Students explore composing and decomposing numbers up to 10. Using manipulatives and number bonds, they explore how greater numbers can be broken into lesser numbers, and how lesser numbers can be combined to make a greater number.

**COMMON CORE STANDARD(S)**

**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.

**DURATION**

Two 45-minute classroom periods

Engage and Explore, Explain, Elaborate page 1—one 45-minute classroom period

Elaborate page 2, Evaluate—second 45-minute classroom period

**MATERIALS**

1 baggie of countable objects per child

1 two-sided recording sheet - one side with spaces to draw the number of each colored counter, and a place for the total to the right; and the other side with a place to write the total to the left, and then a space for drawing to the right

**ENGAGE AND EXPLORE**

Engage students by reaching into your baggie and pulling out a handful of two-sided counters. Drop the counters on the table, allowing the two different colors to show. Model for students how to separate the counters by color and how to line them up in a row.
Ask students to count the number of red counters you picked (3). Model how students should record their counters: draw 3 red circles. Then ask students to count the number of yellow counters you picked (2). Model how to draw the yellow circles in the row with the red circles.

When all counters have been drawn, ask students to count the total number of counters (1, 2, 3, 4, 5). Write the total number of counters to the right of the circles.

Return the counters to the bag and repeat, this time with a different number of red and yellow counters.

Replace the counters, pick out another handful, and drop them on the table. This time, do not sort the counters by color. Instead, just count how many there are (6). Model how to write the total number to the left of any counters (on the back of the recording sheet). Then, have students sort by color and draw circles to record the number of each color. Return the counters and repeat.

Distribute bags of counters and a recording sheet to students. Review how to do both sides of the recording sheet: on one side the parts come first, and on the other side the total comes first. Allow students time to complete both sides of the recording sheet. Once all students are done, have pairs get together. Have them find matching totals and see if their parts are the same. Allow students time to share their findings with the class—by sharing their work or by drawing on the board or on a large chart. Allow 2-3 models for each total 2-10.

Elicit a discussion about having two groups to make a total number. Also discuss how when counting, the last number that is said is the number of items total.

**EXPLAIN**

**WATCH THE GENERATION GENIUS COMPOSING & DECOMPOSING NUMBERS (1-10) VIDEO AS A GROUP**
Facilitate a conversation using the Discussion Questions.

**ELABORATE**

Direct students to use their new understanding to complete the practice problem worksheets. Page 1 contains bare mathematical problems to solidify understanding of the process. Page 2 contains application problems for students to apply the process to solve real-world problems.

**EVALUATE**

Have students gather in groups of 2 or 4 to compare and discuss their answers to the problems. Allow students enough time to communicate with their peers about their process and their thinking. Encourage students to use correct mathematical language when discussing their process. Have each group choose two questions they want more information about, or they want to discuss as a class.

When groups are ready, take questions from students. Encourage groups to answer questions brought up by other groups.

Students can play the online Kahoot! quiz game located below the video. It provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz, or the exit ticket questions. All these resources are located below the video in the assessment section.