

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

### Introduction

The State of New Jersey adopted the Common Core Standards for Mathematics in June of 2010 and requires implementation in grades K-12 beginning in September of 2012. The Wandell School mathematics curriculum for grades K-5 incorporates the State of New Jersey's model curriculum for mathematics.

Common Core Standards for Mathematics:

The K-5 standards provide students with a solid foundation in whole numbers, addition, subtraction, multiplication, division, fractions and decimals—which help young students build the foundation to successfully apply more demanding math concepts and procedures, and move into applications.

The standards stress not only procedural skill but also conceptual understanding, to make sure students are learning and absorbing the critical information they need to succeed at higher levels.

These standards define what students should understand and be able to do in their study of mathematics. What does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student's mathematical maturity, why a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between a student who can summon a mnemonic device to expand a product such as  $(a + b)(x + y)$  and a student who can explain where the mnemonic comes from. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding  $(a + b + c)(x + y)$ . Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

All students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The standards do provide clear signposts along the way to the goal of college and career readiness for all students.

National Governors Association Center for Best Practices, Council of Chief State School Officers. "Common Core State Standards - Mathematics." National Governors Association Center for Best Practices, Council of Chief State School Officers, Washington D.C., 2010. Web. 20 June 2012. <<http://www.corestandards.org/the-standards/mathematics>>.

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### Unit 1 Overview

**Content Area: Mathematics**

**Unit Title:** Counting and Cardinality

**Target Course/Grade Level: Kindergarten**

#### Unit Summary

In this unit students learn that numbers can be used for different purposes, numbers can be classified, and represented in different ways. In **Topic 1** students learn that the arrangement of objects in a group does not affect the number of objects in that group, known as the *conservation of number*. As the students explore various arrangements of a given number of objects they develop a variety of visual representations for each number which leads to the ability to recognize quantities up to 5 without counting, a skill that is known as *subitizing*. Students learn to keep track of what is counted by placing a counter on each item as it is counted. Students also learn how to write numerals and by saying the number name while writing, connect the written numeral with the number name.

**Topics 2 & 4** introduce and reinforce the concept that numbers and quantities can be compared and related to other numbers and quantities in different ways. Students learn the concepts of *more*, *fewer*, and *the same* by using one-to-one correspondence to match objects in two groups. If all objects in one group match one, and only one, other object in a second group, children recognize that the two groups contain the same quantity. Children continue to match objects in two groups to determine which group has *1 or 2 more* objects and which group has *1 or 2 fewer* objects. This experience is used to order numbers sequentially while learning number names and symbols, for quantities from 0 to 5. They begin to answer questions such as, “Which number comes before 3?” and “Which number comes after 4?”

In **Topics 3 & 4** children use numbers for different purposes, classify numbers, and represent them in different ways. Students apply counting and comparing sets skills to the task of ordering the numbers through ten. Children use ten-frames to learn to visualize the relationship between ten and numbers less than ten. Using the ten-frames allows children to develop visual representations of numbers as a whole made from different parts. For example, six can be seen as “a set of five, and one more” which leads to mental math processes and the understanding of equivalent expressions in algebra.

**Topic 4** explores the concept that real numbers can be associated with a unique point on a number line.

**Topic 5** strengthens children’s ability to connect number names, the count sequence, and quantity and has children exploring the relationships between 10 and the numbers to 20.

In **Topic 6**, students use a hundred chart to observe counting patterns, and learn to count to 100 by ones and tens, as well as connecting groups of ten to the words for the decade numbers. Children begin to see the importance of groups of ten which will later lead to place value understandings.

**Primary interdisciplinary connections:** Reading, Social Studies, Science, Writing, Dramatic Play, Physical Education, Art

#### 21<sup>st</sup> century themes:

- Critical Thinking/Problem Solving
- Communication
- Collaboration

#### Unit Rationale

Counting and Cardinality and Operations and Algebraic Thinking are about understanding and using numbers. Counting and Cardinality underlies Operations and Algebraic Thinking as well as Number and Operations in Base Ten. It begins with early counting and telling how many in one group of objects. Addition, subtraction, multiplication, and division grow from these early roots. (The Common Core Standards Writing Team, 2011)

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### Learning Targets

#### **Standards for Mathematical Content**

- K.CC.A.1 Count to 100 by ones and by tens.
- K.CC.A.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- K.CC.A.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.B.4a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
- K.CC.B.4b Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- K.CC.B.4c Understand that each successive number name refers to a quantity that is one larger.
- K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
- K.CC.C.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
- K.CC.C.7 Compare two numbers between 1 and 10 presented as written numerals.

#### **Standards for Mathematical Practice**

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

#### **Content Statements**

- Know number names and the count sequence.
- Count to tell the number of objects.
  - Understand the relationship between numbers and quantities; connect counting to cardinality.
- Compare numbers

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

CPI #	<b>Cumulative Progress Indicator (CPI)</b> <b>Source: NJDOE Model Curriculum for Mathematics</b>
K.CC.A.1	Count to 100 by ones and tens.
K.CC.A.2	Count forward beginning from a given number within the known sequence, instead of having to begin again at 1.
K.CC.A.3	Represent the number of objects by the correct numeral up to 5 (using zero to represent no objects).

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**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

K.CC.B.4a	Assign an ascending number name for each object in a group.				
K.CC.B.4b	For objects named in the standard order, identify the last number named as the number of counted objects in the set regardless of the order they are counted).				
K.CC.B.4c	Understand that each successive number name refers to a quantity that is one larger.				
K.CC.B.5	Answer “how many?” questions about groups of objects up to 10 when arranged in a line or up to 5 in a scattered configuration.				
K.CC.C.6	Identify whether the number of objects in a group is greater than, less than or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Includes groups with up to ten objects)				
K.CC.C.7	Compare two numbers between 1 and 10 presented as written numerals.				
K.OA.A.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"><b>Unit Essential Questions</b></th> <th style="width: 50%;"><b>Unit Enduring Understandings</b></th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>• Topic 1: How can numbers from 1 to 5 be counted, read, and written?</li> <li>• Topic 2: How can numbers from 0 to 5 be compared and ordered?</li> <li>• Topic 3: How can numbers from 6 to 10 be counted, read, and written?</li> <li>• Topic 4: How can numbers from 0 to 10 be compared and ordered?</li> <li>• Topic 5: How can numbers to 20 be counted, read, and written?</li> <li>• Topic 6: How can numbers to 100 be counted using a hundred chart?</li> </ul> </td> <td style="vertical-align: top;"> <p><b>Topic 1:</b></p> <ul style="list-style-type: none"> <li>• Counting tells how many are in a set, regardless of their arrangement or the order in which they were counted.</li> <li>• The last number said when counting a set is the total.</li> <li>• Counting is cumulative.</li> <li>• There is a unique symbol that goes with each number word.</li> <li>• Some problems can be solved by using objects to act out the actions in the problems.</li> </ul> <p><b>Topic 2:</b></p> <ul style="list-style-type: none"> <li>• If objects in two different groups are matched one-to-one, and no objects are left over, the two groups contain the same number of objects. If one group has objects left over (without a match) that group has more objects.</li> <li>• <i>1 more than</i> or <i>2 more than</i> expresses the relationship between two groups of objects.</li> <li>• <i>1 fewer than</i> or <i>2 fewer than</i> expresses the relationship between two groups of objects.</li> <li>• If after comparing two groups of objects, one group has objects left over, it can be said that the group with objects left over has <i>more</i>, and the other group has <i>fewer</i> objects.</li> <li>• In a pair of numbers, the number that represents a group with more objects is <i>greater</i>, while the number representing the other group is <i>less</i>.</li> <li>• <i>Zero</i> is a number that tells that a group has no objects.</li> <li>• There is a specific order to the set of whole</li> </ul> </td> </tr> </tbody> </table>		<b>Unit Essential Questions</b>	<b>Unit Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• Topic 1: How can numbers from 1 to 5 be counted, read, and written?</li> <li>• Topic 2: How can numbers from 0 to 5 be compared and ordered?</li> <li>• Topic 3: How can numbers from 6 to 10 be counted, read, and written?</li> <li>• Topic 4: How can numbers from 0 to 10 be compared and ordered?</li> <li>• Topic 5: How can numbers to 20 be counted, read, and written?</li> <li>• Topic 6: How can numbers to 100 be counted using a hundred chart?</li> </ul>	<p><b>Topic 1:</b></p> <ul style="list-style-type: none"> <li>• Counting tells how many are in a set, regardless of their arrangement or the order in which they were counted.</li> <li>• The last number said when counting a set is the total.</li> <li>• Counting is cumulative.</li> <li>• There is a unique symbol that goes with each number word.</li> <li>• Some problems can be solved by using objects to act out the actions in the problems.</li> </ul> <p><b>Topic 2:</b></p> <ul style="list-style-type: none"> <li>• If objects in two different groups are matched one-to-one, and no objects are left over, the two groups contain the same number of objects. If one group has objects left over (without a match) that group has more objects.</li> <li>• <i>1 more than</i> or <i>2 more than</i> expresses the relationship between two groups of objects.</li> <li>• <i>1 fewer than</i> or <i>2 fewer than</i> expresses the relationship between two groups of objects.</li> <li>• If after comparing two groups of objects, one group has objects left over, it can be said that the group with objects left over has <i>more</i>, and the other group has <i>fewer</i> objects.</li> <li>• In a pair of numbers, the number that represents a group with more objects is <i>greater</i>, while the number representing the other group is <i>less</i>.</li> <li>• <i>Zero</i> is a number that tells that a group has no objects.</li> <li>• There is a specific order to the set of whole</li> </ul>
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numbers.

### Topic 3:

- Counting tells how many are in a set no matter which order the objects are counted. The last number said when counting a set is the total. Counting is cumulative.
- There is a unique symbol that goes with each number word.
- In a growing pattern, there is a predictable and countable change from one part to the next.

### Topic 4:

- In a pair of numbers, the number that shows more is greater. The number that shows fewer is less.
- The numbers 5 and 10 can be used as benchmarks to compare numbers.
- *1 more than, 2 more than, 1 fewer than, and 2 fewer than* express relationships between two numbers.
- There is a specific order to the set of whole numbers.
- A number can be shown by a unique point on a number line. The distance between any two consecutive whole numbers on a given number line is always the same.
- Some problems can be solved by using objects to act out the actions in a problem.

### Topic 5:

- There is a unique symbol that goes with each number word.
- Counting tells how many are in a set, regardless of their arrangement or the order in which they were counted. The last number said when counting a set is the total. Counting is cumulative.
- Some problems can be solved by reasoning about conditions in the problem.

### Topic 6:

- Counting tells how many are in a set, regardless of their arrangement or the order in which they were counted. The last number said when counting a set is the total. Counting is cumulative.
- Numbers are counted and written in a specific sequence on a hundred chart.

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- The decade numbers are built on groups of ten. The oral names are similar to, but not the same as, the number of tens counted.
- Counting patterns (numerical and visual) can be seen on a hundred chart.
- Some problems can be solved by identifying elements that repeat in a particular way.

### Unit Learning Targets

*Students will ...*

- count and represent with a written numeral a number of objects to 20.
- write numerals from zero to 20.
- assign an ascending number name for each object in a group.
- identify the last number named as the number of counted objects in a group.
- answer “how many?” questions about groups of objects.
- create addition and subtraction events with objects (or make drawings) to represent a sum (putting together) or a difference (taking from) up to 10.
- count forward beginning from any given number up to 50 – instead of having to begin at 1.
- identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group (groups of up to 10 objects).
- count to 100 by ones and tens.
- compare numbers (up to 10) written as numerals.

### Evidence of Learning

#### Summative Assessment (14 days per topic)

- Topics 1 – 6 Tests and Performance Assessments

**Materials needed:** as per teacher’s edition

#### Teacher Resources:

*enVision Math Common Core: Realize Edition Topic 1, One to Five*

*enVision Math Common Core: Realize Edition Topic 2 Comparing and Ordering 0 to 5*

*enVision Math Common Core: Realize Edition Topic 3 Six to Ten*

*enVision Math Common Core: Realize Edition Topic 4 Comparing and Ordering Numbers 0 to 10*

*enVision Math Common Core: Realize Edition Topic 5 Numbers to 20*

*enVision Math Common Core: Realize Edition Topic 6 Numbers to 100*

### Formative Assessments

- teacher observation
- homework
- Lesson *Additional Activity*
- prior knowledge assessment
- guided practice
- Lesson *Quick Check*
- *Daily Common Core Review*

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Topic/Lesson Plans	
Topic	Timeframe
Topic 1 <i>One to Five</i>	14 days
Topic 2 <i>Comparing and Ordering 0 to 5</i>	14 days
Topic 3 <i>Six to Ten</i>	14 days
Topic 4 <i>Comparing and Ordering Numbers 0 to 10</i>	14 days
Topic 5 <i>Numbers to 20</i>	14 days
Topic 6 <i>Numbers to 100</i>	14 days
<b>Teacher Notes:</b> <p>This unit consists of six topics from the <i>enVision Math Common Core</i> series with anywhere from 5 to 10 lessons per topic. These six topics address the Counting and Cardinality domain of the Common Core Standards for Mathematics for Kindergarten students. In addition, these six topics address all eight of the Standards for Mathematical Practice.</p> <p>Essential questions and enduring understandings were taken directly from the textbook series used by the district, <i>enVision Math Common Core: Realize Edition</i>.</p>	
<b>Curriculum Development Resources:</b> <p>The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): K, Counting and Cardinality; K–2, Operations and Algebraic Thinking<sup>1</sup>. Working paper. Tools for the Common Core Standards, 29 May 2011. Web. 6 Apr. 2015. &lt;<a href="http://commoncoretools.me/tools/">commoncoretools.me/tools/</a>&gt;.</p> <p>Charles, Randall. <i>enVision Math Common Core</i>. Realize ed. Upper Saddle River: Pearson Education, 2015. Print. <i>enVision Math Common Core</i>.</p> <p>Common Core State Standards Initiative. Ed. NGA Center/CCSSO. NGA Center and CCSSO, n.d. Web. 6 Apr. 2015. &lt;<a href="http://www.corestandards.org/Math/">http://www.corestandards.org/Math/</a>&gt;.</p>	

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Topic 1								
<b>Content Area: Mathematics</b>								
<b>Topic Title:</b> <i>One to Five</i>				<b>Timeframe:</b> 14 days				
<a href="#">(Back to Topic/Lesson Plans)</a>								
Topic Components								
21 <sup>st</sup> Century Themes								
Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy		Environmental Literacy
21 <sup>st</sup> Century Skills								
Creativity and Innovation		Critical Thinking and Problem Solving	x	Communication	x	Collaboration		
<b>Interdisciplinary Connections:</b> Reading, Writing, Science, Social Studies, Drama, Physical Education								
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson								
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>counters</li> <li>paper clips</li> <li>pencil</li> <li>crayons</li> <li>number cards 0 – 11</li> <li>sticky dots</li> <li>tape</li> </ul>								

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<b>Students:</b> <ul style="list-style-type: none"> <li>will count the quantities of objects using the number names <i>one</i>, <i>two</i>, and <i>three</i> in standard order. (1-1)</li> <li>will identify whether a particular set includes 1, 2, or 3 objects, regardless of how the objects are arranged. (1-2)</li> <li>will recognize and write the numerals that describe the quantities 1, 2, and 3. (1-3)</li> </ul>	<b>Lesson Sequence</b> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>lesson <i>Quick Check</i></li> <li><i>Show Me!</i> Activity (TE pg 4A)</li> <li><i>Stick Numbers</i> Activity (TE pg 6A)</li> <li><i>Show 1, 2, and 3</i> Activity (TE pg 8A)</li> <li><i>Dot Cards</i> Activity (TE pg 10A)</li> <li><i>Dot Numbers</i> Activity (TE pg 12A)</li> <li><i>Matching Game</i> Activity (TE pg 14A)</li> <li><i>Paired Problems</i> Activity (TE pg.16A)</li> </ul>



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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

- will use objects to represent and count the quantities four and five. (1-4)
- will identify whether a particular set includes 4 or 5 objects. (1-5)
- will recognize and write the numerals that describe the quantities four and five. (1-6)
- will solve problems by using objects (1-7)

### Differentiation (Topic 1, pg 1E)

#### ELL:

- Repeating oral language practice of the number words for 1 through 5 will help English Language Learners remember and understand number words.
- Write the number words on the board with the corresponding numerals. Have children draw an object to illustrate each word. Relate these illustrations to the word's mathematical definition.

#### Special Needs:

- Review the relationship between counting and written numerical symbols.
- Use common classroom objects (crayons, paper clips, etc.) that can easily be counted (1 to 5) to model the relationship between the group of objects and the written numerical symbol.
- Repeat daily using consistent math vocabulary such as *number* and *count*.

#### Below Grade Level:

- The ability to recite the number names in order does not guarantee understanding of the numbers, therefore, children should move objects in a set as they recite the counting sequence so that the number they are saying is reflected in the set of objects they have moved.
- Provide numerous opportunities for children to practice physically representing the numbers 1 to 5 with classroom objects.

#### Advanced/Gifted:

- Provide ample opportunities for children to practice counting to 5 and to practice reading and writing the numerals 1 through 5 using both concrete and abstract representations of these quantities.

### Resources Provided

- enVision Math Common Core: Topics 1 - 6 Teacher Guides, digital resources, manipulatives

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Topic 2							
<b>Content Area: Mathematics</b>							
<b>Topic Title:</b> <i>Comparing and Ordering 0 to 5</i>					<b>Timeframe:</b> 14 days		
Topic Components							
<u>21<sup>st</sup> Century Themes</u>							
Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy	Environmental Literacy
<u>21<sup>st</sup> Century Skills</u>							
Creativity and Innovation		Critical Thinking and Problem Solving	x	Communication	X	Collaboration	
<b>Interdisciplinary Connections:</b> Reading, Writing, Science, Social Studies, Drama, Physical Education, Art							
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson							
<b>Materials needed:</b>							
<ul style="list-style-type: none"> <li>• counters</li> <li>• paper clips</li> <li>• pencil</li> <li>• connecting cubes</li> <li>• crayons</li> <li>• number cards 0 – 5</li> <li>• glue</li> </ul>							

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
Students: <ul style="list-style-type: none"> <li>• will use one-to-one correspondence to compare objects and decide whether one group has <i>more</i>, <i>fewer</i>, or the <i>same number</i> as the other group. (2-1)</li> <li>• will recognize and identify a group of objects that has <i>1 more</i> or <i>2 more</i> than the other group. (2-2)</li> <li>• will recognize and identify a group of</li> </ul>	<b>Lesson Sequence</b> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Big Chairs and Little Blocks</i> Activity (TE pg 24A)</li> <li>• <i>Bead Jewelry</i> (TE pg 26A)</li> <li>• <i>Leaves on a Vine</i> Activity (TE pg 28A)</li> <li>• <i>Pour More or Fewer</i> Activity (TE pg 30A)</li> <li>• <i>Count and Compare</i> Activity (TE pg 32A)</li> <li>• <i>Hands Up for Zero</i> Activity (TE pg 34A)</li> </ul>

## Wandell School Math Curriculum

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<p>objects that has <i>1 fewer</i> or <i>2 fewer</i> than another group. (2-3)</p> <ul style="list-style-type: none"><li>• will use one-to-one correspondence to compare two groups and determine whether one group has <i>more</i>, <i>fewer</i>, or <i>as many as</i> the other group. (2-4)</li><li>• will compare two numbers using sets of objects and one-to-one correspondence to determine which number is <i>greater</i> and which is <i>less</i>. (2-5)</li><li>• will understand that <i>zero</i> means <i>none</i>. (2-6)</li><li>• will recognize and write the numeral that describes the quantity of <i>zero</i>. (2-7)</li><li>• will use objects to order numbers 0 to 5 in sequence. (2-8)</li><li>• will use objects to show the number in each group, order the number of objects in each group, and identify the group that has the <i>most</i> or <i>fewest</i> number of objects. (2-9)</li></ul>		<ul style="list-style-type: none"><li>• <i>My Number Book</i> Activity (TE pg 36A)</li><li>• <i>Number Puzzles</i> Activity (TE pg 38A)</li><li>• <i>Cube Sort</i> Activity (TE pg.40A)</li></ul>
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### Differentiation (Topic 2, TE pg. 21C)

#### ELL:

- Repeating oral language practice of terms will help English Language Learners remember and understand the words and associate them with concepts.
- Write the numeral 1 on the board have the children hold up 1 object and say the word *one*. Repeat with numerals 2-5.
- Write the words *1 more* and *2 more* on the board. Read each term together with children and help them illustrate each term with manipulatives. Repeat with *1 fewer* and *2 fewer*.
- Write the word *order* on the board. Model how to order the numerals 0 to 5. Then ask children to trace the number that comes after 4 with red chalk. Continue with other numbers.

#### Special Needs:

## Wandell School Math Curriculum

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

- Review with children the concepts of *more*, *fewer*, and *same*.
- Use manipulatives to demonstrate these concepts and ask children to replicate your model. Focus on the comparison of the two groups using math words *more* and *fewer* to describe them.
- Use a variation of this activity to demonstrate the concept of *same as* by creating groups with equal number of objects.

### Below Grade Level:

- Help children understand that they can build on the concepts of *equal groups* and *more* introduced in Topic 2.
- Show a group of objects such as 4 cubes. Model for children how to make a group that has *1 more* object than another group, or *1 fewer* object.
- Provide numerous opportunities for children to practice making groups that have *1 more*, *2 more*, *1 fewer*, and *2 fewer*.

### Advanced/Gifted:

- Write two different numbers from 0 to 5 on the board. Ask children to draw sets of dots for the numbers, then circle the larger number.

### Resources Provided

- enVision Math Common Core: Topics 1 - 6 Teacher Guides, digital resources, manipulatives
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## Wandell School Math Curriculum

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Topic 3						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Six to Ten</i>				<b>Timeframe:</b> 14 days		
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Social Studies, Physical Education, Art						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>old magazines and newspapers</li> <li>crayons</li> <li>construction paper</li> <li>paste</li> <li>buttons</li> <li>children's picture books</li> <li>large index cards</li> <li>connecting cubes</li> <li>color tiles</li> <li>large container</li> <li>water</li> <li>tagboard</li> <li>craft materials</li> <li>number cards 1-10</li> <li>blocks</li> <li>counters</li> <li>paper clips</li> <li>pencil</li> <li>five-frame mat</li> <li>modeling clay</li> <li>ten-frame mat</li> <li>ink stamp pad</li> <li>markers</li> <li>student scissors</li> </ul>						

## Wandell School Math Curriculum

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- writing paper
- building blocks all the same size, shape, and color

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will use objects to represent and count the quantities of 6 and 7 and understand that the last number said tells the number of objects counted. (3-1)</li> <li>• will recognize and write the numerals that describe the quantities 6 and 7. (3-2)</li> <li>• will use objects to represent and count the quantities of 8 and 9 and understand that the last number said tells the number of objects counted. (3-3)</li> <li>• will recognize and write numerals that describe the quantities 8 and 9. (3-4)</li> <li>• will use objects to represent and count the quantity 10 and understand that the last number said tells the number of objects counted. (3-5)</li> <li>• will recognize and write the numeral that describes the quantity of 10. (3-6)</li> <li>• will solve problems by identifying growing patterns and predicting what comes next. (3-7)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Challenge Me Game Activity</i> (TE pg. 48A)</li> <li>• <i>Number Sculpture</i> (TE pg. 50A)</li> <li>• <i>Color Counting Activity</i> (TE pg. 52A)</li> <li>• <i>Fancy 8s and 9s Activity</i> (TE pg. 54A)</li> <li>• <i>Crazy Count-Off Activity</i> (TE pg. 56A)</li> <li>• <i>Check the Label Activity</i> (TE pg. 58A)</li> <li>• <i>Shrinking Towers Activity</i> (TE pg. 60A)</li> </ul>
<p><b>Differentiation (Topic 3, TE pg. 45C)</b></p> <p><b>ELL:</b></p> <ul style="list-style-type: none"> <li>• Repeating oral language practice of terms will help English Language Learners remember and</li> </ul>		

## Wandell School Math Curriculum

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

understand the words and associate them with concepts.

- Write the numeral 6 on the board, point to the numeral, and have children repeat the word as you count out 6 objects. Repeat with numerals 7 through 10.
- Place 10 dried beans in a row. Have children count with you as you point to each one. Repeat with a row of 9, a row of 8, etc.
- Draw a number line from 0 through 10 on the board. Have children start a 0 in a whisper and make their voices increasingly louder until they are shouting 10.

### Special Needs:

- Review with children the numbers 6 through 10 and the quantities represented by each.
- Using various manipulatives, demonstrate a set of 6 objects and have children count them. Have children hold 6 objects and count them as they put them in a row. Then have children make their own set of 6 using different objects.
- Use mathematical terms: *count* and *number* as you describe the process; repeat daily
- Repeat with sets of 7 through 10.

### Below Grade Level:

- Provide opportunities for children to recognize sets of objects with varying quantities and to count the objects in those sets.
- Provide opportunities for children to create sets of objects representing the numbers 1 through 10.

### Advanced/Gifted:

- Introduce the mathematical language and symbols for simple addition to those children who quickly grasp the concept of quantity represented by written symbols.

### Resources Provided

- enVision Math Common Core: Topics 1 - 6 Teacher Guides
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## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

Topic 4						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Comparing and Ordering Numbers 0 to 10</i>				<b>Timeframe:</b> 14 days		
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Drama, Social Studies, Science, Physical Education, Art						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• dot cubes</li> <li>• easel paper</li> <li>• paint</li> <li>• classic children's books</li> <li>• 5-10 stones or shells of different sizes</li> <li>• 5-10 different sized blocks</li> <li>• number cards 0-11</li> <li>• pennies</li> <li>• cookie cutters</li> <li>• sand tools</li> <li>• counters</li> <li>• paper clip</li> <li>• pencil</li> <li>• crayons</li> <li>• color tiles</li> <li>• connecting cubes</li> <li>• number dot cards 1-10</li> <li>• masking tape</li> <li>• chart paper</li> <li>• markers</li> <li>• dried beans</li> <li>• construction paper</li> <li>• glue</li> <li>• student scissors</li> <li>• surprise gift for the class (book for class library)</li> </ul>						



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**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- number line (0-10)
- small trays or pieces of cardboard
- yarn
- large index cards

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will compare two numbers using sets of objects and one-to-one correspondence to determine which number is greater and which is less. (4-1)</li> <li>• when given a number from 0 to 5 will tell if the number is greater than or less than 5. (4-2)</li> <li>• when given a number, or set from 0-12, will decide if the number is greater than or less than 10. (4-3)</li> <li>• will use counting to identify a number that is 1 more than another number. (4-4)</li> <li>• will use counting to identify a number that is 1 fewer than another number. (4-5)</li> <li>• will use counting to identify a number that is 2 more than another number. (4-6)</li> <li>• will use counting to identify a number that is 2 fewer than another number. (4-7)</li> <li>• will order numbers from 0 to 10 in sequence. (4-8)</li> <li>• will use a number line to count numbers 0 to</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Count and Compare</i> Activity (TE pg. 68A)</li> <li>• <i>Sorting by Sight</i> Activity (TE pg. 70A)</li> <li>• <i>Greater Than or Less Than</i> Activity (TE pg. 72A)</li> <li>• <i>Add One More Clap</i> Activity (TE pg. 74A)</li> <li>• <i>Disappearing Tiles</i> Activity (TE pg. 76A)</li> <li>• <i>How Many More?</i> Activity (TE pg. 78A)</li> <li>• <i>Picturing 1 and 2 Fewer</i> Activity (TE pg. 80A)</li> <li>• <i>Find the Clue</i> Activity (TE pg. 82A)</li> <li>• <i>Tray Round Up</i> Activity (TE pg. 84A)</li> </ul>

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

<p>10 in order. (4-9)</p> <ul style="list-style-type: none"><li>• will solve problems by using counters to show 1 more and 2 more. (4-10)</li></ul>		
<p><b>Differentiation (Topic 4, TE pg. 65C)</b></p> <p><b>ELL:</b></p> <ul style="list-style-type: none"><li>• Repeating oral language practice of terms will help English Language Learners remember and understand the words and associate them with concepts.</li><li>• Compare two unequal groups of objects, using the word <i>greater</i> to describe the group that has more. Then compare the two groups again, using the word <i>less</i> to describe the group that has fewer.</li><li>• Model the above activity, then have children repeat it, using the words <i>greater</i> and <i>less</i>.</li><li>• Have children create two groups of objects that have an unequal number of objects. Have children compare the groups using the words <i>greater</i> and <i>less</i>.</li></ul> <p><b>Special Needs:</b></p> <ul style="list-style-type: none"><li>• Demonstrate the order of numbers 1 through 10 by using fingers to count. Have children start counting with pinky finger.</li><li>• Help children see that when we count the next number is always <i>1 more</i> than the given number, and the number before the given number is always <i>1 less</i>.</li></ul> <p><b>Below Grade Level:</b></p> <ul style="list-style-type: none"><li>• Allow for extra practice in comparing numbers.</li><li>• Use one-to-one correspondence to indicate <i>more</i> and <i>fewer</i>.</li></ul> <p><b>Advanced/Gifted:</b></p> <ul style="list-style-type: none"><li>• Provide ample opportunities for children to practice mental math.</li></ul>		
<p><b>Resources Provided</b></p> <ul style="list-style-type: none"><li>• enVision Math Common Core: Topics 1 - 6 Teacher Guides, digital resources, manipulatives</li><li>•</li></ul>		

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Topic 5							
<b>Content Area: Mathematics</b>							
<b>Topic Title:</b> <i>Numbers to 20</i>					<b>Timeframe:</b> 14 days		
Topic Components							
<u>21<sup>st</sup> Century Themes</u>							
Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy	Environmental Literacy
<u>21<sup>st</sup> Century Skills</u>							
Creativity and Innovation		Critical Thinking and Problem Solving	x	Communication		x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Drama, Science, Physical Education, Art							
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson							
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• connecting cubes</li> <li>• popcorn</li> <li>• construction paper</li> <li>• glue</li> <li>• crayons</li> <li>• drawing paper</li> <li>• objects from nature (pine cones, stones, twigs, leaves)</li> <li>• chart paper</li> <li>• number cards 0-20</li> <li>• blocks</li> <li>• counters</li> <li>• double ten-frame mat</li> <li>• yarn</li> <li>• paper strips</li> <li>• ten-frame</li> <li>• double sided counters</li> <li>• clay</li> <li>• stapler</li> <li>• large index cards</li> <li>• marking pens</li> <li>• cotton balls</li> <li>• large tray of sand</li> <li>• small tray of sand</li> </ul>							

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- tape
- blank books with 10 pages plus cover
- rubber stamps
- ink pad
- baskets

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will recognize and write the numerals that describe the quantities 11 and 12. (5-1)</li> <li>• will recognize and write the numerals that describe the quantities 13, 14, and 15. (5-2)</li> <li>• will recognize and write the numerals that describe the quantities 16 and 17. (5-3)</li> <li>• will recognize and write the numerals that describe the quantities 18, 19, and 20. (5-4)</li> <li>• will recognize the number of objects does not change when the objects are moved rearranged or counted in another order. (5-5)</li> <li>• will solve problems by applying logical reasoning to identify missing numbers in a number sequence. (5-6)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Find a Number</i> Activity (TE pg. 94A)</li> <li>• <i>Number Flip Books</i> Activity (TE pg. 96A)</li> <li>• <i>Yarn Numbers</i> Activity (TE pg. 98A)</li> <li>• <i>Number Line Riddles</i> Activity (TE pg. 100A)</li> <li>• <i>Stacks and Stacks</i> Activity (TE pg. 102A)</li> <li>• <i>Paired Problems</i> Activity (TE pg. 104A)</li> </ul>

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

### Differentiation (Topic 5, TE pg. 91C)

#### ELL:

- Repeating oral language practice of terms will help English Language Learners remember and understand the words and associate them with concepts.
- Write the numerals 11 to 20 on the board. Ask children to trace each number with colored chalk and say the number aloud.
- Write the number words *eleven* to *twenty* on the board with the corresponding numerals. Have children draw an object to illustrate each number word.
- Write the number words and numerals for 11 to 20. Have children trace each numeral and say the word it represents.

#### Special Needs:

- Provide children with a variety of materials with which to practice writing numbers (chalk, sand, clay). Have them trace each number with their finger as they identify it.

#### Below Grade Level:

- Provide many opportunities to practice reading and writing the numbers 11 to 20

#### Advanced/Gifted:

- Provide ample opportunities for children to practice identifying number words and numerals to 20 in random order.

### Resources Provided

- enVision Math Common Core: Topics 1 - 6 Teacher Guides, digital resources, manipulatives
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## Wandell School Math Curriculum

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Topic 6						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Numbers to 100</i>				<b>Timeframe:</b> 14 days		
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Drama, Art, Technology						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• cooking pot</li> <li>• large spoon</li> <li>• measuring cup</li> <li>• large dried beans</li> <li>• computer</li> <li>• printer</li> <li>• paper</li> <li>• blocks (100)</li> <li>• large grid paper with 100 squares</li> <li>• pencils</li> <li>• crayons</li> <li>• colored pencils</li> <li>• sets of number cards (20-30, 30-40, 40-50, 50-60, 60-70, 70-80, 80-90, 90-100)</li> <li>• counters</li> <li>• number cards 1-10</li> <li>• drawing paper</li> </ul>						

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Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- scissors
- masking tape
- footprint patterns
- hundred chart
- ten-frame for counting 21-31
- connecting cubes
- index cards
- star stickers
- marker
- paper squares

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will count to 30 objects (6-1)</li> <li>• will count and write numbers to 100 on hundred chart. (6-2)</li> <li>• will count groups of 10, up to 10 tens, and write how many. (6-3)</li> <li>• will use a hundred chart to recognize patterns when counting by 1s and tens. (6-4)</li> <li>• will solve problems by looking for a pattern. (6-5)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>30 Balloons</i> Activity (TE pg. 112A)</li> <li>• <i>Number Riddles</i> Activity (TE pg. 114A)</li> <li>• <i>Counting Stars</i> Activity (TE pg. 116A)</li> <li>• <i>1s or 10s</i> Activity (TE pg. 118A)</li> <li>• <i>Paired Problems</i> Activity (TE pg. 120A)</li> </ul>
<p><b>Differentiation (Topic 6, TE pg. 109C)</b></p> <p><b>ELL:</b></p> <ul style="list-style-type: none"> <li>• Repeating oral language practice of terms will help English Language Learners remember and understand the words and associate them with concepts.</li> <li>• Have an even number of children stand in a line. Say, “I am going to count by 2s.” Count the group of children by 2s, then have the students repeat the numbers.</li> </ul> <p><b>Special Needs:</b></p> <ul style="list-style-type: none"> <li>• Count on from decade numbers that children are familiar with to help them transition from counting by tens to counting by ones.</li> <li>• Repeat daily and use correct math vocabulary consistently.</li> </ul> <p><b>Below Grade Level:</b></p> <ul style="list-style-type: none"> <li>• Provide many opportunities to practice skip counting to help with finding embedded patterns in</li> </ul>		

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

the hundred chart.

### **Advanced/Gifted:**

- Provide ample opportunities for children to practice counting by 2s, 5s, 10s to count large groups of objects.
- Lead children to understand that they can choose what they skip count by depending upon the number of objects in the group.

### **Resources Provided**

- enVision Math Common Core: Topics 1 - 6 Teacher Guides, digital resources, manipulatives



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Aligned to the 2014 Common Core Standards for Mathematics

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

### Unit 2 Overview

**Content Area: Mathematics**

**Unit Title:** Operations and Algebraic Thinking

**Target Course/Grade Level: Kindergarten**

#### Unit Summary

In this unit, children begin to quantify the world around them and express everyday experiences as number relationships, then more formally as numerical expressions and equations. Students understand addition to be the joining of two sets of similar items. As students verbally express the joining of two groups, they lay the “foundation for the symbolic representation of addition.” (enVision Math, pg. 125B)

Students then apply this same verbal expression to situations that compare, that involve separating one group into smaller groups, and those situations that involve taking away a part of a larger group. Students first model these situations with concrete objects and verbal descriptions, then putting pencil to paper, draw pictures to model the situation, and then represent the models and drawings with symbols. It is in this unit that students are introduced to the plus sign (+), the minus sign (-), and the equals sign (=). Students learn that the value of the number sentence on one side of the equal sign must be the same as the value of the number sentence on the opposite side of the equal sign. Children learn that the equal sign serves as the balance point in the number sentence, not just an indicator of the “answer.”

Also in this unit, children learn that number quantities can be represented in many different ways and develop “number sense” as well as deepening their understanding that numbers represent quantities.

**Primary interdisciplinary connections:** Reading, Social Studies, Science, Writing, Dramatic Play, Physical Education, Art

#### 21<sup>st</sup> century themes:

- Critical Thinking/Problem Solving
- Communication
- Collaboration

#### Unit Rationale

Operations and Algebraic Thinking deals with the basic operations—the kinds of quantitative relationships they model and consequently the kinds of problems they can be used to solve as well as their mathematical properties and relationships. (The Common Core Standards Writing Team, pg. 2, 2011). These understanding form the foundation for all further mathematics work and encourage children to think of numbers and arithmetic as a method for describing the world around them.

### Learning Targets

#### Standards for Mathematical Content

- K.OA.A.1 Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
- K.OA.A.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- K.OA.A.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

using objects or drawings, and record each decomposition by a drawing or equation (e.g.,  $5 = 2 + 3$  and  $5 = 4 + 1$ ).

- **K.OA.A.4** For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
- **K.OA.A.5** Fluently add and subtract within 5.
- **K.CC.C.6** Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (groups up to 10 objects)
- **K.MD.B.3** Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

### **Standards for Mathematical Practice**

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

### **Content Statements**

- Understand addition, and understand subtraction.
- Compare numbers
- Classify objects and count the number of objects in each category.

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

CPI #	<b>Cumulative Progress Indicator (CPI)</b> <b>Source: NJDOE Model Curriculum for Mathematics</b>				
K.OA.A.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, (e.g., claps) acting out situations, verbal explanations, expressions, or equations.				
K.OA.A.2	Use objects or drawings to represent and solve addition and subtraction word problems (within 10).				
K.OA.A.3	Decompose numbers less than or equal to ten into pairs of numbers in more than one way and record with a drawing or equations (e.g., write 7 as $2 + 5$ and $6 + 1$ ).				
K.OA.A.4	Given a number less than 10, find a number that makes 10 (e.g., $1 + 9$ , $2 + 8$ , etc.)				
K.OA.A.5	Fluently add within 5.				
K.CC.C.6	Identify whether the number of objects in a group is greater than, less than or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Includes groups with up to ten objects)				
K.MD.B.3	Classify and sort objects into given categories and count the objects in each category (up to 10 objects).				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 50%;"><b>Unit Essential Questions</b></th> <th style="text-align: left; width: 50%;"><b>Unit Enduring Understandings</b></th> </tr> </thead> <tbody> <tr> <td>• Topic 7: How can numbers from 0 to 20 be</td> <td><b>Topic 7:</b></td> </tr> </tbody> </table>		<b>Unit Essential Questions</b>	<b>Unit Enduring Understandings</b>	• Topic 7: How can numbers from 0 to 20 be	<b>Topic 7:</b>
<b>Unit Essential Questions</b>	<b>Unit Enduring Understandings</b>				
• Topic 7: How can numbers from 0 to 20 be	<b>Topic 7:</b>				

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

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counted, read, and written?

- Topic 8: What types of situations involve subtraction?
- Topic 9: What are the different ways to make a number?

- Joining parts to make a whole is one interpretation of addition.
- Joining groups can be shown in an addition expression that uses the plus sign (+).
- Information in a problem can often be shown using a picture or diagram and used to understand and solve the problem.

### Topic 8:

- Separating parts from a whole is one interpretation of subtraction.
- Taking part of a group away is one interpretation of subtraction.
- Separating, take away, and comparison subtraction situations can be shown in a subtraction expression that uses the minus sign (-).
- Some separating, take away, and comparison situations can be represented and solved using subtraction.
- Subtraction number sentences using – and = can be used to show subtraction situations.
- Some problems can be solved by using objects to act out the actions in the problem.

### Topic 9:

- There is more than one way to show a number.
- Joining parts to make a whole is one interpretation of addition. Addition number sentences using + and = can be used to show parts of a whole.
- Some problems can be solved by making, reading, and analyzing a graph.

### Unit Learning Targets

*Students will ...*

- represent addition and subtraction with objects, fingers, mental images, drawings, sounds, (e.g., claps) acting out situations, verbal explanations, expressions, or equations.
- use objects or drawings to represent and solve addition and subtraction word problems.
- decompose numbers less than or equal to ten into pairs of numbers in more than one way and record with a drawing or equations.
- when given a number less than 10, find a number that makes 10.
- fluently add within 5.
- identify whether the number of objects in a group is greater than, less than or equal to the number of objects in another group.

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- classify and sort objects into given categories and count the objects in each category.

### Evidence of Learning

**Summative Assessment (14 days per topic)**

- Topics 7-9 Tests and Performance Assessments

**Materials needed:** as per teacher's edition

**Teacher Resources:**

*enVision Math Common Core: Realize Edition Topic 7 Understanding Addition*

*enVision Math Common Core: Realize Edition Topic 8 Understanding Subtraction*

*enVision Math Common Core: Realize Edition Topic 9 More Addition and Subtraction*

**Formative Assessments**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• teacher observation</li> <li>• homework</li> <li>• Lesson <i>Additional Activity</i></li> </ul> | <ul style="list-style-type: none"> <li>• prior knowledge assessment</li> <li>• guided practice</li> <li>• Lesson <i>Quick Check</i></li> <li>• <i>Daily Common Core Review</i></li> </ul> |
|--|---|

### Topic/Lesson Plans

Topic	Timeframe
Topic 7 <i>Understanding Addition</i>	14 days
Topic 8 <i>Understanding Subtraction</i>	14 days
Topic 9 <i>More Addition and Subtraction</i>	14 days

**Teacher Notes:**

This unit consists of 3 topics from the *enVision Math Common Core* series with anywhere from 7 to 9 lessons per topic. These six topics address the Operations and Algebraic domain of the Common Core Standards for Mathematics for Kindergarten students. In addition, these 3 topics address all eight of the Standards for Mathematical Practice.

Essential questions and enduring understandings were taken directly from the textbook series used by the district, *enVision Math Common Core: Realize Edition*.

**Curriculum Development Resources:**

The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): K, Counting and Cardinality; K–2, Operations and Algebraic Thinking1. Working paper. Tools for the Common Core Standards, 29 May 2011. Web. 6 Apr. 2015.

<[commoncoretools.me/tools/](http://commoncoretools.me/tools/)>.

Charles, Randall. *enVision Math Common Core*. Realize ed. Upper Saddle River: Pearson Education, 2015. Print. *enVision Math Common Core*.

Common Core State Standards Initiative. Ed. NGA Center/CCSSO. NGA Center and CCSSO, n.d. Web. 6

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

Apr. 2015. <<http://www.corestandards.org/Math/>>.

Topic 7						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Understanding Addition</i>					<b>Timeframe:</b> 14 days	
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Drama, Art, Physical Education, Music						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• masking tape</li> <li>• cube blocks</li> <li>• writing paper</li> <li>• cumulative counting book (children’s literature)</li> <li>• index cards</li> <li>• crayons</li> <li>• large and small dried beans</li> <li>• strong paper plates with rims</li> <li>• glue</li> <li>• ribbon</li> <li>• food coloring</li> <li>• small plastic container for water</li> <li>• straws</li> <li>• counters</li> <li>• number dot cards 1-4</li> <li>• yarn</li> <li>• connecting cubes</li> <li>• two-color counters</li> <li>• number cards 0-5</li> <li>• small tray of sand</li> </ul>						

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

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- colored tiles
- dot tiles

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will act out number stories that involve joining two groups. (7-1)</li> <li>• will interpret illustrations that show joining groups and write the corresponding numbers. (7-2)</li> <li>• will determine how many there are altogether when two groups are joined. (7-3)</li> <li>• will use the plus sign (+) to represent joining groups when recording addition. (7-4)</li> <li>• will identify and use the equal sign (=); add and write the sum. (7-5)</li> <li>• will write and solve addition sentences to represent joining situations. (7-6)</li> <li>• will solve problems by drawing pictures and joining two groups. (7-7)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>How Many Fingers?</i> Activity (TE pg. 128A)</li> <li>• <i>Dot Card Game</i> Activity (TE pg. 130A)</li> <li>• <i>Chugga, Chugga, Choo, Choo!</i> Activity (TE pg. 132A)</li> <li>• <i>Using the Plus Sign</i> Activity (TE pg. 134A)</li> <li>• <i>Turn Up Two and Add</i> Activity (TE pg. 136A)</li> <li>• <i>Frog Hops</i> Activity (TE pg. 138A)</li> <li>• <i>Paired Problems</i> Activity (TE pg. 140A)</li> </ul>
<p><b>Differentiation (Topic 7, TE pg. 125C)</b></p> <p><b>ELL:</b></p> <ul style="list-style-type: none"> <li>• Provide extra practice working with the + and = symbols.</li> <li>• Write the addition sentence <math>3 + 4 = 7</math> on the board. Have children come to the board and circle the plus and equal symbols in the sentence, and say the words <i>plus</i> and <i>equals</i> as they circle the symbols.</li> </ul> <p><b>Special Needs:</b></p> <ul style="list-style-type: none"> <li>• Review the + and = symbols and their meanings.</li> </ul>		

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

### Below Grade Level:

- Connect the sentence *2 and 3 is 5* with the number sentence  $2 + 3 = 5$ .
- Provide extra practice working with the + and = symbols.

### Advanced/Gifted:

- Have children write out addition sentences with more complex math stories.
- Encourage mental math.

### Resources Provided

- *enVision Math Common Core, Realize Edition: Topics 7-9 Teacher Guides*

Topic 8						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Understanding Subtraction</i>					<b>Timeframe:</b> 14 days	
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy		Environmental Literacy
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Drama, Music, Science, Social Studies						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• masking tape</li> <li>• cube blocks</li> <li>• writing paper</li> <li>• markers</li> <li>• chalk</li> <li>• tray</li> <li>• utensils (fork, spoon)</li> <li>• paper clip</li> <li>• yardstick</li> <li>• magnets</li> <li>• crayons</li> <li>• glue</li> </ul>						

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- dried beans
- box
- counters
- books from classroom library
- two-color counters
- metal can
- pencils
- black paper
- toy cars
- construction paper
- buttons
- dried pasta
- yarn
- student scissors
- baskets
- small balls
- kitchen timer
- number tiles

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will act out number stories that involve separating two groups (8-1)</li> <li>• will determine how many are left when some objects in a group are taken away. (8-2)</li> <li>• will act out and solve subtraction word problems and record the answers. (8-3)</li> <li>• will use the minus sign (-) to represent “take away” situations when recording subtraction. (8-4)</li> <li>• will use the equal sign (=), subtract, and write the difference. (8-5)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Storyboard</i> Activity (TE pg. 148A)</li> <li>• <i>The Name Game</i> Activity (TE pg. 150A)</li> <li>• <i>Spend It!</i> Activity (TE pg. 152A)</li> <li>• <i>Parking Lot</i> Activity (TE pg. 154A)</li> <li>• <i>Cut Away</i> Activity (TE pg. 156A)</li> <li>• <i>Subtracting on a Number Line</i> Activity (TE pg. 158A)</li> <li>• <i>Paired Problems</i> Activity (TE pg. 160A, 162A)</li> </ul>



## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"><li>• will write and solve subtraction sentences to represent <i>take-away</i> situations. (8-6)</li><li>• will write and solve subtraction sentences to represent <i>take-away</i> situations. (8-7)</li><li>• will solve problems by choosing addition or subtraction. (8-8)</li></ul> |  |  |
|--|--|--|

### Differentiation (Topic 8, TE pg. 145C)

#### ELL:

- Provide extra practice working with the + and = symbols.
- Write the subtraction sentence  $8 - 3 = 5$  on the board. Have children come to the board and circle the minus and equals symbols in the sentence and say the words *minus* and *equals* as they circle them.
- Write the symbols “-“ and “=” on the board. Write the words *minus* and *equals* below the symbols. Have children draw lines to connect the word with correct symbol and then repeat the words orally.
- Say a subtraction sentence, such as “7 minus 4 equals 3.” Call on children to write the sentence on the board using the symbols “-“ and “=”.

#### Special Needs:

- Review the “-“ and “=” symbols and their meanings.

#### Below Grade Level:

- Connect the sentence *5 take away 3 is 2* with the number sentence  $5 - 3 = 2$ .
- Provide extra practice working with the “-“ and “=” symbols.
- Remind children that when they use + they will have more than they started with; when they use “-“, they will have less than they started with.

#### Advanced/Gifted:

- Have children write out subtraction sentences with more complex math stories.
- Encourage mental math.

### Resources Provided

- *enVision Math Common Core, Realize Edition: Topics 7-9 Teacher Guides*

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

Topic 9						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>More Addition and Subtraction</i>				<b>Timeframe:</b> 14 days		
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Science, Social Studies, Physical Education						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• connecting cubes</li> <li>• number cards 0-10</li> <li>• paper clips</li> <li>• yardstick or pointer</li> <li>• magnet</li> <li>• string</li> <li>• chart paper</li> <li>• index cards</li> <li>• soft and hard objects (marbles, cotton balls, etc.)</li> <li>• Two-Column graph (Teaching Tool 28)</li> <li>• crayons</li> <li>• markers</li> <li>• chalk</li> <li>• attribute blocks</li> <li>• Three-Column Graph (Teaching Tool 29)</li> <li>• counters</li> <li>• 5 x 5 grid (Teaching Tool 11)</li> <li>• paper cups (small and large)</li> <li>• two-color counters</li> <li>• paper</li> </ul>						

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- pencils
- square tiles
- pennies
- magnifier
- colored chalk
- ten-frame mat (Teaching Tool 8)
- student scissors
- stickers
- number cube

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will use objects to show 4 and 5 in two parts. (9-1)</li> <li>• will write number sentences to describe the decomposition of 4 or 5 into two parts (9-2)</li> <li>• will use objects to show 6 and 7 in two parts. (9-3)</li> <li>• will write number sentences to describe the decomposition of 6 or 7 into two parts. (9-4)</li> <li>• will use objects to show 8 and 9 in two parts. (9-5)</li> <li>• will write number sentences that add up to 8 and 9. (9-6)</li> <li>• will use objects to 10 in two parts. (9-7)</li> <li>• will write number sentences that show how two numbers can add to 10. (9-8)</li> <li>• will construct graphs using real objects or pictures to answer questions. (9-9)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Number Grids</i> Activity (TE pg. 170A)</li> <li>• <i>How Many are Hiding?</i> Activity (TE pg. 172A)</li> <li>• <i>Cups of 6 and 7</i> Activity (TE pg. 174A)</li> <li>• <i>Toss and Rub</i> Activity (TE pg. 176A)</li> <li>• <i>Xs and Os</i> Activity (TE pg. 178A)</li> <li>• <i>Number Sentence Match</i> Activity (TE pg. 180A)</li> <li>• <i>Handful of Color</i> Activity (TE pg. 182A)</li> <li>• <i>Paper Chains</i> Activity (TE pg. 184A)</li> <li>• <i>Paired Problems</i> Activity (TE pg. 186A)</li> </ul>

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

### Differentiation (Topic 9, TE pg. 167C)

#### ELL:

- Write the addition sentence  $2 + 3 = 5$  on the board. Underline the symbols as you read the number sentence aloud, then have children repeat the words as you touch each symbol on the board.

#### Special Needs:

- Provide larger ten-frames to children or allow them to work with a partner.

#### Below Grade Level:

- When saying a number sentence aloud, always write the number sentence on the board and model it with illustrations or manipulatives.
- Provide many opportunities for children to model addition number sentences using concrete objects. Say number sentences slowly so children can use the manipulative at the appropriate time.

#### Advanced/Gifted:

- Challenge children to think algebraically by writing number sentences with missing addends. Have children write or say the missing addend.
- Have children compare addition expressions to determine which expression represents more objects. Encourage children to draw pictures to solve.

#### Resources Provided

- *enVision Math Common Core, Realize Edition: Topics 7-9 Teacher Guides*

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

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### Unit 3 Overview

**Content Area: Mathematics**

**Unit Title:** Number and Operations in Base Ten

**Target Course/Grade Level: Kindergarten**

#### Unit Summary

This unit introduces children to the concept of grouping by tens and representing quantities as a group of ten, and some more. Children continue to build number sense by composing and decomposing the teen numbers into one 10 and some more ones. Representing the composition and decomposition of numbers also strengthens the role of the equal sign as the balance point between two quantities. When children compose and decompose numbers, they are not looking for “answers” but for two quantities that are in fact equal, but represented in different ways on either side of the equal sign.

During this unit, children become familiar with the use of double ten-frames. The use of the double ten-frame makes the grouping of one 10 and some more ones obvious and intuitive. Students connect the model with the number sentence as they practice recording their actions as number sentences.

**Primary interdisciplinary connections:** Reading, Social Studies, Science, Writing, Dramatic Play, Physical Education, Art

#### 21<sup>st</sup> century themes:

- Critical Thinking/Problem Solving
- Communication
- Collaboration

#### Unit Rationale

The focus of this unit is the composition and decomposition of the teen numbers 11-19. The focus is on the realization that teen numbers can be composed of one group of 10 and another group that contains less than 10 objects. This focus on groups of ten lays the foundations for place value understandings while continuing to build number sense and continuing to have children represent their world with number sentences.

### Learning Targets

#### Standards for Mathematical Content

- K.NBT.A.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as  $18 = 10 + 8$ ); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

#### Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

(Source: <a href="http://www.corestandards.org/Math/Content/K/CC/">http://www.corestandards.org/Math/Content/K/CC/</a> )	
<b>Content Statements</b>	
<ul style="list-style-type: none"> <li>Work with numbers 11-19 to gain foundations for place value.</li> </ul> (Source: <a href="http://www.corestandards.org/Math/Content/K/CC/">http://www.corestandards.org/Math/Content/K/CC/</a> )	
<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b> <b>Source: NJDOE Model Curriculum for Mathematics</b>
K.NBT.A.1	Compose and decompose numbers from 11 to 19 into a group of ten and some one(s) with or without manipulatives. Record each composition or decomposition through a drawing or equation.
<b>Unit Essential Questions</b> <ul style="list-style-type: none"> <li>Topic 10: How can you add 1 ten and some ones to make the numbers 11 to 19?</li> <li>Topic 11: How can we break the numbers 11 to 19 into parts?</li> </ul>	<b>Unit Enduring Understandings</b> <b>Topic 10:</b> <ul style="list-style-type: none"> <li>Numbers from 11 – 19 can be represented as the sum of 10 and some more.</li> <li>Patterns on the hundreds chart can be represented using number sentences and drawings.</li> </ul> <b>Topic 11:</b> <ul style="list-style-type: none"> <li>There is more than one way to show a number.</li> <li>The numbers 11 to 19 can be decomposed as the sum of ten and some ones.</li> <li>Some problems can be solved by identifying elements that repeat in a predictable way.</li> </ul>
<b>Unit Learning Targets</b>	
<i>Students will ...</i>	
<ul style="list-style-type: none"> <li>decompose numbers from 11 to 19 into a group of ten and some more ones.</li> </ul>	
<b>Evidence of Learning</b>	
<b>Summative Assessment (14 days per topic)</b>	
<ul style="list-style-type: none"> <li>Topics 10 - 11 Tests and Performance Assessments</li> </ul>	
<b>Materials needed:</b> as per teacher's edition	
<b>Teacher Resources:</b>	
<i>enVision Math Common Core: Realize Edition Topic 10 Composing Numbers 11 to 19</i>	
<i>enVision Math Common Core: Realize Edition Topic 11 Decomposing Numbers 11 to 19</i>	
<b>Formative Assessments</b> <ul style="list-style-type: none"> <li>teacher observation</li> <li>homework</li> <li>Lesson <i>Additional Activity</i></li> </ul>	<ul style="list-style-type: none"> <li>prior knowledge assessment</li> <li>guided practice</li> <li>Lesson <i>Quick Check</i></li> <li><i>Daily Common Core Review</i></li> </ul>
<b>Topic/Lesson Plans</b>	
<b>Topic</b>	<b>Timeframe</b>
Topic 10 <i>Composing Numbers 11 to 19</i>	14 days
Topic 11	

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<i>Decomposing Numbers 11 to 19</i>	14 days
<p><b>Teacher Notes:</b></p> <p>This unit consists of 2 topics from the <i>enVision Math Common Core</i> series with 4 to 5 lessons per topic. These two topics address the Number and Operations – Base Ten domain of the Common Core Standards for Mathematics for Kindergarten students. In addition, these 2 topics address all eight of the Standards for Mathematical Practice.</p> <p>Essential questions and enduring understandings were taken directly from the textbook series used by the district, <i>enVision Math Common Core: Realize Edition</i>.</p>	
<p><b>Curriculum Development Resources:</b></p> <p>The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): K, Counting and Cardinality; K–2, Operations and Algebraic Thinking 1. Working paper. Tools for the Common Core Standards, 29 May 2011. Web. 6 Apr. 2015. &lt;<a href="http://commoncoretools.me/tools/">commoncoretools.me/tools/</a>&gt;.</p> <p>Charles, Randall. <i>enVision Math Common Core</i>. Realize ed. Upper Saddle River: Pearson Education, 2015. Print. <i>enVision Math Common Core</i>.</p> <p>Common Core State Standards Initiative. Ed. NGA Center/CCSSO. NGA Center and CCSSO, n.d. Web. 6 Apr. 2015. &lt;<a href="http://www.corestandards.org/Math/">http://www.corestandards.org/Math/</a>&gt;.</p>	

Topic 10						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Composing Numbers 11 to 19</i>					<b>Timeframe:</b> 14 days	
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Art, Physical Education, Science, Social Studies						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<p><b>Materials needed:</b></p> <ul style="list-style-type: none"> <li>• counters</li> <li>• ten-frames</li> <li>• writing paper</li> </ul>						

## Wandell School Math Curriculum

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- connecting cubes
- index cards
- paper
- crayons
- small rectangular boxes (shoe box)
- soil
- plastic wrap
- bean seeds
- tape
- colored square tiles
- number cube
- craft sticks
- glue
- chart paper
- markers
- number cards 5-19
- hundreds chart

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will represent 11, 12, and 13 as the composition of 10 plus 1, 2, or 3. (10-1)</li> <li>• will represent 14, 15, and 16 as the composition of 10 plus 4, 5, or 6. (10-2)</li> <li>• will represent 17, 18, and 19 as the composition of 10 plus 7, 8, or 9. (10-3)</li> <li>• will use drawings and number sentences to identify patterns on the first two rows of the hundreds chart. (10-4)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>How Many?</i> Activity (TE pg. 194A)</li> <li>• <i>Number Sentence Match</i> Activity (TE pg. 196A)</li> <li>• <i>Stick Tallies</i> Activity (TE pg. 198A)</li> <li>• <i>Making Numbers</i> Activity (TE pg. 200A)</li> </ul>



## Wandell School Math Curriculum

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### Differentiation (Topic 10, TE pg. 167C)

#### ELL:

- Spend additional time connecting the quantity eleven with the number name eleven, and with the quantity twelve and the number name twelve as these number names do not follow the same pattern as the rest of the “teen” number names.

#### Special Needs:

- Provide larger ten-frames to children or allow them to work with a partner.
- If writing numerals and numbers is difficult, have students use number cards that can be placed on answer blanks; or use numeral rubber stamps and ink pads.

#### Below Grade Level:

- Model the connection between 10 ones and a group of ten often. Point out that 10 individual items can be brought together as *1 group* of 10 items.

#### Advanced/Gifted:

- Compare teen numbers: Which is greater? How much greater?
- Have children brainstorm objects that come in groups of ten, draw pictures and share with class.

#### Resources Provided

- *enVision Math Common Core, Realize Edition: Topics 7-9 Teacher Guides*

Topic 11						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Decomposing Numbers 11 to 19</i>					<b>Timeframe:</b> 14 days	
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy		Environmental Literacy
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Writing, Art, Physical Education, Drama						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b>						
<ul style="list-style-type: none"> <li>masking tape</li> <li>connecting cubes</li> <li>writing paper</li> <li>paper plates</li> </ul>						

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

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- counters
- index cards
- crayons
- number cards 11-19
- glue
- double ten-frames
- beads
- buttons
- craft sticks
- clay
- paper clips
- two-color counters
- dot stickers
- cups
- butcher paper

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will use objects to create sets to 19. (11-1)</li> <li>• will represent the decomposition of 11, 12, and 13 as ten ones and additional ones. (11-2)</li> <li>• will represent the decomposition of 14, 15, and 16 as one ten, and 4, 5, or 6 ones. (11-3)</li> <li>• will make drawing and write number sentences that represent the decomposition of 17, 18, and 19 into ten and 7, 8, or 9 ones. (11-4)</li> <li>• will identify patterns found in decomposing the teen numbers, including the constant of one 10 and the variable number of</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Sets of Objects</i> Activity (TE pg. 208A)</li> <li>• <i>Number Sculptures</i> Activity (TE pg. 210A)</li> <li>• <i>Making 14, 15, and 16</i> Activity (TE pg. 212A)</li> <li>• <i>Domino Draw</i> Activity (TE pg. 214A)</li> <li>• <i>Full and Empty Patterns</i> Activity (TE pg. 216A)</li> </ul>

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

ones. They will make drawings and write number sentences for numbers 11 to 19.  
(11-5)

### Differentiation (Topic 11, TE pg. 205C)

#### ELL:

- Write the number pairs *four* and *fourteen*; *six* and *sixteen*; *seven* and *seventeen*; *eight* and *eighteen*; *nine* and *nineteen* on the board, then
  - Point to each 1-digit number as you say it; tap your shoe against the floor one time to stress that the word has only one syllable. Then point to each 2-digit number (except *seventeen*) as you say it; tap your shoe against the floor two times to stress that the word has two syllables. Clearly pronounce *-teen* as you say it. Repeat for *seventeen*, tapping 3 times for the 3 syllables.

#### Special Needs:

- Provide extra practice with the manipulatives and visual representations.
- Provide partner work.

#### Below Grade Level:

- Provide students with numbered counters to place in the ten-frames.
- Help children to realize that 5 counters always fills one row of a ten-frame; 10 counters always fills an entire ten-frame; and 15 counters fills an entire ten-frame and the first row of the next ten-frame. Establish these as benchmarks to help children work with unnumbered counters.

#### Advanced/Gifted:

- Show that addends may change places without affecting the sum. Encourage application of the Commutative Property.

### Resources Provided

- *enVision Math Common Core, Realize Edition*: Topics 10-11 Teacher Guides, digital resources, manipulatives

## Wandell School Math Curriculum

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

### Unit 4 Overview

**Content Area: Mathematics**

**Unit Title:** Measurement and Data

**Target Course/Grade Level: Kindergarten**

#### Unit Summary

In this unit, students investigate objects and notice how they are alike (same) or different. As observations continue, students notice more specific attributes of the object such as color, size, and shape. As the unit progresses, more attributes are noticed and explored, such as length, height, weight, and capacity. Students learn the math language that will let them describe objects according to their attributes and compare one object to another. Students then sort objects according to a given attribute. Students notice that objects have more than one attribute that can be compared, and describe one object in relation to another object using words such as *taller*, *shorter*, *longer*, *tallest*.

**Primary interdisciplinary connections:** Reading, Social Studies, Science, Writing, Dramatic Play, Physical Education, Art

#### 21<sup>st</sup> century themes:

- Critical Thinking/Problem Solving
- Communication
- Collaboration

#### Unit Rationale

Geometric measurement connects the two most critical domains of early mathematics, geometry and number, with each providing conceptual support to the other. Measurement is central to mathematics, to other areas of mathematics (e.g., laying a sensory and conceptual foundation for arithmetic with fractions), to other subject matter domains, especially science, and to activities in everyday life. (The Common Core Standards Writing Team, 2012)

### Learning Targets

#### Standards for Mathematical Content

- K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- K.MD.A.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.B.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

#### Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.

## Wandell School Math Curriculum

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**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

### Content Statements

- Describe and compare measurable attributes.
- Classify objects and count the number of objects in each category.

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

**CPI #**

**Cumulative Progress Indicator (CPI)**

**Source: NJDOE Model Curriculum for Mathematics**

K.MD.A.1

Describe measurable attributes of objects, such as length or weight.

K.MD.A.2

Directly compare and describe two objects with a measurable attribute in common using “more of” /”less of” the attribute. For example, directly compare the heights of two children and describe one child as taller/shorter.

K.MD.B.3

Classify and sort objects into given categories and count the objects in each category (up to 10 objects in a group).

### Unit Essential Questions

- Topic 12: How can objects be compared and ordered by length, height, and weight?
- Topic 13: What are different ways objects can be grouped?

### Unit Enduring Understandings

#### Topic 12:

- Objects have measurable attributes such as length, capacity, and weight that can be compared and described.
- Objects can be compared by length.
- Objects can be compared by height. Comparing by height is similar to comparing by length.
- Objects can be compared by capacity.
- Objects can be compared by weight.
- Some problems can be solved by making a reasoned first try for what the answer might be and then, through additional reasoning, arrive at the correct answer.

#### Topic 13:

- Attributes can be used to compare objects.
- Attributes can be used to sort a group of objects.
- Attributes such as color, shape, or size can be used to sort the same set of objects in different ways.
- A set of objects can be sorted according to a combination of attributes.
- Some problems can be solved by reasoning about conditions in the problem.
- Data can be collected and represented using

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**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

	different types of graphs. Graphs can be used to answer questions.
<p><b>Unit Learning Targets</b>  <i>Students will ...</i></p> <ul style="list-style-type: none"> <li>• describe measurable attributes of objects, such as length, height, weight, or capacity.</li> <li>• directly compare and describe two objects with a measurable attribute in common using “more of” /”less of” the attribute.</li> <li>• classify and sort objects into given categories and count the objects in each category.</li> </ul>	
<b>Evidence of Learning</b>	
<p><b>Summative Assessment (14 days per topic)</b></p> <ul style="list-style-type: none"> <li>• Topics 12-13 Tests and Performance Assessments</li> </ul> <p><b>Materials needed:</b> as per teacher’s edition</p> <p><b>Teacher Resources:</b>  <i>enVision Math Common Core: Realize Edition Topic 12 Measurement</i>  <i>enVision Math Common Core: Realize Edition Topic 13 Sorting, Classifying, Counting, and Categorizing Data</i></p>	
<p><b>Formative Assessments</b></p> <ul style="list-style-type: none"> <li>• teacher observation</li> <li>• homework</li> <li>• Lesson <i>Additional Activity</i></li> </ul>	<ul style="list-style-type: none"> <li>• prior knowledge assessment</li> <li>• guided practice</li> <li>• Lesson <i>Quick Check</i></li> <li>• <i>Daily Common Core Review</i></li> </ul>
<b>Topic/Lesson Plans</b>	
<b>Topic</b>	<b>Timeframe</b>
Topic 12 <i>Measurement</i>	14 days
Topic 13 <i>Sorting, Classifying, Counting, and Categorizing Data</i>	14 days
<p><b>Teacher Notes:</b>            This unit consists of 2 topics from the <i>enVision Math Common Core</i> series with 4 to 7 lessons per topic. These two topics address the Measurement and Data domain of the Common Core Standards for Mathematics for Kindergarten students. In addition, these 2 topics address all eight of the Standards for Mathematical Practice.</p> <p>Essential questions and enduring understandings were taken directly from the textbook series used by the district, <i>enVision Math Common Core: Realize Edition</i>.</p>	
<p><b>Curriculum Development Resources:</b></p> <p>The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): K, Counting and Cardinality; K–2, Operations and Algebraic Thinking1. Working paper. Tools for the Common Core Standards, 29 May 2011. Web. 6 Apr. 2015.  <a href="http://commoncoretools.me/tools/">&lt;commoncoretools.me/tools/&gt;</a>.</p>	

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): K-5, Geometric Measurement. Working paper. Tools for the Common Core Standards, 23 June 2012. Web. 7 Apr. 2015. <[commoncoretools.me/tools/](http://commoncoretools.me/tools/)>.

Charles, Randall. *enVision Math Common Core*. Realize ed. Upper Saddle River: Pearson Education, 2015. Print. enVision Math Common Core.

Common Core State Standards Initiative. Ed. NGA Center/CCSSO. NGA Center and CCSSO, n.d. Web. 6 Apr. 2015. <<http://www.corestandards.org/Math/>>.

Topic 12						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Measurement</i>					<b>Timeframe:</b> 14 days	
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy		Health Literacy	Environmental Literacy
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Art, Physical Education, Drama, Social Studies, Science						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>teddy bear, large dolls, trucks, and building blocks</li> <li>various sized containers with an “unexpected surprise” inside</li> <li>construction paper</li> <li>crayons</li> <li>photographs</li> <li>glue</li> <li>masking tape</li> <li>picture books about plants</li> <li>potted plants in classroom</li> <li>plastic cups of various sizes</li> <li>balance scale</li> <li>connecting cubes</li> </ul>						

## Wandell School Math Curriculum

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**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- measuring cup
- student scissors
- paper bags
- yarn
- pencils
- number cards 0-11
- straws
- chart paper
- tape
- sticky notes
- building blocks
- sand
- play tea cups
- pan
- small bouncing balls

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will recognize and describe the measurable attributes of objects. (12-1)</li> <li>• will directly compare objects by length. (12-2)</li> <li>• will compare and order objects by length. (12-3)</li> <li>• will solve problems by comparing lengths and revising their answers. (12-4)</li> <li>• will directly compare objects by height. (12-5)</li> <li>• will compare and order three objects by height using the word “tallest”. (12-6)</li> <li>• will compare containers by capacity. (12-7)</li> <li>• will directly compare objects by weight. (12-8)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Step by Step</i> Activity (TE pg. 224A)</li> <li>• <i>Yarn Lengths</i> Activity (TE pg. 226A)</li> <li>• <i>Make a Train</i> Activity (TE pg. 228A)</li> <li>• <i>Paired Problems</i> Activity (TE pg. 230A)</li> <li>• <i>Block Towers</i> Activity (TE pg. 232A)</li> <li>• <i>Make a Tower</i> Activity (TE pg. 234A)</li> <li>• <i>More or Less?</i> Activity (TE pg. 236A)</li> <li>• <i>About the Same</i> Activity (TE pg. 238A)</li> </ul>



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### Differentiation (Topic 12, TE pg. 221C)

#### ELL:

- Show the vocabulary cards for the words *shorter* and *longer*. Have children repeat the words with you. Display in size order 3 different-colored pieces of yarn. Hold up the card for *shorter* and have children repeat the word with you.
- Draw pictures of monkeys on the board with different sized tails. Have children use the words *longer*, *shorter*, *longest*, *shortest* to describe the tails.
- Show children a 3-cube train. Have children make cube trains that are shorter than the 3-cube train. Have them say aloud the words *shorter* and *longer*.

#### Special Needs:

- Review the words *longer* and *as long as* with students.
- Direct 8 children to form 2 equal lines as if they were leaving the room. Ask other children to describe the lines. Ask if one line is *as long as* the other line.
- Move 2 children from line 1 to line 2. Ask which line is *longer*.
- Point out *longer/shorter/same length* lines of children throughout the day.

#### Below Grade Level:

- Model the words *shorter*, *longer*, *as long as* using yarn of different colors and lengths.
- Give partners yarn of different colors and sizes and have them model as above.

#### Advanced/Gifted:

- Ask children to order 3 cube trains by length, then write and order the numbers that represent the trains.
- Hold up an object and ask students to find an object that is *longer/shorter/as long as* the object being held up.

#### Resources Provided

- *enVision Math Common Core, Realize Edition*: Topics 12-13 Teacher Guides, digital resources, manipulatives

Topic 13									
<b>Content Area: Mathematics</b>									
<b>Topic Title:</b> <i>Sorting, Classifying, Counting, and Categorizing Data</i>					<b>Timeframe:</b> 14 days				
Topic Components									
<u>21<sup>st</sup> Century Themes</u>									
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy		Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>									
Creativity and Innovation		x	Critical Thinking and Problem Solving		x	Communication		x	Collaboration

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

**Interdisciplinary Connections:** Reading, Art, Physical Education, Drama, Social Studies, Science

**Integration of Technology:** this series has digital resources for each topic and lesson

**Materials needed:**

- attribute blocks
- small pieces of vegetables
- paint
- paper plates
- drawing/painting paper
- small bowls
- small paper bags
- pictures of cats and dogs from magazines, etc.
- counters
- paper clips
- pencils
- colored square tiles
- crayons
- colored chalk
- index cards
- black pen
- buttons
- cubes
- masking tape
- yarn
- large brown paper bag
- glue
- student scissors
- markers
- construction paper
- two-column graph (Teaching Tool 28)
- butcher paper (or rolled paper)

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will identify <i>same</i> and <i>different</i> by the attributes of color, shape, size, and kind.</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning</li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Concentration Game</i> Activity (TE pg. 246A)</li> <li>• <i>Stand in a Shape</i> Activity (TE pg. 248A)</li> </ul>

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

<p>(13-1)</p> <ul style="list-style-type: none"> <li>will sort objects by one attribute such as color, shape, size, or kind. (13-2)</li> <li>will sort the same set in different ways. (13-3)</li> <li>will use more than one attribute to sort a set of objects. (13-4)</li> <li>will solve problems by thinking logically. (13-5)</li> <li>will make and read a real graph. (13-6)</li> <li>will make and read a picture graph. (13-7)</li> </ul>	<p>(Modeling)</p> <p>5. Develop the Concept: Visual</p> <ol style="list-style-type: none"> <li>guided practice</li> <li>independent practice</li> </ol> <p>6. Close/Assess and Differentiate</p> <ol style="list-style-type: none"> <li>lesson Quick Check</li> <li>differentiated activities</li> <li>leveled homework</li> <li>additional activities (at right)</li> </ol>	<ul style="list-style-type: none"> <li><i>Sorting Art Supplies</i> Activity (TE pg. 250A)</li> <li><i>Brown Hair and Blue Shirts</i> Activity (TE pg. 252A)</li> <li><i>Paired Problems</i> Activity (TE pg. 254A)</li> <li><i>Sink or Float?</i> Activity (TE pg. 256A)</li> <li><i>Bug or Fish?</i> Activity (TE pg. 258A)</li> </ul>
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### Differentiation (Topic 13, TE pg. 243C)

#### ELL:

- Repeat oral language practice of the attribute words commonly used for sorting: *color, size, shape*. Make sure that children understand that these words describe categories and are used to describe how the objects are alike and different.
- Show vocabulary cards for the words *same* and *different*. Have children say the words with you. Show 2 objects that are the same and 2 that are different pointing out the vocabulary words.
- Hold out another 2 objects, have children state whether they are the *same* or *different*. Have students put the objects on the correct vocabulary card and say the word. Repeat with other sets of objects.

#### Special Needs:

- Review the words *large* and *small*
- Demonstrate examples of large and small objects whose other attributes are the same (i.e., large and small paper clips).
- Make sure that children know that size tells *how big*, and that *large* and *small* describe the object.
- Ask children to find objects that are the same color but a different size. Discuss the examples.

#### Below Grade Level:

- Reinforce the concept that objects have more than one attribute.
- Show an object; have children identify the shape, then the color.
- Model how to draw a circle, square, triangle, and rectangle one at a time. Children will draw the shapes on paper; identify the shapes using the correct shape names.
- Have children color the shapes and identify the shape name and its color.

#### Advanced/Gifted:

- Have children sort using other categories (wild animals, tool, vehicles).
- As children sort shapes, have them describe physical attributes such as number of sides.

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

### Resources Provided

- *enVision Math Common Core, Realize Edition*: Topics 12-13 Teacher Guides, digital resources, manipulatives

## Unit 5 Overview

**Content Area: Mathematics**

**Unit Title:** Geometry

**Target Course/Grade Level: Kindergarten**

### Unit Summary

This unit begins with children “explor(ing) the geometric world in which they live” (enVision Topic 14 pg. 263A) and begin to understand that objects in their environment are composed of shapes. At first children focus on the whole shape, then move on to notice attributes and learn the language that will help them describe these shapes. Students then move on to learning to describe positions and locations of the geometric shapes they see. At first, spatial learning is accomplished through physical activities such as stacking blocks, rolling spheres, etc. and describing the location of the objects. In the last topic of the unit, children focus on specific properties of shapes and use these properties to compare shapes.

**Primary interdisciplinary connections:** Reading, Social Studies, Science, Writing, Dramatic Play, Physical Education, Art

### 21<sup>st</sup> century themes:

- Critical Thinking/Problem Solving
- Communication
- Collaboration

### Unit Rationale

Like core knowledge of number, core geometrical knowledge appears to be a universal capability of the human mind. Geometric and spatial thinking are important in and of themselves, because they connect mathematics with the physical world, and play an important role in modeling phenomena whose origins are not necessarily physical, for example, as networks or graphs. They are also important because they support the development of number and arithmetic concepts and skills. Thus, geometry is essential for all grade levels for many reasons: its mathematical content, its roles in physical sciences, engineering, and many other subjects, and its strong aesthetic connections. (The Common Core Standards Writing Team, 2013)

## Learning Targets

### Standards for Mathematical Content

- K.G.A.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
- K.G.A.2 Correctly name shapes regardless of their orientations or overall size.
- K.G.A.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
- K.G.B.4 Analyze and compare two- and three-dimensional shapes, in different sizes and

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Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

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.B.5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
- K.G.B.6 Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*

### Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

### Content Statements

- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.

(Source: <http://www.corestandards.org/Math/Content/K/CC/>)

CPI #	<b>Cumulative Progress Indicator (CPI)</b> <b>Source: NJDOE Model Curriculum for Mathematics</b>				
K.G.A.1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as <i>above, below, beside, in front of, behind,</i> and <i>next to</i> .				
K.G.A.2	Correctly name shapes regardless of their orientation or overall size.				
K.G.A.3	Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").				
K.G.B.4	Analyze and compare two- and three-dimensional shapes in different sizes and orientations by counting sides or vertices ("corners") or comparing attributes such as side lengths.				
K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay) and drawing shapes.				
K.G.B.6	Compose simple shapes to form larger shapes. <i>For example, joining two triangles to create a rectangle.</i>				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 50%;"><b>Unit Essential Questions</b></th> <th style="text-align: left; width: 50%;"><b>Unit Enduring Understandings</b></th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>• Topic 14: How can shapes be named and described?</li> <li>• Topic 15: What words can be used to describe the position and location of shapes?</li> <li>• Topic 16: How can shapes be named, described, compared, and composed?</li> </ul> </td> <td style="vertical-align: top;"> <p><b>Topic 14:</b></p> <ul style="list-style-type: none"> <li>• A rectangle has four sides and four corners.</li> <li>• A square has four sides and four corners. All the sides of a square are the same length.</li> <li>• A circle is round and does not have any corners.</li> <li>• All triangles have three sides, but can have different configurations of sides and angles.</li> </ul> </td> </tr> </tbody> </table>		<b>Unit Essential Questions</b>	<b>Unit Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• Topic 14: How can shapes be named and described?</li> <li>• Topic 15: What words can be used to describe the position and location of shapes?</li> <li>• Topic 16: How can shapes be named, described, compared, and composed?</li> </ul>	<p><b>Topic 14:</b></p> <ul style="list-style-type: none"> <li>• A rectangle has four sides and four corners.</li> <li>• A square has four sides and four corners. All the sides of a square are the same length.</li> <li>• A circle is round and does not have any corners.</li> <li>• All triangles have three sides, but can have different configurations of sides and angles.</li> </ul>
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## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

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- A hexagon is a shape with six sides and six corners.
- Three-dimensional or solid figures have length, width, and height. Many everyday objects closely approximate geometric solids.
- Flat surfaces of many solid figures have specific shapes.
- Some problems can be solved by using object to act out the actions in the problem.

### Topic 15:

- The position of objects can be determined in relation to surrounding objects and described using words.
- Some problems can be solved by using object to act out the actions in the problem.

### Topic 16:

- Two-dimensional shapes can be classified by their defining attributes, specifically, the number of sides and /or the number of corners.
- Shapes can be combined to make other shapes.
- Solid figures can be compared in different ways. Some solid figures can be compared by their flat surfaces (faces) and vertices (corners).
- Solid figures can be combined to make other solid figures.
- Some problems can be solved by reasoning about conditions in the problem.

### Unit Learning Targets

*Students will ...*

- describe objects in the environment using names of shapes and describe the relative positions of these shapes.
- correctly name shapes regardless of their orientation or overall size.
- model shapes in the world by building shapes from components and by drawing shapes.
- combine simple shapes to form larger shapes.
- identify shapes as two-dimensional or three-dimensional.
- compare two- and three-dimensional shapes in different sizes and orientations by counting sides or corners, or comparing side lengths.

### Evidence of Learning

#### Summative Assessment (14 days per topic)

- Topics 14-16 Tests and Performance Assessments

**Materials needed:** as per teacher's edition

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

### Teacher Resources:

*enVision Math Common Core: Realize Edition* Topic 14 *Identifying and Describing Shapes*

*enVision Math Common Core: Realize Edition* Topic 15 *Position and Location of Shapes*

*enVision Math Common Core: Realize Edition* Topic 16 *Analyzing, Comparing, and Composing Shapes*

### Formative Assessments

- teacher observation
- homework
- Lesson *Additional Activity*
- prior knowledge assessment
- guided practice
- Lesson *Quick Check*
- *Daily Common Core Review*

### Topic/Lesson Plans

Topic	Timeframe
Topic 14 <i>Identifying and Describing Shapes</i>	14 days
Topic 15 <i>Position and Location of Shapes</i>	14 days
Topic 16 <i>Analyzing, Comparing, and Composing Shapes</i>	14 days

### Teacher Notes:

This unit consists of 3 topics from the *enVision Math Common Core* series with 5 to 8 lessons per topic. These three topics address the Geometry domain of the Common Core Standards for Mathematics for Kindergarten students. In addition, these 3 topics address all eight of the Standards for Mathematical Practice.

Essential questions and enduring understandings were taken directly from the textbook series used by the district, *enVision Math Common Core: Realize Edition*.

### Curriculum Development Resources:

The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): K, Counting and Cardinality; K–2, Operations and Algebraic Thinking<sup>1</sup>. Working paper. Tools for the Common Core Standards, 29 May 2011. Web. 6 Apr. 2015. <commoncoretools.me/tools/>.

The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): Geometry K-6. Working paper. Tools for the Common Core Standards, 19 September 2013. Web. 7 Apr. 2015. <commoncoretools.me/tools/>.

The Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft): K-5, Geometric Measurement. Working paper. Tools for the Common Core Standards, 23 June 2012. Web. 7 Apr. 2015. <commoncoretools.me/tools/>.

Charles, Randall. *enVision Math Common Core*. Realize ed. Upper Saddle River: Pearson Education,

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

2015. Print. enVision Math Common Core.

Common Core State Standards Initiative. Ed. NGA Center/CCSSO. NGA Center and CCSSO, n.d. Web. 6 Apr. 2015. <<http://www.corestandards.org/Math/>>.

Topic 14						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Identifying and Describing Shapes</i>				<b>Timeframe:</b> 14 days		
Topic Components						
<u>21<sup>st</sup> Century Themes</u>						
Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	
<u>21<sup>st</sup> Century Skills</u>						
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration
<b>Interdisciplinary Connections:</b> Reading, Art, Physical Education, Drama						
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson						
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• chart paper</li> <li>• crayons</li> <li>• cardboard shapes</li> <li>• attribute blocks</li> <li>• paper bags</li> <li>• student scissors</li> <li>• clay</li> <li>• glitter</li> <li>• plastic knives</li> <li>• cookie cutters in various shapes</li> <li>• colored yarn</li> <li>• construction paper</li> <li>• glue</li> <li>• counters</li> <li>• paper clips</li> <li>• pencil</li> <li>• pattern blocks</li> </ul>						



## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

- sponges
- paint
- student scissors
- poster board
- connecting cubes
- pipe cleaners
- markers
- geometric solids: cone, cylinder, sphere, cube, rectangular prism, pyramid
- sticky notes
- rolling pin

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will identify and describe rectangles. (14-1)</li> <li>• will identify and describe squares. (14-2)</li> <li>• will identify and describe circles. (14-3)</li> <li>• will identify and describe triangles. (14-4)</li> <li>• will identify and describe hexagons. (14-5)</li> <li>• will identify cubes, cones, cylinders, and spheres and relate them to real life objects. (14-6)</li> <li>• will identify three-dimensional figures and describe the shape of flat surfaces. (14-7)</li> <li>• will solve problems by using objects. (14-8)</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Clay Shapes Activity</i> (TE pg. 266A)</li> <li>• <i>Shape Designs Activity</i> (TE pg. 268A)</li> <li>• <i>Sorting Flat Shapes Activity</i> (TE pg. 270A)</li> <li>• <i>Triangle Books Activity</i> (TE pg. 272A)</li> <li>• <i>Hexagon Art Activity</i> (TE pg. 274A)</li> <li>• <i>Sorting Solid Figures Activity</i> (TE pg. 276A)</li> <li>• <i>Counting Flat Surfaces Activity</i> (TE pg. 278A)</li> <li>• <i>Paired Problems Activity</i> (TE pg. 280A)</li> </ul>

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

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### Differentiation (Topic 14, TE pg. 263C)

#### ELL:

- Repeat oral language practice of the words related to shape names.
- Draw a circle, a triangle, a square, and a rectangle on the board. Ask children to name each shape. Help children pronounce the words as needed. Give children paper and crayon; say the name of one of the shapes and have children draw that shape.

#### Special Needs:

- Review the words *square*, *rectangle*, *circle*, and *triangle* and the shapes represented by those words.
- Hold up a paper cut out representation of each shape and children identify it.
- Draw a square, a rectangle, a circle, and a triangle in one row on the board. Make paper shapes, including several of different sizes and colors of each shape, and put them in a paper bag.
  - Call on a child to pick a shape from the bag and identify it. Then have the child tape the shape to the board under the drawing of the shape. Repeat until all shapes are taped on the board.

#### Below Grade Level:

- Review the shapes: circle, rectangle, square, and triangle. Make a bulletin board of the shapes.
- Help children identify shapes in the classroom.
  - Have children draw the shape they observe and post them in the correct category on the bulletin board. Help children label their drawings. Add to the bulletin board on a daily basis.

#### Advanced/Gifted:

- Challenge students to identify shapes that are the same size but are not in the same relative position.
- Select a shape and have children find pattern blocks with *more/fewer* sides, or the *same* number of sides.

#### Resources Provided

- *enVision Math Common Core, Realize Edition*: Topics 12-13 Teacher Guides, digital resources, manipulatives

Topic 15						
<b>Content Area: Mathematics</b>						
<b>Topic Title:</b> <i>Position and Location of Shapes</i>					<b>Timeframe:</b> 14 days	
Topic Components						
21 <sup>st</sup> Century Themes						
Global Awareness	x	Financial, Economic, Business, and	Civic Literacy	Health Literacy	Environmental Literacy	

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

		Entrepreneurial Literacy			
<b>21<sup>st</sup> Century Skills</b>					
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x Collaboration
<b>Interdisciplinary Connections:</b> Reading, Physical Education, Drama, Social Studies					
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson					
<p><b>Materials needed:</b></p> <ul style="list-style-type: none"> <li>• masking tape</li> <li>• small shallow bowl or basket</li> <li>• paper clips</li> <li>• paper</li> <li>• index cards – small and large</li> <li>• building blocks</li> <li>• toy cars and trucks</li> <li>• boxes</li> <li>• pictures of objects found in a home or outside of a home</li> <li>• square stickers</li> <li>• solid figures</li> <li>• attribute blocks</li> <li>• magazine and catalog pictures</li> <li>• glue</li> <li>• markers</li> <li>• construction paper</li> <li>• counters</li> <li>• student scissors</li> <li>• tape</li> <li>• crayons</li> <li>• small beanbags</li> </ul>					

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
<p>Students:</p> <ul style="list-style-type: none"> <li>• will describe an object as <i>inside</i> or <i>outside</i> a given place. (15-1)</li> <li>• will describe an object</li> </ul>	<p><b>Lesson Sequence</b></p> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning</li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>In and Out Collage</i> Activity (TE pg. 288A)</li> <li>• <i>Going on a Picnic</i> Activity (TE pg. 290A)</li> </ul>

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

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<p>as <i>above</i>, <i>below</i>, or <i>on</i> a given object. (15-2)</p> <ul style="list-style-type: none"> <li>• will describe an object as <i>in front of</i> or <i>behind</i>, <i>next to</i>, or <i>beside</i> a given object. (15-3)</li> <li>• will describe an object as <i>left</i> or <i>right</i> of a given object. (15-4)</li> <li>• will solve a problem by acting it out. (15-5)</li> </ul>	<p style="text-align: center;">(Modeling)</p> <ol style="list-style-type: none"> <li>5. Develop the Concept: Visual               <ol style="list-style-type: none"> <li>a. guided practice</li> <li>b. independent practice</li> </ol> </li> <li>6. Close/Assess and Differentiate               <ol style="list-style-type: none"> <li>a. lesson Quick Check</li> <li>b. differentiated activities</li> <li>c. leveled homework</li> <li>d. additional activities (at right)</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• <i>Spinning In Front Of and Behind</i> Activity (TE pg. 292A)</li> <li>• <i>Hokey Pokey</i> Activity (TE pg. 294A)</li> <li>• <i>Following Directions</i> Activity (TE pg. 296A)</li> </ul>
<p><b>Differentiation (Topic 15, TE pg. 285C)</b></p> <p><b>ELL:</b></p> <ul style="list-style-type: none"> <li>• Repeat oral language practice of positional vocabulary.</li> <li>• With your back to the class, extend your left arm out to the side, point and look in that direction. <i>This is the left.</i> Have children mimic your actions and repeat the words. Repeat with right arm.</li> </ul> <p><b>Special Needs:</b></p> <ul style="list-style-type: none"> <li>• Review positional vocabulary using classroom objects to demonstrate.</li> <li>• Allow children to use the whole classroom as they place objects according to your directions using positional vocabulary.</li> </ul> <p><b>Below Grade Level:</b></p> <ul style="list-style-type: none"> <li>• Act out the meaning of the positional words as they are introduced and give children physical experiences placing objects in front of and behind each other.</li> </ul> <p><b>Advanced/Gifted:</b></p> <ul style="list-style-type: none"> <li>• Give children chances to follow directions using positional words. Students can give classmates directions.</li> </ul>		
<p><b>Resources Provided</b></p> <ul style="list-style-type: none"> <li>• <i>enVision Math Common Core, Realize Edition</i>: Topics 14-16 Teacher Guides, digital resources, manipulatives</li> </ul>		

Topic 16	
<b>Content Area: Mathematics</b>	
<b>Topic Title:</b> <i>Analyzing, Comparing, and Composing Shapes</i>	<b>Timeframe:</b> 14 days
Topic Components	
<a href="#"><u>21<sup>st</sup> Century Themes</u></a>	

## Wandell School Math Curriculum

Aligned to the 2014 Common Core Standards for Mathematics

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS**

Global Awareness	x	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy		Environmental Literacy
<b>21<sup>st</sup> Century Skills</b>								
Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication	x	Collaboration		
<b>Interdisciplinary Connections:</b> Reading, Drama, Social Studies, Art								
<b>Integration of Technology:</b> this series has digital resources for each topic and lesson								
<b>Materials needed:</b> <ul style="list-style-type: none"> <li>• paper bags</li> <li>• geometric solids</li> <li>• sand</li> <li>• tray</li> <li>• construction paper</li> <li>• magazines</li> <li>• student scissors</li> <li>• glue</li> <li>• crayons</li> <li>• blocks</li> <li>• index cards</li> <li>• counters</li> <li>• paper clips</li> <li>• pencils</li> <li>• right triangles</li> <li>• connecting cubes</li> <li>• pattern blocks</li> <li>• markers</li> <li>• craft sticks</li> <li>• clay</li> </ul>								

Goals/Objectives	Learning Activities/Instructional Strategies	Formative Assessment Tasks
Students: <ul style="list-style-type: none"> <li>• will create two-dimensional shapes from various materials and drawings. (16-1)</li> <li>• will recognize that shapes can be combined</li> </ul>	<b>Lesson Sequence</b> <ol style="list-style-type: none"> <li>1. Interactive Math Story</li> <li>2. Topic Opener</li> <li>3. Daily Common Core Review</li> <li>4. Problem-Based Interactive Learning (Modeling)</li> </ol>	<ul style="list-style-type: none"> <li>• lesson <i>Quick Check</i></li> <li>• <i>Shape Riddles</i> Activity (TE pg. 304A)</li> <li>• <i>Big Squares, Small Squares</i> Activity (TE pg. 306A)</li> </ul>

## Wandell School Math Curriculum

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<p>to make other shapes. (16-2)</p> <ul style="list-style-type: none"><li>• will identify solid figures that roll, stack, and/or slide on a flat surface. (16-3)</li><li>• will make shapes by combining 2 solid figures. (16-4)</li><li>• will use logical reasoning to solve problems. (16-5)</li></ul>	<p>5. Develop the Concept: Visual</p> <ul style="list-style-type: none"><li>a. guided practice</li><li>b. independent practice</li></ul> <p>6. Close/Assess and Differentiate</p> <ul style="list-style-type: none"><li>a. lesson Quick Check</li><li>b. differentiated activities</li><li>c. leveled homework</li><li>d. additional activities (at right)</li></ul>	<ul style="list-style-type: none"><li>• <i>How Are They Alike?</i> Activity (TE pg. 308A)</li><li>• <i>Building with Solid Figures</i> Activity (TE pg. 310A)</li><li>• <i>Shape Riddles</i> Activity (TE pg. 312A)</li></ul>
<p><b>Differentiation (Topic 16, TE pg. 301C)</b></p> <p><b>ELL:</b></p> <ul style="list-style-type: none"><li>• Repeat oral language practice of shape names.</li><li>• Show children several different solid figures. Ask them to name each of the solid shapes. Then ask them to look at the surface of the solid shapes and name the plane shape on the surface of each solid. Children should repeat the shape names.</li></ul> <p><b>Special Needs:</b></p> <ul style="list-style-type: none"><li>• Review solid shape names and show the three-dimensional solid as you review.</li><li>• Help children recognize three-dimensional shapes in their environment.</li><li>• Pass around solid figures and have children handle them. Then place the figures in a box. Children close their eyes and pick a figure from the box and guess what figure it is. Ask children to explain how they know.</li></ul> <p><b>Below Grade Level:</b></p> <ul style="list-style-type: none"><li>• If children use two-dimensional shape names to describe three-dimensional shapes, use questioning strategies to help children be more precise.</li><li>• Have children press solid figures into modeling clay and identify the flat shapes made by the imprints.</li></ul> <p><b>Advanced/Gifted:</b></p> <ul style="list-style-type: none"><li>• Give children opportunities to compare three-dimensional shapes with their two-dimensional counterparts.</li></ul>		
<p><b>Resources Provided</b></p> <ul style="list-style-type: none"><li>• <i>enVision Math Common Core, Realize Edition</i>: Topics 14-16 Teacher Guides, digital resources, manipulatives</li></ul>		

## LESSON REFLECTION

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Reflect on the lesson you have developed and rate the degree to which the lesson ***Strongly***, ***Moderately*** or ***Weakly*** meets the criteria below.

Lesson Activities:	Strongly	Moderately	Weakly
Are challenging and require higher order thinking and problem solving skills			
Allow for student choice			
Provide scaffolding for acquiring targeted knowledge/skills			
Integrate global perspectives			
Integrate 21 <sup>st</sup> century skills			
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills			
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills			
Are varied to address different student learning styles and preferences			
Are differentiated based on student needs			
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process			
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives			
Provide opportunities for student reflection and self-assessment			
Provide data to inform and adjust instruction to better meet the varying needs of learners			

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**Curriculum Design Template**

**Content Area: Mathematics**

<b>Course Title:</b>	<b>Grade Level: K</b>
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<a href="#"><u>Unit Plan 1</u></a>	Pacing Guide
Unit Plan 1	Pacing Guide
Unit Plan 3	Pacing Guide
Unit Plan 4	Pacing Guide
Unit Plan 5	Pacing Guide
Unit Plan 6	Pacing Guide

**Date Created:**

**Board Approved on:**