Topic: Composing and Decomposing 10 (5 lessons)

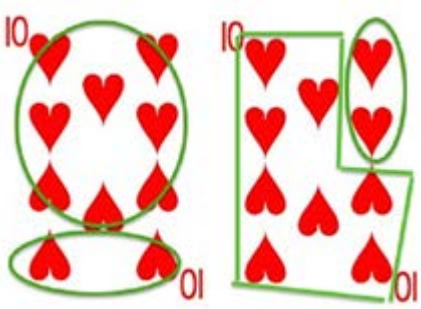
Stage 1 - Desired Results

Target Standards:

- 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.

Review Standards:

- 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 were counted

Understandings:	**Essential Questions:**
● numbers 1-10 can be broken into smaller groups in many different ways ● the count sequence can be used to count individual items as well as groups of items ● we can represent number compositions/decompositions with addition number sentences that are connected to the smaller groups that compose the whole ● finding the number that makes 10 given a number 1-9 is a special composing/decomposing context	● When we decompose numbers (ex. 3+4=7), which part of the decomposed set of objects is represented by the 3? the 4? the 7? ● How are decompositions like this the same? How are they different?  ● What are the different ways to decompose 10?

Students will know / students will be able to…

- Decompose numbers less than or equal to 10 into pairs in more than one way .. and record each decomposition with a drawing or equation
- For any number 1-9, find the number that makes 10 when added to the given number (by using objects or drawings)

Stage 2 - Assessment Evidence

Performance tasks:	**Other Evidence:**
● Daily work (decompositions on playing cards with equations) - - multiple small problems to check for understanding	● ideas surfaced through talk

Stage 3 - Learning Plan

Lesson	Title	Learning Goal
1	Decomposing the numbers seven. eight, and nine	Students will decompose numbers less than 10 and represent them with a number sentence.
2	Comparing decompositions	Students will compare different ways of decomposing numbers and understand that the total doesn't change.
3	Decomposing the number ten	Students will decompose the number 10 in different ways and represent them with a number sentence.
4	Comparing decompositions of ten	Students will compare different ways of decomposing 10 and understand that the total doesn't change.
5	How many more do you need to make 10?	Students will find the number needed to make 10 when given a number.

Lesson 3 of 5. Decomposing the number ten[1]

Lesson Steps	Anticipated Student Responses	T responses, prompts, talk moves; language supports
Introducing (10 minutes) 1. Remind the students that they worked yesterday on decomposing the 7, 8, or 9 of hearts in many different ways. 2. Present students with two decompositions of the 10 of hearts card. Both will represent the 10=2+8, but the decompositions will be visually different. 3. Ask a student to describe what they see; ask other students to repeat the first student's description. 4. Ask students what is the same and what is different about the two cards (both show 2+8, but the group of 2 and the group of 8 are in different places). 5. Once students have come to agree (or perhaps disagree) that these decompositions are described by the same equation (or that the quantity of each group is the same even though the two decompositions are visually different), students move into the independent work phase of the lesson to find find as many different possible decompositions of 10 as possible.	Depending on students' developmental levels, I expect that it may be very difficult for some students to accept that two visually different representations of the same decomposition are the same, even if they accept that the quantities and equations are the same. If this happens, I will focus the discussion on what is the same (the group of 8, the group of 2, and the total 10).	**Clarify and share thoughts.** Wait time, turn and talk, stop and jot, say more, revoicing, tell us more, give an example **Orient to the thinking of others.** Who can repeat? Who can say that again? Who can put it in their own words? Tell us what your friend said? **Engage with reasoning of others**. Do you agree or disagree? What do you think about that? Who can add on? Can you think of a different way? Does anyone have more evidence? **Deepen own thinking.** Why do you think that? How did you get the answer? What is your evidence? Why do you think that worked? Can you prove that? Can you explain step by step?
Exploring / extending (20 minutes) 1. Students work to decompose 10 in as many	Some students will be able to decompose by	

[1] Based on *Classroom Discussions in Math* (Math Solutions, 2012).

different ways as possible by circling two groups on their 10 of hearts cards; they will record these decompositions using equations. 2. Push students who are finding multiple decompositions that are visually different but mathematically identical to articulate that difference -- and move to finding a different combination. 3. An extension is for students to find as many different ways (visually) to represent the same decomposition.	drawing groups, but will need support: ● linking these groups to the total ● using numbers or equation symbols to represent their decomposition	
Summarizing (15 minutes) 1. Bring students to the carpet. Give them time to share their work with the person sitting next to them. 2. Collect work. 3. Have students discuss work from two students that are visually different but represent the same combination (ex. 3+7=10). Push students to describe using precise mathematical language what is the same (the number in the groups) and what is different (where the groups are visually).		