Mathematics / K

Unit 1

Course/Subject:	Grade:	Unit 1:	Suggested Timeline:
Math	Kindergarten	Shapes in Space	**2 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	**Unit 1: Shapes in Space** Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Shapes in Space
Unit Summary	Students will learn to identify shapes through hands-on activities and conversations. Students can describe the location of objects (shapes) based on their relative position.

Unit Essential Questions:	**Key Understandings:**
1. How can I name and describe a 2-dimensional shape? 2. How can I explain the position of an object?	1. Each shape has a unique set of attributes and name. 2. Position words can be used to describe the location of an object.

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

Standard Number	*Standard Description*
CC.2.3.K.A.1	Identify and describe two-dimensional shapes.
K.G.A.1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

K.G.A.2	Correctly name shapes regardless of their orientations or overall size.

Important Standards Addressed in the Unit:

CC.2.4.K.A.4	Classify objects and count the number of objects in each category.

Misconceptions:	**Proper Conceptions:**
● Identifying shapes based on their appearance rather than their property. ● Incorrectly using position words because of misunderstanding positional language.	● Each shape has specific attributes regardless of its size or orientation. ● Correctly using position words to explain where an object (shape) is located.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Shapes are objects with unique properties/attributes (number of sides/vertices). ● Position words imply that an object is situated in a given location.	● Students can apply the use of the words above/over, behind, below, beside, in front of, and next to in order to recognize the location of an object. ● Students can identify and describe circles, squares, rectangles, triangles, and hexagons. ● Students can identify shapes regardless of position or orientation.	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 ● Communication through appropriate dialogue about shapes and positions. ● Collaboration through group math activities.

Academic Vocabulary:

● Shape ● Hexagon ● Circle ● Triangle ● Rectangle ● Square	● Side ● Vertex/ Corner	● Above / Over ● Behind ● Below ● Beside ● In front of ● Next to

Evidence: Assessments and Performance Task(s)

● A task for this unit would require students to use position words and shape vocabulary to complete learning activities.

Interdisciplinary Connections:
- Following Directions
- Understanding Classroom Routines and Procedures

- Mat Man

Additional Resources:
- Module 12: Geometry - Math in Practice Kindergarten
    - Positional Language Mats
    - Positional Language Dice
- Module 13: Exploring Geometry
- Smart Notebook Software
- Manipulatives
- *The Shape of Things* by Dayle Ann Dodds
- *Rosie's Walk* by Pat Hutchins
- *Going on a Bear Hunt* by Michael Rosen and Helen Oxenbury

Math in Practice **Literature Connections:**
**Round is a Mooncake* (Roseanne Thong)
**The Wing on a Flea: A Book About Shapes* (Ed Emberley)

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.

Myers, M., O'Connell, S., and SanGiovanni, J. (2016). *Math in practice: Teaching Kindergarten math.* Portsmouth, NH: Heinemann.

Created By:
Elizabeth Berger
Carly Lyon

Mathematics / K

Unit 2

Course/Subject:	Grade:	Unit 2:	Suggested Timeline:
Math	Kindergarten	Numbers to 5	**2 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space **Unit 2: Numbers to 5** Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Numbers to 5
Unit Summary	Students will develop number sense as they manipulate groups of objects, count up to 5 objects with one-to-one correspondence, identify numerals, and write numerals to express a quantity.

Unit Essential Questions:	**Key Understandings:**
1. What are numbers? 2. What is counting and how can it be used? 3. How do I represent quantities?	1. Numbers represent a quantity. 2. Understand that the count sequence means that every number said is one more than the number before. 3. A number can be represented as a written numeral.

Focus Standards Addressed in the Unit:

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

Standard Number	*Standard Description*
CC.2.1.K.A.1	Know number names and write and recite the count sequence.
CC.2.1.K.A.2	Apply one-to-one correspondence to count the number of objects.

K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.B.4.A	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.CC.B.4.B	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.

Important Standards Addressed in the Unit:	
K.CC.A.3	(Write numbers from 0-5. Represent a number of objects with a written numeral 0-5 (with 0 representing a count of no objects).)

Misconceptions:	**Proper Conceptions:**
● Lack of one-to-one correspondence (not pointing to one object for each number said). ● Rote counting does not signify number sense.	● Students demonstrate one-to-one correspondence when they touch one object as they say one number in the count sequence. ● Students must understand that each number matches a set quantity.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each number in the count sequence represents a distinct numeral and quantity. ● Understands the last number said is the number of objects in a set. ● Understands that each number in the count sequence increases by one.	● Students can count up to five objects by touching or sliding objects regardless of configuration. ● Students can use the count sequence to determine how many objects in a group. ● Students can write numbers 0-5 to represent quantities.	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 ● Competence demonstrated with mastery of counting, identifying, and writing numbers 0-5. ● Courage shown in attempting to count, identify, and write numbers.

Academic Vocabulary:		
● Number ● Count ● Set	● Zero ● One ● Two ● Three ● Four ● Five	

Evidence: Assessments and Performance Task(s)

- A task for this unit would require students to navigate the relationships between quantities, number names, and written numerals.

Interdisciplinary Connections:

- Calendar Skills
  - Understanding Classroom Routines and Procedures

Additional Resources:

- Module 1: Numbers 1 to 5 - Math in Practice Kindergarten
- Module 2: Counting and Cardinality (Numbers 0-10)
- *5 Green and Speckled Frogs* by Constanza Basaluzzo
- *Doggies* by Sandra Boynton
- *1, 2, 3 to the Zoo: A Counting Book* by Eric Carle
- *5 Little Monkeys* by Eileen Christelow

Math in Practice **Literature Connections:**

**Rooster's Off to See the World* (Eric Carle)

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.

Myers, M., O'Connell, S., and SanGiovanni, J. (2016). *Math in practice: Teaching Kindergarten math.* Portsmouth, NH: Heinemann.

Created By:

Elizabeth Berger
Carly Lyon

Mathematics / K

Unit 2

Course/Subject:	Grade:	Unit 2:	Suggested Timeline:
Math	Kindergarten	Numbers to 5	**2 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space **Unit 2: Numbers to 5** Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Numbers to 5
Unit Summary	Students will develop number sense as they manipulate groups of objects, count up to 5 objects with one-to-one correspondence, identify numerals, and write numerals to express a quantity.

Unit Essential Questions:	**Key Understandings:**
4. What are numbers? 5. What is counting and how can it be used? 6. How do I represent quantities?	4. Numbers represent a quantity. 5. Understand that the count sequence means that every number said is one more than the number before. 6. A number can be represented as a written numeral.

Focus Standards Addressed in the Unit:

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

Standard Number	*Standard Description*
CC.2.1.K.A.1	Know number names and write and recite the count sequence.
CC.2.1.K.A.2	Apply one-to-one correspondence to count the number of objects.

K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.B.4.A	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.CC.B.4.B	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.

Important Standards Addressed in the Unit:	
K.CC.A.3	(Write numbers from 0-5. Represent a number of objects with a written numeral 0-5 (with 0 representing a count of no objects).)

Misconceptions:	**Proper Conceptions:**
● Lack of one-to-one correspondence (not pointing to one object for each number said). ● Rote counting does not signify number sense.	● Students demonstrate one-to-one correspondence when they touch one object as they say one number in the count sequence. ● Students must understand that each number matches a set quantity.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each number in the count sequence represents a distinct numeral and quantity. ● Understands the last number said is the number of objects in a set. ● Understands that each number in the count sequence increases by one.	● Students can count up to five objects by touching or sliding objects regardless of configuration. ● Students can use the count sequence to determine how many objects in a group. ● Students can write numbers 0-5 to represent quantities.	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 ● Competence demonstrated with mastery of counting, identifying, and writing numbers 0-5. ● Courage shown in attempting to count, identify, and write numbers.

Academic Vocabulary:		
● Number ● Count ● Set	● Zero ● One ● Two ● Three ● Four ● Five	

Evidence: Assessments and Performance Task(s)

- A task for this unit would require students to navigate the relationships between quantities, number names, and written numerals.

Interdisciplinary Connections:

- Calendar Skills
  - Understanding Classroom Routines and Procedures

Additional Resources:

- Module 1: Numbers 1 to 5 - Math in Practice Kindergarten
- Module 2: Counting and Cardinality (Numbers 0-10)
- *5 Green and Speckled Frogs* by Constanza Basaluzzo
- *Doggies* by Sandra Boynton
- *1, 2, 3 to the Zoo: A Counting Book* by Eric Carle
- *5 Little Monkeys* by Eileen Christelow

Math in Practice **Literature Connections:**

**Rooster's Off to See the World* (Eric Carle)

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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Created By:

Elizabeth Berger
Carly Lyon

			Mathematics / K **Unit 3**
Course/Subject: Math	**Grade:** Kindergarten	**Unit 3:** Numbers to 10	**Suggested Timeline:** **2 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: 1 representing and comparing whole numbers, initially with sets of objects; 2 describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 **Unit 3: Numbers to 10** Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Numbers to 10
Unit Summary	Students will develop number sense as they manipulate groups of objects, count up to 10 objects with one-to-one correspondence, identify numerals, and write numerals to express a quantity.

Unit Essential Questions:	**Key Understandings:**
1. What are numbers? 2. What is counting and how can it be used? 3. How do I represent quantities?	1. Numbers represent a quantity. 2. Understand that the count sequence means that every number said is one more than the number before. 3. A number can be represented as a written numeral.

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

Standard Number	*Standard Description*
CC.2.1.K.A.1	Know number names and write and recite the count sequence.
CC.2.1.K.A.2	Apply one-to-one correspondence to count the number of objects.

K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.B.4.A	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.CC.B.4.B	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.

Important Standards Addressed in the Unit:	
K.CC.A.3	Write numbers from 0-10. Represent a number of objects with a written numeral 0-10 with 0 representing a count of no objects.

Misconceptions:	**Proper Conceptions:**
● Lack of one-to-one correspondence not pointing to one object for each number said. ● Rote counting does not signify number sense.	● Students demonstrate one-to-one correspondence when they touch one object as they say one number in the count sequence. ● Students must understand that each number matches a set quantity.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each number in the count sequence represents a distinct numeral and quantity. ● Understands the last number said is the number of objects in a set. ● Understands that each number in the count sequence increases by one.	● Students can count up to ten objects by touching or sliding objects regardless of configuration. ● Students can use the count sequence to determine how many objects in a group. ● Students can write numbers 0-10 to represent quantities.	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 ● Competence demonstrated with mastery of counting, identifying, and writing numbers 0-10. ● Courage shown in attempting to count, identify, and write numbers.

Academic Vocabulary:		
● Number ● Count ● Set	● Six ● Seven ● Eight ● Nine ● Ten	

Evidence: Assessments and Performance Tasks
● A task for this unit would require students to navigate the relationships between quantities, number names, and written numerals.

Interdisciplinary Connections:

- Calendar Skills
- Understanding Classroom Routines and Procedures

Additional Resources:

- Module 1: Numbers 1 to 5 - Math in Practice Kindergarten
- Module 2: Counting and Cardinality Numbers 0-10 - Math in Practice Kindergarten
- *Chicka, Chicka 1 2 3* by Bill Martin Junior
- *10 Little Rubber Ducks* by Eric Carle
- *10 Black Dots* by Donald Crews

Math in Practice **Literature Connections:**

**Zero Is the Leaves on the Tree* (Betsy Franco)
**Ten Black Dots* (Donald Crews)
**Click, Clack, Splish, Splash* (Doreen Cronin)

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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Mathematics / K

Unit 4

Course/Subject:	Grade:	Unit 4:	Suggested Timeline:
Math	Kindergarten	Comparing Numbers 0-10	**2 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: 1 representing and comparing whole numbers, initially with sets of objects; 2 describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 **Unit 4: Comparing Numbers** Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Comparing Numbers 0-10
Unit Summary	Students will develop number sense as they compare quantities, and written numerals using matching and counting strategies.

Unit Essential Questions:	**Key Understandings:**
1. How do I compare numbers? 2. How can I show that two groups are equal?	1. Numbers represent a quantity. 2. Understand that the count sequence means that every number said is one more than the number before. 3. A number can be represented as a written numeral.

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

Standard Number	*Standard Description*
CC.2.1.K.A.3	Apply the concept of magnitude to compare numbers and quantities.
K.CC.C.6	Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.

K.CC.C.7	Compare two numbers between 1 and 10 presented as written numerals.

Important Standards Addressed in the Unit:	
K.CC.B.4.A	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.
K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.B.4.B	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

Misconceptions:	**Proper Conceptions:**
● Students may confuse the terms "greater" and "less". ● Students may not apply the counting strategies appropriately. Ex: Incorrectly lining up manipulatives.	● Students understand that less means fewer and greater means more. ● Students need to create lines of objects that have equal starting points and no gaps to compare sets.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that "fewer than" or "less than" designate a smaller amount. ● Understands that "greater than" or "more than" indicate a larger amount. ● Understand that "equal to" designates the same amount.	● Students can line up sets of objects to compare quantities. ● Students can use and apply understandings of the words "greater than", "more than", "less than", "fewer than", "equal to", and "same as" to compare quantities and numbers. ● Students can apply number sense and counting and matching strategies to compare numerals.	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 ● Think critically by choosing a counting/matching strategy and explaining the thought process. ● Conscientious learner in working hard to compare quantities and numbers and defend thinking.

Academic Vocabulary:		
● Compare ● Match ● Equal to ● Same As	● Greater than ● More than ● Fewer Than ● More	

Evidence: Assessments and Performance Tasks

● A task for this unit would require students to compare two sets of objects and/or numerals.

Interdisciplinary Connections:

● Comparing and Contrasting in texts ELA standard

Additional Resources:

- Module 5: Comparing Numbers 1-10
- BrainPop Jr. Comparing Numbers
- *Just Enough Carrots* by Stuart Murphy
- *Alphie the Alligator* by Sandy Turley
- *Equal Shmequa*l by Virginia L. Kroll
- *Who Has More? Who Has Fewer?* By Caroline Arnold

Math in Practice **Literature Connections:**
**Just Enough Carrots* (Stuart J Murphy)

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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Mathematics / K

Unit 5

Course/Subject:	Grade:	Unit 5:	Suggested Timeline:
Math	Kindergarten	Counting to 20	**1 week**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: 1 representing and comparing whole numbers, initially with sets of objects; 2 describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers **Unit 5: Counting to 20** Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Counting to 20
Unit Summary	Students will develop number sense as they manipulate groups of objects to count up to 20 by ones with one-to-one correspondence. Students can also orally rote count to 20.

Unit Essential Questions:	**Key Understandings:**
1. What are numbers? 2. What is counting and how can it be used?	1. Numbers represent a quantity. 2. Understand that the count sequence means that every number said is one more than the number before. 3. Understand and apply the principle of one-to-one correspondence.

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

Standard Number	*Standard Description*
CC.2.1.K.A.1	Know number names and recite the count sequence.
CC.2.1.K.A.2	Apply one-to-one correspondence to count the number of objects.

K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.
K.CC.B.5	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

Important Standards Addressed in the Unit:	
K.CC.B.4.A	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.CC.B.4.B	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

Misconceptions:	**Proper Conceptions:**
● "Thirteen" and "fourteen" being confused as the same number. ● Lack of one-to-one correspondence not pointing to one object for each number said.	● Knowing that "thirteen" and "fourteen" are separate numbers in successive order. ● Students demonstrate one-to-one correspondence when they touch one object as they say one number in the count sequence.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each number in the count sequence represents a distinct numeral and quantity. ● Understands the last number said is the number of objects in a set. ● Understands that each number in the count sequence increases by one.	● Students can count up to twenty objects by touching or sliding objects regardless of configuration. ● Students can use the count sequence to determine how many objects in a group.	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 ● Competence demonstrated with mastery of counting orally and with manipulatives. ● Courage shown in attempting to count out loud and a set of objects.

Academic Vocabulary:

● Number ● Count ● Set ● One ● Two ● Three ● Four ● Five	● Six ● Seven ● Eight ● Nine ● Ten ● Eleven ● Twelve ● Thirteen	● Fourteen ● Fifteen ● Sixteen ● Seventeen ● Eighteen ● Nineteen ● Twenty

Evidence: Assessments and Performance Tasks

● A task for this unit would require students to count a set of up to 20 objects.

Interdisciplinary Connections:

- Calendar Skills
- Understanding Classroom Routines and Procedures

Additional Resources:

- Module 3 - Counting and Cardinality and Place Value: Numbers 0-20 - Math in Practice
- *20 Big Trucks in the Middle of the Street* by Mark Lee
- Chicka Chicka 1, 2, 3 by Bill Martin, Jr.

Math in Practice **Literature Connections:**

**Twenty Big Trucks in the Middle of the Street* (Mark Lee)
**Bears at the Beach* (Niki Yektai)

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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Mathematics / K

Unit 6

Course/Subject:	Grade:	Unit 6:	Suggested Timeline:
Math	Kindergarten	Composing and Decomposing Teen Numbers	**3 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 **Unit 6: Composing and Decomposing Teen Numbers** Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Composing and Decomposing Teen Numbers
Unit Summary	Students will develop number sense as they count, manipulate and write teen numbers as groups of ten and some more.

Unit Essential Questions:	**Key Understandings:**
1. How can I represent teen numbers? 2. How can I write teen numbers?	1. Teen numbers can be represented as a group of ten and some more. 2. Teen numbers begin with a one to represent one group of ten.

Focus Standards Addressed in the Unit:

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

Standard Number	*Standard Description*
CC.2.1.K.B.1	Use place value to compose and decompose numbers within 19.
K.NBT.A.1	Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such

	as 18=10+8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight or nine ones.)
K.CC.A.3	Write numbers from 0-20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects)

Important Standards Addressed in the Unit:	
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.
K.CC.B.5	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

Misconceptions:	**Proper Conceptions:**
● "Thirteen" and "fourteen" being confused as the same number. ● Students may confuse names of teen numbers, thinking they all restate the single-digit number (such as 14, 16, 17, 18 and 19) ● Students may reverse the order of digits when writing teen numbers (such as 41 instead of 14).	● Knowing that "thirteen" and "fourteen" are separate numbers in successive order. ● Students recite each teen number in the sequence and match it to a written numeral or quantity. ● Students show understanding that teen numbers represent a group of ten and some more by writing the numeral without reversal.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each number in the count sequence represents a distinct numeral and quantity. ● Understands that each number in the count sequence increases by one. ● Understands that the numbers 11-19 contain a group of ten and some more. *MP 4- A teen number can be represented by an addition equation of 10 plus some more.	● Students can count up to twenty objects regardless of configuration. ● Students can use the count sequence to determine how many objects in a group. ● Students can group objects as ten and some more to determine the teen number. ● Students can write numbers 11-20 to represent a group of objects. * MP 4- Students who have mastered composing and decomposing teen numbers can record an equation to represent composition or decomposition of teen numbers.	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 by showing willingness to learn by trial and error, use inquiry to solve problems and innovation by problem solving, taking risks and exploring ● Courage by failing forward and learning from mistakes

Academic Vocabulary:		
● Group ● Digit ● Ones ● Tens ● Eleven ● Twelve ● Thirteen ● Fourteen	● Fifteen ● Sixteen ● Seventeen ● Eighteen ● Nineteen ● Twenty	*Plus *Equal

Evidence: Assessments and Performance Task(s)

- A task for this unit would require students to represent and write numbers 11-20.

Interdisciplinary Connections:

- Calendar Skills- counting days of school

Additional Resources:

- Module 3 - Counting and Cardinality and Place Value: Numbers 0-20 - Math in Practice
- *20 Big Trucks in the Middle of the Street* by Mark Lee
- Chicka Chicka 1, 2, 3 by Bill Martin, Jr.

***Math in Practice* Literature Connections:**

**Twenty Big Trucks in the Middle of the Street* (Mark Lee)
**Bears at the Beach* (Niki Yektai)

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.

Myers, M., O'Connell, S., and SanGiovanni, J. (2016). *Math in practice: Teaching Kindergarten math.* Portsmouth, NH: Heinemann.

Created By:

Carly Lyon

Mathematics / K

Unit 7

Course/Subject:	Grade:	Unit 7:	Suggested Timeline:
Math	Kindergarten	Counting to 50	**1 week**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers **Unit 7: Counting to 50** Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Counting to 50
Unit Summary	Students will recognize patterns in the counting sequence as they count to 50 by tens and ones.

Unit Essential Questions:	**Key Understandings:**
1. What patterns exist in the count sequence?	1. Each successive number in the count sequence increases by one. 2. Each column in the hundred chart increases by ten.

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

Standard Number	*Standard Description*
CC.2.1.K.A.1	Know number names and write and recite the count sequence.
K.CC.A.1	Count to 100 by ones and by tens.
K.CC.A.C	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

Important Standards Addressed in the Unit:	
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.

Misconceptions:	**Proper Conceptions:**
● Students may have difficulty with teen numbers and decade numbers that do not follow the language pattern that names the number. ● Students struggle at the decade numbers (20, 30, 40, etc.) and begin back at the decade sequence (19, 21, 31, etc.). ● Students believe that you must always begin at 1 when counting.	● Students understand that each number has a specific name and not all follow language patterns that name the number. ● Students understand that at the end of each row on the hundred chart, the number increases by ten, starting a new "decade". ● Students understand that counting can begin anywhere in the count sequence and continues in a successive pattern.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each number in the count sequence represents a distinct quantity. ● Understands that each number in the count sequence increases by one. ● Understands that each column in the hundred chart increases by ten and represents a new decade.	● Students can count up to fifty by ones. ● Students can count up to fifty by tens. ● Students can begin counting anywhere in the count sequence between 1-50. ● Students identify patterns within the count sequence using a hundred chart.	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 ● Conscientious by working hard and being self-motivated ● Competent by mastering ability to count by ones to 50

Academic Vocabulary:		
● Hundred chart ● Ones ● Tens ● Pattern ● Sequence	● Ten ● Twenty ● Thirty ● Forty ● Fifty	

Evidence: Assessments and Performance Task(s)

● A task for this unit would require students to count to 50 by tens and ones. An additional task would require students to count by starting at a given number other than 1 and stop at a given number.

Interdisciplinary Connections:

● Calendar Skills- counting days of school

Additional Resources:

● Module 4 - Counting Numbers - Math in Practice
● Zero by Kathryn Otoshi

***Math in Practice* Literature Connections:**

*_The 100th Day of School_ (Angela Shelf Medearis)
*_Zero_ (Kathryn Otoshi)
*_Count!_ (Denise Fleming)

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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Created By:
Carly Lyon

Mathematics / K

Unit 8

Course/Subject:	Grade:	Unit 8:	Suggested Timeline:
Math	Kindergarten	2D Shapes	**2 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 **Unit 8: 2D Shapes** Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	2D Shapes
Unit Summary	Students will identify, name and describe two-dimensional shapes as they touch and observe them.

Unit Essential Questions:	**Key Understandings:**
1. What are the names of basic shapes and how can I identify them? 2. How can I describe shapes using their characteristics?	1. Each shape has a given a name based on their characteristics and these characteristics can be used to identify a shape regardless of its orientation. 2. Each shape has a specific set of attributes (number of sides, vertices, etc.)

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

Standard Number	*Standard Description*
CC.2.3.K.A.1	Identify and describe two-and three-dimensional shapes.
KG.A.2	Correctly name shapes regardless of their orientations or overall size.

Important Standards Addressed in the Unit:	
K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls and drawing shapes.)

Misconceptions:	**Proper Conceptions:**
● Students identify shapes by their appearance and neglect to identify shapes in different sizes or orientations. ● Students confuse a square and rectangle based on their similarities.	● Students understand that a shape contains the same set of attributes, regardless of size or orientation. ● Students recognize that squares have four equal sides and rectangles have two long sides and two short sides.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each shape represents a specific set of attributes. ● Understands that a shape's attributes do not change with size or orientation.	● Students name basic 2D shapes. ● Students identify 2D shapes regardless of their size or orientation. ● Students describe 2D shapes by their attributes (sides, vertices, etc.).	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 ● Communication by describing shape attributes and listening to others' points of view ● Collaboration by participating in thoughtful discussions.

Academic Vocabulary:		
● Shape ● Flat ● Two-dimensional (2D) ● Circle ● Square	● Square ● Rectangle ● Triangle ● Hexagon ● Line ● Vertex	

Evidence: Assessments and Performance Task(s)

● A task for this unit would require students to name, identify and describe two-dimensional shapes.

Interdisciplinary Connections:

● Calendar Skills- patterning with shapes

Additional Resources:

● Module 12 - Introducing Geometry - Math in Practice
● Module 13- Exploring Geometry- Math in Practice
● Mouse Shapes by Ellen Stoll Walsh
● Round is a Mooncake by Roseanne Thong
● The Shape of Things by Dayle Ann Dodds

***Math in Practice* Literature Connections:**
**Round is a Mooncake* (Roseanne Thong)
**The Wing on a Flea: A Book About Shapes* (Ed Emberley)
**Mouse Shapes* (Ellen Stoll Walsh)

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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Created By:
Carly Lyon

			Mathematics / K **Unit 9**
Course/Subject: Math	**Grade:** Kindergarten	**Unit 9:** 3D Shapes	**Suggested Timeline:** **2 weeks**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes **Unit 9: 3D Shapes** Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	3D Shapes
Unit Summary	Students will identify, name and describe three-dimensional shapes as they manipulate and observe them.

Unit Essential Questions:	**Key Understandings:**
1. What are the names of three-dimensional shapes and how can I identify them? 2. How can I describe 3D shapes using their attributes? 3. How are 2D and 3D shapes different?	1. Each shape has a given a name based on their characteristics and these characteristics can be used to identify a shape regardless of its orientation. 2. Each 3D shape has a specific set of attributes (number of edges, vertices, faces) 3. 3D shapes have properties that differ from 2D shapes. They can roll, slide or stack.

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

Standard Number	*Standard Description*
CC.2.3.K.A.1	Identify and describe two-and three-dimensional shapes.

KG.A.2	Correctly name shapes regardless of their orientations or overall size.

Important Standards Addressed in the Unit:	
K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls and drawing shapes.)
K.G.A.3	Identify shapes as two-dimensional (lying in a plan, "flat") or three-dimensional ("solid").

Misconceptions:	**Proper Conceptions:**
● Students identify shapes by their appearance and neglect to identify shapes in different sizes or orientations. ● Students confuse a square and rectangle based on their similarities.	● Students understand that a shape contains the same set of attributes, regardless of size or orientation. ● Students recognize that squares have four equal sides and rectangles have two long sides and two short sides.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each shape represents a specific set of attributes. ● Understands that a shape's attributes do not change with size or orientation. ● Understands that 2D shapes are flat and 3D shapes are solid.	● Students name basic 3D shapes. ● Students identify 3D shapes regardless of their size or orientation. ● Students describe 3D shapes by their attributes (edges, vertices, faces) and properties (roll, slide, stack). ● Students can describe the difference between 2D and 3D shapes.	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 ● Communication by describing shape attributes and listening to others' points of view ● Collaboration by participating in thoughtful discussions.

Academic Vocabulary:		
● Shape ● Solid ● Three-dimensional (3D) ● Sphere ● Cube	● Cylinder ● Cone ● Roll ● Stack ● Slide	

Evidence: Assessments and Performance Task(s)

- A task for this unit would require students to name, identify and describe three-dimensional shapes.

Interdisciplinary Connections:

- Play and STEM centers- building blocks

Additional Resources:

- Module 12 - Introducing Geometry - Math in Practice
- Module 13- Exploring Geometry- Math in Practice

***Math in Practice* Literature Connections:**

**Round is a Mooncake* (Roseanne Thong)
**The Wing on a Flea: A Book About Shapes* (Ed Emberley)
**Mouse Shapes* (Ellen Stoll Walsh)

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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Created By:

Carly Lyon

			Mathematics / K **Unit 10**
Course/Subject: Math	**Grade:** Kindergarten	**Unit 10:** Comparing and Composing Shapes	**Suggested Timeline:** **1 week**

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes **Unit 10: Comparing and Composing Shapes** Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Comparing and Composing Shapes
Unit Summary	Students will analyze and compare 2D and 3D shapes to describe how they are alike and different. Students will also use shapes to compose larger shapes, demonstrating a greater understanding of the characteristics that form shapes.

Unit Essential Questions:	**Key Understandings:**
1. How are shapes alike and different? 2. How can I compose new shapes?	1. Shapes can be alike and different based on their attributes (sides, vertices, edges, etc.), dimensions (2D/3D) or properties (motion/size/orientation). 2. Specific shapes can be combined to compose larger shapes. Larger shapes created must contain a set of characteristics specific to that shape. 3. 3D shapes have properties that differ from 2D shapes. They can roll, slide or stack.

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

Standard Number	*Standard Description*
CC.2.3.K.A.2	Analyze, compare, create and compose two- and three- dimensional shapes.
KG.B.4	Analyze and compare two- and three- dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/ "corners") and other attributes (e.g., having sides of equal length).
KG.B.6	Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?".

Important Standards Addressed in the Unit:

K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls and drawing shapes.)
K.G.A.3	Identify shapes as two-dimensional (lying in a plan, "flat") or three-dimensional ("solid").)
CC.2.3.K.A.1	Identify and describe two-and three-dimensional shapes.

Misconceptions:	**Proper Conceptions:**
● Students identify shapes by their appearance and neglect to identify shapes in different sizes or orientations. ● Students confuse the terms 2D and 3D. ● Students try to form new shapes by creating an outline with existing shapes instead of lining up shapes.	● Students understand that a shape contains the same set of attributes, regardless of size or orientation. ● Students recognize that 2D refers to two-dimensional or flat shapes and 3D refers to three-dimensional or solid shapes. ● Students understand that shapes can fit together like a puzzle to compose larger shapes (e.g. two triangles make a square).

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each shape represents a specific set of attributes. ● Understands that a shape's attributes do not change with size or orientation. ● Understands that shapes can have attributes that are alike and different. ● Understands that shapes with attributes that are alike are not always the same shape. ● Understands that 2D shapes are flat and 3D shapes are solid.	● Students compare shapes by attributes and properties that are alike and different. ● Students can describe the difference between 2D and 3D shapes. ● Students can describe how shapes are alike and different and justify their comparisons. ● Students can sort shapes based on attributes that are alike and different.	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 ● Communication by describing shape comparisons and listening to others' points of view ● Collaboration by participating in thoughtful discussions.

Academic Vocabulary:

● Alike ● Different ● Compare ● Compose	● Flat ● Solid ● Face ● Vertex ● Edge ● Line	

Evidence: Assessments and Performance Task(s)

- A task for this unit would require students to describe similarities and differences between a set of shapes. Another task would require students to use shapes to compose a given shape.

Interdisciplinary Connections:

- Play and STEM centers- building blocks

Additional Resources:

- Module 13- Exploring Geometry- Math in Practice

***Math in Practice* Literature Connections:**

**Round is a Mooncake* (Roseanne Thong)
**The Wing on a Flea: A Book About Shapes* (Ed Emberley)
**Mouse Shapes* (Ellen Stoll Walsh)

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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Created By:

Carly Lyon

			Mathematics / K **Unit 11**
Course/Subject: Math	**Grade:** Kindergarten	**Unit 11:** Compose and Decompose 0-10	**Suggested Timeline:** 1 week

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes **Unit 11: Compose and Decompose 0-10** Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Compose and Decompose 0-10
Unit Summary	Students will begin to understand numbers are flexible as they take apart (decompose) and put together (compose) numbers 1-10.

Unit Essential Questions:	**Key Understandings:**
1. How do I break apart (decompose) numbers in different ways? 2. How do I find pairs that make 10?	1. Numbers can be broken into parts using manipulatives, pictures, diagrams and equations. 2. Finding ways to make 10.

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

Standard Number	*Standard Description*
CC.2.2.K.A.1	Extend concepts of putting together and taking apart to add and subtract within 10.
K.OA.A.3	Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

K.OA.A.4	For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Important Standards Addressed in the Unit:	

Misconceptions:	**Proper Conceptions:**
● Students confuse the term "whole" with "hole". ● Incorrectly preparing the whole (total) that is to be decomposed. Example only using 5 counters when you are decomposing the number 6. ● Counting to 10 in place of finding the missing part that makes 10.	● Whole refers to the total. ● Correctly building numbers. ● Finding the missing part to make 10.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Numbers can be broken apart (decomposed) into smaller parts. ● Whole refers to the total and part refers to the decomposed amounts. ● Two numbers can make 10.	● Students can decompose numbers within 10 using manipulatives, pictures, diagrams and equations. ● Students can find addends that make 10 when given a part. ● Students can use decomposition to solve math problems.	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 with missing addends to 10.

Academic Vocabulary:		
● Break apart ● Combine ● Decompose ● Join ● Number bond	● Part ● Whole ● Part-part-whole	● Equation ● Number sentence

Evidence: Assessments and Performance Task(s)
● A task for this unit would require students to use break apart a given number and find the missing addend to make 10.

Interdisciplinary Connections:
● Following Directions ● Writing (fine motor skills)

Additional Resources:

- Module 6: Decomposing Numbers
- Smart Notebook Software
- Manipulatives
- Whole/Part Mats
- Number bonds
- *Quack and Count* by Keith Baker
- *Mouse Count* by Ellen Stoll Walsh
- *One Watermelon Seed* by Celia Lottridge
- *Dinner at the Panda Palace* by Stephanie Calmenson

***Math in Practice* Literature Connections:**

**Quack and Count* (Keith Baker)
-*Mouse Count* (Ellen Stoll Walsh)
-*One Watermelon Seed* (Celia Lottridge)
-*Dinner at the Panda Palace* (Stephanie Calmenson)

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Mathematics / K

Unit 12

Course/Subject:	Grade:	Unit 12:	Suggested Timeline:
Math	Kindergarten	Addition and Subtraction	4 weeks

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 **Unit 12: Addition and Subtraction** Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Addition and Subtraction
Unit Summary	Students will be introduced to the operations of addition and subtraction through active exploration. Students will gain a solid understanding of the actions of addition and subtraction, so they can apply addition or subtraction strategies through acting out, draw pictures, story structure, and using objects.

Unit Essential Questions:	**Key Understandings:**
1. How do I put together two quantities to get a total? 2. What strategies can I use to solve addition problems? 3. How do I separate a part from the whole to find the unknown part? 4. What strategies can I use to solve subtraction problems?	1. Students understand if something is being taken away or put together in the problem. 2. Addition refers to the action of combining two quantities to find a total. 3. Addition problems can be solved using manipulatives, acting out, drawing a picture or story structures. 4. Students understand which number is the part being taken away from the whole. 5. Subtraction problems can be solved using manipulatives, acting out, drawing a picture or story structures. 6. The count sequence can be used to help solve addition and subtraction problems.

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

Standard Number	*Standard Description*
CC.2.2.K.A.1	Extend concepts of putting together and taking apart to add and subtract within 10.
K.OA.A.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
K.OA.A.4	For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
K.OA.A.5	Fluently add and subtract within 5.

Important Standards Addressed in the Unit:	
K.OA.A.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
K.OA.A.3	Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

Misconceptions:	**Proper Conceptions:**
● Addition and subtraction is about keywords. ● Addition is only used when you are adding to a group. ● Not counting the crossed off part of the picture as part of the whole in a subtraction problem. ● Counting to 10 in place of finding the missing part that makes 10. ● Student can comprehend the word problem and solve it effectively. . ● You can only count up in the count sequence.	● Addition and subtraction is about key ideas. ● Addition has two situations: putting together and adding to. ● Correctly building numbers. ● The total number of objects represents the whole and the crossed off or removed objects represent the part. ● With instructional strategies students can comprehend and effectively solve the word problem. ● You can travel both ways in the count sequence to solve addition or subtraction problems.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Addition is the action of putting together or adding to. ● Subtraction is the action of taking away or breaking apart. ● Plus refers to the symbol used to represent addition. ● Minus refers to the symbol used to represent subtraction. *MP 4- Students understand how the value of zero affects an addition or subtraction sentence. *MP 4- Students understand how the concept of one more and one less connects to addition and subtraction.	● Students can show ways to find the total of an addition problem using concrete objects, pictures, and through acting out scenarios. ● Students can show ways to find the difference of a subtraction problem using concrete objects, pictures, and through acting out scenarios. ● Students can use the count sequence to solve addition and subtraction problems. ● Students can write a number sentence to match a picture or story. *MP 4- Students can fluently add and subtract with the numbers one or zero within a problem.	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 ● Critically Thinking through problems ● Courage through failing forward and willingness to try new/uncomfortable things.

Academic Vocabulary:

● add ● equal ● plus ● put together ● Number bond	● Same as ● Total ● Minus ● Separate ● Subtract	● Equation ● Number sentence ● Take apart ● Take away

Evidence: Assessments and Performance Task(s)

- A task for this unit would require students to solve addition or subtraction problems using drawings, objects, and acting out scenarios. An additional task would require students to write equations to match a representation of an addition or subtraction problem.

Interdisciplinary Connections:

- Following Directions
- Word problem comprehension.
- Writing (fine motor skills)

Additional Resources:

- Module 7: Understanding Addition
- Module 8: Understanding Subtraction
- Module 9: Understanding Math Facts
- Manipulatives
- Whole/Part Mats
- Number bonds
- Number lines
- Rekenrek
- *If You Were a Plus Sign* by Trisha Speed Shaskan
- *If You Were a Minus Sign* by Trisha Speed Shaskan
- *Pete the Cat's Groovy Buttons* by Eric Litwin
- *Ten Sly Piranhas* by William Wise
- *1,2,3 to the Zoo* by Eric Carle

Math in Practice **Literature Connections:**

**Mouse Count* (Ellen Stoll Walsh)
**Monster Musical Chairs* (Stuart J Murphy)
**Fish Eyes: A Book You Can Count On* (Lois Ehlert)
**Ten Sly Piranhas* (William Wise)
-*Ten Orange Pumpkins* (Stephen Savage)
-*Ten Little Fish* (Audrey Wood)
-*Five Little Monkeys Jumping on the Bed* (Eileen Christelow)
-*Five Little Monkeys Sitting in the Tree* (Eileen Christelow)
-*Ten Little Bears: A Counting Rhyme* (Kathleen Hague)
**1, 2, 3 to the Zoo* (Eric Carle)

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.

Myers, M., O'Connell, S., and SanGiovanni, J. (2016). *Math in practice: Teaching Kindergarten math.* Portsmouth, NH: Heinemann.

Created By:
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			Mathematics / K **Unit 13**
Course/Subject: Math	**Grade:** Kindergarten	**Unit 13:** Counting to 100	**Suggested Timeline:** 2 weeks

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction **Unit 13: Counting to 100** Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Counting to 100
Unit Summary	Students will be able to count in sequential order recognizing patterns that help them count beyond their memory of number order by one and tens. Through this understanding students will be able to begin counting at any given number.

Unit Essential Questions:	**Key Understandings:**
1. What patterns exist in the count sequence?	1. Each successive number in the count sequence increases by one. 2. Each column in the hundred chart increases by ten.

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

Standard Number	*Standard Description*
CC.2.1.K.A.1	Know number names and write and recite the count sequence.
K.CC.A.1	Count to 100 by ones and by tens.

K.CC.A.C	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

Important Standards Addressed in the Unit:	
K.CC.B.4.C.	Understand that each successive number name refers to a quantity that is one larger.

Misconceptions:	**Proper Conceptions:**
● Students may have difficulty with teen numbers and decade numbers that do not follow the language pattern that names the number. ● Students struggle at the decade numbers (20, 30, 40, etc.) and begin back at the decade sequence (19, 21, 31, etc.). ● Students believe that you must always begin at 1 when counting.	● Students understand that each number has a specific name and not all follow language patterns that name the number. ● Students understand that at the end of each row on the hundred chart, the number increases by ten, starting a new "decade". ● Students understand that counting can begin anywhere in the count sequence and continues in a successive pattern.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that each number in the count sequence represents a distinct quantity. ● Understands that each number in the count sequence increases by one. ● Understands that each column in the hundred chart increases by ten and represents a new decade.	● Students can count up to 100 by ones. ● Students can count up to 100 by tens. ● Students can begin counting anywhere in the count sequence between 1-100. ● Students identify patterns within the count sequence using a hundred chart.	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 ● Critically Thinking through problems ● Courage through failing forward and willingness to try new/uncomfortable things.

Academic Vocabulary:		
● count ● Hundred chart ● ones ● order	● pattern ● Sequence ● Tens	

Evidence: Assessments and Performance Task(s)
● A task for this unit would require students to count to 100 by tens and ones. An additional task would require students to count by starting at a given number other than 1 and stop at a given number.

Interdisciplinary Connections:
- Following Directions
- Writing (fine motor skills)

Additional Resources:

- Module 4: Counting Numbers
- Hundreds Chart
- *Zero* by Kathryn Otoshi
- *The 100th Day of School* by Angela Shelf Medearis

***Math in Practice* Literature Connections:**

**The 100th Day of School* (Angela Shelf Medearis)
**Zero* (Kathryn Otoshi)
**Count!* (Denise Fleming)

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.

Myers, M., O'Connell, S., and SanGiovanni, J. (2016). *Math in practice: Teaching Kindergarten math.* Portsmouth, NH: Heinemann.

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Mathematics / K

Unit 14

Course/Subject:	Grade:	Unit 14:	Suggested Timeline:
Math	Kindergarten	Classifying Objects	2 weeks

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 **Unit 14: Classifying Objects** Unit 15: Graphing Unit 16: Measurement Unit 17: Word Problems

Unit Title	Classifying objects
Unit Summary	Students observe objects and their attributes to identify ways they are alike and different. Through this understanding students will be able to sort items into groups, describe how items are sorted and add additional items into sorted groups.

Unit Essential Questions:	**Key Understandings:**
1. How do I use attributes to sort objects?	1. All objects have attributes that can be alike or different. 2. An object's attributes can be used to create a rule for sorting. 3. All objects sorted in a group must be similar in one or more attributes.

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

Standard Number	*Standard Description*
CC.2.4.K.A.4	Classify objects and count the number of objects in each category.
K.MD.B.3	Classify objects into given categories; count the number of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● Students may have difficulty sorting object by multiple traits and may believe that there is only one way to sort their objects.	● Objects can be sorted by more than one attribute.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that objects have attributes that can be alike or different. ● Understands that attributes can be used to create a rule for sorting. ● Understands that all objects sorted in a group must be similar in one or more attributes.	● Students can sort items into groups ● Students can describe how they sorted objects. ● Students can add an item to a group sorted. ● Students can count the number of objects within a group sorted.	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 ● Critically Thinking through problems ● Courage through failing forward and willingness to try new/uncomfortable things.

Academic Vocabulary:

● alike ● different ● sort ● categories	● groups ● least ● most ● rule ● set	

Evidence: Assessments and Performance Task(s)

● A task for this unit would require students to sort a set of objects based on various attributes and describe the rule used. Students would be asked to identify the number of objects in each group.

Interdisciplinary Connections:
- Graphing/Voting/Record Keeping
- Compare/Contrast (literacy)

Additional Resources:
- Module 11: Sorting and Classifying Objects
- Sorting Mats
- *How Many Snails?* by Paul Giganti
- *The Button Box* by Margarette S. Ried

Math in Practice **Literature Connections:**
**The Button Box* (Margarette S Reid)
**How Many Snails? A Counting Book* (Paul Giganti, Jr.)

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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Mathematics / K

Unit 15

Course/Subject:	Grade:	Unit 15:	Suggested Timeline:
Math	Kindergarten	Graphing	1 week

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects **Unit 15: Graphing** Unit 16: Measurement Unit 17: Word Problems

Unit Title	Graphing
Unit Summary	Students observe objects and their attributes to identify ways they are alike and different. Through this understanding students will be able to sort items into groups, describe how items are sorted, count, and graph groups.

Unit Essential Questions:	**Key Understandings:**
1. How do I count objects sorted by attributes? 2. How do I use a graph to represent the amount of objects in each group?	1. Once objects are sorted they should be counted. 2. Amounts of sorted objects can be represented through graphs.

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

Standard Number	*Standard Description*
CC.2.4.K.A.4	Classify objects and count the number of objects in each category.
K.MD.B.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● Students may attempt to sort objects by multiple attributes within a graph. ● Bar graphs can only be represented one way (vertical/horizontal).	● When sorting objects can be sorted by one attribute. ● Bar graphs can be organized horizontally or vertically.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that attributes can be used to create a rule for sorting. ● The amount of objects in each group must be represented on the graph.	● Students can count the number of objects within a group sorted. ● Students can organize the amount of objects within a group using a graph as representation.	Standards of Mathematical Practice ● SMP 1: Understand and Persevere ● SMP 4: Model with Mathematics ● SMP 6: Attend to Precision NYCSD Profile of a Graduate ● Collaboration through group sorting and graphing. ● Creativity through creating information to graph. ● Critical Thinking through data analysis

Academic Vocabulary:

● graph ● Sort ● Classify ● categories	● groups ● least ● most ● rule	

Evidence: Assessments and Performance Task(s)

● A task for this unit would require students to sort a set of objects based on one attribute and organize the number of objects in each group into a graph.

Interdisciplinary Connections:
- Graphing/Voting/Record Keeping
- Compare/Contrast (literacy)

Additional Resources:
- Module 11: Sorting and Classifying Objects
- Bar Graphs
- *Tally O'Malley* by Stuart J. Murphy
- *Tally Cat Keeps Track* by Trudy Harris

***Math in Practice* Literature Connections:**

*_The Button Box_ (Margarette S Reid)
*_How Many Snails? A Counting Book_ (Paul Giganti, Jr.)

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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Mathematics / K

Unit 16

Course/Subject:	Grade:	Unit 16:	Suggested Timeline:
Math	Kindergarten	Measurement	2 weeks

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing **Unit 16: Measurement** Unit 17: Word Problems

Unit Title	Measurement
Unit Summary	Students will be introduced to measurable attributes of objects and the vocabulary used to describe them. Students will explore these concepts by comparing two objects by the same attribute. Attention to accuracy will be facilitated by aligning endpoints when measuring length and height.

Unit Essential Questions:	**Key Understandings:**
1. What are the measurable attributes of an object ? 2. How do I compare two objects measurable attributes and describe them?	1. Compare the height of an object. 2. Compare the weight of an object 3. Compare the length of an object. 4. Compare the capacity of an object.

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

Standard Number	*Standard Description*
CC.2.4.K.A.1	Describe and compare attributes of length, area, weight, and capacity of everyday objects.
K.MD.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

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

Important Standards Addressed in the Unit:	

Misconceptions:	**Proper Conceptions:**
● Difference between length and height ● Not aligning end points when trying to compare. ● Describing objects by color instead of a measurable attribute.	● Students understand the difference between length and height when they use long and short to describe length and tall and short to describe height. They understand that length is horizontal and height is vertical. ● Students learn to align endpoints when they compare the length or height of objects. ● Color is a describable attribute, not a measurable attribute.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Understands that objects have measurable attributes that can be compared. ● Understands each measurable attribute has specific vocabulary to describe the object ● Understands how to explore measuring attributes of an object.	● Students can compare two objects based on their height, weight, length or capacity. ● Students can describe an objects' measurable attributes using appropriate vocabulary. ● Students can align the endpoints of two objects to compare and measure their height or length.	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 ● Competent through demonstrating mastery of measurement content and vocabulary ● Communication through utilizing appropriate vocabulary to describe objects

Academic Vocabulary:		
● Tall, taller, tallest ● Short, shorter, shortest ● Light, lighter, lightest ● Heavey, heavier, heaviest ● Long, longer longest	● Weight ● Length ● Height ● Capacity ● Holds more ● Liquid	● Holds less ● Endpoint ● Compare ● Scale ● Balance

Evidence: Assessments and Performance Task(s)

- A task for this unit would require students to compare several sets of objects based on their height, weight, length and capacity. Another task would require students to demonstrate properly aligning two objects or identifying objects that are aligned for measurement.

Interdisciplinary Connections:

- Science- states of matter
- Compare/Contrast (literacy)

Additional Resources:

- Module 10: Exploring Measurement
- Balance scales
- Rulers
- Links, paper clips, cubes
- *Goldilocks and the Three Bears* by James Marshall
- *The Best Bug Parade* by Stuart J. Murphy
- *Just a Little Bit* by Ann Tompert

***Math in Practice* Literature Connections:**

**The Best Bug Parade* (Stuart J Murphy)
**Just a Little Bit* (Ann Tompert)
**Balancing Act* (Ellen Stoll Walsh)
**A Pig is Big* (Douglas Florian)
**Goldilocks and the Three Bears* (James Marshall)

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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Mathematics / K

Unit 17

Course/Subject:	Grade:	Unit 17:	Suggested Timeline:
Math	Kindergarten	Word Problems	1 week

Grade Level Summary	In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.
Grade Level Units	Unit 1: Shapes in Space Unit 2: Numbers to 5 Unit 3: Numbers to 10 Unit 4: Comparing Numbers Unit 5: Counting to 20 Unit 6: Composing and Decomposing Teen Numbers Unit 7: Counting to 50 Unit 8: 2D Shapes Unit 9: 3D Shapes Unit 10: Comparing and Composing Shapes Unit 11: Compose and Decompose 0-10 Unit 12: Addition and Subtraction Unit 13: Counting to 100 Unit 14: Classifying Objects Unit 15: Graphing Unit 16: Measurement **Unit 17: Word Problems**

Unit Title	Word Problems
Unit Summary	Students will apply their understanding of addition and subtraction by solving real world problems. After listening to a word problem, students will go through the problem solving steps: retell the problem, identify the key information, develop a plan and solve using a strategy.

Unit Essential Questions:	**Key Understandings:**
1. What are the problem solving steps? 2. How do I retell a math problem in my own words? 3. How do I identify key information within a problem? 4. How do I come up with a plan to solve a math problem? 5. What strategies can I use to solve a word problem?	1. Retelling a math story. 2. Keywords for addition and subtraction. 3. Strategies to solve addition and subtraction.

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

Standard Number	*Standard Description*
CC.2.2.K.A.1	Extend concepts of putting together and taking apart to add and subtract within 10.
(K.OA.A.2)	(Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.)

Important Standards Addressed in the Unit:

Misconceptions:	**Proper Conceptions:**
● What information to use from a math story. ● In subtraction either number can go first.	● Students use problem solving steps to identify important information from the story, rather than randomly picking out numbers and applying them to an operation. ● Students understand that when subtracting the larger amount will go first.

Knowledge & Concepts	**Skills & Competencies**	**Dispositions & Practices**
● Students understand what vocabulary signals addition and which vocabulary signals subtraction. ● Strategies to solve addition and subtraction problems. ● The larger number must be first in a subtraction problem to complete the problem successfully.	● Students can retell a math problem in their own words. ● Students can identify the key information within a word problem. ● Students can develop a plan to solve a word problem using a strategy (manipulatives, draw a picture, etc.)	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 ● Courageous through developing a plan and solving a problem in different ways. ● Communication through retelling word problems. ● Critical Thinking through the details of the word problem.

Academic Vocabulary:

● Take away ● Left ● How many more? ● In all ● All together ● Total		

Evidence: Assessments and Performance Task(s)

● A task for this unit would require students to listen to a real world math problem, retell it in their own words, pull out key information, plan, and solve the problem.

Interdisciplinary Connections:

● Retelling- literacy

Additional Resources:

- Module 7: Understanding Addition
- Module 8: Understanding Subtraction
- *If You Were a Plus Sign* by Trisha Speed Shaskan
- *If You Were a Minus Sign* by Trisha Speed Shaskan

***Math in Practice* Literature Connections:**

**Mouse Count* (Ellen Stoll Walsh)
**Monster Musical Chairs* (Stuart J Murphy)

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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