|  |
| --- |
| **TEAM Lesson Plan Template** |
| Teacher: Rachael Worley and Carrie Stringer |
| Subject/Grade: 4th grade Math  |
| Lesson Title: “Comparing Fractions using Numerators” |
| **STANDARDS:** |
| Standard: 4.NF.A.2 – Compare two fractions with different denominators by creating common numerators. Use the symbols >, <, or = to show the relationship and justify the conclusion.This lesson emphasizes: * creating equivalent fractions to make comparisons using common numerators.
 |
| **OBJECTIVES:** |
| I can statements:* I can create equivalent fractions. (prerequisite skill; 4.NF.A.1)
* I can compare two fractions using a common denominator. (level 3)
 |
| **MATERIALS AND RESOURCES:** |
| Materials: * Each student is given 1 fraction bar set.

What if technology is not working?* Ideally, this is shown under document cameras and observations are recorded on a whiteboard; however, circulating around the room and writing observations on butcher paper works as well.

Routine for distributing materials: * Each fraction bar set is prebagged and each student is given one set. If this is the first time they are given these manipulatives, outline expectations of use and give them a few minutes to explore them with a neighbor.
 |
| **ACCOMMODATIONS/ADAPTATIONS:** |
| Accommodations: * Preferential seating
	+ Close to teacher for behavior or attention needs
	+ Close to a peer for students with math difficulties

Enrichment option:* Students will draw models showing comparison of fractions. They will then be able to justify which is greater using their models as proof.
* Example below shows comparison of 1/3 and 1/6.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |

|  |  |  |
| --- | --- | --- |
|  |  |  |

 | > |

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |

 |  |
| Sample response: I know that 1/3 is larger than 1/6 because when a whole is divided into 3 equal pieces, each of those individual pieces are larger than if the same whole had been divided into 6 equal pieces.  |

* Student will be asked to do the above activity without relying on fraction tiles or drawing the models.
 |
| **MOTIVATING STUDENTS/ANTICIPATORY SET:** |
| Put the following question on the board: * Anastasia ate ¼ of a cake. Sage ate 3/5 of a cake. Who ate more cake? Explain your reasoning.
* Students will write their answer on a post stick note and place at the front of the room. Make sure to explain that they will have the opportunity to revise their answer later on, so have them write neatly and put their name or student # on it for easy identification.
 |
| **INSTRUCTIONAL PROCEDUCRES:** |
| **Lesson Layout**Introduction:* Pass out bagged fraction sets – 1 per student
* Have students build a whole out of halves, then fourths, then sixths, etc… As they do this have them focus on the question, “What are you noticing about the size of the pieces?” Use assessing and advancing questions to guide them to the understanding that as the denominator gets larger – the size of the individual pieces get smaller. This is an essential understanding.
* Allow time here for the class discussion to deepen understanding. Use assessing and advancing questions and accountable talk practices; encourage the students to lead. You may want to add good observations to a class created anchor chart.

Middle: * Explain that you are going to compare ½ and ¼ without the fraction bars. Poll the students and have them predict which one is larger making sure to have them justify their reasoning using the understandings they learned from the lesson intro. Then have them check their answer with the fraction tiles. Allow time for class discussion to have students share their successes, their revelations, their misconceptions. During this discussion make sure to focus on the common numerator. Example, “1 half of a fraction bar is larger than 1 fourth of a fraction bar, because the fourths are smaller.”
* Repeat this process with ½ and 1/8, followed by 5/8 and 5/6.
* “We have been comparing fractions with common numerators to determine which fraction has the greatest value. What do you think we might do if we were to compare ¼ and 3/6?” Allow time for students to discuss in partners or small groups, then bring it together in a class discussion. Again, you will facilitate the discussion using assessing and advancing questions and continually connect to the previous understandings they’ve gained. The students should come to the conclusion that they can create equivalent fractions so that the two fractions have the same numerator. This would make it where the students are comparing 3/12 to 3/6. Students will need to see this with their fraction tiles to really understand.
* Repeat this discussion with the following problems:
	+ 2/5 and 1/3 (using fraction tiles)
	+ 2/3 and 4/5 (encourage students to try it without the tiles first, then they may check with fraction tiles)
	+ 3/7 and 6/9 (without tiles)

End/Closure: * Put the original hook question about Anastasia back on the board. Instruct students to get their post stick notes and rethink their first answer. They can NOT erase the original answer, but they can write that they’ve changed it and why, or they can add to their original explanation to make it clearer and more math focused. Have them turn in their post stick note. This is now used by the teacher to see each child’s understanding of the concept.
* Instruct students to clean up their fraction tiles and collect them.

**Motivating Students*** Verbal praise; make sure to praise the *process* and not the end result. This helps encourage those struggling learners and keeps them engaged in putting forth the effort.

**Presenting Instructional Content** * Hands-on
* Class discussion with teacher assessing and advancing questioning and accountable talk

**Instructional Strategies** Input: * Hook

Exploration and Discussion: * Hands on work
* Teacher guides exploration through assessing and advancing questions

Check for Understanding: * Check for understanding through questioning and observing student models
	+ Struggling Students: Give more 1 on 1 attention during partner/group work; question individually to see where the misunderstanding lies and help aid in understanding.
	+ Challenging Students: Extend thinking using higher level of questioning and include more advanced fractions; challenge to complete comparisons without the fraction tiles or beyond what the tiles allow.
 |
| **QUESTIONING/THINKING/PROBLEM SOLVING:**  |
| Questioning - These questions will occur throughout the activity as prompts based on groups’ or individual students’ progress and needs. These are also meant to be springboards to other questions.Knowledge: * Are ½ and ¼ equivalent? Why? Which fraction is larger?
* Comparing ½ and ¼, what are you noticing about the numerators? Denominators? Repeat these questions with ½ and 1/8.

Comprehension: * As the denominator gets larger, what are you noticing about the size of the pieces?
* Comparing 5/8 and 5/6, what are you noticing about the numerators? The denominators? How can we use this information to compare these two fractions?

Application:* Let’s compare ¼ and 3/6, what are you noticing about the numerator? The denominator? How can we compare these?
* Repeat this questioning with 2/5 and 1/3, 2/3 and 4/5 and 3/7 and 6/9.

**Thinking**Practical: * Who ate more cake? Anastasia who ate 1/4 of a cake, or Sage who ate 3/5 of a cake?

Analytical: * Application questions – discovering that by creating equivalent fractions so that the two fractions being compared have the same numerator you can easily compare the two.

What am I going to do to give students an opportunity to: * Generate a variety of ideas?
	+ Use assessing and advancing questions during the class discussion.
	+ Allow students to explore the concept of comparing fractions using manipulatives.
* Analyze problems from multiple viewpoints?
	+ Facilitate class discussions and encourage a variety of thoughts/ideas from different levels of students.

**Problem Solving**Experimenting: * Allow plenty of time for students to use the manipulatives to discover equivalent fractions.
* Student discovery of the best way to compare ¼ and 3/6.

Predicting outcomes: * Students will predict outcomes as they experiment with the numbers to compare ¼ and 3/6.

Improving solutions: * Teacher-led discussion using assessing and advancing questions based on student ideas
* Exit ticket
 |
| **ASSESSMENT** |
| * Hook and Exit Ticket
 |
| **CLOSURE** |
| Students go and get their “hook” post stick note. They must leave their original work, but can change their answer or add to their original explanation to reflect their learning. ALL students will write and explanation to justify their answer.  |

**NOTES:**

This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.