

Evidence: Assessments and Performance Task(s)

- Performance Tasks
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:

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

Additional Resources:

Math in Practice: Teaching First Grade Math Module 14
Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

Math in Practice Literature Connections:

**A Cloak for the Dreamer* (Aileen Friedman)
-*Brown Rabbit's Shape Book* (Alan Baker)
-*Captain Invincible and the Space Shapes* (Stuart J. Murphy)
-*Circles, Triangles, and Squares* (Tana Hoban)
-*Circus Shapes* (Stuart J. Murphy)
-*Round as a Mooncake* (Roseanne Thong)

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			Math / Grade 1 **Unit 2**
Course/Subject: Math	**Grade:** 1	**Unit 2:** Add & Subtract 1, 0, 2, & 10	**Suggested Timeline:** **7 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry **Unit 2: Add and Subtract 1, 0, 2, and 10** Unit 3: Data and Graphing Unit 4: Add and Subtract Doubles and Making Ten Unit 5: Place Value Unit 6: Add and Subtract Two Digit Numbers Unit 7: Fractions Unit 8: Time Unit 9: Measurement

Unit Title	Adding and Subtracting 1, 0, 2, and 10
Unit Summary	Students will learn basic addition and subtraction facts using learning progressions by first adding 1, then 0, then 2, and then 10.. Students will learn and apply the commutative property. Students will understand fact families. Students will solve with unknowns in every position, understanding that the equal sign means the same value on both sides of the equation..

Unit Essential Questions:	**Key Understandings:**
1. How does understanding the relationship between addition and subtraction help me add and subtract 1, 0, 2, and 10? 2. How does understanding commutative property help me learn addition facts with 1, 0, 2, and 10? 3. How does understanding the relationship between addition and subtraction help me with fact families within 1, 0, 2, and 10? 4. How do I use subtraction to solve for an unknown addend of 1, 0, 2, and 10?	1. Understanding addition and subtraction of 1, 0, 2, and 10 following a progression of fact acquisition. 2. Understand and apply the commutative property. 3. Understand fact families adding and subtracting 1, 0, 2, and 10. 4. Understand how to solve for an unknown addend. 5. Understand addition and subtraction with 1, 0, 2, and 10 in problem solving.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.2.1.A.1	Represent and solve problems involving addition and subtraction within 20.

1.OA.A.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.C.5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2)
1.OA.C.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 - 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
CC.2.2.1.A.2	Understand and apply properties of operations and the relationship between addition and subtraction
1.OA.B.3	Apply properties of operations as strategies to add and subtract. Examples: If 8+3=11 is known, then 3+8=11 is also known. (Commutative Property of Addition.) To add 2+6+4, the second two numbers can be added to make a ten, so 2+6+4=2+10=12. (Associative Property of Addition)
1.OA.B.4	Understand subtraction as an unknown-addend problem. For example, subtract 10-8 by finding the number that makes 10 when added to 8.
1.O.A.D.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6=6, 7=8-1, 5+2=2+5, 4+1=5+2
1.O.A.D.8	Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8+?=11, 5=__-3, 6+6=_)

Important Standards Addressed in the Unit:	

Misconceptions:	**Proper Conceptions:**
● Students may struggle to understand adding and subtracting, not understanding that a value could stay the same. ● Students may add ten by counting all without regard to increasing the digit in the tens place.	● Students use models to recognize sums and differences with 1, 0, 2, and 10. ● Students understand that ten more or less changes the digit in the tens place by one digit. ● Students become fluent with addition and subtraction facts with 1, 0, 2, and 10.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Addition & subtraction are related operations. ● Subtraction can be perceived as an unknown addend problem. ● Addition and subtraction problems can be posed with the missing part being in different positions. ● The commutative & associative properties of operations can be used to solve problems (but students do not need to know them by name). ● Symbols can represent an unknown quantity in an equation.	● Students know that adding 1 to a number is the next counting number, and subtracting 1 is the number before. ● Students know that adding or subtracting 0 doesn't change the quantity. ● Students will count on to add 2. ● Students know that when they add 10 to a number, the digit in the tens place increases by 1, and subtracting 10 from a number, the digit in the tens place decreases by 1.	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 ● Critical Thinking ● Competent

● Know facts adding 1, 0, 2, and 10 fluently..	● Students demonstrate fluency for addition and subtraction with 1, 0, 2, and 10. Use strategies and tools such as number line counting, ten frames, a rekenrek, counting on, and patterns; using the relationship between addition and subtraction (e.g.,fact families).. ● Understand the commutative property (3+2=5, 2+3=5) ● Understand subtraction as an unknown-addend problem. (For example, subtract 10 - 8 by finding the number that makes 10 when added to 8). ● Relate counting to addition and subtraction (e.g., by counting on or back 0, 1 or 2 to add or subtract).	

Academic Vocabulary:

● Addend	● Fact Family	● Plus
● Adding	● Forward	● Put together
● Backward	● Greater	● Same
● Combine	● Join	● Subtract
● Counting Back	● Less	● Sum
● Counting On	● Minus	● Ten frame
● Difference	● Missing part	● Total
● Equal	● Model	● Unknown
● Equation	● More	

Evidence: Assessments and Performance Task(s)

- Performance Task
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Adding and Subtracting values of 1, 0, 2, and 10
- Written Responses

Additional Resources:

- Math in Practice: Teaching First Grade Math Module 3, 4, 5 (with Modules 1 & 2)

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

- Mastering the Basic Math Facts

O'Connell, S., & SanGiovanni, J. (2015). *Mastering the basic math facts in addition and subtraction*. Portsmouth, NH: Heinemann

Math in Practice Literature Connections:

**Fish Eyes* (Lois Ehlert)
**Look!* (Jeff Mack)
**Ten Little Speckled Frogs* (Jess Stockham)
**Ten Little Ladybugs* (Melanie Gerth)
**Frog and Toad are Friends* (Arnold Lobel)
**Splash!* (Ann Jonas)

**Ten Sly Piranhas* (William Wise)
**Ten Flashing Fireflies* (Philemon Sturges)
**Elevator Magic* (Stuart J. Murphy)

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			Math / Grade 1 **Unit 3**
Course/Subject: Math	**Grade:** 1	**Unit 3:** Data and Graphing	**Suggested Timeline:** **4 weeks** **(2 wks each in MP 2 & 3)**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry Unit 2: Add and Subtract 1, 0, 2, and 10 **Unit 3: Data and Graphing** Unit 4: Add and Subtract Doubles and Making Ten Unit 5: Place Value Unit 6: Add and Subtract Two Digit Numbers Unit 7: Fractions Unit 8: Time Unit 9: Measurement

Unit Title	Data and Charts
Unit Summary	Students will categorize and represent data in up to three categories. Students will show data on a chart or graph.. Students will ask and answer questions and tell about data.

Unit Essential Questions:	**Key Understandings:**
1. How can I organize and represent up to three categories of data? 2. How can I describe and interpret data? 3. How can I answer questions about data on a graph?	1. Objects and data can be sorted and categorized.. 2. Data can be shown on a chart. 3. Questions can be asked and answered to tell about data on a chart.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.4.1.A.4	Represent and interpret data using tables/charts.
1.MD.4	Organize, represent and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● Students may misrepresent how many pieces of data if data is not displayed in an organized manner. (example: post it notes organized in a neat line versus random placement could lead to inaccurate reporting.) ● Students could assign values to the wrong piece of data.	● Students organize visual displays of data to accurately show information. ● Students accurately connect values to data.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Organizing data can help with interpreting and answering questions. ● Data can be represented in multiple ways (e.g., line plots, bar graphs/towers of cubes, Venn diagrams, tables) ● How we interpret data changes depending on the context of the question being asked.	● Students can organize data to interpret and answer questions. ● Students can display data in multiple ways (e.g., lbar graphs/towers of cubes, Venn diagrams, tables) ● Students can interpret data changes depending on the context of the question being asked.	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 ● Critical Thinking ● Competent

Academic Vocabulary:

● chart ● compare ● label ● organize	● sort ● survey ● tally ● title ●	

Evidence: Assessments and Performance Task(s)

- Performance Tasks
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:

- Science and Social Studies
    - Understanding data from graphs and charts in context
- Written Responses

Additional Resources:

- Math in Practice: Teaching First Grade Math Module 13

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

Math in Practice Literature Connections:
**The Best Vacation Ever* (Stuart J Murphy)
**Tally O'Malley* (Stuart J. Murphy)
**Duck! Rabbit!* (Amy Krouse Rosenthal)
-*The Sunday Scoop* (Stuart J. Murphy)
-*Who's Got Spots?* (Linda W. Aber)

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			Math / Grade 1 **Unit 4**
Course/Subject: Math	**Grade:** 1	**Unit 4:** Add & Subtract Doubles and Making Ten	**Suggested Timeline:** **7 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry Unit 2: Add and Subtract 1, 0, 2, and 10 Unit 3: Data and Graphing **Unit 4: Add and Subtract Doubles and Making Ten** Unit 5: Place Value Unit 6: Add and Subtract Two Digit Numbers Unit 7: Fractions Unit 8: Time Unit 9: Measurement

Unit Title	Add and Subtract Doubles and Making Ten
Unit Summary	Students will learn basic doubles and making ten addition and subtraction facts following learning progressions. Students will learn and apply the commutative property. Students will solve for an unknown addend.

Unit Essential Questions:

1. How does understanding the relationship between addition and subtraction help me add and subtract with doubles and making ten?
2. How does understanding the commutative property help me learn addition facts with doubles and making ten?
3. How does understanding the relationship between addition and subtraction help me with fact families with doubles and making ten?
4. How do I use subtraction to solve for an unknown addend?

Key Understandings:

1. There are multiple ways to represent and find sums/ differences with doubles and making 10 (story problems, pictures, equations, computational strategies, manipulatives).
2. An equation must be balanced and the equal sign represents quantities on each side of the symbol as the same (equal).
3. The relationship between addition & subtraction can be used to solve problems.
4. Decomposing doubles and making ten facts will be used to solve problems involving three addends.

Focus Standards Addressed in the Unit:

*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.2.1.A.1	Represent and solve problems involving addition and subtraction within 20.

1.OA.A.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.A.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
CC.2.2.1.A.2	Understand and apply properties of operations and the relationship between addition and subtraction.
1.OA.B.3	Apply properties of operations as strategies to add and subtract. Examples: If 8+3=11 is known, then 3+8=11 is also known. (Commutative Property of Addition.) To add 2+6+4, the second two numbers can be added to make a ten, so 2+6+4=2+10=12. (Associative Property of Addition)
1.OA.B.4	Understand subtraction as an unknown-addend problem. For example, subtract 10-8 by finding the number that makes 10 when added to 8.
1.OA.C.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8+6=8+2+4=10+4=14); decomposing a number leading to a ten (e.g., 13-4=13-3-1=10-1=9); using the relationship between addition and subtraction (e.g., knowing that 8+4=12, one knows 12-8=4); and creating equivalent but easier known sums (e.g., adding 6+7 by creating the known equivalent 6+6+1=12+1=13)
1.O.A.D.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6=6, 7=8-1, 5+2=2+5, 4+1=5+2
1.O.A.D.8	Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8+?=11, 5=__-3, 6+6=_)

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● Students who may not "see doubles" need to count each number. ● Students who may not "see" pairs that make ten need to count each number.	● Students understand two of the same number make a doubles fact. ● Students can visualize ten using a ten frame and a rekenrek to find addend pairs that make ten.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Addition & subtraction are related operations. ● Subtraction can be perceived as an unknown addend problem. ● Addition and subtraction problems can be posed with the missing part being in different positions. ● The commutative & associative properties of operations can be used to solve problems (but students do not need to know them by name). ● Symbols can represent an unknown quantity in an equation. ● Know doubles and making 10 combinations fluently.	● Students can show addition and subtraction of doubles and making teen facts with models to find the sum. ● I can build and write number pairs that make ten. ● I can fluently add and subtract using doubles and making ten facts. ● Use addition and subtraction facts to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a	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 NYCSD Profile of a Graduate ● Critical Thinking ● Competent

	symbol for the unknown number to represent the problem. ● Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. ● Understand the commutative property (3+2=5, 2+3=5) ● Understand subtraction as an unknown-addend problem. (For example, subtract 10 - 8 by finding the number that makes 10 when added to 8).	

Academic Vocabulary:

● Addend ● Adding ● Backward ● Combine ● Counting Back ● Counting On ● Difference ● Double ● Equal ● Equation	● Fact Family ● Forward ● Greater ● Half ● Join ● Less ● Minus ● Missing part ● Model	● More ● Number pairs ● Plus ● Put together ● Same ● Subtract ● Sum ● Ten frame ● Total ● Unknown

Evidence: Assessments and Performance Task(s)

- Performance Tasks
- Formative Assessments
- Summative Assessments

Interdisciplinary Connections:

- Science and Social Studies
  - Adding and Subtracting doubles and making ten
- Written Responses

Additional Resources:

- Math in Practice: Teaching First Grade Math Module 3, 4, 5 (with Modules 1 & 2)

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

- Mastering the Basic Math Facts

O'Connell, S., & SanGiovanni, J. (2015). *Mastering the basic math facts in addition and subtraction*. Portsmouth, NH: Heinemann

Math in Practice Literature Connections:

**Two of Everything* (Lily Toy Hong)
-*Double the Ducks* (Stuart J. Murphy)
-*Double Trouble in Walla Walla* (Andrew Clements)
**Ten Little Fish (*Audrey Wood)
-*Ten Black Dots* (Donald Crews)
-*Ten Apples Up on Top* (Theo LeSieg)
-*Ten Pigs* (Derek Anderson)
-*Ten Sly Piranhas* (William Wise) also Module 4

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Math / Grade 1

Unit 5

Course/Subject:	Grade:	Unit 5:	Suggested Timeline:
Math	1	Place Value	**7-8 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry Unit 2: Add and Subtract 1, 0, 2, and 10 Unit 3: Data and Graphing Unit 4: Add and Subtract Doubles and Making Ten **Unit 5: Place Value** Unit 6: Add and Subtract Two Digit Numbers Unit 7: Fractions Unit 8: Time Unit 9: Measurement

Unit Title	Place Value
Unit Summary	Students will count to 120, starting at any number, and be able to read and write those numerals. Students will learn and understand the meaning of tens and ones in a 2-digit number. Students will decompose 2-digit numbers. Students will be able to compare 2-digit numbers using symbols.

Unit Essential Questions:	**Key Understandings:**
1. How does understanding the relationship between addition and subtraction help me add and subtract within 20? 2. How does understanding the commutative property help me learn addition facts within 20? 3. How does understanding the relationship between addition and subtraction help me with fact families within 20? 4. How do I use subtraction to solve for an unknown addend?	1. Numbers extend beyond the number 100. 2. Numbers to 120 can be read and written.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.1.1.B.1	Extend the counting sequence to read and write numerals to represent objects.
1.NBT.A.1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
CC.2.1.1.B.2	Use place-value concepts to represent amounts of tens and ones and to compare two digit numbers.

1.NBT.B.2	Understand that the two digits of a two-digit number represent amounts of tens and ones.
1.NBT.B.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● Students often stop the count sequence at 100. ● Students sometimes see a 2-digit number as two 1-digit numbers, not recognizing one digit describes how many tens, and the other digit describes how many ones ● Students sometimes confuse the symbols for comparing numbers (>,<, =),	● Students accurately count around the decade numbers to 120. ● Students recognize a 2-digit number shows how many tens and how many ones are in a number.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Digits have different values when they are located in different positions according to place value. ● The count sequence extends beyond 100. ● A 2-digit number is composed of a group of tens and ones. ● Two-digit numbers can be compared.	● Students can count, read, and write numbers to 120. ● Students can explain patterns in the digits of numbers to 120. ● Students can show and explain the meaning of tens and ones in a 2-digit number. ● Students can take apart a 2-digit number into tens and ones in different ways. ● Students can show which 2-digit number is greater or less using symbols.	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 NYCSD Profile of a Graduate ● Critical Thinking ● Communication ● Competent

Academic Vocabulary:

● Break apart/decompose ● Bundle ● Compare ● Digit ● Digits	● Equal ● Greater ● Less ● Ones ● Ones digit	● Ones place ● Place Value ● Tens ● Tens digit ● Tens place

Evidence: Assessments and Performance Task(s)

- Performance Tasks
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:

- Science and Social Studies
    - Understanding value of data
- Written Responses

Additional Resources:

- Math in Practice: Teaching First Grade Math Module 8

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

Literature Connections:

-*From One to One Hundred* (Teri Sloat)
-*The 100th Day of Schoo*l (Angela Shelf Medearis)
-*The King's Commissioners* (Aileen Friedman)
-*One Hundred Hungry Ants* (Elinor J. Pinczes)
-*100th Day Worries* (Margery Cuyler)
-*The Wolf's Chicken Stew* (Keiko Kasza)

Created By:

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			Math / Grade 1 **Unit 6**
Course/Subject: Math	**Grade:** 1	**Unit 6:** Add & Subtract Two Digit Numbers	**Suggested Timeline:** **3 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry Unit 2: Add and Subtract 1, 0, 2, and 10 Unit 3: Data and Graphing Unit 4: Add and Subtract Doubles and Making Ten Unit 5: Place Value **Unit 6: Add and Subtract Two Digit Numbers** Unit 7: Fractions Unit 8: Time Unit 9: Measurement

Unit Title	Add and Subtract Two Digit Numbers
Unit Summary	Students will use place value understanding to add a one-digit number or a multiple of ten to a two-digit number. Students will subtract a multiple of ten from a multiple of ten.

Unit Essential Questions:	**Key Understandings:**
1. How do I mentally find 10 more than any 2-digit number.? 2. How do I mentally find 10 less than any 2-digit number?? 3. How do I add multiples of 10 to a 2-digit number? 4. How do I subtract multiples of 10 from a multiple of 10? 5. How do I add a single-digit number to a 2-digit number?	1. Ten more and ten less than a 2-digit number can be found using place value patterns. 2. A 1-digit number or a multiple of ten can be added to a 2-digit number using place value models, drawings, or strategies. 3. A multiple of ten can be subtracted from a multiple of ten using place value models, drawings, or strategies.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.1.1.B.3	Use place value concepts and properties of operations to add and subtract within 100.
1.NBT.C.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
1.NBT.C.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
1.NBT.C.6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

Important Standards Addressed in the Unit:

CC.2.1.1.B.2	Use place value concepts to represent amounts of tens and ones and to compare two digit numbers.

Misconceptions:	**Proper Conceptions:**
● Students may count blocks to find a total instead of mentally finding adding or subtracting ten using place value understanding. ● Students add numbers without regard to the place value (seeing 58 as a 5 and an 8 instead of 5 tens or 50 and 8 more)	● Students see patterns in a hundreds chart, recognizing values that are ten more or ten less. ● Students understand the different values of digits using place value strategies.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Ten more and ten less than a 2-digit number can be found mentally using patterns in a hundred chart and place value understanding. ● Multiples of ten can be added to a 2-digit number using place value understanding. ● Multiples of ten can be subtracted from a larger multiple of ten using place value understanding. ● A 1-digit number can be added to a 2-digit number using place value understanding.	● Students can mentally find 10 more than any 2-digit number and can explain how they did it. ● Students can mentally find 10 less than any 2-digit number and can explain how they did it. ● Students can add multiples of 10 to a 2-digit number using what they know about place value. ● Students can subtract multiples of 10 from a multiple of 10 using what they know about place value. ● Students can use place value models to add a 2-digit number and a 1-digit number.	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 ● SMP 7: Utilize Structure ● SMP 8: Utilize Patterns NYCSD Profile of a Graduate ● Critical Thinking ● Competent

Academic Vocabulary:

● Add ● Addend ● Decompose ● Difference ● Digit	● Dimes ● Hundred Chart ● Number Line ● One-Digit Numbers ● Ones	● Patterns ● Subtract ● Sum ● Tens ● Two-Digit Numbers ● Value

Evidence: Assessments and Performance Task(s)

- Performance Tasks
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:
- Science and Social Studies
    - Add values of data
- Written responses

Additional Resources:
- Math in Practice: Teaching First Grade Math Module 9

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

Math in Practice Literature Connections:
**Pinkalicious and the Pink Drink* (Victoria Kann)
-*Berenstain Bears Trouble with Money* (Stand and Jan Berenstain)
-*A Chair for My Mother* (Vera B. Williams)
-*A Fair Bear Share* (Stuart J. Murphy)
-*A Collection for Kate* (Barbara deRubertis)
-*Mission Addition* (Loreen Leedy)
-*The Smushy Bus* (Leslie Helakoski)
-*Shark Swimathon* (Stuart J. Murphy)

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			Math / Grade 1 **Unit 7**
Course/Subject: Math	**Grade:** 1	**Unit 7:** Fractions	**Suggested Timeline:** **2 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry Unit 2: Add and Subtract 1, 0, 2, and 10 Unit 3: Data and Graphing Unit 4: Add and Subtract Doubles and Making Ten Unit 5: Place Value Unit 6: Add and Subtract Two Digit Numbers **Unit 7: Fractions** Unit 8: Time Unit 9: Measurement

Unit Title	Fractions
Unit Summary	Students will partition shapes into halves and fourths.

Unit Essential Questions:	**Key Understandings:**
1. How can I split a shape into halves and fourths in different ways? 2. How can I put together halves or fourths to make a whole shape? 3. How can I compare halves and fourths of the same shape?	1. Shapes can be split into halves and fourths. 2. Whole shapes are composed of halves and fourths. 3. Half of a shape and a fourth of the same shape can be compared to determine which is larger.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.3.1.A.2	Use the understanding of fractions to partition shapes into halves and quarters.
1.G.3	Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Important Standards Addressed in the Unit:

CC.2.3.1.A.1	Compose and distinguish between two-and three-dimensional shapes based on their attributes.

Misconceptions:	Proper Conceptions:
● Some students may use the word halves to describe two parts without recognizing parts must be equal to be halves. ● Students may think that ¼ is larger than ½ because the denominator is a larger number.	● Students understand that halves and fourths are equal parts of a whole. ● Students recognize that two parts of shape are larger than four parts of thee same shape.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
● Partitioning shapes into halves and fourths ● Composing halves and fourths to make a whole shape ● Comparing halves and fourths	● Students can split shapes in halves and fourths in different ways. ● Students can put together halves or fourths to make a whole shape. ● Students can compare halves and fourths of the same shape.	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 ● Critical Thinking ● Competent ● Conscientious

Academic Vocabulary:

● Equal Parts (or Shares) ● Fourth ● Half ● Part ● Partition ● Quarter ● Whole		

Evidence: Assessments and Performance Task(s)

- Performance Tasks
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:

- Science and Social Studies
  - Partition shapes into halves and fourths
- Written Responses

Additional Resources:

- Math in Practice: Teaching First Grade Math Module 15

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

Math in Practice Literature Connections:

**Give Me Half* (Stuart J. Murphy)
-Eating Fractions (Bruce McMillan)

-*Let's Fly a Kite* (Stuart J. Murphy)

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			Math / Grade 1 **Unit 8**
Course/Subject: Math	**Grade:** 1	**Unit 8:** Time	**Suggested Timeline:** **1-2 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry Unit 2: Add and Subtract 1, 0, 2, and 10 Unit 3: Data and Graphing Unit 4: Add and Subtract Doubles and Making Ten Unit 5: Place Value Unit 6: Add and Subtract Two Digit Numbers Unit 7: Fractions **Unit 8: Time** Unit 9: Measurement

Unit Title	Time
Unit Summary	Students will recognize an analog clock face with twelve numbers. Students will tell time to the hour and half hour. Students will connect analog and digital displays of time.

Unit Essential Questions:	**Key Understandings:**
1. What do the numbers on a clock face mean? 2. How can I tell time to the hour and half hour? 3. How does time on an analog clock match time on a digital clock?	1. The numbers on a clock face recognize different hours of time. 2. A clock face can show hours and half hours. 3. An analog clock tells the same time as a digital clock.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.4.1.A.2	Tell and write time to the nearest half hour using both analog and digital clocks.
1.MD.3	Tell and write time in hours and half-hours using analog and digital clocks.

Important Standards Addressed in the Unit:

CC.2.3.1.A.2	Use the understanding of fractions to partition shapes into halves and quarters.

Misconceptions:	Proper Conceptions:
● Students often confuse the two hands of a clock face. ● Students may misread the hour hand when reading a half hour. (They may read 2:30 as 3:30 thinking that the hour hand is almost to thee three). ● Students may think the hour after 12:00 is 13:00.	● Students understand that shorter hand represents the hours, and the longer hand represents the minutes. ● Students know that time is read as the hour that the hour hand is on or after until it reaches the next hour.

Knowledge & Concepts	Skills & Competencies	Dispositions & Practices
● The clock face has twelve numbers that represent hours. ● The clock face can be partitioned into halves to show a half hour. ● An analog clock can show the same time as a digital clock.	● Students can tell what the numbers on a clock face mean. ● Students can tell time to the hour and the half hour. ● Students can match the time on an analog clock to a digital time.	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 ● NYCSD Profile of a Graduate: Critical Thinking ● NYCSD Profile of a Graduate: Competent

Academic Vocabulary:

● Analog ● Clock face ● Digital	● Half ● Half past ● Hands	● Hour ● Minute ● O'clock ● Thirty

Evidence: Assessments and Performance Task(s)

- Performance tasks
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:

- Daily Schedule
- Written Responses

Additional Resources:

- Math in Practice: Teaching First Grade Math Module 9

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

Math in Practice Literature Connections:

**What Time Is It, Mr. Crocodile?* (Judy Sierra)
-*All in a Day* (Mitsumasa Anno)
-*Around the Clock with Harriet* (Betsy and Giulio Maestro)
-*Bats Around the Clock* (Kathi Appelt)
-*Game Time!* (Stuart J. Murphy)
-*The Grouchy Ladybug* (Eric Carle)
-*It's About Time, Max!* (Kitty Richards)

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Math / Grade 1

Unit 9

Course/Subject:	Grade:	Unit 9:	Suggested Timeline:
Math	1	Measurement	**1-2 weeks**

Grade Level Summary	In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.
Grade Level Units	Unit 1: Geometry Unit 2: Add and Subtract 1, 0, 2, and 10 Unit 3: Data and Graphing Unit 4: Add and Subtract Doubles and Making Ten Unit 5: Place Value Unit 6: Add and Subtract Two Digit Numbers Unit 7: Fractions Unit 8: Time **Unit 9: Measurement**

Unit Title	Measurement
Unit Summary	Students will compare lengths of objects. Students will line objects end to end to compare different sized units.

Unit Essential Questions:	**Key Understandings:**
1. How can three objects be ordered according to length? 2. How can you compare the length of two objects based on a third object? 3. How can the length of objects be measured by lining them up end to end? 4. How do measurements of object differ when different-sized units are used for measuring?	1. Objects can be ordered by length. 2. The length of objects can be described based on the length of other objects. 3. The length of objects using non-standard measurement differs based on the object used for measuring.

Focus Standards Addressed in the Unit:
*Standards with prefix "CC" denote PA Core Standards, and standards beginning with "1" denote Common Core Standards.

Standard Number	*Standard Description*
CC.2.4.1.A.1	Order lengths and measure them both indirectly and by repeating length units.
1.MD.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
1.MD.2	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● Students often don't understand why measuring an object with two different non-standard units of measure give different results. (Ex: a paperclip or a cube)	● Students understand that different tools will give different lengths.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Three objects can be compared and ordered by length. ● The length of two objects can be compared based on a third object. ● Lengths can be measured using non-standard units. ● Lengths can be interpreted based on different objects used as units of measure..	● Students can put three objects in order from shortest to longest. ● Students can compare the length of two objects based on a third object. ● Students can measure an object by lining up objects end to end. ● Students can explain why the measurement is different if I measure a length with different-size items.	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 NYCSD Profile of a Graduate ● Critical Thinking ● Competent

Academic Vocabulary:

● End to end ● Height ● Length ● Long ● Longer	● Longest ● Measure ● Short ● Shorter ● Shortest	● Tall ● Taller ● Tallest ● Width

Evidence: Assessments and Performance Task(s)

- Performance Tasks
- Formative Assessment
- Summative Assessment

Interdisciplinary Connections:

- Science and Social Studies
    - Measuring lengths using non-standard units
- Written Responses

Additional Resources:

- Math in Practice: Teaching First Grade Math Module 10

Hunovice, L., O'Connell, S., SanGiovanni, J. (2016). *Math in practice: Teaching first-grade math.* Portsmouth, NH: Heinemann

Math in Practice Literature Connections:
-*Is the Blue Whale the Biggest Thing There is?* (Robert E. Wells)
-*What's Smaller Than a Pygmy Shrew?* (Robert E. Wells)
-*Super Sand Castle Saturday* (Stuart J Murphy)

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