

Two Numbers Together

Compose and Decompose Numbers Up to 10

Length of Unit in Days: 10

Pre-Requisite Skills:

- K.CC 1-ii. Count to 10 by ones.
- K.CC 2-i. Count forward beginning from a given number within 1-10.
- K.CC 3-i. Write numbers from 0 to 10. Represent a number of objects with a written numeral 0-10.
- K.CC 3-iii. Understand 0 representing a count of no objects.
- K.CC 4a-i. 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. (1-10)
- K.CC 4b-i. 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. (1-10)
- K.CC 4c-i. Understand that each successive number name refers to a quantity that is one larger. (1-10)
- K.CC 5-i. Count to answer “how many?” questions about as many as 10 things arranged in a line.
- K.CC 5-iii. Count to answer “how many?” questions about as many as 10 things arranged in a rectangular array.
- K.CC 5-v. Count to answer “how many?” questions about as many as 10 things arranged in a circle.
- K.CC 5-vii. Count to answer “how many?” questions about as many as 10 things in a scattered configuration.
- K.CC 5-viii. Given a number from 1–10, count out that many objects.
- K.CC 6-i. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group by using matching. (1-10)
- K.CC 6-iii. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group by using counting strategies. (1-10)
- K.CC 7. Compare two numbers between 1 and 10 presented as written numerals.
- K.MD 3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Standards:

- K.OA 3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
- K.OA 4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Lesson Flow:

In this unit, students will further extend the idea of seeing a number from multiple perspectives, specifically understanding simultaneously that “two and five is seven” (a composition view) and “seven is two and five” (a decomposition view). Although students have learned the order of numbers up to 10, counting the number of objects up to 10, and reading and writing numerals 1-9, it is also important for students to understand the quantitative relationships among the numbers. For example, if students only know the sequential order of the numbers, they may need to rely heavily upon counting strategies when adding and subtracting numbers. In order for students to be ready for learning basic addition and subtraction, developing a rich number sense based on the understanding of quantitative relationships among the numbers is crucial. Moreover, this foundation will also be important when students calculate $8+6$. For example, students can use the relationships between numbers, $10=8+2$ and $6=2+4$ when calculating $8+6$ e.g. $8+6=8+2+4=10+4=14$. This is called, “the making-ten strategy” (1.OA.6) that students should be able to use in Grade 1.

In this unit, students will also learn how the decomposition of numbers can be expressed using equations. For example, students will understand that the decomposition of 8 can be expressed as $8 = 3 + 5$ and read it as 8 is 3 and 5. However, the more formal way of reading and writing these equations will be introduced in Unit 5.








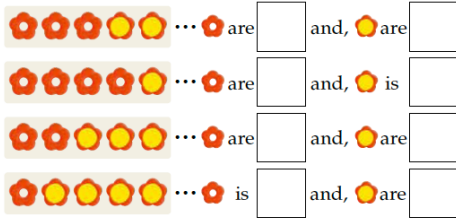
In the course of learning numbers and the structure of numbers, it is important for students to think about and visualize numbers through their own “lens” and, by doing so, will enrich their number sense. Teachers need to be careful to not rush into using numerals and doing calculations. By considering the students’ level of understanding, make sure they make connections and transitions smoothly between semi-concrete objects, such as counters, dice, and counting blocks, and more abstract representations, such as ten-frame cards, and numeral cards. Even if the textbook asks, “Five is made up of what numbers?” which prompts students to use a decomposition view, the teacher should consider asking, “What numbers do we use to make five?” to prompt for the composition view. Decomposition and composition are opposites and their doing-undoing relationship means that asking students to engage in both ways of thinking will ultimately enhance their over-all understanding.

Table of Contents

<u>Lesson Number</u>	<u>Title</u>	<u>Goals</u>
1	Composing and decomposing 5, pp.48 - 49	To understand the structure of 5
2	Composing and decomposing 6, p.50	To understand the structure of 6
3	Composing and decomposing 7, p.51	To understand the structure of 7
4	Composing and decomposing 8, p.52	To understand the structure of 8 To learn about how to read and write equations (math sentences)
5	Composing and decomposing 9, p.53	To understand the structure of 9 To learn about how to record the decomposition of 9 using equations
6	Composing and decomposing 10, p.54	To understand the structure of 10 To learn about how to record the decomposition of 10 using equations
7	Composing and decomposing 10, p.55	To strengthen students' understanding of the structure of 10
8	Composing and decomposing 10 (Let's make 10), p.56	To strengthen students' understanding of the structure of 10
9	Composing and decomposing 10 (Let's try), p. 57	To strengthen students' understanding of the structure of 10
10	Composing and decomposing numbers up to 10, pp.58 - 59	To strengthen students' understanding of the structure of numbers up to 10

Outline of the first 3 days of the unit for the experiment

Note: The series of three lessons are specially designed for a group of K students at the end of the school year as experimental lessons. Since this unit is originally designed for K students at the beginning of the school year, the first three lessons are modified based on the unit flow.







Lesson Day 1: Composing and decomposing 5 and 6	
About the Lesson	Description
<p>Type: Concept Development</p> <p>Purpose of lesson: To understand the structure of 5 and 6</p> <p>Since the students already learned some of the basic addition facts of 10, the focus of the lesson is for the students to see how the number 5 and 6 can be described in different ways through a simple game.</p> <p>When students do this game it may be possible to have the five and zero combination. Although the textbook did not include this situation in the pages, the teacher might want to show the students it is possible to have such a combination.</p>	<p>1. Introduction By going through the step-by-step instructions for explaining the activity on page 48, the students will understand the nature of the instruction and the expectations.</p> <p>1.1. Take five flower counters from the case and put them on their desks. </p> <p>1.2. See one side of each flower counter has a sticker.</p> <p>1.3. Understand that each student will be working with his/her partner to do this game. The student who has more counters with stickers on them on the sheet will be the winner.</p> <p>2. Activity</p> <p>2.1. Each student will follow the directions and find the number of  that he/she has on the sheet of paper.</p> <p>2.2. Each student will write how many  and how many  he/she has on the sheet of paper.</p> <p>3. Compare and Discuss</p> <p>3.1. Students will find how many  each student has. The teacher will use a large size flower counter on the board to see how many each has.</p> <p>3.2. Use the board to find out who has the most number of , and who has the least.</p> <p>3.3. The teacher organizes the possible outcomes in order as seen in the diagram below to see all possible outcomes from the activity.</p> <div style="text-align: right; margin-top: 10px;">   </div>

5	is	● ○ ○ ○ ○	and	1	and	4
		● ● ○ ○ ○		2		
		● ● ● ○ ○				
		● ● ● ● ○				

3.4. The teacher will ask each student to complete the worksheet and to copy the writing on the board.

4. Apply the learning to another situation

4.1. The teacher will explain the activity on page 50 that uses six counters.

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4.2. Students will do the activity with their partners. Students may use the textbook page to record the results.

5. Consolidating the learning

Use the textbook page to list all the possible ways to make six.

6	is	● ○ ○ ○ ○ ○	and	1	and	5
		● ● ○ ○ ○ ○		2		
		● ● ● ○ ○ ○				
		● ● ● ● ○ ○				
		● ● ● ● ● ○				

Lesson Day 2: Composing and decomposing 7

<u>About the Lesson</u>	<u>Description</u>																									
<p>Type: Concept Development</p> <p>Purpose of lesson: To understand the structure of 7 and 8</p> <p>Some students might have difficulty in finding the number that makes 7 just by looking at the number on the number cube. Thus, the teacher might want to provide seven slower counters to each pair of students.</p>	<p>1. Introduction By going through the step-by-step instructions for explaining the activity on page 51, the students will understand the activity.</p> <p>1.1. The activity has the students work with his/her partner by using a number cube and number cards 1 – 7. Students might be able to use seven flower counters if they need to use them.</p> <p>1.2. Student A rolls the number cube to find a number between 1-6.</p> <p>1.3. Student B will choose a number card that makes the number on the cube seven.</p> <p>1.4. Student A makes sure the number card that student B chose makes the number seven. Students may use the flower counters to make sure it is right.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">4 and 3</div> <div style="text-align: center;">1 and <input style="width: 20px; height: 20px;" type="text"/></div> <div style="text-align: center;">6 and <input style="width: 20px; height: 20px;" type="text"/></div> </div> <p>1.5. Record the results using the page in the textbook.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">5 and <input style="width: 20px; height: 20px;" type="text"/></div> <div style="text-align: center;">2 and <input style="width: 20px; height: 20px;" type="text"/></div> <div style="text-align: center;">3 and <input style="width: 20px; height: 20px;" type="text"/></div> </div> <p>2. Activity</p> <p>2.1. Each student will follow the directions.</p> <p>2.2. Each student will write the results on the textbook page.</p> <p>3. Compare and Discuss</p> <p>3.1. The teacher will work with the class to organize the possible outcomes in order similar to the diagram below to see all possible outcomes from the activity.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">7</div> <div style="margin-right: 5px;">is</div> <div style="display: flex; gap: 5px;"> ● </div> <div style="margin-left: 20px; display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">1</div> <div style="margin-right: 5px;">and</div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">6</div> </div> </div> <div style="margin-top: 10px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">●●</td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> <tr> <td style="text-align: center;">●●●</td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> <tr> <td style="text-align: center;">●●●●</td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> <tr> <td style="text-align: center;">●●●●●</td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> <tr> <td style="text-align: center;">●●●●●●</td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="text-align: center; vertical-align: middle;">and</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> </table> </div> <p>3.2. The teacher will ask each student to complete the worksheet and to copy the writing on the board.</p> <p>4. Apply the learning to another activity</p> <p>4.1. The teacher will explain the activity, the concentration game on page 50.</p> <p>4.1.1. The students will put two sets of the number cards, 1-6 on the desk. They</p>	●● 	and		and		●●● 	and		and		●●●● 	and		and		●●●●● 	and		and		●●●●●● 	and		and	
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	<p>will work with the same partner from the previous activity.</p> <p>4.1.2. The purpose of the activity is for each student to find the pair of numbers that makes 7. The students who find more pairs of cards will be the winner.</p> <p>4.2. Students will lie all the cards face down so that the number on the cards cannot be seen.</p> <p>4.3. In each turn, a student will flip two cards over. If these two cards make seven, the students can keep the cards and will receive one point. Students need to make sure if the two cards make seven or not.</p> <p>4.4. The activity will end when there are no more cards on the desk.</p> <p>5. Consolidating the learning The teacher will ask students what the most fun part of the class was and what they want to do next.</p>
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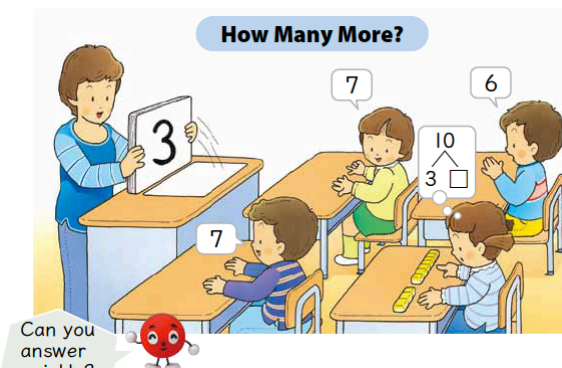
Lesson Day 3: Composing and decomposing 8	
About the Lesson	Description
<p>Type: Concept Development</p> <p>Purpose of lesson: To understand the structure of 7 and 8</p> <p>Some students might have difficulty in finding numbers that make 7 just looking at the number on the number cube. Thus, the teacher might want to provide seven slower counters to each pair of students.</p>	<p>1. Introduction</p> <p>1.1. Review the procedure of the concentration game. (Using two sets of number cards, 1-7)</p> <p>1.2. Understand that they will be making 8 today.</p> <p>2. Activity</p> <p>2.1. Each student will follow the directions.</p> <p>2.2. Each student will write the results on the textbook page.</p> <div style="text-align: center;"> </div> <p>3. Compare and Discuss</p> <p>3.1. The teacher will work with the class to organize the possible outcomes in order like the diagram below to see all the possible outcomes from the activity.</p>

3.2. The teacher will introduce how to show two numbers making eight using the way that is used in mathematics. The students will read the equations e.g. $8=1+7$ as “Eight is One and Seven”.

3.3. The teacher will ask each student to complete the worksheet and to copy the writing on the board.

4. Apply the learning to another activity

4.1. The teacher will show a number card from 1 to 7 and ask students to show how many more is needed to make 8 using a number card, a number word, or number dots card like the picture on page 56.



5. Consolidating the learning

Teacher will ask students what the most fun parts of the class was and what they want to do next.