The Fraction Bucket
Task #3

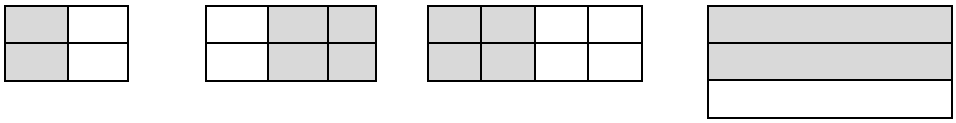
(This Task builds from Task 1 and 2)

Adapted from North Carolina Department of Public Instruction

Student Objectives: "I can compare and explain fractions with different numerators and denominators."

Standards to Measure	**Mathematical Practices**
4.NF.A.1 Explain why a fraction *a/b* is equivalent to a fraction *(n x a)/(n x b)* by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principal to recognize and generate equivalent fractions. **4.NF.A.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model..	2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others.

Materials:
Fraction Cards, Fraction Bucket Cards

G **Engage Students with the Goal**	<u>State and Rate</u> Objective: "I can compare and explain fractions with different numerators and denominators." Students rate themselves to the goal (1, 2, 3, 4).	Setting Objectives and Providing Feedback
A **Access Prior Knowledge**	What can you tell about these fractions? 	Nonlinguistic Representation Identifying Similarities and Differences

N **New Information**	Using the "Fraction Bucket" cards, have classroom discussion about how the cards could be positioned from least to greatest. **Pose this question:** Is there anything about the "Fraction Bucket" cards that would help you make the decision? Discuss any misunderstandings about the buckets. The teacher pre-selects 5 cards (one for each bucket) to demonstrate how to place them correctly in a bucket. Using one of the cards, the teacher places it on the correct bucket card while thinking out loud to the class, *"I have the card 4/4, so I am thinking that if I had four parts out of 4 total parts, I would have all the parts. So I would have a whole. I am going to place this card in the one whole bucket."* As a class, determine where the next four cards would be placed. Discuss possible reasons for why the card belongs where it is placed. Look for multiple reasons. Would it be a better fit in a different bucket? Can students support each others' ideas? Explain that in a few moments students will be working with a partner to place many different fractions in the correct bucket.	Similarities and Differences Nonlinguistic Representation Cues, Questions, and Advance Organizers
A **Application**	**Placing the Cards** Each pair of students should receive a copy of the "Fraction Bucket" cards and a set of fraction cards. Students lay out the fraction bucket cards in the correct order. Shuffle the fraction cards and place them face down in front of themselves. Take turns flipping over a fraction card and placing them on the correct bucket. As the card is being placed on the bucket, the student must explain why they are choosing that particular bucket. If the partner agrees with the explanation, another card is flipped and the students continue. If the partner does not agree with the explanation, they get a turn to explain where they think it goes. Both students must agree on which bucket each card will be place in. If the pair cannot agree, they can place the fraction card to the side for later. Repeat until all the cards have been placed. As students do this: Circulate around the room to observe the students at work. Listen to students reasoning as they place a card. Ask student to re-explain why a card is place in a certain bucket. If there is a card that is not agreed upon, listen to both arguments, and help students find other cards that may help them make a final decision. **Checking the Cards** After all the fraction cards have been placed, students can self check by flipping the buckets over and matching their cards to the answer sheet. Students can keep notes of the cards they used in their notebook. Shuffle the fraction cards and repeat.	Cooperative Learning Providing Feedback Generating and Testing Hypotheses Practice and Homework

	Discussion about the Fraction Bucket: Choose one of the fraction buckets to discuss. Suggested questions: • What strategies did the students use to place cards in this bucket? • What do all the cards have in common with each other? • Repeat with other buckets. Have the class share highlights about the fraction bucket task • Were there any cards that gave you a hard time? • What was difficult about the cards, how did other pairs solve these cards? **Placing Blank Cards** Give students blank fraction cards and have them create fractions for their partner to place. In their math journal, write rules for each bucket. How can you determine what goes in each bucket. Divide the cards between two students. Place the cards face down. Each student takes their first card and places it in the correct bucket. The student with the largest card takes their opponents card. If a card is misplaced it is automatically forfeited. If there is a tie, a second card is drawn, and the winner takes all the cards.	
G **Revisit the Goal**	<u>State and Rate</u> Objective: "I can compare and explain fractions with different numerators and denominators." Students rate themselves to the goal (1, 2, 3, 4).	Setting Objectives and Providing Feedback

Evaluation of Students

Formative:

As students are working the teacher is evaluating the students' ability to place fractions in the correct location. Teachers are listening for the reasons why the student thinks the fraction belongs where they placed it. Are there certain fractions that are giving the whole class problems?

Possible Questions

1. Where would you place 6/10? Why would you place it in the more than half and less than one bucket?
2. What do all the cards in the less than half bucket have in common?
3. If I had two fractions 2/5 and 2/3, how would I know which one is bigger?

Summative:

Students' work from various sections of this lesson can be analyzed as a summative assessment.

Plans for Individual Differences

Intervention: Remove the cards that are not ½ or 1. As the student becomes more familiar with these cards, introduce the less than half, followed by the more than half cards. Finally add the more than one card.

Bucket Fraction Cards

$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{4}$
$\frac{3}{4}$	$\frac{1}{5}$	$\frac{5}{2}$	$\frac{3}{5}$
$\frac{4}{5}$	$\frac{6}{3}$	$\frac{5}{6}$	$\frac{9}{5}$
$\frac{6}{12}$	$\frac{5}{8}$	$\frac{3}{12}$	$\frac{9}{12}$
$\frac{12}{12}$	$\frac{3}{10}$	$\frac{9}{10}$	$\frac{10}{20}$

$\frac{5}{10}$	$\frac{3}{2}$	$\frac{3}{3}$	$\frac{2}{4}$
$\frac{4}{4}$	$\frac{5}{4}$	$\frac{8}{8}$	$\frac{5}{5}$
$\frac{6}{5}$	$\frac{11}{8}$	$\frac{2}{6}$	$\frac{3}{6}$
$\frac{4}{8}$	$\frac{2}{8}$	$\frac{6}{6}$	$\frac{10}{10}$

Solution Page

Between One Half and One Whole 2/3, ¾, 3/5, 4/5, 5/6, 5/8, 9/10
Less than One Half 1/3, ¼, 1/5, 2/6, 2/8, 3/10, 3/12
More than One Whole 5/2, 6/3, 5/4, 6/5, 9/5, 11/8, 3/2
One Half ½, 2/4, 3/6, 4/8, 5/10, 6/12, 10/20
One Whole 3/3, 4/4, 5/5, 6/6, 8/8, 10/10, 12/12

Bucket Cards


One
Whole