<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rote counting and understanding amount counted</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Writing numbers and counting &quot;How many?&quot;</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Classifying and counting objects</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Identifying and describing shapes</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Rote counting to 50 and representing up to 20 objects</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Comparing numbers</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Describing and comparing measurable attributes</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Classifying two- and three-dimensional shapes</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Modeling and composing shapes</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>Understanding and representing addition within 5</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Adding and subtracting within 5</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>Understanding addition and subtraction within 10</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>Composing ten</td>
<td>10</td>
</tr>
<tr>
<td>14</td>
<td>Counting to 100 by ones and tens</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>Developing foundations of place value</td>
<td>11</td>
</tr>
<tr>
<td>16</td>
<td>Solving problems and demonstrating fluency within 5</td>
<td>10</td>
</tr>
</tbody>
</table>
Mathematics » Kindergarten » Introduction

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 number than to other topics.

1. Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as 5 + 2 = 7 and 7 – 2 = 5. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

2. Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Fluency Expectations or Examples of Culminating Standards

K.OA.A.5
Fluently add and subtract within 5.
Kindergarten Math

Sequenced Units for the Common Core State Standards in Mathematics
Kindergarten

In Kindergarten students will concentrate on number. They will use numbers to represent quantities and to solve quantitative problems. Through the study of numbers students will develop an understanding of cardinality, counting strategies, and strategies for joining and separating within 10 and to make ten. Students will use positional words, descriptive words, and mathematical terms to talk about their physical world.

The Kindergarten year outlined in this document begins with developing strategies for counting by ones. In the first unit, students count to 20. In subsequent units, students build on this understanding to expand counting to 50 and 100. By the end of Kindergarten, students count to 100 by ones and tens. The concept of number builds as the year proceeds. Students will be able to read, write and represent quantities to 20. They compare quantities and numerals up to 10. Students in Kindergarten use counting strategies to add and subtract within ten. As Kindergarten students develop their ability to compose and decompose numbers, they learn to fluently add and subtract within 5. Another major focus in Kindergarten is using both informal and geometric language to describe shapes and space. Geometric concepts and spatial reasoning are developed throughout the Kindergarten year as students progress from informal conversations and activities to more formal classifications and compositions of shapes.

This document reflects the Dana Institute’s current thinking related to the intent of the Common Core State Standards for Mathematics (CCSSM) and assumes 180 days for instruction, divided among 16 units. The number of days suggested for each unit assumes 45-minute class periods and is included to convey how instructional time should be balanced across the year. The units are sequenced in a way that we believe best develops and connects the mathematical content described in the CCSSM; however, the order of the standards included in any unit does not imply a sequence of content within that unit. Some standards may be revisited several times during the course; others may be only partially addressed in different units, depending on the focus of the unit. Strikethroughs in the text of the standards are used in some cases in an attempt to convey that focus, and comments are included throughout the document to clarify and provide additional background for each unit.

Throughout Kindergarten, students should continue to develop proficiency with the Common Core's eight Standards for Mathematical Practice:

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.

These practices should become the natural way in which students come to understand and do mathematics. While, depending on the content to be understood or on the problem to be solved, any practice might be brought to bear, some practices may prove more useful than others. Opportunities for highlighting certain practices are indicated in different units in this document, but this highlighting should not be interpreted to mean that other practices should be neglected in those units.

When using this document to help in planning your district’s instructional program, you will also need to refer to the CCSSM document, relevant progressions documents for the CCSSM, and the appropriate assessment consortium framework.
<table>
<thead>
<tr>
<th>Learning Targets:</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>K.CC.1.1 Count to 10 by ones.</td>
<td>K.CC.A.1 is developed throughout the year. The target for this unit is counting to 20 by ones, but this number should not be a limit. It is crucial that students know the number names and count sequence and incorporate counting in daily activities in the classroom.</td>
</tr>
<tr>
<td>K.CC.1.2 Count to 20 by ones.</td>
<td>The target of K.CC.B.4a in this unit is for students to count up to 10 objects accurately. Students need time to count small quantities to develop one-to-one correspondence and cardinality.</td>
</tr>
<tr>
<td>K.CC.1.3 Count to 50 from ones.</td>
<td></td>
</tr>
<tr>
<td>K.CC.1.4 Count to 75 from ones.</td>
<td></td>
</tr>
<tr>
<td>K.CC.1.5 Count to 100 from ones.</td>
<td></td>
</tr>
<tr>
<td>K.CC.1.6 Count to 100 by tens.</td>
<td></td>
</tr>
<tr>
<td>K.CC.4a.1 Point to objects as I count aloud and say the correct number of objects (0-10).</td>
<td>K.CC.B.4b is repeated in full in unit 2 to establish conservation of number.</td>
</tr>
<tr>
<td>K.CC.4a.2 Point to objects as I count aloud and say the correct number of objects (0-20).</td>
<td></td>
</tr>
</tbody>
</table>

Common Core State Standards for Mathematical Content

Counting and Cardinality—K.CC

A. Know number names and the count sequence.

1. Count to 100 by ones and by tens.

B. Count to tell the number of objects.

4. Understand the relationship between numbers and quantities; connect counting to cardinality.

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.

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.

**Common Core State Standards for Mathematical Practice**

2. Reason abstractly and quantitatively.

| Students are working to make the connection between the (verbal) number names and quantities (MP.2). |   |   |
### Vocabulary
- One
- Two
- Three
- Four
- Five
- Six
- Seven
- Eight
- Nine
- Ten
- Eleven
- Twelve
- Thirteen
- Fourteen
- Fifteen
- Sixteen
- Seventeen
- Eighteen
- Nineteen
- Twenty

### Essential Questions
- How do I count to ten?
- How do I count to twenty?
- How do I use objects to show that I can count to ten? To twenty?

### Formative Assessment Strategies
- **Hand Signals:** Ask students to display a designated hand signal to indicate their understanding of a specific concept, principal, or process:
  - I understand______ and can explain it (e.g., thumbs up).
  - I do not yet understand_______ (e.g., thumbs down).
  - I'm not completely sure about_______ (e.g., wave hand).
- **Choral Response:** In response to a cue, all students respond verbally at the same time. Response can be either to answer a question or to repeat something the teacher has said.
- **Questioning:** Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.
**Unit 2: Writing numbers and counting "How many?"** Suggested number of days: 10

<table>
<thead>
<tr>
<th>I Can Statements: Bold Statements to be Mastered in this Unit</th>
<th>Notes/Comments</th>
<th>Unit Materials and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>K.CC.3.1 Write numbers 0-10 from memory.</td>
<td>The focus of <a href="http://www.azed.gov/azccrs/files/2013/11/kflipbookedited.pdf">K.CC.3</a> in this unit is for students to write the numerals 0-10. They will be writing numerals 11-20 in unit 8.</td>
<td></td>
</tr>
<tr>
<td>K.CC.3.2 Write numbers 0-20 from memory.</td>
<td><a href="http://www.azed.gov/azccrs/files/2013/11/kflipbookedited.pdf">K.CC.5</a> emphasize the practice of counting accurately when objects are organized in different arrangements. Students start by organizing up to 10 objects in a straight line. Other arrangements will be addressed in unit 3 and unit 7.</td>
<td></td>
</tr>
<tr>
<td>K.CC.3.3 Count a group of objects (0-10) and write the correct numeral.</td>
<td>Students attend to precision in both their explanations and particular strategies they use to count (<a href="http://www.azed.gov/azccrs/files/2013/11/kflipbookedited.pdf">MP.6</a>).</td>
<td></td>
</tr>
<tr>
<td>K.CC.3.4 Count a group of objects (0-20) and write the correct numeral.</td>
<td></td>
<td>Bridges Kindergarten CCSS Math: <a href="http://catalog.mathlearningcenter.org/files/pdfs/8KSUPCCSS-B_1211w.pdf">http://catalog.mathlearningcenter.org/files/pdfs/8KSUPCCSS-B_1211w.pdf</a></td>
</tr>
<tr>
<td>K.CC.4b.1 Point, count objects and explain that the last number tells the number of objects.</td>
<td></td>
<td>Oregon City CCSS Resources: <a href="http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten">http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten</a></td>
</tr>
<tr>
<td>K.CC.4c.1 Understand that when I count in order, by ones, the next number means one more.</td>
<td></td>
<td>Yuureka CCSS Math Resources: <a href="http://www.yuureka.com/resources-1/common-core">http://www.yuureka.com/resources-1/common-core</a></td>
</tr>
<tr>
<td>K.CC.5.1 Count up to 10 items in an arranged order.</td>
<td></td>
<td>K-5 Teaching Resources: <a href="http://www.k-5mathteachingresources.com">www.k-5mathteachingresources.com</a></td>
</tr>
<tr>
<td>K.CC.5.2 Count up to 20 items in an arranged order.</td>
<td></td>
<td>K-5 CCSS Homework Resource: <a href="http://www.mathworksheetsland.com">www.mathworksheetsland.com</a></td>
</tr>
<tr>
<td>K.CC.5.3 Count up to 10 scattered items.</td>
<td></td>
<td>Kindergarten CCSS Interactive Math lessons: <a href="http://www.ixl.com/math/kindergarten">http://www.ixl.com/math/kindergarten</a></td>
</tr>
<tr>
<td>K.CC.5.4 Count out a specific number of items, when given a number from 1-20.</td>
<td></td>
<td><a href="http://www.abcya.com">www.abcya.com</a></td>
</tr>
<tr>
<td>Common Core State Standards for Mathematical Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Attend to precision.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common Core State Standards for Mathematical Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Attend to precision.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common Core State Standards for Mathematical Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counting and Cardinality—K.CC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Know number names and the count sequence.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Write numbers from 0 to 20.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Count to tell the number of objects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Understand the relationship between numbers and quantities; connect counting to cardinality.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Count to answer &quot;how many?&quot; 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</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unit Overview:
Extending their work with the counting sequence in the previous unit, students now write numerals and represent a number of objects. The focus of this unit is connecting written numerals to quantities, furthering students' understanding of one-to-one correspondence. They usually indicate their understanding of this one-to-one correspondence by pointing to the objects or moving them as they say the numbers, pairing each number name with one and only one object.
### Vocabulary
- Memory
- Count
- Written Numerals 1-10

### Essential Questions
- How do I write numbers 1-10?
- How do I count a group of objects and write the correct numeral?
- What objects can I use to point to and show I can count up to 10 accurately?
- Can I organize up to 10 objects by putting them in a straight line?
- How do you write a number that shows how many you have counted?

### Formative Assessment Strategies
- Anecdotal Records: Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.
- Student Conferences: Circulate while students are working on independent and group work and check for understanding. Adjust instruction as needed.
- Work sample completed and collected for teacher to assess students ability to write numbers.
### Unit Overview:
The focus of this unit is sorting and classifying objects into given categories (with up to 10 objects in each group) and using positional language to describe the objects. Students develop geometric concepts and spatial reasoning from experience describing (informally) the shape of objects and the relative positions of objects. Students need practice using their informal language to develop effective vocabulary and to develop geometrical perspectives. This context of classifying objects supports continued development of counting skills. In this unit, students continue counting within 10 and writing numerals 0-10 to represent quantities of objects in the various categories.

<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematical Content</th>
<th>Learning Targets</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Counting and Cardinality—K.CC</strong></td>
<td>K.CC.5.1 Count up to 10 items in an arranged order. K.CC.5.2 Count up to 20 items in an arranged order. K.CC.5.3 Count up to 10 scattered items. K.CC.5.4 Count out a specific number of items, when given a number from 1-20.</td>
<td>When addressing K.CC.B.5, it is important that children count accurately when objects are organized in different arrangements. They start by organizing up to 10 objects organized in a straight line or in a rectangular array. Other arrangements will be addressed unit 7.</td>
</tr>
<tr>
<td><strong>Measurement and Data—K.MD</strong></td>
<td>K.MD.3.1 Sort objects into groups by size, shape, color, etc. that are less than or equal to 10. K.MD.3.2 Compare objects by size, shape, color, etc. K.MD.3.3 Compare groups of objects using words like more/less/equal. K.MD.3.4 Sort objects by more than 1 attribute (size and shape, shape and color, color and size) K. MD.3.5 Classify a group of objects.</td>
<td></td>
</tr>
</tbody>
</table>

### Notes/Comments

### Unit Materials and Resources
- Oregon City CCSS Resources: [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten)
- K-5 Teaching Resources: [www.k-smathteachingresources.com](http://www.k-smathteachingresources.com)
- K-5 CCSS Homework Resource: [www.mathworksheetsland.com](http://www.mathworksheetsland.com)
- [www.abcya.com](http://www.abcya.com)
### Geometry—K.G

A. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

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.

### Common Core State Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Construct viable arguments and critique the reasoning of others.

### K.G.1 Identify and name squares, circles, rectangles, triangles, diamonds, hearts, ovals, and stars, rectangular prisms, cubes, cylinders, spheres, cones, and pyramids.

### K.G.1.2 Identify shapes in the environment.

### K.G.1.3 Identify the position of shapes in the environment using positional words such as: above, below, beside, in front of, behind, and next to.

In this unit K.G.A.1 calls for students to begin with familiar objects in their environment. Development of spatial reasoning is the focus of this unit. Students will describe objects using the formal names of the shapes in unit 5.

Students make sense of the problems by counting and recounting (MP.1) and then communicate this understanding by justifying their strategies and reasoning (MP.3).
### Vocabulary
- Shape
- Color
- Size
- Category
- Straight Line
- Rectangular Array
- Above
- Below
- Beside
- In Front Of
- Behind
- Next To

### Essential Questions
- What strategies can I use when given a number from 1-10 to count out that many objects?
- How do I name, recognize, and count up to 10 using objects or drawings?
- How can I sort up to 10 objects into groups by size, shape or color?
- How can I identify and name shapes?
- How can I find shapes in my environment?
- How can I describe the position of shapes in the environment using positional words such as: above, below, beside, in front of, behind, and next to.

### Formative Assessment Strategies
- **Choral Response:** In response to a cue, all students respond verbally at the same time. The response can be either to answer a question or to repeat something the teacher has said.
- **Anecdotal Records:** Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.
- **Pop Sickle Stick- Pop Quiz:** Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.
- **Questioning:** Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.
## Common Core State Standards for Mathematical Content

### Geometry—K.G

A. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

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.

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

B. Analyze, compare, create and compose shapes.

5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

### Learning Targets:

- **K.G.1.1** Identify and name squares, circles, rectangles, triangles, diamonds, hearts, ovals, and stars, rectangular prisms, cubes, cylinders, spheres, cones, and pyramids.
- **K.G.1.2** Identify shapes in the environment.
- **K.G.1.3** Identify the position of shapes in the environment using positional words such as: above, below, beside, in front of, behind, and next to.
- **K.G.2.1** Name and recognize shapes no matter the size, color, or position.
- **K.G.5.1** Make shapes using a variety of materials (e.g., play-dough, modeling clay, common objects, etc.)
- **K.G.5.2** Draw recognizable shapes.

### I Can Statements: Bold Statements to be Mastered in this Unit

- **K.G.B.5** will be revisited in unit 15 in which students will also be expected to draw shapes.

### Comments

- Mathematically proficient students look closely to discern a pattern or structure (MP.7) and have the ability to abstract a given situation (MP.2).

---

### Unit Materials and Resources

- www.abcya.com
- www.mathworksheetsland.com
- Oregon City CCSS Resources: [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten)
- K-S Teaching Resources: [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)
- K-5 CCSS Homework Resource: [www.mathworksheetsland.com](http://www.mathworksheetsland.com)
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Shapes</td>
<td>• How can I use positional words to describe 2D objects in my environment?</td>
</tr>
<tr>
<td>• Square</td>
<td>• How can I create and compose shapes?</td>
</tr>
<tr>
<td>• Circle</td>
<td>• What can I use to create shapes?</td>
</tr>
<tr>
<td>• Triangle</td>
<td>• Can I use different objects such as sticks or clay to create different shapes?</td>
</tr>
<tr>
<td>• Rectangle</td>
<td></td>
</tr>
<tr>
<td>• Cube</td>
<td></td>
</tr>
<tr>
<td>• Cone</td>
<td></td>
</tr>
<tr>
<td>• Cylinder</td>
<td></td>
</tr>
<tr>
<td>• Sphere</td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- **Hand Signals**: Ask students to display a designated hand signal to indicate their understanding of a specific concept, principal, or process: - I understand _______ and can explain it (e.g., thumbs up). - I do not yet understand _______ (e.g., thumbs down). - I'm not completely sure about _______ (e.g., wave hand).

- **Choral Response**: In response to a cue, all students respond verbally at the same time. The response can be either to answer a question or to repeat something the teacher has said.

- **Questioning**: Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.

- **Anecdotal Records**: Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.
### Unit 5: Rote counting to 50 and representing up to 20 objects

**Suggested number of days: 10**

<table>
<thead>
<tr>
<th>Learning Targets:</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>K.CC.1.1 Count to 10 by ones.</td>
<td>The target for K.CC.A.1 in this unit is rote counting to 50; however, this number should not be a limit.</td>
</tr>
<tr>
<td>K.CC.1.2 Count to 20 by ones.</td>
<td></td>
</tr>
<tr>
<td>K.CC.1.3 Count to 50 from ones.</td>
<td></td>
</tr>
<tr>
<td>K.CC.1.4 Count to 75 from ones. K.CC.1.5 Count to 100 from ones.</td>
<td></td>
</tr>
<tr>
<td>K.CC.1.6 Count to 100 by tens.</td>
<td></td>
</tr>
<tr>
<td>K.CC.2.1 Begin with a given number and count in order to 10.</td>
<td></td>
</tr>
<tr>
<td>K.CC.2.2 Begin with a given number and count in order to 20.</td>
<td></td>
</tr>
<tr>
<td>K.CC.2.3 Begin with a given number and count in order to 50.</td>
<td></td>
</tr>
<tr>
<td>K.CC.2.4 Begin with a given number and count in order to 100.</td>
<td></td>
</tr>
<tr>
<td>K.CC.3.1 Write numbers 0-10 from memory.</td>
<td></td>
</tr>
<tr>
<td>K.CC.3.2 Write numbers 0-20 from memory.</td>
<td></td>
</tr>
<tr>
<td>K.CC.3.3 Count a group of objects (0-10) and write the correct numeral.</td>
<td></td>
</tr>
<tr>
<td>K.CC.3.4 Count a group of objects (0-20) and write the correct numeral.</td>
<td></td>
</tr>
</tbody>
</table>

**Common Core State Standards for Mathematical Content**

**Counting and Cardinality—K.CC**

A. Know number names and the count sequence.

1. Count to 100 by ones and by tens.

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

3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

**Notes/Comments**

- **K.CC.3.4**
- **K.CC.3.2**
- **K.CC.2.4**
- **K.CC.2.2**
- **K.CC.2.1**
- **K.CC.1.6**
- **K.CC.1.5**
- **K.CC.1.4**
- **K.CC.1.3**
- **K.CC.1.2**
- **K.CC.1.1**

**Unit Materials and Resources**

- Oregon City CCSS Resources: [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten)
- K-5 Teaching Resources: [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)
- K-5 CCSS Homework Resource: [www.mathworksheetsland.com](http://www.mathworksheetsland.com)
- [www.abcya.com](http://www.abcya.com)

**Notes/Comments**

- **K.CC.3.4**
- **K.CC.3.2**
- **K.CC.2.4**
- **K.CC.2.2**
- **K.CC.2.1**
- **K.CC.1.6**
- **K.CC.1.5**
- **K.CC.1.4**
- **K.CC.1.3**
- **K.CC.1.2**
- **K.CC.1.1**

**Unit Overview:**

In this unit students extend the counting sequence to 50 and develop their ability to represent up to 20 objects both numerically and visually. This includes effectively counting objects in more difficult configurations—e.g. in a circle.

- **K.CC.3.4**
- **K.CC.3.2**
- **K.CC.2.4**
- **K.CC.2.2**
- **K.CC.2.1**
- **K.CC.1.6**
- **K.CC.1.5**
- **K.CC.1.4**
- **K.CC.1.3**
- **K.CC.1.2**
- **K.CC.1.1**

**Notes/Comments**

- **K.CC.3.4**
- **K.CC.3.2**
- **K.CC.2.4**
- **K.CC.2.2**
- **K.CC.2.1**
- **K.CC.1.6**
- **K.CC.1.5**
- **K.CC.1.4**
- **K.CC.1.3**
- **K.CC.1.2**
- **K.CC.1.1**

**Unit Materials and Resources**

- Oregon City CCSS Resources: [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten)
- K-5 Teaching Resources: [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)
- K-5 CCSS Homework Resource: [www.mathworksheetsland.com](http://www.mathworksheetsland.com)
- [www.abcya.com](http://www.abcya.com)
B. Count to tell the number of objects.
   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.

<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematical Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Attend to precision.</td>
</tr>
<tr>
<td>7. Look for and make use of structure.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K.CC.5.1 Count up to 10 items in an arranged order.</th>
</tr>
</thead>
<tbody>
<tr>
<td>K.CC.5.2 Count up to 20 items in an arranged order.</td>
</tr>
<tr>
<td>K.CC.5.3 Count up to 10 scattered items.</td>
</tr>
<tr>
<td>K.CC.5.4 Count out a specific number of items, when given a number from 1-20.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K.CC.8.5 includes counting out a given number of objects, which is more difficult than just counting that many objects.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students should be given opportunities to discuss the structure of the number system (MP.7) and precisely express how they know that their count is accurate (MP.6).</td>
</tr>
<tr>
<td>Vocabulary</td>
</tr>
<tr>
<td>------------------------------------</td>
</tr>
<tr>
<td>• Written Numerals 0-20</td>
</tr>
<tr>
<td>• Straight Line</td>
</tr>
<tr>
<td>• Rectangular Array</td>
</tr>
<tr>
<td>• Circle</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formative Assessment Strategies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exit Ticket:</strong> written responses to questions the teacher poses at the end of a lesson or a class to assess student understanding of key concepts. (can be a worksheet with pictures of objects up to ten that are arranged in a line, rectangular array or in a circle, student counts and identifies how many).</td>
<td></td>
</tr>
<tr>
<td><strong>Pop Sickle Stick-Pop Quiz:</strong> Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.</td>
<td></td>
</tr>
<tr>
<td><strong>Choral Response:</strong> In response to a cue, all students respond verbally at the same time. The response can be either to answer a question or to repeat something the teacher has said.</td>
<td></td>
</tr>
<tr>
<td><strong>Questioning:</strong> Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.</td>
<td></td>
</tr>
<tr>
<td><strong>Anecdotal Records:</strong> Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.</td>
<td></td>
</tr>
</tbody>
</table>
### Unit 6: Comparing numbers

**Suggested number of days:** 10

<table>
<thead>
<tr>
<th>I Can Statements: Bold Statements to be Mastered in this Unit</th>
<th>Notes/Comments</th>
<th>Unit Materials and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Targets:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K.CC.6.1 Count and compare 2 groups of items and tell which group is greater than, less than or if the groups are equal with groups with up to 10 items.</td>
<td><strong>Comments</strong></td>
<td>Kindergarten Math Flip Book: <a href="http://www.azed.gov/azccrs/files/2013/11/kflipbookedited.pdf">http://www.azed.gov/azccrs/files/2013/11/kflipbookedited.pdf</a></td>
</tr>
<tr>
<td>K.CC.6.2 Use one-to-one matching to compare two groups using words like greater than, less than, or equal for groups with up to 10 items.</td>
<td>K.C.C.6 calls for students to have practice working with concrete objects when comparing. This develops understanding of the relationship between quantities and written numerals.</td>
<td>Bridges Kindergarten CCSS Math: <a href="http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf">http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf</a></td>
</tr>
<tr>
<td><strong>Common Core State Standards for Mathematical Content</strong></td>
<td></td>
<td>Oregon City CCSS Resources: <a href="http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten">http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten</a></td>
</tr>
<tr>
<td>C. Compare numbers.</td>
<td></td>
<td>K-5 Teaching Resources: <a href="http://www.k-5mathteachingresources.com">www.k-5mathteachingresources.com</a></td>
</tr>
<tr>
<td>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. 1</td>
<td>In K.C.C.7 students can use their experience with counting concrete objects and the counting sequence to compare two written numerals. Note that students will use language to describe these comparisons. Mathematical symbols will be introduced in Grade 1.</td>
<td>K-5 CCSS Homework Resource: <a href="http://www.mathworksheetsland.com">www.mathworksheetsland.com</a></td>
</tr>
</tbody>
</table>

| **Common Core State Standards for Mathematical Practice** |                |                              |
| 2. Reason abstractly and quantitatively.                     |                |                              |

---

**Unit Overview:**

This unit focuses on students identifying which of two groups of objects has more than the other or if the two groups have the same number of objects. They can then use this understanding or their understanding of the counting sequence to compare numbers between presented as written numerals.
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater Than</td>
<td>How can I use my counting ability to compare sets of objects (1-10)?</td>
</tr>
<tr>
<td>Less Than</td>
<td>How can I use my counting ability to compare written numbers (1-10)?</td>
</tr>
<tr>
<td>Equal To</td>
<td>How can I compare whether the number of objects in one group is greater than, less</td>
</tr>
<tr>
<td>Match</td>
<td>than, or equal to the number of objects in another group?</td>
</tr>
<tr>
<td>Matching</td>
<td></td>
</tr>
<tr>
<td>Compare</td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- **Think-Pair-Share:** Teacher gives direction to students. Students formulate individual response, and then turn to a partner to share their answers. Teacher calls on several random pairs to share their answers with the class.

- **Work sheet completed and collected for teacher to assess students for factual information, concepts and skills. There is usually a single best answer. Questions can be:** True/False, Matching, Multiple Choice

- **Hand Signals:** Ask students to display a designated hand signal to indicate their understanding of a specific concept, principal, or process: - I understand_______ and can explain it (e.g., thumbs up). - I do not yet understand _______ (e.g., thumbs down). - I’m not completely sure about _______ (e.g., wave hand).
<table>
<thead>
<tr>
<th>Unit 7: Describing and comparing measurable attributes</th>
<th>I Can Statements: Bold Statements to be Mastered in this Unit</th>
<th>Notes/Comments</th>
<th>Unit Materials and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suggested number of days: 10</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Unit Overview:**
In this unit students explore **non-standard** measurement concepts using comparative and descriptive vocabulary. **Through conversation**, students learn to identify and distinguish different measurable attributes.

**Common Core State Standards for Mathematical Content**

**Measurement and Data—K.MD**

A. Describe and compare measurable attributes.

1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

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.

**Common Core State Standards for Mathematical Practice**

3. Construct viable arguments and critique the reasoning of others.

5. Use appropriate tools strategically.

**Learning Targets:**

K.MD.1.1 Describe the length of an object. (long, short).
K.MD.1.2 Describe the weight of an object. (heavy, light)

K.MD.2.1 Compare two like groups to see which has more or less.
K.MD.2.2 Use words such as (thicker, thinner; taller, shorter; heavier, lighter) to compare two objects.

**Comments**

Students use comparative language to justify their conclusions (MP.3) and why and how they use particular tools to measure and compare lengths (MP.5).

**Kindergarten Math Flip Book:**

Bridges Kindergarten CCSS Math:
http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf

Oregon City CCSS Resources:
http://www.orecity.k12.or.us/staff/courses/curriculum_resources/mathematics/kindergarten

Yuureka CCSS Math Resources:
http://www.yuureka.com/resources-1/common-core

K-5 Teaching Resources:
www.k-5mathteachingresources.com

K-5 CCSS Homework Resource:
www.mathworksheetsland.com

Kindergarten CCSS Interactive Math lessons:
http://www.ixl.com/math/kindergarten
www.abcya.com
### Vocabulary
- Measure
- Length
- Height
- Weight
- More Of
- Less Of
- Compare

### Essential Questions
- How can I compare objects that are put next to each other?
- How do we compare the length, height or weight of two objects?
- How can I use attributes to sort and count a collection of objects?
- How can you organize groups by the quantity in each group?

### Formative Assessment Strategies
- **Questioning:** Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding, adjusting instruction as needed.
- **Anecdotal Records:** Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.
- **Think-Pair-Share:** Teacher gives direction to students. Students formulate individual response, and then turn to a partner to share their answers. Teacher calls on several random pairs to share their answers with the class.
- **Pop Sickle Stick-Pop Quiz:** Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.
### Unit 8: Classifying two- and three-dimensional shapes

**Suggested number of days:** 10

<table>
<thead>
<tr>
<th>I Can Statements: Bold Statements to be Mastered in this Unit</th>
<th>Notes/Comments</th>
<th>Unit Materials and Resources</th>
</tr>
</thead>
</table>

#### Unit Overview:

In this unit students continue to develop the concept of classifying and counting objects—this time in the context of classifying two- and three-dimensional shapes.

#### Common Core State Standards for Mathematical Content

**Measurement and Data—K.MD**

- B. Classify objects and count the number of objects in each category.
  3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.  

**Geometry—K.G**

- A. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
  3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

- B. Analyze, compare, create, and compose shapes.
  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).

**Learning Targets:**

- **K.MD.3.1 Sort objects into groups by size, shape, color, etc. that are less than or equal to 10.**

- **K.MD.3.2 Compare objects by size, shape, color, etc.**

- **K.MD.3.3 Compare groups of objects using words like more/less/equal.**

- **K.MD.3.4 Sort objects by more than 1 attribute (size and shape, shape and color, color and size).**

- **K.MD.3.5 Classify a group of objects.**

- **K.G.3.1 Tell the difference between a (flat) two dimensional and a (solid) three dimensional shape.**

- **K.G.4.1 Identify a side or corner of a shape.**

- **K.G.4.2 Use my own words to tell how two shapes (2 or 3 dimensional) are alike and different by describing their parts (number of sides or vertices/"corners") and other attributes (sides of equal length).**

**Comments**

**K.MD.3.3** is repeated here to provide students the opportunity to practice classifying objects in the context of geometric figures.

**K.G.3.2** includes students identifying faces of three-dimensional shapes as two-dimensional geometric figures.

---

**Unit Materials and Resources**


- **Bridges Kindergarten CCSS Math:** [http://catalog.mathlearningcenter.org/files/pdfs/KSUPCCCSS-B_1211w.pdf](http://catalog.mathlearningcenter.org/files/pdfs/KSUPCCCSS-B_1211w.pdf)

- **Oregon City CCSS Resources:** [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten)

- **Yuureka CCSS Math Resources:** [http://www.yuureka.com/resources-1/common-core](http://www.yuureka.com/resources-1/common-core)

- **K-5 Teaching Resources:** [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)

- **K-5 CCSS Homework Resource:** [www.mathworksheetsland.com](http://www.mathworksheetsland.com)

- **Kindergarten CCSS Interactive Math lessons:** [http://www.ixl.com/math/kindergarten](http://www.ixl.com/math/kindergarten)

- **www.abcya.com**
<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematical Practice</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Construct viable arguments and critique the reasoning of others.</td>
<td>Students look for similarities and differences (MP.7) and present their own arguments and respond to the arguments of others (MP.3).</td>
</tr>
<tr>
<td>7. Look for and make use of structure.</td>
<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>Essential Questions</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Sort</td>
<td>• How can I identify similarities and differences between objects?</td>
</tr>
<tr>
<td>• Compare</td>
<td>• How can I compare objects that are put next to each other?</td>
</tr>
<tr>
<td>• Size</td>
<td>• How can I use attributes to sort and count a collection of objects?</td>
</tr>
<tr>
<td>• Shape</td>
<td>• How can I describe the difference between two-dimensional (flat) and three-</td>
</tr>
<tr>
<td>• Color</td>
<td>dimensional (solid) shapes?</td>
</tr>
<tr>
<td>• More</td>
<td>• How can I organize groups by the quantity in each group?</td>
</tr>
<tr>
<td>• Less</td>
<td>•</td>
</tr>
<tr>
<td>• Equal</td>
<td></td>
</tr>
<tr>
<td>• Flat</td>
<td></td>
</tr>
<tr>
<td>• Solid</td>
<td></td>
</tr>
<tr>
<td>• Two-Dimensional</td>
<td></td>
</tr>
<tr>
<td>• Three-Dimensional</td>
<td></td>
</tr>
<tr>
<td>• Vertices</td>
<td></td>
</tr>
<tr>
<td>• Corners</td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- Pop Sickle Stick-Pop Quiz: Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.

- Think-Pair-Share: Teacher gives direction to students. Students formulate individual response, and then turn to a partner to share their answers. Teacher calls on several random pairs to share their answers with the class.

- Yes/No Cards: Teacher asks students if they know meaning of vocab words or math terms. Call out a word, students hold up (prepared to give meaning), students hold up no teacher takes note to inform instruction.
### Unit Overview:
In this unit students extend their understanding of creating and composing shapes to include drawing shapes. It is important for students to have opportunities for open exploration in composing shapes. For example, “What shape can you make with these two triangles?” Students build understandings of shapes and their properties, becoming able to do increasingly elaborate compositions, decompositions, and iterations of the two.

### Common Core State Standards for Mathematical Content

**Geometry—K.G**

B. Analyze, compare, create, and compose shapes.

5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

6. Compose simple shapes to form larger shapes. For example, “Can you join these two triangles with full sides touching to make a rectangle?”

### Common Core State Standards for Mathematical Practice

4. Model with mathematics.

6. Attend to precision.

### Learning Targets:

**K.G.5.1** Make shapes using a variety of materials (e.g., play-dough, modeling clay, common objects, etc.)

**K.G.5.2** Draw recognizable shapes.

**K.G.6** Use pattern blocks or tangrams to form larger or new shapes. (ex. 2 triangles to make a rectangle)

### Comments

**K.G.B.5** is repeated in this unit to extend students’ understanding of creating shapes to include drawing.

With repeated experiences with modeling these shapes (MP.4), students become more precise in their compositions and descriptions of shapes (MP.6).
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Shape</td>
<td>• How can I create and compose shapes?</td>
</tr>
<tr>
<td>• Pattern</td>
<td>• How can I use my understanding of geometric attributes to create shapes?</td>
</tr>
<tr>
<td>• Square</td>
<td>• How can you move, rotate, flip and arrange 2D shapes to create a new shape?</td>
</tr>
<tr>
<td>• Triangle</td>
<td></td>
</tr>
<tr>
<td>• Rectangle</td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- Anecdotal Records: Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed. (students can create 2D and 3D shapes using construction paper, play dough, etc.)

- Admit ticket-Shape Up: Teacher calls name of shape at start of lesson, students hold up correct shape. Teacher assesses overall class understanding of previous lesson taught and adjusts current lesson accordingly.

Unit 10: Understanding and representing addition within 5
Suggested number of days: 10

| I Can Statements: Bold Statements to be Mastered in this Unit |
| Notes/Comments |
| Unit Materials and Resources |

Unit Overview:
This unit connects students’ experience with counting to joining groups of objects. Students begin by modeling addition situations using concrete models and counting strategies to make sense of adding to and putting together. Students will likely use their fingers to keep track of the addends, so it is beneficial for students to develop rapid visual recognition of the numbers 0-5 on their fingers. Teachers are encouraged to use addition and subtraction equations to model the situations, but students are not required to use equations until Grade 1.

Common Core State Standards for Mathematical Content

Counting and Cardinality—K.CC
B. Count to tell the number of objects.
   1. Count to 100, starting at any number less than 100.
   2. Write numbers 0-20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
   3. When counting objects, say the number names in the standard order, pairing each object with one and only one number name.
   4. Understand the relationship between numbers and quantities; connect counting to cardinality. c. Understand that each successive number name refers to a quantity that is one larger.

Operations and Algebraic Thinking—K.OA
A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
   1. Represent addition and subtraction with objects, fingers, mental images, drawings2, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

NOTE:2 Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Learning Targets:

K.CC.1 Count to 100 by ones and by tens.
K.CC.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
K.CC.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
K.CC.4a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and making the consistency of one-to-one correspondence.
K.CC.4b Understand that the last number name said tells the number of objects counted.
K.CC.4c Understand that each successive number name refers to a quantity that is one larger.
K.CC.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.

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.
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.
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).
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 (e.g., 5 + 5 = 10)

K.OA.5 Fluently add and subtract within 5.

Comments

The emphasis of K.OA.A.1 in this unit is for students to represent the addition situations of putting together and adding to. Subtraction will be addressed in unit 7.

NOTE:
Begin building fluency of addition facts within 5—not for mastery.
Common Core State Standards for Mathematical Practice

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.

1. Make sense of problems and persevere in solving them.
4. Model with mathematics.

K.OA.1.10 Explain how to solve word problems and equations.
K.OA.1.11 Relate addition equations to real life situations.
K.OA.1.12 Recognize the plus sign, minus sign, and equal sign and know how to use each.
K.OA.1.13 Recognize an answer to an addition problem as the sum or total.
K.OA.1.14 Recognize the answer to a subtraction problem as the difference.
K.OA.1.15 Write an addition equation.
K.OA.1.16 Write a subtraction equation.
K.OA.1.17 Explain the difference between addition and subtraction fact families (how they are alike and different).

Students practice explaining their drawings and discuss how different drawings are similar and different (MP.1, MP.4).
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Addition</td>
<td>• What strategies can I use when given a number from 0-20 to count out that many</td>
</tr>
<tr>
<td>• One More</td>
<td>objects?</td>
</tr>
<tr>
<td>• Subtraction</td>
<td>• Can I explain that when I count in order, by ones, the next number means one more?</td>
</tr>
<tr>
<td>• Equation</td>
<td>• How can I count aloud and point to objects to keep track so that no objects are</td>
</tr>
<tr>
<td>• Solve</td>
<td>skipped or double counted?</td>
</tr>
<tr>
<td></td>
<td>• How can I explain how many objects I have?</td>
</tr>
<tr>
<td></td>
<td>• How can I explain what happens when more items are added to a set?</td>
</tr>
<tr>
<td></td>
<td>• How can I show a number using different combinations of the same objects?</td>
</tr>
<tr>
<td></td>
<td>• How can I solve story problems by using counting strategies?</td>
</tr>
<tr>
<td></td>
<td>• How can I use drawings to help me solve a story problem?</td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- **White Board-Draw it:** Teachers gives prompt question and students draw what they understand. Example: Use drawings (circles or sticks) to help me solve a story problem.
- **Think-Pair-Share:** Teacher gives direction to students. Students formulate individual response, and then turn to a partner to share their answers. Teacher calls on several random pairs to share their answers with the class.
- **Questioning:** Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.
<table>
<thead>
<tr>
<th>Learning Targets:</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following statements will be using numbers up to 5. In Unit 12 they will be assessed in numbers up to 10:  &lt;br&gt; K.OA.1.1 Use manipulatives to represent addition.  &lt;br&gt; K.OA.1.2 Use manipulatives to represent subtraction.  &lt;br&gt; K.OA.1.3 Add using my fingers.  &lt;br&gt; K.OA.1.4 Create drawings to represent addition equations.  &lt;br&gt; K.OA.1.5 Use mental images to imagine an equation for addition.  &lt;br&gt; K.OA.1.6 Act out an equation to solve addition problems.  &lt;br&gt; K.OA.1.7 Use a number line to solve addition problems.  &lt;br&gt; K.OA.1.8 Practice addition equations by using many methods (acting out, drawing, using sounds, expressions, verbal explanations).  &lt;br&gt; K.OA.1.9 Practice subtraction equations by using many methods (acting out, drawing, using sounds, expressions, verbal explanations).  &lt;br&gt; K.OA.1.10 Explain how to solve word problems and equations.  &lt;br&gt; K.OA.1.11 Relate addition equations to real life situations.  &lt;br&gt; K.OA.1.12 Recognize the plus sign, minus sign, and equal sign and know how to use each.  &lt;br&gt; K.OA.1.13 Recognize an answer to an addition problem as the sum or total.  &lt;br&gt; K.OA.1.14 Recognize the answer to a subtraction problem as the difference.</td>
<td>K.OA.A.1 was introduced in unit 4. This standard is extended in this unit to address both addition and subtraction situations.</td>
</tr>
</tbody>
</table>


Oregon City CCSS Resources: [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten)


K-5 Teaching Resources: [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)

K-5 CCSS Homework Resource: [www.mathworksheetsland.com](http://www.mathworksheetsland.com)


[www.abcy.com](http://www.abcy.com)
2. Solve addition and subtraction word problems, and add and subtract **within 10**, e.g., by using objects or drawings to represent the problem.

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 \(5 = 4 + 1\)).

<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematical Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Model with mathematics.</td>
</tr>
<tr>
<td>5. Use appropriate tools strategically.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K.OA.1.15 Write an addition equation.</th>
<th>K.OA.1.16 Write a subtraction equation.</th>
<th>K.OA.1.17 Explain the difference between addition and subtraction fact families (how they are alike and different).</th>
</tr>
</thead>
<tbody>
<tr>
<td>K.OA.2.1 Tell in my own words what a simple word problem is asking and show how a word problem is solved.</td>
<td>K.OA.2.2 Use objects or drawings to solve addition problems through 10.</td>
<td>K.OA.2.3 Use objects or drawings to solve subtraction problems through 10.</td>
</tr>
<tr>
<td>K.OA.3.1 Use objects to show different pairs.</td>
<td>K.OA.3.2 Use drawings to record different pairs.</td>
<td>K.OA.3.3 Break a number less than or equal to 10 into pairs in more than one way ((2+3=5) or (4+1=5)).</td>
</tr>
<tr>
<td>K.OA.3.4 Use equations to write/record different pairs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The goal of **K.OA.2** in this unit is to solve addition and subtraction situations within 5. Students will extend this number range in unit 10 to addition and subtraction situations within 10.

**K.OA.3** requires time for students to experiment with various compositions and decompositions of smaller numbers (within 5) before working with larger numbers.

**NOTE:**
Begin building fluency of subtraction facts within 5—not for mastery.

Students use manipulatives and drawings (**MP.5**) to model the given situation (**MP.4**).
### Vocabulary
- Addition
- Putting Together
- Adding To
- Subtraction
- Taking Apart
- Taking From
- Word Problems

### Essential Questions
- How do we show ways to compose or make up to 5 using concrete objects, drawings, and numbers?
- How can I explain how many objects I have by acting out, drawing or using manipulatives?
- How can I solve story problems by using counting strategies?
- How can I use drawings, manipulatives or acting out to help me solve story problems?

### Formative Assessment Strategies
- **Questioning:** Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.
- **Pop Sickle Stick-Pop Quiz:** Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.
- **Anecdotal Records:** Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.
- **Whip Around:** Teacher poses a question or task. Students with partner or individually respond verbally or on white board then stand up. Teacher randomly calls on a student to share answers. Students check off any items that are said and sit down when all of their ideas have been shared with the group, whether or not they were the one to share them. The teacher calls on students until they are all seated. As the teacher listens to the information shared by students, he/she can adjust instruction if need.
### Unit 12: Understanding addition and subtraction within 10

**Suggested number of days: 12**

#### Unit Overview:

In this unit students extend their understanding from unit 11 to include addition and subtraction up to 10. Put Together/Take Apart situations with Both Addends Unknown are important because they allow Kindergarteners to explore various compositions and decompositions of each number. Practice with composing and decomposing numbers supports the development of subitizing and numeric reasoning. This is essential to developing more sophisticated addition and subtraction strategies this year and in later grades.

#### Common Core State Standards for Mathematical Content

**Operations and Algebraic Thinking—K.OA**

A. Understand addition as putting together and adding to, and under- stand subtraction as taking apart and taking from.

1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

**NOTE:** Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

#### I Can Statements: Bold Statements to be Mastered in this Unit

The following I can statements will be assessed using numbers up to 10:

- **K.OA.1.1** Use manipulatives to represent addition.
- **K.OA.1.2** Use manipulatives to represent subtraction.
- **K.OA.1.3** Add using my fingers.
- **K.OA.1.4** Create drawings to represent addition equations.
- **K.OA.1.5** Use mental images to imagine an equation for addition.
- **K.OA.1.6** Act out an equation to solve addition problems.
- **K.OA.1.7** Use a number line to solve addition problems.
- **K.OA.1.8** Practice addition equations by using many methods (acting out, drawing, using sounds, expressions, verbal explanations).
- **K.OA.1.9** Practice subtraction equations by using many methods (acting out, drawing, using sounds, expressions, verbal explanations).
- **K.OA.1.10** Explain how to solve word problems and equations.
- **K.OA.1.11** Relate addition equations to real life situations. **K.OA.1.12** Recognize the plus sign, minus sign, and equal sign and know how to use each.
- **K.OA.1.13** Recognize an answer to an addition problem as the sum or total.
- **K.OA.1.14** Recognize the answer to a subtraction problem as the difference.
- **K.OA.1.15** Write an addition equation.
- **K.OA.1.16** Write a subtraction equation.
- **K.OA.1.17** Explain the difference between addition and subtraction equations.

#### Comments

In this unit **K.OA.A.1** is included to emphasize the relationship between addition and subtraction using various strategies. **K.OA.A.3** is foundational for addition and subtraction strategies in Grade 1 (1.OA.C.6).

#### Unit Materials and Resources

- Oregon City CCSS Resources: [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kinergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kinergarten)
- K-5 Teaching Resources: [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)
- K-5 CCSS Homework Resource: [www.mathworksheetsland.com](http://www.mathworksheetsland.com)
- [www.abcya.com](http://www.abcya.com)
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

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 $5 = 4 + 1$).

**Common Core State Standards for Mathematical Practice**

4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.

and subtraction fact families (how they are alike and different).

K.OA.2.1 Tell in my own words what a simple word problem is asking and show how a word problem is solved.
K.OA.2.2 Use objects or drawings to solve addition problems through 10.
K.OA.2.3 Use objects or drawings to solve subtraction problems through 10.

K.OA.3.1 Use objects to show different pairs.
K.OA.3.2 Use drawings to record different pairs.
K.OA.3.3 Break a number less than or equal to 10 into pairs in more than one way (2+3=5 or 4+1=5)
K.OA.3.4 Use equations to write/record different pairs.

Students model addition and subtraction situations (MP.4) by using objects, their fingers, and math drawings (MP.5). Students should also explain their strategies explicitly and discuss similarities and differences with other strategies (MP.6).
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Addition</td>
<td>• How do we show ways to compose or make up to 10 using concrete objects, drawings, and numbers?</td>
</tr>
<tr>
<td>• Putting Together</td>
<td>• How can I describe how many of each object I need when making a number from 1-10?</td>
</tr>
<tr>
<td>• Adding To</td>
<td>• How can I solve story problems by using counting strategies?</td>
</tr>
<tr>
<td>• Subtraction</td>
<td>• How can I use drawings, manipulatives or acting out to help me solve addition or subtraction story problems through 10?</td>
</tr>
<tr>
<td>• Taking Apart</td>
<td>• How can I explain how many objects I have up to 10 by acting out, drawing or using manipulatives?</td>
</tr>
<tr>
<td>• Taking From</td>
<td>• How can I show my understanding of a word problem by writing an equation?</td>
</tr>
<tr>
<td>• Word Problems</td>
<td>• How can I explain in my own words the difference between addition and subtraction fact families (how they are alike and different).</td>
</tr>
<tr>
<td>• Pairs</td>
<td></td>
</tr>
<tr>
<td>• Fact Families</td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- **Pop Sickle Stick-Pop Quiz:** Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.

- **Work sample completed and collected for teacher to assess students ability to draw objects to help solve addition or subtraction story problems.**

- **Think-Pair-Write:** Teacher gives direction to students. Students turn to a partner to share their strategies, they then write individual responses. Teacher calls on several random students to share their answers with the class.
### Unit 13: Composing ten
Suggested number of days: 10

**Unit Overview:**
In this unit students use objects and drawings to identify partners for any number 1 to 9 to compose ten. Composing ten is a foundation for understanding the base-ten system that will develop in later grades, and during this unit teachers help children prepare for this by drawing special attention to the number 10.

<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematical Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operations and Algebraic Thinking—K.OA</strong></td>
</tr>
<tr>
<td>A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematical Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Look for and make use of structure.</td>
</tr>
<tr>
<td>8. Look for and express regularity in repeated reasoning.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Targets:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus is on Base 10</strong></td>
</tr>
<tr>
<td>K.OA.4.1 Make 10 (sum) when adding to a given number from 1-9 using objects and drawings.</td>
</tr>
<tr>
<td>K.OA.4.2 Write an addition sentence to represent my drawing/group of objects.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K.OA.A.4</strong> is foundational for addition and subtraction strategies in Grade 1 <em>(1.OA.C.6).</em></td>
</tr>
<tr>
<td>Students look for shortcuts by analyzing patterns to find all of the combinations that make 10 <em>(MP.7, MP.8).</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit Materials and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon City CCSS Resources: <a href="http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten">http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten</a></td>
</tr>
<tr>
<td>K-5 Teaching Resources: <a href="http://www.k-5mathteachingresources.com">www.k-5mathteachingresources.com</a></td>
</tr>
<tr>
<td>K-5 CCSS Homework Resource: <a href="http://www.mathworksheetsland.com">www.mathworksheetsland.com</a></td>
</tr>
<tr>
<td>Vocabulary</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
</tbody>
</table>
| • Addition              | • How can I describe how many of each object you need when making a number from 1-10?
| • Putting Together      | • How can you show a number using different combinations of the same objects?       |
| • Adding To             | • How can I use drawings or a group of objects to represent an addition sentence?    |
| • Sum                   | • How can I write an addition sentence to represent a drawing or group of objects?   |
| • Subtraction           |                                                                                     |
| • Taking Apart          |                                                                                     |
| • Taking From           |                                                                                     |
| • Addition Sentence     |                                                                                     |

**Formative Assessment Strategies**

- **Hand Signals:** Ask students to display a designated hand signal to indicate their understanding of a specific concept, principal, or process: - I understand_______ and can explain it (e.g., thumbs up). - I do not yet understand _______ (e.g., thumbs down). - I’m not completely sure about _______ (e.g., wave hand).

- **Work sample completed and collected for teacher to assess understanding and mastery of learning targets.**

- **Anecdotal Records:** Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.

- **Questioning:** Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.
<table>
<thead>
<tr>
<th>Unit 14: Counting to 100 by ones and tens</th>
<th>I Can Statements: Bold Statements to be Mastered in this Unit</th>
<th>Notes/Comments</th>
<th>Unit Materials and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suggested number of days:</strong> 5</td>
<td><strong>Learning Targets:</strong></td>
<td><strong>Comments</strong></td>
<td><strong>Kindergarten Math Flip Book:</strong></td>
</tr>
<tr>
<td><strong>Unit Overview:</strong></td>
<td>K.CC.1.1 Count to 10 by ones.</td>
<td>K.C.C.A.2 is repeated here to provide an opportunity to extend this ability of counting from a given number with this new range of numbers.</td>
<td><a href="http://www.azed.gov/azccrs/files/2013/11/kflipbookedited.pdf">http://www.azed.gov/azccrs/files/2013/11/kflipbookedited.pdf</a></td>
</tr>
<tr>
<td>The focus of this unit is to <strong>finalize</strong> the counting sequence to 100 and <strong>introduce</strong> the pattern of counting by <strong>tens</strong>.</td>
<td>K.CC.1.2 Count to 20 by ones.</td>
<td>Students discover and explain patterns in the number system and apply this understanding to counting (MP.7, MP.8).</td>
<td>Bridges Kindergarten CCSS Math: <a href="http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf">http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf</a></td>
</tr>
<tr>
<td>Common Core State Standards for Mathematical Content</td>
<td>K.CC.1.3 Count to 50 from ones.</td>
<td></td>
<td>Oregon City CCSS Resources: <a href="http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten">http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten</a></td>
</tr>
<tr>
<td>Counting and Cardinality—K.CC</td>
<td>K.CC.1.4 Count to 75 from ones.</td>
<td></td>
<td>Yuureka CCSS Math Resources: <a href="http://www.yuureka.com/resources-1/common-core">http://www.yuureka.com/resources-1/common-core</a></td>
</tr>
<tr>
<td>A. Know number names and the count sequence.</td>
<td>K.CC.1.5 Count to 100 from ones.</td>
<td></td>
<td>K-5 Teaching Resources: <a href="http://www.k-5mathteachingresources.com">www.k-5mathteachingresources.com</a></td>
</tr>
<tr>
<td>1. Count to 100 by ones and by tens.</td>
<td>K.CC.1.6 Count to 100 by tens.</td>
<td></td>
<td>K-5 CCSS Homework Resource: <a href="http://www.mathworksheetsland.com">www.mathworksheetsland.com</a></td>
</tr>
<tr>
<td>2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).</td>
<td><strong>Common Core State Standards for Mathematical Practice</strong></td>
<td></td>
<td>Kindergarten CCSS Interactive Math lessons: <a href="http://www.ixl.com/math/kindergarten">http://www.ixl.com/math/kindergarten</a></td>
</tr>
<tr>
<td>8. Look for and express regularity in repeated reasoning.</td>
<td><strong><a href="http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten">www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten</a></strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>Essential Questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Number names 0-100</td>
<td>• How can I count to 100 by ones?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How can I count to 100 by tens?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How can I count correctly without using objects?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How can I count aloud and keep track so no numbers are skipped?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How can I begin with a given number and count in order to 10, 20, 50, and 100?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- **Choral Response:** In response to a cue, all students respond verbally at the same time. The response can be either to answer a question or to repeat something the teacher has said.
- **Pop Sickle Stick-Pop Quiz:** Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.
- **Think Pair Share:** Teacher gives direction to students. Students turn to their partner to share strategies and practice counting from given number to given number. Teacher calls on several random students to share strategies and practice aloud to class.
<table>
<thead>
<tr>
<th><strong>Unit 15: Developing foundations of place value</strong></th>
<th><strong>I Can Statements: Bold Statements to be Mastered in this Unit</strong></th>
<th><strong>Notes/Comments</strong></th>
<th><strong>Unit Materials and Resources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suggested number of days: 11</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Unit Overview:**
The focus of this unit is building a foundational understanding of the base-ten system by developing an understanding of the teen numbers as being composed of ten ones and some more ones. The number range in this standard emphasizes the understanding of ten ones rather than an understanding of the tens "place". This work is an opportunity for students to start counting on, which is a Level 2 strategy for addition that will be emphasized in Grade 1. Teachers are encouraged to use addition and subtraction equations to model the situations, but students are not required to use equations until Grade 1.

### Common Core State Standards for Mathematical Content

#### Number and Operations in Base Ten—K.NBT

A. Work with numbers 11–19 to gain foundations for place value.

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 (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

#### Common Core State Standards for Mathematical Practice

4. Model with mathematics.
7. Look for and make use of structure.

### Learning Targets:

- **K.NBT.1.1** Create a group of 10 using manipulatives.
- **K.NBT.1.2** Create a group of 10 plus more ones using manipulatives.
- **K.NBT.1.3** Show numbers 11-19 with a drawing.
- **K.NBT.1.4** Show numbers 11-19 using a number sentence (18=10+8).

### Comments

- **K.NBT.A.1** is a precursor for further development of place value understanding in Grade 1—viewing ten ones as a new unit called a ten (1.NBT.B.2a,b).

Students explore the structure of ten ones and some more ones (MP.7) using various strategies—such as ten-frames—to model the "teen" numbers (MP.4).

### Unit Materials and Resources

- **Bridges Kindergarten CCSS Math:** [http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf](http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf)
- **Oregon City CCSS Resources:** [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kinergarden](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kinergarden)
- **Yuureka CCSS Math Resources:** [http://www.yuureka.com/resources-1/common-core](http://www.yuureka.com/resources-1/common-core)
- **K-5 Teaching Resources:** [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)
- **K-5 CCSS Homework Resource:** [www.mathworksheetsland.com](http://www.mathworksheetsland.com)
- **Kindergarten CCSS Interactive Math lessons:** [http://www.ixl.com/math/kindergarten](http://www.ixl.com/math/kindergarten)
- **www.abcya.com**
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Create</td>
<td>• How do I compose a group of 10 using drawings or manipulatives?</td>
</tr>
<tr>
<td>• Compose</td>
<td>• How do I create a group of 11-19 using a drawing?</td>
</tr>
<tr>
<td>• Decompose</td>
<td>• How do I create a number sentence to show a sum of 11-19?</td>
</tr>
<tr>
<td>• Number Sentence</td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- **White Board-Draw it**: Teachers gives prompt question and students draw what they understand. Example: Create a group of 11-19 using drawings (sticks or circles)

- **Exit Ticket**: written responses to questions the teacher poses at the end of a lesson or a class to assess student understanding of key concepts (Can use handout with word story in pictures, the student creates a number sentence for it).

- **Questioning**: Asking questions periodically throughout lesson that give students opportunity for deeper thinking and provide teachers with insight into the degree and depth of student understanding adjusting instruction as needed.

- **Think-Pair-Write**: Teacher gives direction to students. Students turn to a partner to share their strategies, they then write individual responses. Teacher calls on several random students to share their answers with the class.
<table>
<thead>
<tr>
<th>Unit 16: Solving problems and demonstrating fluency within 5 Suggested number of days: 10</th>
<th>I Can Statements: Bold Statements to be Mastered in this Unit</th>
<th>Notes/Comments</th>
<th>Unit Materials and Resources</th>
</tr>
</thead>
</table>
| **Unit Overview:** This unit finalizes addition and subtraction problem solving within 10 and fluency within 5. By the end of Kindergarten, students should have experience with four of the problem types in Table 1 on page 88 in the Common Core State Standards for Mathematics:  
- Add To with Result Unknown  
- Take From with Result Unknown  
- Put Together/Take Apart with Total Unknown  
- Put Together/Take Apart with Both Addends Unknown | **K.OA.5.1** Memorize addition facts to 5 and quickly give the sum.  
**K.OA.5.2** Memorize subtraction facts to 5 and quickly give the difference. | **COMMENTS:** Students work towards fluency with **K.OA.A.5** by relying on their experience with decompositions of numbers and with Add To and Take From situations. | **Kindergarten Math Flip Book:** [http://www.azed.gov/azcde/files/2013/11/kflipbookedited.pdf](http://www.azed.gov/azcde/files/2013/11/kflipbookedited.pdf)  
**Bridges Kindergarten CCSS Math:** [http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf](http://catalog.mathlearningcenter.org/files/pdfs/BKSUPCCSS-B_1211w.pdf)  
**Oregon City CCSS Resources:** [http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten](http://www.orecity.k12.or.us/staff/curriculum_resources/mathematics/kindergarten)  
**Yuureka CCSS Math Resources:** [http://www.yuureka.com/resources-1/common-core](http://www.yuureka.com/resources-1/common-core)  
**K-5 Teaching Resources:** [www.k-5mathteachingresources.com](http://www.k-5mathteachingresources.com)  
**K-5 CCSS Homework Resource:** [www.mathworksheetsland.com](http://www.mathworksheetsland.com)  
**Kindergarten CCSS Interactive Math lessons:** [http://www.ixl.com/math/kindergarten](http://www.ixl.com/math/kindergarten) [www.abcya.com](http://www.abcya.com) |
| **Common Core State Standards for Mathematical Content**  
**Operations and Algebraic Thinking—K.OA**  
A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.  
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.  
5. Fluently add and subtract within 5. | **K.OA.2.1** Tell in my own words what a simple word problem is asking and show how a word problem is solved.  
**K.OA.2.2** Use objects or drawings to solve addition problems through 10.  
**K.OA.2.3** Use objects or drawings to solve subtraction problems through 10. | | |

**NOTE:** Metacognition and Fluency are the major focus. Must be able memorize addition and subtraction facts to 5—quickly.
**Common Core State Standards for Mathematical Practice**

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 have developed strategies for solving addition and subtraction problems and should now be able to *explain their own strategies* (metacognitive thinking) and understand the approaches of others (MP.1). They recognize when calculations are repeated and look for both general methods and shortcuts (MP.8).
<table>
<thead>
<tr>
<th>Vocabulary</th>
<th>Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Add</td>
<td>• How can I explain a simple story problem in my own words?</td>
</tr>
<tr>
<td>• Addition</td>
<td>• I can I use objects or drawings to solve addition problems through 10?</td>
</tr>
<tr>
<td>• Putting Together</td>
<td>• How can I use objects or drawings to solve subtraction problems through 10?</td>
</tr>
<tr>
<td>• Adding To</td>
<td>• How can I memorize addition facts to 5?</td>
</tr>
<tr>
<td>• Sum</td>
<td>• I can I use objects or drawings to solve subtraction problems through 10?</td>
</tr>
<tr>
<td>• Subtract</td>
<td>• How can I memorize subtraction facts to 5?</td>
</tr>
<tr>
<td>• Subtraction</td>
<td></td>
</tr>
<tr>
<td>• Taking Apart</td>
<td></td>
</tr>
<tr>
<td>• Taking From</td>
<td></td>
</tr>
<tr>
<td>• Difference</td>
<td></td>
</tr>
<tr>
<td>• Word problem</td>
<td></td>
</tr>
</tbody>
</table>

**Formative Assessment Strategies**

- **Choral Response**: In response to a cue, all students respond verbally at the same time. The response can be either to answer a question or to repeat something the teacher has said. *(addition and subtraction facts)*

- **Exit Ticket**: Exit cards are written student responses to questions posed at the end of a class or learning activity or at the end of a day.

- **White Board-Draw it**: Teachers gives prompt question and students draw what they understand. Example: How can I use drawings to solve addition or subtraction word problems?

- **Pop Sickle Stick-Pop Quiz**: Students demonstrate understanding and mastery of skills and concepts. Have each student’s name on a Popsicle stick in a cup. Draw random names to answer questions.

- **Anecdotal Records**: Take short notes during a lesson or circulate the classroom and observe students as they work to check for learning. The teacher should reflect on a specific aspect of the learning and adjust instruction as needed.
**Kindergarten Critical Areas of Focus**

**Critical Area of Focus #1**

Representing and comparing whole numbers, initially with sets of objects

Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. (Kindergarten students should see addition and subtraction equations, and student writing of equations in Kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

**Counting and Cardinality**

**Know number names and the count sequence.**

1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).

**Count to tell the number of objects.**

4. Understand the relationship between numbers and quantities; connect counting to cardinality.
   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.
   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.
   c. Understand that each successive number name refers to a quantity that is one larger.
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.

**Compare numbers.**

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

**Operations and Algebraic Thinking**

**Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.**

1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
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 $5 = 4 + 1$).
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.
5. Fluently add and subtract within 5.

Key: □ Major Clusters; ◼ Supporting Clusters; ○ Additional Clusters
**KINDERGARTEN CRITICAL AREAS OF FOCUS**

### CRITICAL AREA OF FOCUS #1, CON’T.

#### Number and Operations in Base Ten

**Work with numbers 11–19 to gain foundations for place value.**

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 (e.g., \(18 = 10 + 8\)); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

#### Measurement and Data

**Describe and compare measurable attributes.**

1. **Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.**

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.**

**Classify objects and count the number of objects in each category.**

3. **Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.**

---

**Key:** ✑ Major Clusters; ☐ Supporting Clusters; ☑ Additional Clusters
**Kindergarten Critical Areas of Focus**

**Critical Area of Focus #2**

Describing shapes and space

Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

**Geometry**  

<table>
<thead>
<tr>
<th>Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).</th>
<th>K.G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as <strong>above</strong>, <strong>below</strong>, <strong>beside</strong>, <strong>in front of</strong>, <strong>behind</strong>, and <strong>next to</strong>.</td>
<td></td>
</tr>
<tr>
<td>2. Correctly name shapes regardless of their orientations or overall size.</td>
<td></td>
</tr>
<tr>
<td>3. Identify shapes as two-dimensional (lying in a plane, &quot;flat&quot;) or three-dimensional (&quot;solid&quot;).</td>
<td></td>
</tr>
</tbody>
</table>

**Analyze, compare, create, and compose shapes.**

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).

5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

6. Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"

---

Key: □ Major Clusters; □ Supporting Clusters; ○ Additional Clusters
**Bailey Educational Group**  
**Common Core State Standards “I Can Statements”**  
**Kindergarten Mathematics**

CCSS Key:  
Counting and Cardinality (CC)  
Operations and Algebraic Thinking (OA)  
Number and Operations in Base Ten (NBT)  
Measurement and Data (MD)  
Geometry (G)

| Common Core State Standards for Mathematics (Outcome Based) | I Can Statements:  
(Concepts & Skills)  
I Can: |
|---------------------------------------------------------|--------------------------------------------------|
| **K.CC.1.** Count to 100 by ones and by tens. | I Can:  
K.CC.1.1 Count to 10 by ones.  
K.CC.1.2 Count to 20 by ones.  
K.CC.1.3 Count to 50 from ones.  
K.CC.1.4 Count to 75 from ones.  
K.CC.1.5 Count to 100 from ones.  
K.CC.1.6 Count to 100 by tens. |
| **K.CC.2.** Count forward beginning from a given number within the known sequence (instead of having to begin at 1). | K.CC.2.1 Begin with a given number and count in order to 10.  
K.CC.2.2 Begin with a given number and count in order to 20.  
K.CC.2.3 Begin with a given number and count in order to 50.  
K.CC.2.4 Begin with a given number and count in order to 100. |
| **K.CC.3.** Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects). | K.CC.3.1 Write numbers 0-10 from memory.  
K.CC.3.2 Write numbers 0-20 from memory.  
K.CC.3.3 Count a group of objects (0-10) and write the correct numeral.  
K.CC.3.4 Count a group of objects (0-20) and write the correct numeral. |
<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematics (Outcome Based)</th>
<th>I Can Statements: (Concepts &amp; Skills)</th>
<th>I Can:</th>
</tr>
</thead>
<tbody>
<tr>
<td>K.CC.4. Understand the relationship between numbers and quantities; connect counting to cardinality.</td>
<td>K.CC.4a.1 Point to objects as I count aloud and say the correct number of objects (0-10). K.CC.4a.2 Point to objects as I count aloud and say the correct number of objects (0-20). K.CC.4b.1 Point, count objects and explain that the last number tells the number of objects. K.CC.4c.1 Understand that when I count in order, by ones, the next number means one more.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Understand that each successive number name refers to a quantity that is one larger.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K.CC.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.</td>
<td>K.CC.5.1 Count up to 10 items in an arranged order. K.CC.5.2 Count up to 20 items in an arranged order. K.CC.5.3 Count up to 10 scattered items. K.CC.5.4 Count out a specific number of items, when given a number from 1-20.</td>
<td></td>
</tr>
<tr>
<td>K.CC.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.¹</td>
<td>K.CC.6.1 Count and compare 2 groups of items and tell which group is greater than, less than or if the groups are equal with groups with up to 10 items. K.CC.6.2 Use one-to-one matching to compare two groups using words like greater than, less than, or equal for groups with up to 10 items.</td>
<td></td>
</tr>
<tr>
<td>¹Include groups with up to ten objects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K.CC.7. Compare two numbers between 1 and 10 presented as written numerals.</td>
<td>K.CC.7.1 Decide which number is greater than when given 2 numerals between 1-10. K.CC.7.2 Decide which number is less than when given 2 numerals between 1-10. K.CC.7.3 Decide if two numbers are equal when given 2 numerals between 1-10.</td>
<td></td>
</tr>
<tr>
<td>Common Core State Standards for Mathematics (Outcome Based)</td>
<td>I Can Statements: (Concepts &amp; Skills)</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>----------------------------------------</td>
<td></td>
</tr>
<tr>
<td>I Can:</td>
<td>I Can:</td>
<td></td>
</tr>
<tr>
<td>K.OA.1. Represent addition and subtraction with objects,</td>
<td>K.OA.1.1 Use manipulatives to represent addition.</td>
<td></td>
</tr>
<tr>
<td>fingers, mental images, drawings ², sounds (e.g.,</td>
<td>K.OA.1.2 Use manipulatives to represent subtraction.</td>
<td></td>
</tr>
<tr>
<td>claps), acting out situations, verbal explanations,</td>
<td>K.OA.1.3 Add using my fingers.</td>
<td></td>
</tr>
<tr>
<td>expressions, or equations.</td>
<td>K.OA.1.4 Create drawings to represent addition equations.</td>
<td></td>
</tr>
<tr>
<td>²Drawings need not show details, but should show the</td>
<td>K.OA.1.5 Use mental images to imagine an equation for addition.</td>
<td></td>
</tr>
<tr>
<td>mathematics in the problem. (This applies wherever</td>
<td>K.OA.1.6 Act out an equation to solve addition problems.</td>
<td></td>
</tr>
<tr>
<td>drawings are mentioned in the Standards.)</td>
<td>K.OA.1.7 Use a number line to solve addition problems.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.8 Practice addition equations by using many methods (acting out, drawing, using sounds, expressions, verbal explanations).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.9 Practice subtraction equations by using many methods (acting out, drawing, using sounds, expressions, verbal explanations).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.10 Explain how to solve word problems and equations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.11 Relate addition equations to real life situations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.12 Recognize the plus sign, minus sign, and equal sign and know how to use each.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.13 Recognize an answer to an addition problem as the sum or total.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.14 Recognize the answer to a subtraction problem as the difference.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.15 Write an addition equation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.16 Write a subtraction equation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.1.17 Explain the difference between addition and subtraction fact families (how they are alike and different).</td>
<td></td>
</tr>
<tr>
<td>K.OA.2. Solve addition and subtraction word problems,</td>
<td>K.OA.2.1 Tell in my own words what a simple word problem is asking and show how a word problem is solved.</td>
<td></td>
</tr>
<tr>
<td>and add and subtract within 10, e.g., by using objects</td>
<td>K.OA.2.2 Use objects or drawings to solve addition problems through 10.</td>
<td></td>
</tr>
<tr>
<td>or drawings to represent the problem.</td>
<td>K.OA.2.3 Use objects or drawings to solve subtraction problems through 10.</td>
<td></td>
</tr>
<tr>
<td>K.OA.3. Decompose numbers less than or equal to 10 into</td>
<td>K.OA.3.1 Use objects to show different pairs.</td>
<td></td>
</tr>
<tr>
<td>pairs in more than one way, e.g., by using objects or</td>
<td>K.OA.3.2 Use drawings to record different pairs.</td>
<td></td>
</tr>
<tr>
<td>drawings, and record each decomposition by a drawing or</td>
<td>K.OA.3.3 Break a number less than or equal to 10 into pairs in more than one way (2+3=5 or 4+1=5)</td>
<td></td>
</tr>
<tr>
<td>equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).</td>
<td>K.OA.3.4 Use equations to write/record different pairs.</td>
<td></td>
</tr>
<tr>
<td>K.OA.4. For any number from 1 to 9, find the number that</td>
<td>K.OA.4.1 Make 10 (sum) when adding to a given number from 1-9 using objects and drawings.</td>
<td></td>
</tr>
<tr>
<td>makes 10 when added to the given number, e.g., by using</td>
<td>K.OA.4.2 Write an addition sentence to represent my drawing/group of objects.</td>
<td></td>
</tr>
<tr>
<td>objects or drawings, and record the answer with a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>drawing or equation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K.OA.5. Fluently add and subtract within 5.</td>
<td>K.OA.5.1 Memorize addition facts to 5 and quickly give the sum.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K.OA.5.2 Memorize subtraction facts to 5 and quickly give the difference.</td>
<td></td>
</tr>
</tbody>
</table>
| Common Core State Standards for Mathematics (Outcome Based) | I Can Statements:  
(Concepts & Skills)  
I Can: |
| --- | --- |
| **K.NBT.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 (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. | **I Can:**  
K.NBT.1.1 Create a group of 10 using manipulatives.  
K.NBT.1.2 Create a group of 10 plus more ones using manipulatives.  
K.NBT.1.3 Show numbers 11-19 with a drawing.  
K.NBT.1.4 Show numbers 11-19 using a number sentence (18=10+8). |
| **K.MD.1.**  
Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. | **K.MD.1.1** Describe the length of an object. (long, short).  
**K.MD.1.2** Describe the weight of an object. (heavy, light) |
| **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. | **K.MD.2.1** Compare two like groups to see which has more or less.  
**K.MD.2.2** Use words such as (thicker, thinner; taller, shorter; heavier, lighter) to compare two objects. |
| **K.MD.3.**  
Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.  
3Limit category counts to be less than or equal to 10. | **K.MD.3.1** Sort objects into groups by size, shape, color, etc. that are less than or equal to 10.  
**K.MD.3.2** Compare objects by size, shape, color, etc.  
**K.MD.3.3** Compare groups of objects using words like more/less/equal.  
**K.MD.3.4** Sort objects by more than 1 attribute (size and shape, shape and color, color and size)  
K. MD.3.5 Classify a group of objects. |
| **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. | **K.G.1.1** Identify and name squares, circles, rectangles, triangles, diamonds, hearts, ovals, and stars, rectangular prisms, cubes, cylinders, spheres, cones, and pyramids.  
**K.G.1.2** Identify shapes in the environment.  
**K.G.1.3** Identify the position of shapes in the environment using positional words such as: above, below, beside, in front of, behind, and next to. |
| **K.G.2.**  
Correctly name shapes regardless of their orientations or overall size. | **K.G.2.1** Name and recognize shapes no matter the size, color, or position. |
| **K.G.3.**  
Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”). | **K.G.3.1** Tell the difference between a (flat) two dimensional and a (solid) three dimensional shape. |
<table>
<thead>
<tr>
<th>Common Core State Standards for Mathematics (Outcome Based)</th>
<th>I Can Statements: (Concepts &amp; Skills)</th>
<th>I Can:</th>
</tr>
</thead>
</table>
| 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). | K.G.4. I Can:  
K.G.4.1 Identify a side or corner of a shape.  
K.G.4.2 Use my own words to tell how two shapes (2 or 3 dimensional) are alike and different by describing their parts (number of sides or vertices/corners) and other attributes (sides of equal length). |
| K.G.5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. | K.G.5. I Can:  
K.G.5.1 Make shapes using a variety of materials (e.g. – play-dough, modeling clay, common objects, etc.)  
K.G.5.2 Draw recognizable shapes. |
| K.G.6. Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”* | K.G.6. I Can:  
K.G.6 Use pattern blocks or tangrams to form larger or new shapes. (ex. 2 triangles to make a rectangle) |
Common Core “Shifts” in Mathematics

There are six shifts in Mathematics that the Common Core requires of us if we are to be truly aligned with it in terms of curricular materials and classroom instruction.

**Shift 1 - Focus**
Teachers use the power of the eraser and significantly narrow and deepen the scope of how time and energy is spent in the math classroom. They do so in order to focus deeply on only the concepts that are prioritized in the standards so that students reach strong foundational knowledge and deep conceptual understanding and are able to transfer mathematical skills and understanding across concepts and grades.

**Shift 2 - Coherence**
Principals and teachers carefully connect the learning within and across grades so that, for example, fractions or multiplication spiral across grade levels and students can build new understanding onto foundations built in previous years. Teachers can begin to count on deep conceptual understanding of core content and build on it. Each standard is not a new event, but an extension of previous learning.

**Shift 3 - Fluency**
Students are expected to have speed and accuracy with simple calculations; teachers structure class time and/or homework time for students to memorize, through repetition, core functions (found in the attached list of fluencies) such as multiplication tables so that they are more able to understand and manipulate more complex concepts.

**Shift 4 - Deep Understanding**
Teachers teach more than “how to get the answer” and instead support students’ ability to access concepts from a number of perspectives so that students are able to see math as more than a set of mnemonics or discrete procedures. Students demonstrate deep conceptual understanding of core math concepts by applying them to new situations, as well as writing and speaking about their understanding.

**Shift 5 – Application**
Students are expected to use math and choose the appropriate concept for application even when they are not prompted to do so. Teachers provide opportunities at all grade levels for students to apply math concepts in “real world” situations. Teachers in content areas outside of math, particularly science, ensure that students are using math – at all grade levels – to make meaning of and access content.

**Shift 6 - Dual Intensity**
Students are practicing and understanding. There is more than a balance between these two things in the classroom – both are occurring with intensity. Teachers create opportunities for students to participate in “drills” and make use of those skills through extended application of math concepts. The amount of time and energy spent practicing and understanding learning environments is driven by the specific mathematical concept and therefore, varies throughout the given school year.
Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy).

The Standards:

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.

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects,
Standards for Mathematical Practice

drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.
Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.
Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.
Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.
Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or that the shapes have. Later, students will see 7 x 8 equals the well-remembered 7 x 5 + 7 x 3, in preparation for learning about the distributive property. In the expression x2 + 9x + 14, older students can see the 14 as 2 x 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see 5 – 3(x – y)2 as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8. Look for and express regularity in repeated reasoning.
Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation \( (y – 2)/(x – 1) = 3 \). Noticing the regularity in the way terms cancel when expanding \((x – 1)(x + 1), (x – 1)(x^2 + x + 1), \) and \((x – 1)(x^3 + x^2 + x +1)\) might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.
## CCSS Standards for Mathematical Practice

### Questions for Teachers to Ask

1. **Make sense of problems and persevere in solving them**
   - Teachers ask:
     - What is this problem asking?
     - How would you describe the problem in your own words?
     - Could you try this with simpler numbers? Fewer numbers?
     - How could you start this problem?
     - Would it help to create a diagram? Make a table? Draw a picture?
     - How is ___’s way of solving the problem like/different from yours?
     - Does your plan make sense? Why or why not?
     - What are you having trouble with?
     - How can you check this?

2. **Reason abstractly and quantitatively**
   - Teachers ask:
     - What does the number ____ represent in the problem?
     - How can you represent the problem with symbols and numbers?
     - Create a representation of the problem.

3. **Construct viable arguments and critique the reasoning of others**
   - Teachers ask:
     - How is your answer different than ____’s?
     - What do you think about what ____ said?
     - Do you agree? Why/why not?
     - How can you prove that your answer is correct?
     - What examples could prove or disprove your argument?
     - What do you think about ____’s argument?
     - Can you explain what ____ is saying?
     - Can you explain why his/her strategy works?
     - How is your strategy similar to ____’s?
     - What questions do you have for ____?
     - Can you convince the rest of us that your answer makes sense?

4. **Model with mathematics**
   - Teachers ask:
     - Write a number sentence to describe this situation.
     - How could we use symbols to represent what is happening?
     - What connections do you see?
     - Why do the results make sense?
     - Is this working or do you need to change your model?

5. **Use appropriate tools strategically**
   - Teachers ask:
     - How could you use manipulatives or a drawing to show your thinking?
     - How did that tool help you solve the problem?
     - If we didn’t have access to that tool, what other one would you have chosen?

6. **Attend to precision**
   - Teachers ask:
     - What does the word ____ mean?
     - Explain what you did to solve the problem.
     - Can you tell me why that is true?
     - How did you reach your conclusion?
     - Compare your answer to ____’s answer
     - What labels could you use?
     - How do you know your answer is accurate?
     - What new words did you use today? How did you use them?

7. **Look for and make use of structure**
   - Teachers ask:
     - Why does this happen?
     - How is ____ related to ____?
     - Why is this important to the problem?
     - What do you know about ____ that you can apply to this situation?
     - How can you use what you know to explain why this works?
     - What patterns do you see?

8. **Look for and express regularity in repeated reasoning**
   - Teachers ask:
     - What generalizations can you make?
     - Can you find a shortcut to solve the problem? How would your shortcut make the problem easier?
     - How could this problem help you solve another problem?

*It is important that the teacher poses tasks that involve real world situations

*It is important that the teacher poses tasks that involve arguments or critiques

*Inductive reasoning (moving from specific to general)

*Deductive reasoning (moving from general to specific)