

Topic/Lesson Title	Renaming Improper Fractions as Mixed Numbers		
Date	February 2, 2017		
Author	Kate O'Donnell		
Subject/Unit of Study	Math	Grade Level	4th
Unit of Study	Fractions		
Materials/Preparation	SmartBoard, ELMO (document camera), pre-cut pizza slices bagged (1 bag per student), recording sheet (1 per student)		
MA Curriculum Frameworks/CCSS	<p>4.NF.3a Understand addition and subtraction of fractions as joining and separating fractions referring to parts of the same whole.</p> <p>4.NF.3b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.</p> <p>4.NF.4a Understand a fraction a/b as a multiple of $1/b$.</p> <p>SMP 3 Construct Viable Arguments and Critique the Reasoning of Others</p> <p>SMP 4 Model with Mathematics.</p>		
Essential Elements Met	<p>1.A.4: Well Structured Lessons</p> <p>1.B.2: Adjustments to Practice</p> <p>2.B.1 Safe Learning Environment</p>		

- **Lesson Learning Targets/ Head and Heart Learning Objectives:**

What do I want the students to learn, know, understand, be able to do?

I can use models to rename improper fractions as mixed numbers or whole numbers.
I can explain my math thinking.
I can listen respectfully to others explain their math thinking and ask questions when I don't understand.

- **Assessment:**

How will I assess the students' understanding and/or skills to determine if the objectives/learning targets have been met? How will I observe? What will I look for?
How will I encourage self-assessment on the part of the student? How will I lead the students to reflect on the content and nature of the experience?

Students will self-assess using the fist to five protocol throughout the lesson.
Observation of student discourse.
Completion of recording sheet.
We will come together to debrief/reflect on our progress toward the learning targets.
Exit Ticket

- **Instructional Steps/Lesson Sequence:**

- Connecting to or building students' prior knowledge/experiences; Engaging learners/setting the purpose: How will I open the lesson? How will I activate the student's prior knowledge, experiences, or skills? How will the lesson build on their knowledge, experiences, and skills?

Do Now: 10 minutes

Add these two fractions: What do you notice about your answer?

$$\frac{3}{5} + \frac{8}{5} =$$

I will open the lesson with a "Do Now" that activates prior knowledge of how to add fractions with like denominators. Although I have taught adding/subtracting fractions with unlike denominators not all students have mastered the steps yet. I don't want them to become encumbered in trying to manage those steps in the "Do Now." We will continue to revisit those skills throughout the unit. I have intentionally chosen like denominators because the focus of the lesson is for students to be able to rename improper fractions as mixed numbers using models and this problem sets the stage for the purposing of the lesson since the answer creates an improper fraction.

As I walk around the room, I will choose 1 or 2 students to share their work based on what I see in their math notebooks. I will choose these students by placing a sticky note on their desk and letting them know that they will be sharing. This will eliminate unnecessary calling out and students vying for the opportunity to come to the board.

I am looking for students who have correctly written the improper fraction and who may have noticed that the numerator is bigger than the denominator. (Because we have bumped into this before with other problems, it's possible that some students will have the correct answer.)

Review Learning Targets: 10 minutes

I can use models to rename improper fractions as mixed numbers or whole numbers.

Discuss key vocabulary with students. Connect improper fractions to the "do now" if students have not already named the answer. Review examples of whole numbers.

I can explain my math thinking.

What do you think "math thinking" is? When we want to begin to share our thinking about math, what is a sentence starter or sentence frame we could use? (I think _____ because _____ or When I was solving the problem I _____ because _____.)

I can listen respectfully to others explain their math thinking and ask questions when I don't understand.

What does it look like and sound like to listen respectfully? Why do you think it is important to do that?

If you have a question about someone's thinking, what might be a way you could ask them? I didn't understand the part where _____.

Why is it important to ask questions if you don't understand something?

- Description of how the lesson unfolds: What will I do (teacher moves)? What will the students do (student moves)? What questions will I ask?

TEACH WHOLE GROUP: Modeling Math Thinking Aloud: 15 minutes

I DO

1. Today we are going to start with an activity that will help us begin to think about how we can model improper fractions and figure out how to rename them as mixed numbers.
2. How many of you have ever eaten pizza before? In a circle pizza, how many slices are there usually? Today you are going to make your own paper pizzas. I will be your customer and tell you how many slices I want you to make. You will each have your own “pizzas” to work with but you can ask for help from your seat partner if you get stuck. When you get your pizza slices, please take them out of the bag and arrange them on your desk. Right now the only thing you need to with your recording sheet is put your name on it.
3. Paper passers pass out pre-cut paper pizza slices to each student and recording sheet.
4. I am going to model an example for you, I want you to watch me pick out my slices of pizza and arrange them. I am going to order 5 slices, I am arranging them now. Do I have more than 1 pizza or less than one pizza? I think I have less than 1 pizza. What fraction of the pizza is here? (Remember there are 8 slices in my pizza.)
5. Now I am going to order 10 slices. Let me see how I should arrange them. I think I'll count them as I arrange them, 1, 2, ... Oh look! My pizza is complete. What should I do with these 2 extra slices? Do I have more than 1 whole pizza? How can I write that as a fraction? When we are working with fractions, we always write part over whole. Which number is my part? Which one is my whole? When I have more parts than my whole, it means I have more than 1 whole. I have a mixed number. Let's look at my pizza. How can I write that as a mixed number? How many whole pizzas do I have? How many slices are left over? How do I write that as a fraction? Remember what number was my whole. Show me with Fist to Five how you are feeling about getting ready to work with a partner to try this activity. (Students that self-assess as fist, one or two will be pulled into small group with me/ESL support teacher for the independent work time) “I know that it can be challenging to think about fractions. They don't follow the same rules that whole numbers do, but I know that if we keep working together and practicing, you will feel confident!”

WE DO

6. Let's try another one, this time I want you to arrange your slices along with me. I am going to order 12 slices. I know that one pizza has 8 slices so let me count out 8 slices and arrange them into 1 pizza. I have 4 left over, what should I do with them? How can I write that as a fraction? $12/8$ How many whole pizzas do I have? 1. What fraction of a pizza do I have left over? What is my part and what is my whole? $4/8$. Is there another way I can write $4/8$? $1/2$, What is that called when we can't reduce a fraction anymore? Simplest form. I have $12/8$ of a pizza or 1 and $1/2$ pizzas. Let's practice again how to say that. 1 and one half. (Fist to five check again, noting any adjustments to plan for small group support) I will be watching to see which students are struggling to figure out how many slices make up one pizza, which students are moving with facility and use these observations to inform my groupings during the work time.

YOU DO- Small group, partner and independent work time. 20 minutes

7. Look at your recording sheet. You have 3 pizza slice orders. You will use your paper pizza slices to make a model. On your recording sheet, draw your model, write the improper fraction that your model shows. Write the mixed number that your model shows. Ms. Shapiro will call her group to the back table and I will call my group. Everyone else you can work by yourself or with your partner. Our noise level should be about a 3, remembering that many of us need it quieter to do our best work. Who can say in their own words what you are going to do right now and how you are going to do it? When I say go you will quickly, quietly and safely get to your work space. Can someone model how to get to their work space? You will have 20 minutes to work and then we will

come back together to discuss our work. Ready “Go”

- Closure: How will I end the lesson? How will I ‘set the stage’ for making connection from this learning experience to a past or future learning experience? How will ideas be synthesized?

Exit Ticket: (10 minutes)

I am going to order pizza for our pizza party this week. There are 22 students in our class. Each pizza has 8 slices. Draw a model that shows how many pizzas I need to order. Write a mixed number that shows the number of whole pizzas and slices I need to order. How many pizzas do I need to order all together? ($2\frac{6}{8}$ or $2\frac{3}{4}$ but 3 pizzas altogether).

This exit ticket asks students to extend their learning to a real life situation. They have earned a pizza party for this week. They will need to recognize that pizza places don’t sell pizza in partial pies so I will have to order 3 whole pizzas in order to have enough for everyone.

Debrief (10 minutes) We will reconvene at our seats to reflect on what we learned. Is there anyone who feels like they can say in their own words what we did today? Why do you think it is important to be able to change improper fractions to mixed numbers? Can you think of a time in real life when you would use a mixed number?

Refer back to the learning targets. Did we do these things? How do you feel now that you have had a chance to practice? Fist to five protocol.

As a class, how do think we did with explaining our math thinking? How did we do when we were listening respectfully? (Depending on how students answer, we’ll reflect on what we did well and/or what we could do differently next time. Listening is a skill we have been actively working on since the beginning of the year and need to continuously practice and reflect on.)

- Differentiation: How will I meet the needs of a range of learners? Who needs what to make this lesson accessible and successful for all (IEP’s, 504s, ELLs)

Based on my observation during the whole group lesson and student self-assessment I will intentionally group students during work time with myself or ESL support.
Recording sheet with examples and scaffolded support.

- Social Justice Orientation: How does this lesson respect and include individual student’s cultural, socio-economic, racial backgrounds?

Story problems and examples will be constructed to take into account student interests and cultural backgrounds.

- Technology Integration: How was technology used in this lesson to enhance the learning experience?

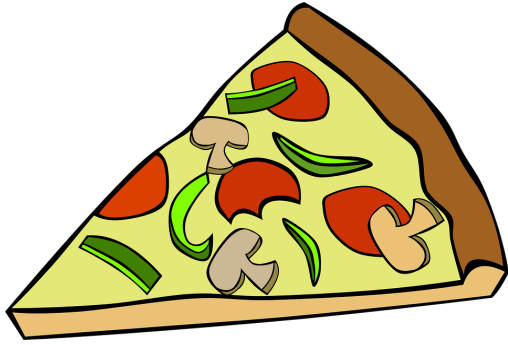
SmartBoard/ELMO to demonstrate examples and show student work.

- **Teacher Candidate Self-Reflection**

- To what degree were you successful in accomplishing the goals of this lesson?

- How do the assessment results of this lesson inform your future instructional decisions?

- What did you learn about yourself as a teacher by planning and implementing this lesson?



Improper Fractions and Mixed Numbers Pizza

Name: _____

Example: I order 10 slices of pizza.

Use your paper pizza slices to model 10 slices of pizza.

Draw a picture of what you modeled with the paper slices.

Write an improper fraction:

Write a mixed number:

1. I order 9 slices of pizza. Model with your paper pizza slices.

Draw a picture of what you modeled with the paper slices.

Write an improper fraction:

Write a mixed number:

2. I order 17 slices of pizza. Model with your paper pizza slices.
Draw a picture of what you modeled with the paper slices.

Write an improper fraction:

Write a mixed number:

3. I order 23 slices of pizza. Model with your paper pizza slices.
Draw a picture of what you modeled with the paper slices.

Write an improper fraction:

Write a mixed number: