



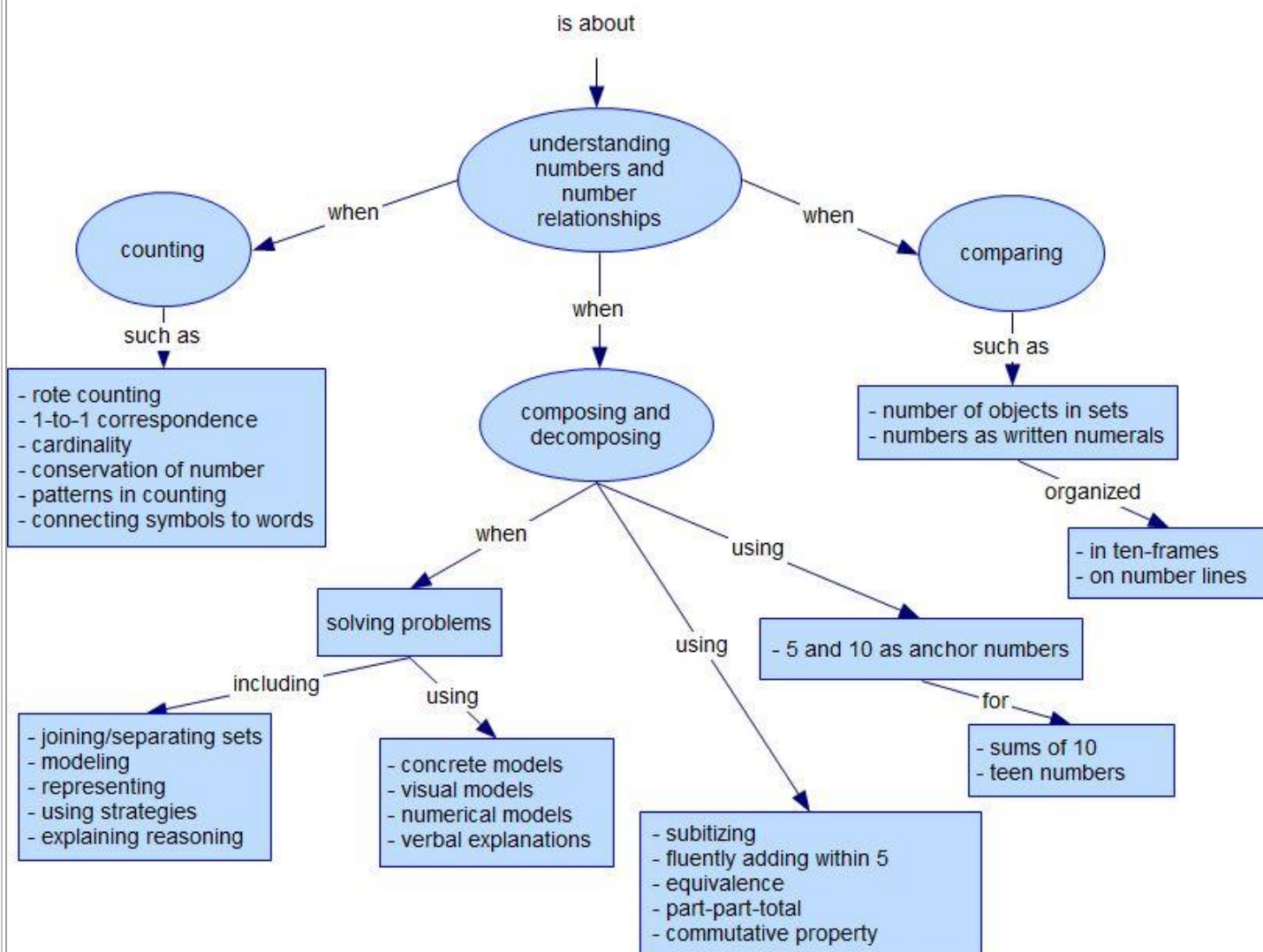
**Unit: 5 - Deepening and Extending Number (Week 22, 8 Weeks)**

## Common Core Initiative

### Overarching Questions and Enduring Understandings

Why are there different ways to count?

### Graphic Organizer



### Unit Abstract

This unit builds on the number concepts that were the focus of Unit 2. By regularly incorporating counting and comparing into daily math activities, students will now be approaching counting to 100 by one and tens. Counting should include beginning at a number other than one. Students will be writing numbers to 20 and keeping track of counting a set of objects to 20. In Unit 2 students decomposed numbers to five. By now they are well on the way to decomposing numbers

to ten. Students will revisit this task early in first grade as a review and as preparation for a first grade focus on place value. In kindergarten the place value focus is on reasoning about the teen numbers, from 11-19. Students work with the numbers as a group of ten ones and some leftovers. While students should have several experiences building teen numbers and, in doing so, seeing a group of ten and some more, they do not need to be able to recognize ten ones as one unit of ten. This concept, known as unitizing, considering ten ones as a unit in itself, is a concept that is addressed early in first grade. Students will be ready for that if they develop a firm foundation and understanding of teen numbers in kindergarten. Working with teen numbers is particularly challenging for kindergartners because, in English, the language of teen numbers does not follow a logical naming system as it does in some other languages.

Throughout this unit, students should continue to work with quick images to develop mental images of number patterns (subitizing). Gradually, with much exposure, students move from quickly describing the visual pattern they see to seeing these patterns as two addends and a total. If they have a visual memory of patterns to five, they benefit from working with larger numbers. For example, if students have done work with ten-frames, using five as an anchor number, and solved many word problems with numbers to five, they should be ready to take a quick look at a slide and quickly see that 5 and 3 more are 8. They may not be able to say “8”, but if they see five and three more, you can work on strategizing how to find the total. While engaging students in these types of explorations of number, ask yourself questions such as the following to assess their understanding. Which students will need to count from one and count all? Are there students who can *count on* from 5? *Counting on* involves a higher level of thinking than *counting all*. Fingers are very useful tools for this kind of work. Students should also have access to a personal ten-frame. By the end of the year, students are expected to “fluently add and subtract within 5,” having internalized acting out the operations of *adding to* and *taking from*.

In this unit students continue to solve addition and subtraction word problems. The types of problems the Standards identify for solving in kindergarten are addition and subtraction problems where the result is unknown and problems where both addends are unknown (but the result is known). For an example of both addends unknown, see the grape problem in the Unit 2 Highlight Lesson where students looked for all the number pairs for 5. Students act out the problem situations with objects, their fingers, drawings, and verbal explanations. They use ten-frames, linking cubes, a number grid, a number line, and other objects as tools to represent the number relationships in the story situation. They may write expressions and equations to represent their problem, but this is not a kindergarten expectation. Whatever strategy and tools students use, they should be supported in explaining their reasoning to others. Related to that is teaching students to listen to each other and to consider the reasoning of what they hear.

 [Unit Overview \(Word\)](#)

 [Unit Overview \(PDF\)](#)

| Content Expectations/Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Unit Level Standards  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <p><b>Kindergarten, Counting &amp; Cardinality</b></p> <p><b>K.CC.A. Know number names and the count sequence.</b></p> <ul style="list-style-type: none"> <li>• K.CC.A.1. Count to 100 by ones and by tens.</li> <li>• K.CC.A.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).</li> <li>• 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).</li> </ul> <p><b>K.CC.B. Count to tell the number of objects.</b></p> <ul style="list-style-type: none"> <li>• K.CC.B.4. Understand the relationship between numbers and quantities; connect counting to cardinality. <ul style="list-style-type: none"> <li>– K.CC.B.4.a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.</li> <li>– K.CC.B.4.b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they</li> </ul> </li> </ul> | <p>Not applicable</p> |

were counted.

- K.CC.B.4.c. Understand that each successive number name refers to a quantity that is one larger.

- K.CC.B.5. Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

K.CC.C. Compare numbers.

- 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.

### Kindergarten, Operations & Algebraic Thinking

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

- 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. Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)
- K.OA.A.2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- K.OA.A.3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g.,  $5 = 2 + 3$  and  $5 = 4 + 1$ ).
- 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.

### Kindergarten, Number & Operations in Base Ten

**K.NBT.A. Work with numbers 11-19 to gain foundations for place value.**

- 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.

#### Essential/Focus Questions

1. What methods can we use to solve number stories?
2. How could you justify your answer to someone else?
3. What are some ways we can decompose numbers

#### Key Concepts

addend unknown situations  
cardinality  
compare

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>and show the same number in different ways?</p> <ol style="list-style-type: none"> <li>How do teen numbers lay the foundation for place value?</li> <li>How might you recognize a number of objects (e.g., dots on a card) without counting?</li> <li>What is the difference between more and less?</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                   | <p>complements of ten<br/>compose<br/>conservation of number<br/>count<br/>decompose<br/>equivalence<br/>ones<br/>part-part-total relationships<br/>put together/take apart situations<br/>subitize<br/>teen numbers<br/>ten</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Assessment Tasks</b></p> <p> <a href="#">Assessment Overview</a></p> <p> <a href="#">Student Handouts</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><b>Intellectual Processes</b></p> <p><b>Standards for Mathematical Practice</b></p> <p><i>Students will have opportunities to:</i></p> <ul style="list-style-type: none"> <li><b>construct viable arguments and critique the reasoning of others</b> when they explain their thinking and respond to the reasoning of others;</li> <li><b>look for and make use of structure</b> when finding number pairs for 10 and when decomposing teen numbers into ten ones and more ones;</li> <li><b>model with mathematics</b> when they represent problem situations with mathematical language, objects, and graphics and when they use ten-frames to model teen numbers; and</li> <li><b>reason abstractly and quantitatively</b> when they use numbers to represent quantities and when they use objects and visual representations to express word problem situations.</li> </ul>                                                                         |
| <p><b>Lesson Sequence</b></p> <p> <a href="#">Lesson Overview (PDF)</a></p> <p> <a href="#">Student Handouts</a></p> <p> <a href="#">Number Pairs Powerpoint</a></p> <p> <a href="#">Numbers 1-10 Ten-frame Powerpoint</a></p> <p> <a href="#">Numbers 10-19 Ten-frame Powerpoint</a></p> | <p><b>Resources</b></p> <p> <a href="#">Unit Resources</a></p> <p> <a href="#">FunBrain: This site has practice addition problems</a></p> <p> <a href="#">Line Jumper - Thinking about Place Value game</a></p> <p> <a href="#">Ten Frame - Applet that develops counting and addition ability</a></p> <p> <a href="#">Applet that allows composing and decomposing numbers 0-10</a></p> <p> <a href="#">Mathematics Gaming Site</a></p> |

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