Equivalent Representations: Mixed & Improper Fractions

Objectives

The following are the specific and observable standards that students should be able to preform at the end of this lesson:

1. The students will preform the algorithm to convert mixed numbers to improper fractions and vise-versa in three of the four centers.
2. The students will be able to draw visual models to represent mixed numbers and improper fractions and numerically identify their partners visual representations.
3. The students will be able to use manipulatives to model mixed and improper fractions.
4. Students will be able to make real world connections to the use of mixed and improper fractions.

Standards

SPI 0506.2.7 Recognize equivalent representations for the same number.

Goals

- Understand that a visual model can represent an equivalent mixed number and improper fraction.
- Understand how to convert between mixed numbers and improper fractions using the standard algorithm.

Vocabulary

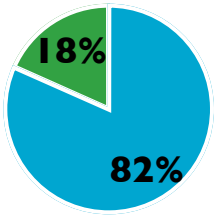
- Mixed Number
- Improper Fraction
- Manipulatives
- Models
- Equivalent

Student Inventory Pre and Post Survey (Liker Scale)

Prior to our first lesson students were asked how confident they were in their ability to convert mixed numbers to improper fractions using a liker scale that ranged from highly unsure to highly confident.

Pre-Survey

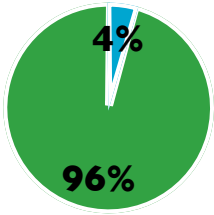
- **82% of students selected that they were unsure or highly unsure.**
- **18% of students selected they were a little bit confident or confident.**



None of the students selected that they were highly confident.

Post-Survey

- **4% of students selected that they were a little bit confident.**
- **88% of students selected that they were confident of highly confident.**



Activities and Materials

The following are the materials that will be used in this lesson:

- ***Visual Manipulatives***: Fraction Bars
- ***Interactive Review Lesson***: Flipchart, Computer, Projector
- ***Group Activity (Ability Grouped)***: Partner Representations and Identification, Dry Erase Materials
- ***Center Grouping (Mixed Ability)***: Center groups are a mixed variety of students.
- ***Assessments***: Promethean Active Expression Voters, Dry Erase Supplies, Centers, Independent Work

Lesson Structure and Pacing

- Introduction/Direct Instruction (8 min): Review whole class concepts from yesterday's lesson. Setting purpose for the lesson today and future lessons. Real-World Applications Anticipatory Set (10 min): Plans for the lesson and partner activity
- Directions and Expectations for Centers (5 min)
- Center 1 (15 min): Teacher Center (Focus on Visual Representations with Manipulatives)
- Center 2 (15 min): Desktop computers (Converting Mixed Numbers to Improper Fractions)
- Center 3 (15 min): iPads (Converting Improper Fractions to Mixed Numbers)
- Center 4 (15 min): Independent Practice
- Closure with Higher Order Questions and Clicker Questions (7 min)

- Assessment #1 Student Practice Through Out the Lesson/Dry Erase
- Assessment #2 Promethean Active Expression Voter Assessment
- Assessment #3 Partner Activity
- Assessment #4 Liker Scale Assessment of Understanding
- Assessment #5 Independent Practice WS
- Assessment # 6 Higher Order Thinking Questions

Methodology for Selected Structure and Pacing

Visual Manipulatives – Seeing is believing and difficult math algorithms can be more manageable when there is visual proof of the concept.
Whole Brain Teaching – this method involved mini-lecture, gestures, and peer teaching. When making gestures with their hands as they teach each other they are using both parts of their brains. In addition, they are active and engaged.
Interactive Lesson Format – rather than the typical teacher talking giving the lesson, the use of the interactive Promethean flipchart enables students to participate in the lesson. They are more engaged and enjoy the use of this technology.
Group Interaction – this keeps the students involved, moving around, and working cooperatively to solve problems. It helps those who are more advanced by teaching others, and it helps those who are farther behind to have additional practice with the concept before having to work independently.

Anticipatory Set with Real World Application

Students often pay more attention to the lesson when they know they are going to have to apply what they learned to a game. They also love the promethean active inspire assessments and graphs, which encourage them to play close attention to the material presented in the lesson.

Whole Group and Small Group Interactions

The whole class interactive flipchart will cover the following information.

- Discuss mixed numbers and improper fractions.
- Use the standard algorithm to convert mixed numbers and improper fractions.
- Understanding different terminology and recognize visual representations.
- Recognize equivalent forms of the same number.

In order to practice a weak area from the first lesson students will work with partners to recognize visual representations of mixed numbers and improper fractions.

Assessment and Questioning

Higher Order Thinking

Through out the flipchart and the following small group centers students will be asked to explain, demonstrate, create, and model their understanding of the content and objectives.

Assessment

- Assessment #1 Student Practice Through Out the Lesson/Dry Erase
- Assessment #2 Promethean Active Expression Voter Assessment
- Assessment #3 Partner Activity
- Assessment #4 Liker Scale Assessment of Understanding
- Assessment #5 Independent Practice WS
- Assessment # 6 Higher Order Thinking Questions

Independent Student Practice & Small Group

Independent student work gives students time to practice and ask questions about the skill they have just been taught. The practice reinforces the lesson that has just been covered in class. This independent work was created by me to quickly be able to assess understanding while still being able to work with a small group of students who seemed to struggles through out the lesson and based on the results of the promethean active vote assessment.

Closure and Knowing Where we are Going

Re-cap and review of the lesson in addition to relating those objectives to the introduction of the future lessons. Students need to understand the importance of mastering this skill because it is going to be necessary for lessons for the next six week and the rest of the year, as well as in the real world.

Teacher Knowledge of Students

I have arranged students into groups based on their ability. At each group there is a mixture of ability groups. However, they sit next to students with a similar ability group. In addition, I realize that I have a group of students that are active and need movement. I have a group of students who thrive on interaction and active learning. My class is also very sequential and visual. This lesson, as are all of the lessons that I teach, are based on those characteristics of my class. I also have two students that are significantly below level and those students had significant modifications for this lesson as are described below.

Expectations for Students

- Students should be sitting up in their seats with their eyes focused on the task at hand.
- Students should actively participate in the lesson.
- Students should ask thoughtful on task questions at the appropriate times in the lesson.
- Students should follow directions the first time.
- Students should follow classroom rules, policies, and procedures.
- Student independent work should meet specified guidelines.

Modifications

- 2 Students have their work modified and they bring their independent work to me to check every couple of problems as they go.
- These two students are placed in the groups that starts with the teacher center, and completes the independent work last.