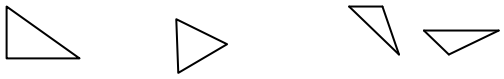
Grade/Subject	Kindergarten Math
Unit Title	**Unit 1**: The Shape of Things
Overview of Unit	In this unit students will recognize, name, draw, compare and sort simple two and three dimensional shapes.
Pacing	4 weeks (beginning first full week of school)

Essential Questions (and Corresponding Big Ideas)	
• How are shapes alike and different? • How are shapes described? • How can we describe the location or position of an item? • How do we use shapes in our world?	
Core Content Standards	**Explanations and Examples**
K.G.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.	Examples of environments in which students would be encouraged to identify shapes would include nature, buildings, and the classroom using positional words in their descriptions. Teachers should work with children and pose four mathematical questions: Which way? How far? Where? And what objects? To answer these questions, children develop a variety of important skills contributing to their spatial thinking. **Examples:** • Teacher holds up an object such as an ice cream cone, a number cube, ball, etc. and asks students to identify the shape. Teacher holds up a can of soup and asks," What shape is this can?" Students respond "cylinder!" • Teacher places an object next to, behind, above, below, beside, or in front of another object and asks positional questions. Where is the water bottle? (water bottle is placed behind a book) Students say "The water bottle is behind the book." Students should have multiple opportunities to identify shapes; these may be displayed as photographs, or pictures using the document camera or interactive whiteboard.
K.G.2. Correctly name shapes regardless of their orientation or overall size. *Figures specific to kindergarten:	Students should be exposed to many types of triangles in many different orientations in order to eliminate the misconception that a triangle is always right-side-up and equilateral.

squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, spheres	 Students should also be exposed to many shapes in many different sizes. **Examples:** • Teacher makes pairs of paper shapes that are different sizes. Each student is given one shape and the objective is to find the partner who has the same shape. Teacher brings in a variety of spheres (tennis ball, basketball, globe, ping pong ball, etc.) to demonstrate that size doesn't change the name of a shape.
K.G.3. Identify shapes as two-dimensional (laying in a plane, "flat") or three-dimensional ("solid").	Student should be able to differentiate between two dimensional and three dimensional shapes. Student names a picture of a shape as two dimensional because it is flat and can be measured in only two ways (length and width). Student names an object as three dimensional because it is not flat (it is a solid object/shape) and can be measured in three different ways (length, width, height/depth).
K.G.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).	Students analyze and compare two- and three-dimensional shapes by observations. Their visual thinking enables them to determine if things are alike or different based on the appearance of the shape. Students sort objects based on appearance. Even in early explorations of geometric properties, they are introduced to how categories of shapes are subsumed within other categories. For instance, they will recognize that a square is a special type of rectangle. Students should be exposed to triangles, rectangles, and hexagons whose sides are not all congruent. They first begin to describe these shapes using everyday language and then refine their vocabulary to include sides and vertices/corners. Opportunities to work with pictorial representations, concrete objects, as well as technology helps student develop their understanding and descriptive vocabulary for both two- and three- dimensional shapes.
K.G.5 Model shapes in the world by building shapes from components (e.g.sticks and clay balls) and drawing shapes.	Ask students to apply their understanding of geometric attributes of shapes in orderto create given shapes. For example, a student may roll a clump of play-doh into a sphere or use their finger to draw a triangle in the sand table, recalling various attributes in order to create that particular shape.
K.G.6. Compose simple shapes to form larger shapes. For example, *"Can you join these two triangles*	Students use pattern blocks, tiles, or paper shapes and technology to make new two- and three-dimensional shapes. Their investigations

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with full sides touching to make a rectangle?"	allow them to determine what kinds of shapes they can join to create new shapes. They answer questions such as "What shapes can you use to make a square, rectangle, circle, triangle? …etc."
K.MD.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).	Possible objects to sort include buttons, shells, shapes, beans, etc. After sorting and counting, it is important for students to: • explain how they sorted the objects; • label each set with a category; • answer a variety of counting questions that ask, "How many …"; and compare sorted groups using words such as, "most", "least", "alike" and "different".
Standards for Mathematical Practice	**Explanations and Examples**
1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with mathematics 5. Use appropriate tools strategically 6. Attend to precision 7. Look for and make use of structure 8. Look for and express regularity in repeated reasoning	• Students will make sense of shapes in their world by recognizing, building, and creating new shapes. • Students will use numeral to refer to number of sides while observing pictures of shapes and recognize that combining shapes can change the number of sides. • Students will clearly express, explain, and organize their ideas about shapes while composing and decomposing them. • Students will begin to represent shapes in their world by using drawings or objects. • Students will explore the use of tools (solid shapes, virtual shapes) to explore geometrical solids in the world around them, whenever appropriate. • Students will express their ideas and reasoning while using appropriate math vocabulary in regards to the shapes and their attributes. • Students will recognize patterns while exploring for shapes such as triangles can be different sizes or colors and still be called a triangle. • Students will begin to notice that as the number of sides increase on a shape, a new shape is created (triangle has 3 sides, a rectangle has 4 sides, a pentagon has 5 sides and hexagon has 6 sides.)
ISTE Standards	
(http://www.iste.org/standards/nets-for-students.aspx) *After reading their descriptions, DELETE those that do not apply to this unit of study and indicate the substandard(s) that do apply to the unit.*	

K-U-D	
KNOW *Facts, formulas, information, vocabulary*	**DO** *Skills of the discipline, social skills, production skills, processes (usually verbs/verb phrases)* *Hint: Use the standards!*
• The names of two and three dimensional shapes including circle, square, triangle, rectangle, hexagon, cone, sphere, cube, cylinder. • Changes in orientation or size do not change the name of a shape. • Descriptions for the location of shapes using positional language, such as above, below, beside, in front of, behind, and next to. • Differences in two and three dimensional shapes. • Smaller shapes can be used to compose larger shapes. • Shapes have sides and angles which can be counted. • Attribute language: vertices/corners, sides, length, equal	• Sort (shapes by their attributes) • Use (positional terms) • Identify (2D & 3D shapes and their location) • Draw (geometric figures) • Use (pattern blocks to produce larger and/or different shapes) • Find and name (shapes in the environment) • Use (shapes to create representations of items in the environment) • Model (shapes in the world) • Build (shapes from components (e.g., sticks and clay balls)) • Compose (simple shapes to form larger shapes) • Describe (shapes in the environment) • Use (relative positional terms)

UNDERSTAND

Big ideas, generalizations, principles, concepts, ideas that transfer across situations

Students will understand that:

- Properties determine when shapes are alike or different.
- Geometry helps us describe, represent, and make sense of our environment.
- Shapes are everywhere.
- All objects have a shape with a specific name.
- Objects can be similar to others in one way and different in other ways.
- Words can be used to describe the location of an object.
- Some shapes are flat (2 dimensional) while other shapes are solid (3 dimensional).
- Smaller shapes can be used to compose larger shapes and larger shapes can be decomposed to from smaller shapes

Unit Assessment/Performance Task	DOK
Task Overview In this performance task, students will be "working at a factory" and their job is to sort items by their shape as well as to place items in certain spaces on shelves by listening for positional words, and describe the attributes of 2 and 3 dimensional shapes as they explain to their "boss" how they do their job. Each student will be presented with cut outs of flat shapes in various sizes and a variety of solid	

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shapes such as cones, cubes and cylinders. Students will search their environment to locate something that is the same shape as the one presented and explain how they are the same, compare it to another shape, and place it on a “shelf” according to the positional words given. Students will then sort flat and solid shapes and compare and contrast the sets of shapes.	

Vocabulary

The following terms and symbols are often misunderstood. These concepts are not an inclusive list and should not be taught in isolation. However, due to evidence of frequent difficulty and misunderstanding associated with these concepts, teachers should pay particular attention to them and how their students are able to explain and apply them.

Teachers should present these concepts to students with models and real life examples in discussions with students. Students should understand the concepts involved and be able to recognize and/or demonstrate them with words, models, pictures, or numbers.

- above
- attribute
- behind
- below
- beside
- circle
- classify
- compose
- cone
- cube
- cylinder
- describe
- in front of
- inside
- left
- property
- next to
- number
- numeral
- outside
- rectangle
- right
- set
- sphere
- square
- triangle
- vertex (vertices)

Interdisciplinary Connections

In **Social Studies**, as students learn about families and themselves at the beginning of the school year, individual homes or neighborhoods can be constructed out of different 2 and 3 dimensional shapes.

As students learn about their surroundings, observations can be made about the shapes that are seen in street signs, buildings, motor vehicles, etc.

Students can experiment drawing themselves and others using the basic shapes as part of an "All About Me" unit.

Tools/Manipulatives

- pattern blocks
- building blocks
- solid representations of cones, cubes, spheres, cylinders
- pictures and representations of every day flat shapes as seen in environment (i.e. name tags, buttons, party hats, etc.)
- every day representations of solid figures (i.e. soup cans, boxes, balls, ice cream cones)
- wikki sticks**,** pipe cleaners, toothpicks, clay, etc. to construct and represent shapes
- tangrams
- geoboards
- sorting mats

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Math K Unit 2

Grade/Subject	Kindergarten Math
Unit Title	**Unit 2:** Counting With Friends and Numbers to Ten
Overview of Unit	Students will develop number sense using numbers 0-10.
Pacing	6 weeks

Essential Questions (and Corresponding Big Ideas)	
• How can we show numbers in different ways? • How do we know if a number is more or less than another? • How do we use numbers in our everyday lives?	
Core Content Standards	**Explanations and Examples** (Developed by Arizona DOE)
K.CC.1	When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is "ten more" (or one more group of ten). Instruction on the counting sequence should be scaffolded (e.g., 1-5, then 6-10, etc.). Counting should be reinforced throughout the day, not in isolation. Examples: • Count the number of chairs of the students who are absent. • Count the number of stairs, shoes, etc. • Counting groups of ten such as "fingers in the classroom" (ten fingers per student). When counting orally, students should recognize the patterns that exist from 1 to 100. They should also recognize the patterns that exist when counting by 10s.
K.CC.3	Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity. Once this is established, students begin to read and write numerals (numerals are the symbols for the quantities). The emphasis should first be on quantity and then connecting quantities to the written symbols. • A sample unit sequence might include: 1. Counting up to 20 objects in many settings and situations over several weeks.

	2. Beginning to recognize, identify, and read the written numerals, and match the numerals to given sets of objects. 3. Writing the numerals to represent counted objects. Since the teen numbers are not written as they are said, teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represents each teen number. For example, when focusing on the number "14," students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten and four extra ones. Students should connect the representation to the symbol "14."
K.CC. 4 K.CC.4.a. K.CC.4.b. K.CC.4.c.	• For example, when counting three bears, the student should use the counting sequence, "1-2-3," to count the bears and recognize that "three" represents the group of bears, not just the third bear. A student may use an interactive whiteboard to count objects, cluster the objects, and state, "This is three." In order to understand that each successive number name refers to a quantity that is one larger, students should have experience counting objects, placing one more object in the group at a time. • For example, using cubes, the student should count the existing group, and then place another cube in the set. Some students may need to re-count from one, but the goal is that they would count on from the existing number of cubes. S/he should continue placing one more cube at a time and identify the total number in order to see that the counting sequence results in a quantity that is one larger each time one more cube is placed in the group.
K.CC.5	Students should develop counting strategies to help them organize the counting process to avoid re-counting or skipping objects. Examples: • If items are placed in a circle, the student may

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	mark or identify the starting object. • If items are in a scattered configuration, the student may move the objects into an organized pattern. • Some students may choose to use grouping strategies such as placing objects in twos, fives, or tens (note: this is not a kindergarten expectation). • Counting up to 20 objects should be reinforced when collecting data to create charts and graphs.
K.CC.6 K.CC.7	Students should develop a strong sense of the relationship between quantities and numerals before they begin comparing numbers. Other strategies: • Matching: Students use one-to-one correspondence, repeatedly matching one object from one set with one object from the other set to determine which set has more objects. • Counting: Students count the objects in each set, and then identify which set has more, less, or an equal number of objects. • Observation: Students may use observation to compare two quantities (e.g., by looking at two sets of objects, they may be able to tell which set has more or less without counting). • Observations in comparing two quantities can be accomplished through daily routines of collecting and organizing data in displays. Students create object graphs and pictographs using data relevant to their lives (e.g., favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as well as by individual students. • Benchmark Numbers: This would be the appropriate time to introduce the use of 0, 5 and 10 as benchmark numbers to help students further develop their sense of quantity as well as their ability to compare numbers. Students state whether the number of objects in a set is more, less, or equal to a set that has 0, 5, or 10 objects. Given two numerals, students should determine which is greater or less than the other.

K.MD.3	Possible objects to sort include buttons, shells, shapes, beans, etc. After sorting and counting, it is important for students to: • explain how they sorted the objects • label each set with a category • answer a variety of counting questions that ask, "How many…"; and • compare sorted groups using words such as, "most", "least", "alike" and "different".
Standards for Mathematical Practice	**Explanations and Examples**
1.Make sense of problems and persevere in solving them	1. Students will use concrete objects or pictures to help them conceptualize and solve problems, like answering "how many?" of "how many more/less?" They may check their thinking by asking themselves, "Does this make sense?" or they may try another strategy.
2. Reason abstractly and quantitatively	2.Students begin to recognize that a number represents a specific quantity. Then, they connect the quantity to written symbols. Quantitative reasoning entails creating representation of a problem while attending to the meaning of the quantity.
4. Model with mathematics	4. Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, etc. Students need opportunities to connect the different representations and explain connections. They should be able to use all of these representations as needed.
5. Use appropriate tools strategically	5. Students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, kindergarteners may decide that it might be advantageous to use linking cubes to represent two quantities and then compare the two representatives side-by-side.
6. Attend to precision	6. As kindergarteners begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning.
7. Look for and make use of structure	7. Students recognize the pattern that exists between number relationships, recognizing that "3 and 2 is 5

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8. Look for and express regularity in repeated reasoning	which is the same as 2 and 3 is 5” 8. In early grades, students notice repetitive actions in counting and computation, etc. For example they may notice that the next number in a counting sequence is one more.

ISTE Standards

(http://www.iste.org/standards/nets-for-students.aspx)
After reading their descriptions, DELETE those that do not apply to this unit of study and indicate the substandard(s) that do apply to the unit.

K-U-D

KNOW *Facts, formulas, information, vocabulary*	**DO** *Skills of the discipline, social skills, production skills, processes (usually verbs/verb phrases)* *Hint: Use the standards!*
• The rote counting sequence by ones (0-10) • 1:1 Correspondence and Count each item once Vocabulary: count, counting, numbers, number names 0-10, how many, greater than, less than and equal, numerals, same, fewer, quantities	• Count to 10 by ones • Write numbers from 0-10 • Represent the number of objects with a written numeral from 0-10 • Count objects saying the number names in sequence using 1:1 correspondence • Count to answer how many • Identify the group of objects that has greater than, less than or equal to quantities Compare two written quantities from 0-10

UNDERSTAND
Big ideas, generalizations, principles, concepts, ideas that transfer across situations

Students will understand **that**

- Numerals are the symbols we read and write to communicate “how many” quantities.(numbers)
- The last number name said when counting tells the number of objects counted. (cardinality)
- Each successive number name refers to a quantity that is one larger.
- The number of objects is the same regardless of their arrangement or the order in which they were counted.
- When comparing two sets of objects or numbers, the one with the larger quantity is more and the smaller quantity is less.

- Counting principles can be used to determine the number of objects.
- Each number represents a specific quantity.

Vocabulary

Academic Vocabulary:

Attribute – Specific characteristics of an object (size, shape, # of sides, # of corners)

Comparing - Differentiating between sets, in terms of same, greater and less than

Count – Referring to the quantity of a number in a set

Counting – The process used to determine "how many?"

Equal – Identical in size, quantity or value (same)

Fewer – Of a lesser quantity

Greater than – (more) of higher value, or bigger quantity

How many – Referring to a specific quantity represented by a number

Less – Smaller amount

Less than – Smaller in size, quantity or value

Matching – Bringing together counterparts which are equal to or close in likeness (one is exactly like another)

More – Greater than, larger amount

Numbers – A value that represents a particular quantity used in counting

Numerals – The written symbol that corresponds to a number/quantity
One to One Correspondence: 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

One to one correspondence – The act of pointing/counting where each object is touched once and only once

Same – Identical in size, quantity or value (equal)

Set – A group, collection or pair

Sort – Divide (objects) into groups which can be defined by attributes or specific categories

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Zero – A number/numeral representing none or nothing

Interdisciplinary Connections

Science: Counting apples, pumpkins, leaves and seeds to count and compare quantities

Technology: See supplemental material and resources below

Literacy: Students will develop their own number books and use reader text connections about families and feelings throughout the teacher read alouds. Students will apply one to one correspondence to letters in their name and words on the page when they are reading.

Tools/Manipulatives

- Cubes
- Five Frame
- Ten frames
- 2 sided chips
- Dot cards
- Number cards
- Bingo Markers
- Manipulatives for counting
- Dice
- Marbles
- Beans
- Number line (to 10)

Suggested Formative Assessment Practices/Processes

If you choose to identify formative assessment practices/processes here (in addition to in lesson plans), make them specific to this unit of study.

Math K Unit 3

Grade/Subject	Kindergarten Math
Unit Title	**Unit 3:** Exploring Teen Numbers
Overview of Unit	This unit will explore ways to compose and decompose teen numbers (11-19) into ten and some ones and will help students develop a basic understanding of place value as they continue to practice counting principles.
Pacing	6 weeks

Essential Questions (and Corresponding Big Ideas)	
• What is an efficient strategy for counting teen numbers? • Why do we need to be able to count forward and backward? • How do we use counting in our everyday lives? • How are two-digit numbers composed/created? • What does each digit represent in a teen number?	
Core Content Standards	**Explanations and Examples** (Developed by Arizona DOE)
K.CC.1.	The emphasis of this standard is on the counting sequence. When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is "ten more" (or one more group of ten). Instruction on the counting sequence should be scaffolded (e.g., 1-10, then 10-20, etc.). Counting should be reinforced throughout the day, not in isolation. Examples: • Count the number of chairs of the students who are absent. • Count the number of stairs, shoes, etc. • Counting groups of ten such as "fingers in the classroom" (ten fingers per student).
K.CC.2.	When counting orally, students should recognize the patterns that exist from 1 to 100. They should also recognize the patterns that exist when counting by 10s.

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K.CC.3.	The emphasis of this standard is on the counting sequence to 100. Students should be able to count forward from any number 1-99 Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity. Once this is established, students begin to read and write numerals (numerals are the symbols for the quantities). The emphasis should first be on quantity and then connecting quantities to the written symbols. • A sample unit sequence might include: 1. Counting up to 20 objects in many settings and situations over several weeks. 2. Beginning to recognize, identify, and read the written numerals, and match the numerals to given sets of objects. 3. Writing the numerals to represent counted objects. Since the teen numbers are not written as they are said, teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represents each teen number. For example, when focusing on the number "14," students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten and four extra ones. Students should connect the representation to the symbol "14."
K.CC.4,4a.,4b.,4c.	This standard focuses on one-to-one correspondence and how cardinality connects with quantity. • For example, when counting three bears, the student should use the counting sequence, "1-2-3," to count the bears and recognize that "three" represents the group of bears, not just the third bear. A student may use an interactive whiteboard to count objects, cluster the objects, and state, "This is three." In order to understand that each successive number name refers to a quantity that is one larger, students should have experience counting objects, placing one more object in the group at a time. • For example, using cubes, the student should count the existing group, and then place another cube in the set. Some students may need to re-count from one, but the goal is that they would count on from the

	existing number of cubes. S/he should continue placing one more cube at a time and identify the total number in order to see that the counting sequence results in a quantity that is one larger each time one more cube is placed in the group. A student may use a clicker (electronic response system) to communicate his/her count to the teacher.
K.CC.5.	Students should develop counting strategies to help them organize the counting process to avoid re-counting or skipping objects. Examples: • If items are placed in a circle, the student may mark or identify the starting object. • If items are in a scattered configuration, the student may move the objects into an organized pattern. • Some students may choose to use grouping strategies such as placing objects in twos, fives, or tens (note: this is not a kindergarten expectation). • Counting up to 20 objects should be reinforced when collecting data to create charts and graphs. A student may use a clicker (electronic response system) to communicate his/her count to the teacher.
K.CC.6.	Students should develop a strong sense of the relationship between quantities and numerals before they begin comparing numbers. Other strategies: • Matching: Students use one-to-one correspondence, repeatedly matching one object from one set with one object from the other set to determine which set has more objects. • Counting: Students count the objects in each set, and then identify which set has more, less, or an equal number of objects. • Observation: Students may use observation to compare two quantities (e.g., by looking at two sets of objects, they may be able to tell which set has more or less without counting). • Observations in comparing two quantities can be accomplished through daily routines of collecting and organizing data in displays. Students create object graphs and pictographs using data relevant to their lives (e.g., favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as

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K.NBT.1.	well as by individual students. •*** Benchmark Numbers: This would be the appropriate time to introduce the use of 0, 5 and 10 as benchmark numbers to help students further develop their sense of quantity as well as their ability to compare numbers. Students state whether the number of objects in a set is more, less, or equal to a set that has 0, 5, or 10 objects. Special attention needs to be paid to this set of numbers as they do not follow a consistent pattern in the verbal counting sequence. • Eleven and twelve are special number words. • "Teen" means one "ten" plus ones. • The verbal counting sequence for teen numbers is backwards – we say the ones digit before the tens digit. For example "27" reads tens to ones (twenty-seven), but 17 reads ones to tens (seven-teen). • In order for students to interpret the meaning of written teen numbers, they should read the number as well as describe the quantity. For example, for 15, the students should read "fifteen" and state that it is one group of ten and five ones and record that 15 = 10 + 5. Teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represent each teen number. For example, when focusing on the number "14," students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten ones and four additional ones. Students should connect the representation to the symbol "14." Students should recognize the pattern that exists in the teen numbers; every teen number is written with a 1 (representing one ten) and ends with the digit that is first stated.

Standards for Mathematical Practice	Explanations and Examples
9. Make sense of problems and persevere in solving them	1. Students will use concrete objects or pictures to help them conceptualize and solve problems, like answering "how many?" of "how many more/less?" They may check their thinking by asking themselves, "Does this make sense?" or they may try another strategy.
10. Reason abstractly and quantitatively	2. Students begin to recognize that a number represents a specific quantity. Then, they connect the quantity to written symbols. Quantitative reasoning entails creating representation of a problem while attending to the meaning of the quantity.
4 . Model with mathematics	**4**. Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, etc. Students need opportunities to connect the different representations and explain connections. They should be able to use all of these representations as needed.
5. Use appropriate tools strategically	**5**. Students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, kindergarteners may decide that it might be advantageous to use linking cubes to represent two quantities and then compare the two representatives side-by-side.
6. Attend to precision	**6**. As kindergarteners begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning.
7. Look for and make use of structure	**7**. Students recognize the pattern that exists between number relationships, recognizing that "3 and 2 is 5 which is the same as 2 and 3 is 5"
8. Look for and express regularity in repeated reasoning	**8**. In early grades, students notice repetitive actions in counting and computation, etc. For example they may notice that the next number in a counting sequence is one more.

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ISTE Standards	
(http://www.iste.org/standards/nets-for-students.aspx) *After reading their descriptions, DELETE those that do not apply to this unit of study and indicate the substandard(s) that do apply to the unit.*	
K-U-D	
KNOW *Facts, formulas, information, vocabulary*	**DO** *Skills of the discipline, social skills, production skills, processes (usually verbs/verb phrases)* *Hint: Use the standards!*
Counting Principles: • one to one correspondence • cardinality (last number counted represents the number of objects) • each successive number name refers to a quantity that is one larger • the configuration of objects does not change the number of objects • numerals 0-20 • number • relationship between numbers and quantities • greater than, less than and equal to • foundations for place value 11-19 • teen numbers are composed of ten ones and some further ones	• write (numerals 0-20) • count (any number of objects 0-20) • connect (counting to cardinality - answer "How Many?") • count (each object with one and only one number name and vice versa) • match and count (to determine greater than, less than or equal to (objects in two groups)) • compare (two numbers between 1 and 10 presented as written numerals) • compose and decompose (numbers 11-19 using objects or drawings) • write (equations for each composition or decomposition (11-19)
UNDERSTAND *Big ideas, generalizations, principles, concepts, ideas that transfer across situations*	
Students will understand **that** • Students will understand that there is a precise way to read and write numerals to show the amount of tens and ones it represents. • Students will understand that numbers and counting help us figure out "How Many?" and compare quantities. • Students will understand that there is a system and rules for how to count accurately	

Unit Assessment/Performance Task	DOK
In this task, students will be using counting principles to count the candies in three bags and record information about the number of items in the bag. Students will tell how many groups of ten and extra ones are in each bag, writing the total number of items in the bag, write a number that is one more and one less than the total number of items. Students will then compare the amounts in each bag to tell which bag has the most and which has the least.	

Vocabulary
Academic Vocabulary **Comparing** - Differentiating between sets, in terms of same, greater and less than **Count** – Referring to the quantity of a number in a set **Counting** – The process used to determine "how many?" **Decompose** – To break a number into smaller parts; there are multiple ways to decompose the same number **Equal** – Identical in size, quantity or value (same) **Fewer** – Of a lesser quantity **Greater than** – (more) of higher value, or bigger quantity **How many** – Referring to a specific quantity represented by a number **Less** – Smaller amount **Less than** – Smaller in size, quantity or value **Matching** – Bringing together counterparts which are equal to or close in likeness (one is exactly like another)

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More – Greater than, larger amount

Numbers – A value that represents a particular quantity used in counting

Numerals – The written symbol that corresponds to a number/quantity
One to One Correspondence: 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

One to one correspondence – The act of pointing/counting where each object is touched once and only once

Same – Identical in size, quantity or value (equal)

Set – A group, collection or pair

Sort – Divide (objects) into groups which can be defined by attributes or specific categories

Teens –a ten and some ones

Zero – A number/numeral representing none or nothing

Interdisciplinary Connections

Social Studies: Sorting and graphing favorite holidays or family traditions.

Technology: See supplemental material and resources below.

Literacy: Students can develop their own number books using teen numbers.

Suggested Formative Assessment Practices/Processes

If you choose to identify formative assessment practices/processes here (in addition to in lesson plans), make them specific to this unit of study.

Many of the above ideas for lessons/activities can be used as a formative assessment.

Grade/Subject	Kindergarten Math
Unit Title	**Unit 4**: Measuring and Analyzing Data
Overview of Unit	In this unit students will describe measureable attributes of objects, such as length or weight, directly compare two objects with a measureable attribute in common, to see which object has “more of”/”less of” the attribute, describe the difference, and classify objects into given categories.
Pacing	3 weeks

Essential Questions	
• What does it mean to measure something? • In what ways can I measure an object? • Is there more than one way to measure an object?	
Core Content Standards	**Explanations and Examples** (Developed by Arizona DOE)
K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	In order to describe attributes such as length and weight, students must have many opportunities to informally explore these attributes. Students should compare objects verbally and then focus on specific attributes when making verbal comparisons for *K.MD.2*. They may identify measurable attributes such as length, width, height, and weight. For example, when describing a soda can, a student may talk about how tall, how wide, how heavy, or how much liquid can fit inside. These are all measurable attributes. Non-measurable attributes include: words on the object, colors, pictures, etc. An interactive whiteboard or document camera may be used to model objects with measurable attributes.
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.	When making direct comparisons for length, students must attend to the “starting point” of each object. For example, the ends need to be lined up at the same point, or students need to compensate when the starting points are not lined up (conservation of length includes understanding that if an object is moved, its length does not change; an important concept when comparing the lengths of two objects).

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	Language plays an important role in this standard as students describe the similarities and differences of measurable attributes of objects (e.g., shorter than, taller than, lighter than, the same as, etc.). An interactive whiteboard or document camera may be used to compare objects with measurable attributes.
K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	Possible objects to sort include buttons, shells, shapes, beans, etc. After sorting and counting, it is important for students to: • explain how they sorted the objects; • label each set with a category; • answer a variety of counting questions that ask, "How many …"; and compare sorted groups using words such as, "most", "least", "alike" and "different".
Standards for Mathematical Practice	**Explanations and Examples**
11. Make sense of problems and persevere in solving them 12. Reason abstractly and quantitatively 13. Construct viable arguments and critique the reasoning of others 14. Model with mathematics 15. Use appropriate tools strategically 16. Attend to precision 17. Look for and make use of structure 18. Look for and express regularity in repeated reasoning	1. Students will begin to explain to themselves and others how they identified like and unlike attributes while comparing two objects. 2. Students begin to use diagrams or charts while expressing quantitative ideas for describing lengths, weights and sizes of similar objects. 3. Students will clearly express, explain, organize and consolidate their math thinking using both verbal and written representations to identify attributes, classify objects, and describe differences. 4. Students will begin to compare similar objects in multiple ways such as using words, pictures, and numbers to describe length, weight or size. 5. Students will explore the use of tools (e.g., cubes for measuring, balance scale for weighing) to describe differences in attributes such as length, weight, or size. 6. Students will express their ideas for classifying objects by using descriptive vocabulary words accurately and clearly. 7. Students will look for patterns and structures in measurements while building onto cube units to compare and show difference in lengths. 8. Students begin to notice repetitive actions in comparing attributes (long and longer, heavy and heavier) such as how adding cube units extends the length or adding more cubes increases weight.

ISTE Standards	
(http://www.iste.org/standards/nets-for-students.aspx) *After reading their descriptions, DELETE those that do not apply to this unit of study and indicate the substandard(s) that do apply to the unit.*	
K-U-D	
KNOW *Facts, formulas, information, vocabulary*	**DO** *Skills of the discipline, social skills, production skills, processes (usually verbs/verb phrases)* *Hint: Use the standards!*
• Terms related to measurement such as length, height, weight, capacity, more, and less. • Different ways to sort objects by attributes • A set is the group of objects that have been sorted	• Identify attributes • Explain why we measure things • Compare and order two (2) objects relating to length, height, weight, capacity, and size. • Select appropriate units to measure attributes • Compare attributes and produce a comparison called a measure • Classify objects according to like/different attributes • Count the number of objects in a category • Organize the categories according to how many are in the set • Record information in an organized manner
UNDERSTAND *Big ideas, generalizations, principles, concepts, ideas that transfer across situations*	
Students will understand that: • Attributes can be compared • Comparing length, weight, capacity, and height of objects is important • Objects can be classified into categories • The number of objects in a category is called a set • Information can be organized and recorded	

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Unit Assessment/Performance Task	DOK
For this task, students will be asked for their expertise with describing objects and sizes and weights of things, to help prepare items for a winter party. Students will sort objects and compare objects using different attributes relating to size, length, weight and capacity in order to answer questions about the preparation of items for a party. Students will be expected to explain their reasoning for choices made in order to demonstrate their understanding of measurement concepts.	

Vocabulary

Academic Vocabulary
attribute
category
compare
height
length
less
measure
more
sort
weight

Interdisciplinary Connections

Science: Students can measure various aspect of weather in a unit on winter weather or weather in general. Students can conduct experiments or observations on different science topics and record data in a science journal, measuring growth or change.

Art: Students can create pictures using various sized shapes or lines to create objects, animals, etc. Students can be challenged to draw a shape/object that is longer, wider, shorter, thinner, etc. than model shown.

Suggested Formative Assessment Practices/Processes

If you choose to identify formative assessment practices/processes here (in addition to in lesson plans), make them specific to this unit of study.

The link below is to 4 informal assessment sheets on measurement.

unit 4 assess0001.pdf

Grade/Subject	Kindergarten Math
Unit Title	**Unit 5:** Learning to Add and Subtract Within 5
Overview of Unit	Students will develop an understanding that addition is putting together and adding to; and subtraction as taking apart and taking from. Fluency with +/- facts within 5 will be focused on.
Pacing	6 weeks

Essential Questions (and Corresponding Big Ideas)	
Essential Questions (Corresponding Big Idea) How can I find a total when I put two quantities together? How can I find what is left over when I take away one quantity from another? How can I represent and solve problems using objects, pictures, words and numbers?	
Core Content Standards	**Explanations and Examples** (Developed by Arizona DOE)
K.OA.1. - Represent addition and subtraction with objects, fingers, mental images, drawings*, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	Using addition and subtraction in a word problem context allows students to develop their understanding of what it means to add and subtract. Students should use objects, fingers, mental images, drawing, sounds, acting out situations and verbal explanations in order to develop the concepts of addition and subtraction. Then, they should be introduced to writing expressions and equations using appropriate terminology and symbols which include "+," "–," and "=". * **Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)**
K.OA.2 - Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	Using a word problem context allows students to develop their understanding about what it means to add and subtract. Addition is putting together and adding to. Subtraction is taking apart and taking from. Kindergarteners develop the concept of addition/subtraction by modeling the actions in word problem using objects, fingers, mental images, drawings, sounds, acting out situations, and/or verbal explanations. Students may use different

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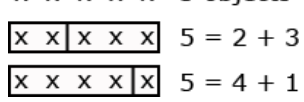
	representations based on their experiences, preferences, etc. They may connect their conceptual representations of the situation using symbols, expressions, and/or equations. Students should experience the following addition and subtraction problem types. • Add To word problems, such as, "Mia had 3 apples. Her friend gave her 2 more. How many does she have now?" • A student's "think aloud" of this problem might be, "I know that Mia has some apples and she's getting some more. So she's going to end up with more apples than she started with." • Take From problems such as: ▪ José had 8 markers and he gave 2 away. How many does he have now? When modeled, a student would begin with 8 objects and remove two to get the result. • Put Together/Take Apart problems with Total Unknown gives students opportunities to work with addition in another context such as: ▪ There are 2 red apples on the counter and 3 green apples on the counter. How many apples are on the counter? • Solving Put Together/Take Apart problems with Both Addends Unknown provides students with experiences with finding all the decompositions of a number and investigating the patterns involved. ▪ There are 10 apples on the counter. Some are red and some are green. How many apples could be green? How many apples could be red?

K.OA.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).	This standard focuses on number pairs, which add to a specified total, 1-10. These number pairs may be examined either in or out of context. Students may use objects such as cubes, two-color counters, square tiles, etc. to show different number pairs for a given number. For example, for the number 5, students may split a set of 5 objects into 1 and 4, 2 and 3, etc. Students may also use drawings to show different number pairs for a given number. For example, students may draw 5 objects, showing how to decompose in several ways.  Sample unit sequence: • A contextual problem (word problem) is presented to the students such as, “Mia goes to Nan’s house. Nan tells her she may have 5 pieces of fruit to take home. There are lots of apples and bananas. How many of each can she take?” • Students find related number pairs using objects (such as cubes or two-color counters), drawings, and/or equations. Students may use different representations based on their experiences, preferences, etc. • Students may write equations that equal 5 such as: 5=4+1 3+2=5 2+3=4+1 This is a good opportunity for students to systematically list all the possible number pairs for a given number. For example, all the number pairs for 5 could be listed as 0+5, 1+4, 2+3, 3+2, 4+1, and 5+0. Students should describe the pattern that they see in the addends, e.g., each number is one less or one more than the previous addend.
K.OA.5 Fluently add and subtract within 5.	This standard focuses on students being able to add and subtract numbers within 5. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them

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	appropriately, and skill in performing them flexibly, accurately, and efficiently. Strategies students may use to attain fluency include: • Counting on (e.g., for 3+2, students will state, "3," and then count on two more, "4, 5," and state the solution is "5") • Counting back (e.g., for 4-3, students will state, "4," and then count back three, "3, 2, 1" and state the solution is "1") • Counting up to subtract (e.g., for 5-3, students will say, "3," and then count up until they get to 5, keeping track of how many they counted up, stating that the solution is "2") • Using doubles (e.g., for 2+3, students may say, "I know that 2+2 is 4, and 1 more is 5") • Using commutative property (e.g., students may say, "I know that 2+1=3, so 1+2=3") • Using fact families (e.g., students may say, "I know that 2+3=5, so 5-3=2")
Standards for Mathematical Practice	**Explanations and Examples**
19. Make sense of problems and persevere in solving them	**1**. Students will use concrete objects or pictures to help them conceptualize and solve problems, like answering "how many?" or "how many more/less?" They may check their thinking by asking themselves, "Does this make sense?" or they may try another strategy.
20. Reason abstractly and quantitatively	**2**. Students begin to recognize that a number represents a specific quantity. Then, they connect the quantity to written symbols. Quantitative reasoning entails creating representation of a problem while attending to the meaning of the quantity.
21. Construct viable arguments and critique the reasoning of others	**3.** Younger students construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They also begin to develop their mathematical communication skills as they participate in mathematical discussions involving questions like —How did you get that? and —Why is that true? They explain their thinking to others and respond to others' thinking.
22. Model with mathematics	**4**. Students experiment with representing problem

	situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, etc. Students need opportunities to connect the different representations and explain connections. They should be able to use all of these representations as needed.
23. Use appropriate tools strategically	**5**. Students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, kindergarteners may decide that it might be advantageous to use linking cubes to represent two quantities and then compare the two representatives side-by-side.
24. Attend to precision	**6**. As kindergarteners begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning.
25. Look for and make use of structure	**7**. Students recognize the pattern that exists between number relationships, recognizing that "3 and 2 is 5 which is the same as 2 and 3 is 5" .
26. Look for and express regularity in repeated reasoning	**8**. In early grades, students notice repetitive actions in counting and computation, etc. For example they may notice that the next number in a counting sequence is one more.

ISTE Standards
(http://www.iste.org/standards/nets-for-students.aspx) *After reading their descriptions, DELETE those that do not apply to this unit of study and indicate the substandard(s) that do apply to the unit.*

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K-U-D	
KNOW *Facts, formulas, information, vocabulary*	**DO** *Skills of the discipline, social skills, production skills, processes (usually verbs/verb phrases)* *Hint: Use the standards!*
• The rote counting sequence by ones • That you can start counting from any number • Numerals are the symbols we read and write to communicate "how many" quantities. (numbers) • There are different ways to show addition and subtraction solutions • Objects or drawings can be used to solve word problems • Quantities represented by numerals can be composed and decomposed into part - whole relationships	• Count forward beginning from a given number within the known sequence K.CC.2 • Write numbers from 0-10 K.CC.3 • Represent the number of objects with a written numeral from 0-10 K.CC.3 • Count to answer how many K.CC.5 • Represent addition and subtraction with objects, fingers, mental images, acting out scenarios, verbal explanation, expression or equation K.OA.1 • Solve addition and subtraction word problems and add and subtract within 5 using objects or drawings to represent the problem. K.OA.2 • Decompose numbers less than or equal to 5 into pairs in more than 1 way by using objects, drawings or equation K.OA.3 • Fluently add and subtract within 5 K.OA.5
UNDERSTAND *Big ideas, generalizations, principles, concepts, ideas that transfer across situations*	
Students will understand **that** • The number of objects is the same regardless of their arrangement or the order in which they were counted. • Addition means putting together or adding to • Subtraction means taking apart or taking from • Numbers can be decomposed in multiple ways K.OA.3	

Unit Assessment/Performance Task	DOK
For this task, students will be asked to demonstrate their knowledge of decomposing facts to 5, solving story problems with addition and subtraction to 5 and demonstrate fact fluency with addition and subtraction facts to 5.	

Vocabulary
Academic Vocabulary **Adding -** The act of putting together and adding to **Addition –** Putting together and adding to **And –** Plus (see definition below) **Comparing** - Differentiating between sets, in terms of same, greater and less than **Count** – Referring to the quantity of a number in a set **Counting** – The process used to determine "how many?" **Decompose** – To break a number into smaller parts; there are multiple ways to decompose the same number **Difference** – The amount that one quantity is greater or less than another **Equal** – Identical in size, quantity or value (same) **Equation –** a statement that shows the equality of two equations **Fewer** – Of a lesser quantity **Greater** – Bigger **How many** – Referring to a specific quantity represented by a number **Is –** Equals (see definition above) **Left –** a part or portion that remains (obtained when subtracting two or more quantities) **Less** – Smaller amount

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Minus - the act of taking apart or taking from

More – Greater than, larger amount

Numbers – A value that represents a particular quantity used in counting

Numerals – The written symbol that corresponds to a number/quantity
One to One Correspondence: 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

Number Sentence – and equation or inequality expressed using common symbols and numbers

One to one correspondence – The act of pointing/counting where each object is touched once and only once

Pair- Two identical, similar, or corresponding things that are matched together

Part-Part-Whole – two smaller portions of the quantity that when put together equal the total quantity

Plus - The act of putting together and adding to

Solve – The answer or explanation

Subtracting – the act of taking apart or taking from

Subtraction – taking apart or taking from

Sum - The whole amount, quantity, or number (obtained when adding two or more quantities)

Take Away – to remove from or subtract

Total - a quantity obtained by the addition of a group of numbers (the whole amount)

Unknown – unidentified quantity

Interdisciplinary Connections

Literacy: Students will work on writing to create their own story problems to be solves. These can be turned into short student books.

Science/Social Studies: Students can create story problems related to the theme or topic being studied. For example, problems could be related to raindrops if studying weather or bears if learning about hibernation.

Suggested Formative Assessment Practices/Processes
Decomposing Exit Slips http://www.teacherspayteachers.com/Product/Kindergarten-Exit-Tickets-FREEBIE-Decomposing-Numbers-1306614    doc03713020141124095702.pdf

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Grade/Subject	Kindergarten Math
Unit Title	**Unit 6:** Exploring Addition/Subtraction to 10
Overview of Unit	Students will develop an understanding that addition is putting together and adding to; and subtraction as taking apart and taking from. Fluency with facts to 5 will continue to be a focus.
Pacing	6 weeks

Essential Questions (and Corresponding Big Ideas)	
• How can I use different combinations of numbers to represent the same quantity? • How can strategies help us solve problems? • What is the difference between addition and subtraction?	
Core Content Standards	**Explanations and Examples** (Developed by Arizona DOE)
K.OA.1. - Represent addition and subtraction with objects, fingers, mental images, drawings*, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. * **Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)**	Using addition and subtraction in a word problem context allows students to develop their understanding of what it means to add and subtract. Students should use objects, fingers, mental images, drawing, sounds, acting out situations and verbal explanations in order to develop the concepts of addition and subtraction. Then, they should be introduced to writing expressions and equations using appropriate terminology and symbols which include "+," "–," and "=". • Addition terminology: add, join, put together, plus, combine, total • Subtraction terminology: minus, take away, separate, difference, compare, subtract Students may use document cameras or interactive whiteboards to represent the concept of addition or subtraction. This gives them the opportunity to communicate their thinking.
K.OA.2 - Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	Using a word problem context enables students to deepen their understanding about what it means to add and subtract. Addition is putting together and adding to. Subtraction is taking apart and taking from. Kindergarteners develop the concepts of addition/subtraction by modeling the actions in word problems using objects, fingers, mental images,

	drawings, sounds, acting out situations, and/or verbal explanations. Students may use different representations based on their experiences, preferences, etc. They may connect their conceptual representations of the situation using symbols, expressions, and/or equations. Students should experience the following addition and subtraction problem types: • Add To problems, such as, "Mia had 3 apples. Her friend gave her 2 more. How many does she have now?" ▪ A student's "think aloud" of this problem might be, "I know that Mia has some apples and she's getting some more. So she's going to end up with more apples than she started with." • Take From problems such as: ▪ José had 8 markers and he gave 2 away. How many does he have now? When modeled, a student would begin with 8 objects and remove two to get the result. • Put Together/Take Apart problems with Total Unknown gives students opportunities to work with addition in another context such as: ▪ There are 2 red apples on the counter and 3 green apples on the counter. How many apples are on the counter? • Solving Put Together/Take Apart problems with Both Addends Unknown provides students with experiences with finding all the decompositions of a number and investigating the patterns involved. There are 10 apples on the counter. Some are red and some are green. How many apples could be green? How many apples could be red?
K.OA.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).	This standard focuses on number pairs, which add to a specified total, 1-10. These number pairs may be examined either in or out of context. Students may use objects such as cubes, two-color counters, square tiles, etc. to show different number pairs for a given number. For example, for the number 5, students may split a set of 5 objects into 1 and 4, 2 and 3, etc.

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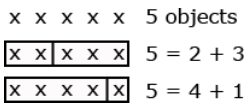
	Students may also use drawings to show different number pairs for a given number. For example, students may draw 5 objects, showing how to decompose in several ways.  given number. For example, students may draw 5 objects, showing how to decompose in several ways. Sample unit sequence: • A contextual problem (word problem) is presented to the students such as, "Mia goes to Nan's house. Nan tells her she may have 5 pieces of fruit to take home. There are lots of apples and bananas. How many of each might she take?" • Students find related number pairs using objects (such as cubes or two-color counters), drawings, and/or equations. Students may use different representations based on their experiences, preferences, etc. • Students may write equations that equal 5 such as: 5=4+1 3+2=5 2+3=4+1 This is a good opportunity for students to systematically list all the possible number pairs for a given number. For example, all the number pairs for 5 could be listed as 0+5, 1+4, 2+3, 3+2, 4+1, and 5+0. Students should describe the pattern that they see in the addends, e.g., each number is one less or one more than the previous addend.
K.OA.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.	The number pairs that total ten are foundational for students' ability to work fluently within base-ten numbers and operations. Different models, such as ten-frames, cubes, two-color counters, etc., assist students in visualizing these number pairs for ten. Example 1: Students place three objects on a ten frame and then determine how many more are needed to "make a ten." Students may use electronic versions of ten frames to develop this skill. (http://illuminations.nctm.org/ActivityDetail.aspx?ID=75)

	Example 2: The student snaps ten cubes together to make a "train." • Student breaks the "train" into two parts. S/he counts how many are in each part and record the associated equation (10 = ___ + ___). • Student breaks the "train into two parts. S/he counts how many are in one part and determines how many are in the other part without directly counting that part. Then s/he records the associated equation (if the counted part has 4 cubes, the equation would be 10 = 4 + ___). Examples Continued: • Student covers up part of the train, without counting the covered part. S/he counts the cubes that are showing and determines how many are covered up. Then s/he records the associated equation (if the counted part has 7 cubes, the equation would be 10 = 7 + ___). Example 3: The student tosses ten two-color counters on the table and records how many of each color are facing up.
K.OA.5. Fluently add and subtract within 5.	This standard focuses on students being able to add and subtract numbers within 5. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Strategies students may use to attain fluency include: • Counting on (e.g., for 3+2, students will state, "3," and then count on two more, "4, 5," and state the solution is "5") • Counting back (e.g., for 4-3, students will state, "4," and then count back three, "3, 2, 1" and state the solution is "1") • Counting up to subtract (e.g., for 5-3, students will say, "3," and then count up until they get to 5, keeping track of how many they counted up, stating that the solution is "2") • Using doubles (e.g., for 2+3, students may say, "I know that 2+2 is 4, and 1 more is 5") • Using commutative property (e.g., students may say, "I know that 2+1=3, so 1+2=3") • Using fact families (e.g., students may say, "I know that 2+3=5, so 5-3=2")

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	Students may use electronic versions of five frames to develop fluency of these facts
Standards for Mathematical Practice	**Explanations and Examples**
27. Make sense of problems and persevere in solving them	**1**. Students will use concrete objects or pictures to help them conceptualize and solve problems, like answering "how many?" or "how many more/less?" They may check their thinking by asking themselves, "Does this make sense?" or they may try another strategy.
28. Reason abstractly and quantitatively	**2**. Students begin to recognize that a number represents a specific quantity. Then, they connect the quantity to written symbols. Quantitative reasoning entails creating representation of a problem while attending to the meaning of the quantity
29. Construct viable arguments and critique the reasoning of others	**3.** Younger students construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They also begin to develop their mathematical communication skills as they participate in mathematical discussions involving questions like —How did you get that? and —Why is that true? They explain their thinking to others and respond to others' thinking.
30. Model with mathematics	**4**. Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, etc. Students need opportunities to connect the different representations and explain connections. They should be able to use all of these representations as needed.
31. Use appropriate tools strategically	**5**. Students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, kindergarteners may decide that it might be advantageous to use linking cubes to represent two quantities and then compare the two representatives side-by-side.
32. Attend to precision	**6**. As kindergarteners begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning.
33. Look for and make use of structure	**7**. Students recognize the pattern that exists between number relationships, recognizing that "3 and 2 is 5

34. Look for and express regularity in repeated reasoning	which is the same as 2 and 3 is 5" **8**. In early grades, students notice repetitive actions in counting and computation, etc. For example they may notice that the next number in a counting sequence is one more.

ISTE Standards

(http://www.iste.org/standards/nets-for-students.aspx)
After reading their descriptions, DELETE those that do not apply to this unit of study and indicate the substandard(s) that do apply to the unit.

K-U-D

KNOW *Facts, formulas, information, vocabulary*	**DO** *Skills of the discipline, social skills, production skills, processes (usually verbs/verb phrases)* *Hint: Use the standards!*
• The rote counting sequence by ones • That you can start counting from any number • Numerals are the symbols we read and write to communicate "how many". (numbers) • There are different ways to show addition and subtraction solutions • Objects or drawings can be used to solve word problems • Quantities represented by numerals can be composed and decomposed into part - whole relationships	• Count forward beginning from a given number within the known sequence K.CC.2 • Write numbers from 0-10 K.CC.3 • Represent the number of objects with a written numeral from 0-10 K.CC.3 • Count to answer how many K.CC.5 • Represent addition and subtraction with objects, fingers, mental images, acting out scenarios, verbal explanation, expression or equation K.OA.1 • Solve addition and subtraction word problems and add and subtract within 10 using objects or drawings to represent the problem. K.OA.2 • Decompose numbers less than or equal to 10 into pairs in more than 1 way by using objects, drawings or equation K.OA.3 • Fluently add and subtract within 5 K.OA.5

UNDERSTAND
Big ideas, generalizations, principles, concepts, ideas that transfer across situations

Students will understand **that:**

- The number of objects is the same regardless of their arrangement or the order in which they were counted.
- Addition means putting together or adding to
- Subtraction means taking apart or taking from

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- Numbers can be decomposed in multiple ways K.OA.3

Unit Assessment/Performance Task	DOK
Students will demonstrate their knowledge of decomposing numbers within 10, problem solving a multi-step story problem in order to make 10, and fact fluency with addition and subtraction facts using numbers to 5.	

Vocabulary

Academic Vocabulary

Adding - The act of putting together or adding to
Addition – Putting together or adding to
And – Plus (see definition below)
Comparing - Differentiating between sets, in terms of same, greater and less than

Count – Referring to the quantity of a number in a set
Counting – The process used to determine "how many?"
Decompose – To break a number into smaller parts; there are multiple ways to decompose the same number
Difference – The amount that one quantity is greater or less than another
Equal – Identical in size, quantity or value (same)
Equation – a statement that shows the equality of two equations
Fewer – Of a lesser quantity
Greater – Bigger
How many – Referring to a specific quantity represented by a number
Is – Equals (see definition above)
Left – a part or portion that remains (obtained when subtracting two or more quantities)
Less – Smaller amount
Minus - the act of taking apart or taking from
More – Greater than, larger amount
Number – A value that represents a particular quantity used in counting
Numeral – The written symbol that corresponds to a number/quantity
Number Sentence – and equation or inequality expressed using common symbols and numbers
One to one correspondence – The act of pointing/counting where each object is touched once and only once
Pair- Two identical, similar, or corresponding things that are matched together
Part-Part-Whole – Two smaller portions of the quantity that when put together equal the total quantity
Plus - The act of putting together and adding to
Solve – To find the answer or explanation

Subtracting – the act of taking apart or taking from
Subtraction – taking apart or taking from
Sum - The whole amount, quantity, or number (obtained when adding two or more quantities)
Take Away – to remove from or subtract
Total - a quantity obtained by the addition of a group of numbers (the whole amount)
Unknown – unidentified quantity

Interdisciplinary Connections

Literacy: Students will write and read story problems that they and their classmates create. These can be turned into small student written books.

Science/Social Studies: The story problems created should relate to current topics of study in these areas.

Tools/Manipulatives

- Cubes
- Ten frames
- 2 sided counters
- Dot cards
- Number cards
- Bingo Markers
- Unifix cubes
- Bears
- Dice
- Marbles
- Beans
- Number line (to 10)
- Dominoe

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Suggested Formative Assessment Practices/Processes
Math journals can be used with story problems for addition and subtraction problems. The files below contain sheets that can be used as a quick assessment.  doc03712920141124095643.pdf    doc03712820141124095628.pdf