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Part 1: The Instructor's Manual

A. Overview of Technology Product

1. Instructional goal, intended audience, length, delivery approach, instructional sequence, and materials needed.

Goal of Instruction:

Given a variety of equations dealing with fractions, 8th grade students at Frontier Middle School will correctly use their basic math skills, with and without a calculator, to solve with 80% accuracy.

Target Population Overview:

This fraction unit is made as a resource for math teachers in grades 3-9. The unit will be used for students in the Special Education program in an 8th grade Math Basic Skills class.

The instructional setting consists of a combination of three eighth grade special education math classes at Frontier Middle School. Frontier Middle is located in the middle of rural farmland in Eagle Mountain, Utah. The target population consists of 26 eighth grade students with Individualized Education Plans (IEPs) in the Special Education program. Each student has been tested and found to have a learning disability in the area of math. Class sizes range from 6-13 students. The majority of the population is Caucasian, with one student Pacific Islander and one Native American.

Classes are broken down into eight 75 minute class periods over two days. There are four classes on "A" day, then a different four classes on "B" day. Students have five minute transition time between classes.

All 26 of the students are in a special education math basic skills class, with 35% of those students also being served in a co-taught math class. This means there is a qualified general

education teacher and qualified special education teacher co-teaching in the classroom. The math basic skills and co-taught classrooms are equipped with a Promethean Smartboard, projector, surround sound speakers, microphone, Document Camera (Elmo), and a DVD/VCR player.

The curriculum taught in the math basic skills is modified from the Utah State Common Core to assist students in meeting their IEP goals. The co-taught math class focuses on grade level curriculum from Utah Common Core as well. There is little focus on math basic skills though in this class.

All 26 students receive the accommodations of use of a calculator on all tests, quizzes, and assignments. This is designed to meet the technology era the students are growing up in. This also aides students with memory and retention disabilities by giving them access to a tool that helps work out problems for them. Students also receive extended time on test, quizzes, and assignments. Many of the students with an IEP have memory difficulties. This allows students a little extra time to comprehend and finish assignments.

Length: Approximately 10-13 hours

Delivery Approach: This is an instructor led instructional unit. For the majority of the lessons, the instructor will do a presentation (PowerPoint or ActivBoard), while students take notes. Certain lessons will also be taken from online resources.

Materials List:

- Student Math Toolkit
- Student entry level tests, pre-tests, post-tests
- Student worksheets, guided notes, and paper for foldables
- ActivBoard and ActivBoard Lessons
- Computer
- Elmo (document camera)
- Whiteboards and markers
- Student binders

- Scissors, glue, tape, colored pencils/markers
- Student cell phones/iPads
- Internet for Mastery Connect
- Internet for Class Blog
- Photoshop
- Clickers

(Instructional Sequence) Task or Goal Analysis with Supporting Performance Objectives

Task 1.0 Entry Level Skills

- 1.1. Addition Review
- 1.2. Subtraction Review
- 1.3. Multiplication Review
- 1.4. Division Review

Task 2.0: Introduction to Fractions

- 2.1 Vocabulary
- 2.2 Labeling fractions

Task 3.0 Proper Fractions

- 3.1. What is a proper fraction
- 3.2 Proper fraction with common denominators
- 3.3 Comparing proper fractions
- 3.4 How to add and subtract proper fractions with common denominators

Task 4.0 Improper Fractions

- 4.1 What is an improper fraction

Performance Objective 1: When given a math worksheet of 10 improper and proper fractions, students will correctly circle with 90% accuracy.

- 4.2 What is a mixed number

4.21 Improper fraction to mixed fraction form

4.22 Mixed fraction to improper fraction form

Performance Objective 2: When given a math worksheet of 10 fractions, students will correctly write fractions from mixed fraction to improper fraction form with 80% accuracy.

4.3 How to add and subtraction improper fractions with common denominators

Performance Objective 3: When given a math worksheet of 10 addition and subtraction fraction equations with the same denominator, students will correctly solve, *without a calculator*, with 80% accuracy.

Performance Objective 4: When given a math worksheet of 10 addition and subtraction fraction equations with the same denominator, students will correctly solve, *with a calculator*, with 80% accuracy

Task 5.0 Proper and Improper Fractions with different denominators

5.1 Greatest Common Factor (GFM)

5.2 Least Common Multiple (LCM)

Task 6.0 Comparing Fractions

6.1 Comparing fractions with common denominators

6.2 Comparing fractions with different denominators

Performance Objective 5: When given a math worksheet of 10 fractions, including proper, improper, and mixed fractions, students will correctly compare two fractions with 80% accuracy.

Task 7.0 Multiplying Fractions

7.1 Multiplying with proper fractions

7.2. Multiplying with improper and mixed fractions

Performance Objective 6: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving multiplication, students will correctly solve, *without a calculator*, with 80% accuracy.

Performance Objective 7: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions involving multiplication, students will correctly solve, *with a calculator*, with 80% accuracy.

Task 8.0 Dividing Fractions

8.1 Dividing with proper fractions

8.2 Dividing with improper and mixed fractions

Performance Objective 8: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving division, students will correctly solve, *without a calculator*, with 80% accuracy.

Performance Objective 9: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving division, students will correctly solve, *with a calculator*, with 80% accuracy.

Performance Objective 10: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving a combination of addition, subtraction, multiplication, and division, *without a calculator*, students will correctly solve with 80% accuracy.

Performance Objective 11: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving a combination of addition, subtraction, multiplication, and division, *with a calculator*, students will correctly solve with 80% accuracy.

2. Brief overview of each lesson in the instruction

Lesson 1: Entry Level Skills

Students will do a basic math review (Order of Operations). They will also be taking their entry level test and pre-test for fractions.

Lesson 2: Introduction to Fractions

Students will be introduced to what a fraction is and looks like. They will learn the parts of a fraction.

Lesson 3: Proper Fractions & Adding and Subtracting Proper Fractions

Students will learn what a proper fraction is. They will learn how to compare fractions with common denominators, and how to add and subtract proper fractions with common denominators.

Lesson 4: Improper Fractions & Adding and Subtracting Improper Fractions

Students will learn what improper fractions and mixed fractions are. They will learn how to write a fraction in different ways. They will learn how to add and subtract improper fractions with common denominators. Students will take performance objectives 1-4.

Lesson 5: Proper and Improper Fractions with Different Denominators

Students will learn about proper and improper fractions with different denominators. They will learn how to find the Greatest Common Factor (GCF) and Least Common Multiple (LCM).

Lesson 6: Comparing Fractions

Students will learn how to compare fractions with common denominators and fractions with different denominators. Students will take performance objective 5.

Lesson 7: Multiplying Fractions

Students will learn how to multiply proper, improper, and mixed fractions. Students will take performance objectives 6-7.

Lesson 8: Dividing Fractions

Students will learn how to divide proper, improper, and mixed fractions. Students will take performance objectives 8-11. They will also take the fractions post-test.

3. Provide a brief overview of how learner performance is assessed.

Learners are assessed through their performance objective goals. These goals are usually worksheets students finish in class to show mastery of the skill or concept. At the beginning of the unit, student(s) will take an entry-level test and then a pre-test on their knowledge of fractions. They will be given 11 Performance Objectives to accomplish throughout the unit. At the very end of the unit the students will take a post-test. There is a class rubric (found in Appendix C) that will be used to keep track of student scores and data.

B. Instructional Strategies

Each lesson in this instructional unit includes a hands-on activity to get the students involved in the lesson. During the pre-instructional activity, students are actively involved in the learning. Each student will have a math toolkit to hold their foldables from the lesson. During the content presentation, each student will be given guided notes that will follow along with the presented lesson. Students will be able to follow along every step of the way. After the content presentation there is an assessment, which is usually in the form of a worksheet. The assessments

are small, usually no more than 10 questions, as to not overwhelm the intended audience.

Following the assessments there is a follow through activity. In this unit, the activity is generally a game of some sort. In this way, the teacher wants to reinforce what the students have just learned but to also have fun in the process. This is also a time to introduce part of the next lesson so students have an idea of what is coming next.

C. Instructional Materials needed for instructional event

- ActivBoard Lessons
- Student binders
- Student Math Toolkit
- Student entry level tests, pre-tests, post-tests
- Student assessments (Performance Objectives)
- Student worksheets, guided notes, and paper for foldables
- Math Videos (YouTube)
- Math Manipulatives (for Math ToolKit)

D. Physical Resources needed for the instructional event

- ActivBoard
- Computer
- Elmo (document camera)
- Whiteboards and markers
- Student binders
- Student Math Toolkit
- Scissors, glue, tape, colored pencils/markers
- Student cell phones/iPads
- Internet for Mastery Connect
- Internet for Class Blog
- Photoshop

- Clickers

E. Lesson plans, handouts, foldables, and assessments

****All lesson plans, handouts, foldables and assessments can be found at the class website/blog: <http://mrsdraperfractionsunit.weebly.com/>**

Handouts and Foldables: Handouts and Foldables can be found at the class website

Assessments and Rubric: Assessments can be found in Appendix A (page 32) and on the class website. The Rubric can be found in Appendix B (page 52) and on the class website.

Lesson Plans:

LESSON 1: Entry Level Skills Review and Pre-test

Lesson Overview: This will be a review of basic math skills (i.e. addition, subtraction, multiplication, division). Students will be given an entry-level skills test. They will also be given review worksheets. Lastly, they will take a pre-test.

Resources or Materials Needed:

Teachers: ActivBoard Basic Math Skills Operations, computer, Elmo (document camera), example of basic math skills foldable

Students: individual whiteboard, marker and eraser, student worksheet, scissors, markers, foldable, entry-level test, pre-test

Technology: Mastery Connect

Time: Approximately 1 ½ to 2 hours

Step 1: Pre-instructional activities:

- Students will get out their math toolkits
- Teacher will place Basic Math Operations Review Foldable on Elmo

- Students will copy down the information into their foldable and then glue foldable under their new Fractions Unit
- Teacher will explain what it means and looks like to add, subtract, multiply, and divide

Step 2: Content presentation:

- Teacher will open Basic Math Operations Review on ActivBoard
- Students will follow along on their guided notes
- The lesson will cover a review on addition, subtraction, multiplication, and division

Step 3: Learner Participation:

- Teacher will put up Basic Review Bingo on the ActivBoard
- Students will be given a blank Bingo Card
- Teacher will put numbers on the board that the students can fill in their charts will
- When finished, teacher will show an equation
- Students will solve, if they put the answer down they may mark it
- First one to 5 in a row wins

Step 4: Assessment:

- Student will be given a 20 question worksheet with a combination of addition, subtraction, multiplication, and division problems on it
- They will work on this individually without a calculators, after they have tried doing each question they will be given a calculator to check their work
- Teacher will grade the assessment; students should correctly answer at least 16/20 (80%) of the questions
- Students will then be given an entry-level skills test to measure all their basic math operation skills as well as fractions

- Teacher will use this information to guide where to begin on Fractions

Step 5: Follow-through activities:

- Students will take the pre-test individually with the use of a calculator
- This pre-test will deal with fractions and will be multiple choice
- The pre-test will be graded using Mastery Connect

Title: LESSON 2: Introduction to Fractions

Lesson Overview: This lesson will introduce the basics of fraction vocabulary and how to set up a fraction

Resources or Materials Needed:

Teachers: ActivBoard Introduction to Fractions Lesson, computer, Elmo (document camera), example of basic math skills foldable,

Students: math toolkit, Pieces of Cake, student guided notes and worksheet, scissors, markers, glue, Numerator and Denominator foldable, cellphone/iPad

Technology: cellphone/iPad

Time: Approximately 1 hour

Step 1: Pre-instructional activities:

- “Piece of Cake” hands on fraction activity
 - Teacher will pass out circles to each student
 - Students will use colored pencils/markers to color in their “cake”
 - Then they will cut out their cake and share it with other students
 - Students will manipulate their “cakes” to practice different fractions
 - After they activity students will glue the cake into their math toolkit

- Teacher will discuss that each of the segments of the shape represent a fraction, or portion, of the whole shape

Step 2: Content presentation:

- Teacher will pass out guided notes to students for Introduction to Fractions
- Teacher will present Introduction to Fractions on ActivBoard
- Students will follow along and fill out guided notes while teacher explains
 - Vocabulary

<ul style="list-style-type: none"> ▪ Fraction ▪ Numerator ▪ Denominator ▪ Integer ▪ Proper fraction ▪ Improper fraction 	<ul style="list-style-type: none"> ▪ Mixed number ▪ Greatest Common Factor (GFM) ▪ Least Common Multiple (LCM)
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- Teacher will hand “Numerator and Denominator” foldables for math toolkit
- Students will get out scissors, glue, and markers to fill out foldable
- Teacher will project on ELMO what students should write on their foldable
- When finished, students will glue into their math toolkit
- Teacher will present practice problems to fill in missing numerator and denominator
- Students will then do practice problems on their own in their guided notes

Step 3: Learner Participation:

- Teacher will walk around and monitor student work
- Teacher will post questions on polleverywhere.com and students will text in their answers using their cell phones and/or iPads

Step 4: Assessment:

- Students will be given a worksheet with questions to fill in the missing numerator or denominator, they will also need to shade in certain parts of shapes to make the given fraction
- Teacher will walk around and assess student work and give corrective feedback as needed
- Teacher will have students come up to ActivBoard to answers questions in worksheets

Step 5: Follow-through activities:

- When finished with the worksheet, students will get in groups of 2 to practice making fractions with different shapes using their Pieces of Cake
- Teacher will explain that this activity will help lead students to proper fractions which will be covered next class

Title: LESSON 3: Proper Fractions

Lesson Overview: Students will learn what a proper fraction is; how to compare proper fractions; and how to add and subtract fractions.

Resources or Materials Needed:

Teachers: Activboard Proper Fraction Lesson, computer, Elmo (document camera), example of math basic skills foldable

Students: math toolkit, student guided notes and worksheet, scissors, markers, dice, proper fractions foldable, clickers, cell phones/iPads

Technology: clickers, cell phones/iPads

Lesson Standards:

USOE Mathematics Fourth Grade Number and Operations 3.a:

Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

Time: Approximately 1 ½ -2 hours

Step 1: Pre-instructional activities:

- Students will begin with a small review starter from the previous lesson. They may use their notes to help them. It will cover vocabulary and matching shaded shapes with the correct fraction amount.
- Students will get out their “cakes” from last time. Teacher will discuss that a proper fraction has a top number (numerator) that is smaller than the bottom number (denominator).
- Teacher will open Proper Fractions on the ActivBoard
 - Students will be given clickers to click in the correct response to questions on the ActivBoard
 - The board will show a variety of shaded shapes and written fractions that the students will use clickers to answer questions

Step 2: Content presentation:

- Comparing Proper fractions
 - Students will get out their math toolkits, scissors, markers, and glue
 - Students will receive a blank white piece of paper for Comparing Fractions Foldable
 - Teacher will put Comparing Fractions foldable on the Elmo
 - There will be 3 sections: one showing and explaining greater than, less than, and equal to

- Teacher will open “Comparing Fractions” on ActivBoard
- Students will follow along with guided notes
- Teacher will explain that when we compare proper fractions we have to look at both fractions
- Teacher will show a visual example using the Pieces of Cake from the previous lesson (students will follow along with their pieces)
- Adding and Subtracting proper fractions
 - Students will keep math toolkits and materials
 - Students will turn to the math basic skills entry in their toolkit to review adding and subtracting
 - Teacher will open “Adding and Subtracting Proper Fractions” on ActivBoard
 - Students will follow along on guided notes
 - The lesson will cover how to set up addition and subtraction equations
 - Teacher will explain that you need to have the same number in the denominator when you want to add or subtract fractions, in this lesson it will only cover adding and subtracting fractions when the denominator is the same

Step 3: Learner Participation:

- Teacher will have students come up to the ActivBoard to answer questions
- Those who do not come up to the board will use their whiteboard and marker to answer the question and hold it up when they are finished

Step 4: Assessment:

- Students will be given a worksheet which includes: deciding if a given fraction is proper, comparing proper fractions, and adding and subtracting proper fractions

Step 5: Follow-through activities:

- Students will be grouped in pairs
- They will be given a set of laminated “Fraction Wars” and whiteboard markers
 - This is a game of comparing Fractions
 - Students will roll the dice to try and make fractions, once they have it written they will need to determine if it’s a proper fraction or not
 - If they successfully make a proper fraction they get a point
- Teacher will place task cards around the room for “Addition and Subtraction of Proper Fractions”
 - Students will be given a recording sheet to mark their answers as they go around the room
 - After solving each task card, students will use cell phone and/or iPad and scan the QR codes to check their answers
 - Some of the equations will leave the answer with an improper fractions, this will lead into the next day lesson on improper fractions

Title: LESSON 4: Improper Fractions

Lesson Overview: Students will learn that an improper fraction is a fraction with a numerator that is larger than the denominator and that a mixed fraction is a whole number and a proper fraction. Students will be able to write an improper fraction as a mixed fraction and a mixed fraction as an improper fraction. They will learn how to add and subtract improper and mixed fractions.

Resources or Materials Needed:

Teachers: Activboard Improper and Mixed Fractions Lesson, computer, Elmo (document camera), example of Improper and Mixed Fractions foldable

Students: math toolkit, individual whiteboard, marker and eraser, student worksheet and guided notes, scissors, markers, foldable, calculator, iPad

Technology: class blog, YouTube, iPad game

Lesson Standards:

USOE Mathematics Fourth Grade Number and Operations 3.a:

Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

Lesson Objectives:

Performance Objective 1: When given a math worksheet of 10 improper and proper fractions, students will correctly circle with 90% accuracy.

Performance Objective 2: When given a math worksheet of 10 fractions, students will correctly write fractions from mixed fraction to improper fraction form with 80% accuracy.

Performance Objective 3: When given a math worksheet of 10 addition and subtraction fraction equations with the same denominator, students will correctly solve, *without a calculator*, with 80% accuracy.

Performance Objective 4: When given a math worksheet of 10 addition and subtraction fraction equations with the same denominator, students will correctly solve, *with a calculator*, with 80% accuracy

Time: Approximately 2 hours

Step 1: Pre-instructional activities:

- Students will get out their math toolkits, scissors, glue, markers
- Teacher will pass out improper fraction foldable

- Teacher will instruct on how to fold and cut, then label numerator and denominator, glue into math toolkit with improper fraction definition (students will write down next to foldable)

Step 2: Content presentation:

- Teacher will open from class blog:
 - <http://www.coolmath4kids.com/fractions/fractions-07-improper-01.html>
 - Website does a short overview of improper and mixed fractions
- Students will be given guided notes to follow along and take notes
- Students will also be given images (hexagon) cut into equal portions to manipulative as teacher goes throughout the lesson
- Students will learn how to write an improper fraction as a mixed number and a mixed fraction as an improper fraction
- Teacher will administer Performance Objective #1 and #2 (Also under Learner Participation)
- When students have finished, teacher will open up Adding and Subtracting Improper and Mixed Fractions
- Students will be handed guided notes to follow along
- Teacher will show how to set up an addition equation with improper and mixed fractions with common denominators
- Students will practice on their guided notes
- Teacher will show how to set up a subtraction equation with improper and mixed fractions with common denominators
- Students will practice on their guided notes

Step 3: Learner Participation:

- Teacher will put some improper fractions under the Elmo
- Students will use their manipulatives to show the correct fraction
- On guided notes, students will write down the improper fraction and the corresponding image
- They will then write the improper fraction as a mixed fraction
- The process will be repeated with the teacher showing mixed fractions and students need to draw and write as an improper fraction
- Students will be given Performance Objective #1 and #2
 - Students will bring paper to the Elmo and show answers
- Addition and Subtraction:
 - Students will be given Performance Objectives #3 and #4
 - Students will bring papers to the Elmo and show answers

Step 4: Assessment:

Performance Objective 1: When given a math worksheet of 10 improper and proper fractions, students will correctly label with 90% accuracy.

Performance Objective 2: When given a math worksheet of 10 fractions, students will correctly write fractions from mixed fraction to improper fraction form with 80% accuracy.

Performance Objective 3: When given a math worksheet of 10 addition and subtraction fraction equations with the same denominator, students will correctly solve, *without a calculator*, with 80% accuracy.

Performance Objective 4: When given a math worksheet of 10 addition and subtraction fraction equations with the same denominator, students will correctly solve, *with a calculator*, with 80% accuracy

Step 5: Follow-through activities:

- Students will get in partners and get an iPad
- They will go to <http://www.jamit.com.au/htmlFolder/app1007.html> and play Adding and Subtracting Fractions

Title: LESSON 5: Proper and Improper Fractions with Different Denominators

Lesson Overview: Students will learn how to find Greatest Common Factors (GCF) and Least Common Multiples (LCM) for proper, improper, and mixed fractions with different denominators

Resources or Materials Needed:

Teachers: GCF and LCM Lesson on Activboard, computer, Elmo (document camera), example of GCF and LCM foldable, class blog

Students: math toolkit, individual whiteboard, marker and eraser, student worksheet, scissors, markers, foldable for GCF and LCM

Technology: class blog, Photoshop

Lesson Standards:

USOE Mathematics Fifth Grade Number and Operations 1:

Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

Time: Approximately 1 hour

Step 1: Pre-instructional activities:

- Students will get out math toolkits
- Students will need scissors, markers, and glue

- Teacher will pass out GCF and LCM Foldables
 - Example at (open from class blog):

<http://simplifyingradicals2.blogspot.com/2013/09/gcf-and-lcm-foldable.html>
- Students will follow along as teacher goes over the steps needed to build the foldable
- The top half will teach GCF, the bottom half will cover LCM
- Students will copy the information then glue into math toolkit

Step 2: Content presentation:

- Teacher will pass out guided notes with a Venn diagram on the front for GCF and written notes on the back for LCM
- Teacher will open ActivBoard lesson Greatest Common Factor
- Students will write and follow along as teacher goes step by step through greatest common factor Venn diagram lesson
- Students will then turn their paper over for a lesson on Least Common Multiple
- Teacher will have used Photoshop for lesson plans

Step 3: Learner Participation:

- After finishing guided notes, teacher will put up <http://www.math-play.com/Factors-and-Multiples-Jeopardy/Factors-and-Multiples-Jeopardy.html> and play Jeopardy as a class (open from class blog).

Step 4: Assessment:

- Students will take a 6 question exit quiz about GCF and LCM
- 3 questions will cover GCF and 3 questions will cover LCM – teacher will take problems from attached worksheets

Step 5: Follow-through activities:

- Students will take their math toolkits home and review proper, improper, and mixed fractions along with GCF and LCM to get ready for the next lesson about comparing fractions
- Students may play Factor Race Game if they finish early

Title: LESSON 6: Comparing Fractions with different denominators

Lesson Overview: Students will learn how to compare proper, improper, and mixed fractions with different denominators. They will learn how to determine which fraction is greater than, less than, or equal to.

Resources or Materials Needed:

Teachers: Activboard Comparing Fractions Lesson, computer, Elmo (document camera), example comparing fractions foldable

Students: math toolkit, individual whiteboard, marker and eraser, student worksheets, scissors, markers, foldable, clickers

Technology: clickers

Lesson Standards:

USOE Mathematics Fourth Grade Number and Operations 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 $\frac{1}{2}$.

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.

Lesson Objectives:

Performance Objective 5: When given a math worksheet of 10 fractions, including proper, improper, and mixed fractions, students will correctly compare two fractions with 80% accuracy.

Time: Approximately 1 hour

Step 1: Pre-instructional activities:

- Students will get out their math toolkits, scissors, markers, and glue
- They will turn to the entry on comparing proper fractions – they will review what greater than, less than, and equal too mean
- They will receive a blank paper to make a foldable for “Comparing Fractions with Different Denominators”
- Teacher will put foldable example on ELMO
- Students will copy example
- Teacher will discuss the similarities with comparing proper fractions with the same denominator

Step 2: Content presentation:

- Teacher will open “Comparing Fractions with Different Denominators” on ActivBoard
- Students will be given guided notes to follow along
- The presentation will begin with visual representations with shaded shapes, then slowly move into written fractions by themselves
- Teacher will explain how to change the denominators so that they are the same number

Step 3: Learner Participation:

- Teacher will bring out Bubble Clickers (or a bell) for Bell War
- Students will be separated into two teams

- Teacher will put a comparing fractions with either like denominators and different denominators question on the board
- Students will need to solve in their teams, when they have the correct answer they will send a person up to ring the bell

Step 4: Assessment:

- **Performance Objective 5:** When given a math worksheet of 10 fractions, including proper, improper, and mixed fractions, students will correctly compare two fractions with 80% accuracy.

Step 5: Follow-through activities:

- Students will get in pairs and play “Fraction Wars”
- This game involves students having two stacks on Fraction Cards
- Each card will have a different fraction, some with picture, some with written fractions
- Students will need to determine if they hold the greater fraction, least fraction, and equal fraction

Title: LESSON 7: Multiplying Fractions

Lesson Overview: Students will learn how to multiply proper, improper, and mixed fractions.

Resources or Materials Needed:

Teachers: Activboard Multiplication Lesson, computer, Elmo (document camera), example multiplication foldable, Fraction Review Task Cards

Students: math toolkit, individual whiteboard, marker and eraser, student worksheets, scissors, markers, foldable, cellphones/iPads

Technology: Cell phones/iPads

Lesson Standards:

USOE Mathematics Fifth Grade Number and Operations Fractions 4:

Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction

Lesson Objectives:

Performance Objective 6: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving multiplication, students will correctly solve, *without a calculator*, with 80% accuracy.

Performance Objective 7: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions involving multiplication, students will correctly solve, *with a calculator*, with 80% accuracy.

Time: Approximately 1 hour

Step 1: Pre-instructional activities:

- Students will get out their math toolkits
- Teacher will pass out Multiplying Fractions foldables
- Teacher will put example on Elmo and explain as students copy down information
- Teacher will put some basic multiplication equations on the board as review
- Students will glue in foldable and multiplication practice paper

Step 2: Content presentation:

- Teacher will pass out guided notes for Multiplying Fractions Lesson
- Teacher will open Multiplying Fractions lesson on ActivBoard
- Students will follow along on their guided notes
- Students will learn that when you multiply fractions, you multiply straight across for both the denominator and numerator

Step 3: Learner Participation:

- Students will use their whiteboards and markers
- Teacher will put a multiplication equation on the board
- Students will copy down the problem on their whiteboard and solve, when they have finished they will hold up their white board
- If they get it correct the first time they get 2 points
- If they get it incorrect, they have a chance to fix it and get 1 point

Step 4: Assessment:

- **Performance Objective 6:** When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving multiplication, students will correctly solve, *without a calculator*, with 80% accuracy.
- **Performance Objective 7:** When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions involving multiplication, students will correctly solve, *with a calculator*, with 80% accuracy.

Step 5: Follow-through activities:

- Teacher will place Fraction Review Task Cards around the room
- Each card will have either an addition, subtraction, or multiplication problem
- Students will work individually and go around the room to solve the task cards
- Students will use Cell phones/iPads to check answers using QR code and QR App

Title: LESSON 8: Dividing Fractions

Lesson Overview: Students will learn how to divide proper, improper, and mixed fractions.

Resources or Materials Needed:

Teachers: Activboard Division Lesson and Jeopardy game, computer, Elmo (document camera), example division foldable

Students: math toolkit, individual whiteboard, marker and eraser, student worksheet, scissors, markers, foldable, post-test

Technology: Prezi Presentation, class blog, Mastery Connect

Lesson Standards:

USOE Mathematics Fifth Grade Number and Operations Fractions 3:

Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem

Lesson Objectives:

Performance Objective 8: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving division, students will correctly solve, *without a calculator*, with 80% accuracy.

Performance Objective 9: When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving division, students will correctly solve, *with a calculator*, with 80% accuracy.

Time: Approximately 1 ½ hours

Step 1: Pre-instructional activities:

- Students will get out their math toolkits
- Teacher will pass out Dividing Fractions foldables
- Teacher will put example on Elmo and explain as students copy down information
 - Foldable will include all the steps to dividing fractions

- 1. Turn the second fraction (the one you want to divide by) upside-down
(this is now the reciprocal)
 - 2. Multiply the first fraction by that reciprocal
 - 3. Simplify the fraction (if needed)
- Students will add reciprocal to their vocabulary list, with definition
- Teacher will put a few basic dividing equations on the board as review
- Students will glue in foldable and division practice paper

Step 2: Content presentation:

- Teacher will open Dividing Fractions Prezi on ActivBoard
- Students will follow along on their guided notes
- Teacher will explain that when we divide fractions, it is a multi-step process
 - 1. Turn the second fraction (the one you want to divide by) upside-down
(this is now the reciprocal)
 - 2. Multiply the first fraction by that reciprocal
 - 3. Simplify the fraction (if needed)
- The lesson will also include that when we divide mixed fractions, you keep the whole number and just deal with the fractions
- After guided notes, teacher will go to http://www.mathsisfun.com/fractions_division.html to reinforce the dividing fractions concept
- Students will verbally answer questions as teacher goes through the website

Step 3: Learner Participation:

- Same activity as multiplying fractions
 - Students will use their whiteboards and markers
 - Teacher will put a division equation on the board

- Students will copy down the problem on their whiteboard and solve, when they have finished they will hold up their white board
- If they get it correct they get 2 points
- If they get it incorrect, they have a chance to fix it and get 1 point

Step 4: Assessment:

- **Performance Objective 8:** When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving division, students will correctly solve, *without a calculator*, with 80% accuracy.
- **Performance Objective 9:** When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving division, students will correctly solve, *with a calculator*, with 80% accuracy.
- **Performance Objective 10:** When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving a combination of addition, subtraction, multiplication, and division, *without a calculator*, students will correctly solve with 80% accuracy.
- **Performance Objective 11:** When given a math worksheet of 10 fraction equations, including proper, improper, and mixed fractions, involving a combination of addition, subtraction, multiplication, and division, *with a calculator*, students will correctly solve with 80% accuracy.

Step 5: Follow-through activities:

- Teacher will open Fraction Jeopardy
 - This will help prepare them for their Fraction Final (post-test)
 - Categories will include
 - Comparing Fraction

- Adding Fractions
- Subtracting Fractions
- Multiplying Fractions
- Dividing Fractions
- Students will be placed in teams
- Each student will be a Jeopardy Answers worksheet
 - They need to write their own answers then as a team they can show their answer
- Teacher will pass out post-test to students (Post-test is the same as pre-test)
 - Students will take individually with calculators
 - Test will be graded using Mastery Connect

Part 2: The Exportable Instructional Product

The exportable instructional product can be found at:

<http://mrsdraperfractionsunit.weebly.com>

Appendix A: Assessments and Performance Objectives

Entry-Level Test: Version A

V. Ward—1st Intermediate Place Skills (unpublished) 1-1-11
FORM A
Copyright © 1995, 2001 by Educational Resources, Inc. All rights reserved. 975-5

WITH A CALCULATOR

Name: _____ Date: _____ Examiner: _____

FORM A

DIRECTIONS: Do as many problems as you can. Be sure to work carefully and do what the signs tell you.

1. $\begin{array}{r} 4 \\ +1 \\ \hline \end{array}$

2. $\begin{array}{r} 7 \\ -5 \\ \hline \end{array}$

3. $\begin{array}{r} 13 \\ +4 \\ \hline \end{array}$

4. $\begin{array}{r} 15 \\ -7 \\ \hline \end{array}$

5. $\begin{array}{r} 23 \\ +58 \\ \hline \end{array}$

6. $\begin{array}{r} 63 \\ -47 \\ \hline \end{array}$

7. $\begin{array}{r} 327 \\ -118 \\ \hline \end{array}$

8. $\begin{array}{r} 327 \\ +492 \\ \hline \end{array}$

9. $\begin{array}{r} 83 \\ 62 \\ +451 \\ \hline \end{array}$

10. $\begin{array}{r} 305 \\ -191 \\ \hline \end{array}$

11. $\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$

12. $35 \div 7 = \underline{\hspace{2cm}}$

13. $\begin{array}{r} 571 \\ \times 4 \\ \hline \end{array}$

14. $4 \overline{)569}$

15. $\begin{array}{r} \frac{1}{8} \\ +\frac{1}{4} \\ \hline \end{array}$

16. $\frac{1}{3}$ of 15 = $\underline{\hspace{2cm}}$

Entry-Level Test: Version B

Name: _____

Date: _____

Examiner: _____

FORM B

DIRECTIONS: Do as many problems as you can. Be sure to work carefully and do what the signs tell you.

1.
$$\begin{array}{r} 3 \\ + 2 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 8 \\ - 3 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 12 \\ + 5 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 16 \\ - 9 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 33 \\ + 49 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 64 \\ - 36 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 335 \\ - 126 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 245 \\ + 383 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 44 \\ 73 \\ + 382 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 407 \\ - 125 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 6 \\ \times 8 \\ \hline \end{array}$$

12. $36 \div 6 = \underline{\quad}$

13.
$$\begin{array}{r} 728 \\ \times 6 \\ \hline \end{array}$$

14. $5 \overline{)790}$

15.
$$\begin{array}{r} \frac{5}{8} \\ + \frac{1}{4} \\ \hline \end{array}$$

16. $\frac{1}{4}$ of 20 = $\underline{\quad}$

Fraction Pre-test

Name: _____

Multiple Choice Identify the choice that best completes the statement or answers the question.

____ 1. Which fraction is less than $\frac{1}{2}$?

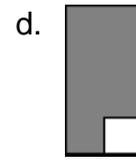
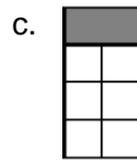
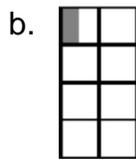
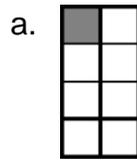
a. $\frac{5}{12}$

b. $\frac{3}{6}$

c. $\frac{3}{5}$

d. $\frac{3}{4}$

____ 2. Which picture shows $\frac{1}{8}$ shaded?



____ 3. Which fractions are in order from least to greatest?

a. $\frac{2}{3}, \frac{1}{3}, \frac{1}{2}$

b. $\frac{1}{3}, \frac{1}{2}, \frac{2}{3}$

c. $\frac{2}{3}, \frac{1}{2}, \frac{1}{3}$

d. $\frac{1}{2}, \frac{1}{3}, \frac{2}{3}$

____ 4. What fraction should be written at point A?



a. $\frac{1}{2}$

b. $\frac{1}{3}$

c. $\frac{5}{8}$

d. $\frac{4}{5}$

____ 5. What number names $\frac{1}{2}$ of 16 clowns?



a. 4

b. 9

c. 8

d. 12

____ 6. A cake was divided into 8 equal pieces. Four of those pieces were eaten. What fraction of the cake was eaten?

a. $\frac{1}{8}$

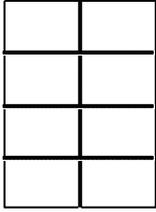
b. $\frac{4}{8}$

c. $\frac{8}{4}$

d. $\frac{4}{10}$

____ 7. Before Ray can begin his art assignment, he must divide his piece of paper into 8 equal parts. Which shows the piece of paper divided into 8 equal parts?

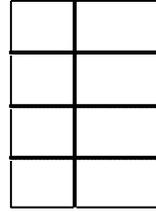
a.



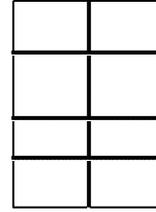
b.



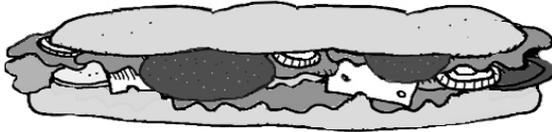
c.



d.



8. If 8 people share a submarine sandwich equally, how much does each person get?



a. $\frac{1}{2}$ of a sandwich

c. $\frac{1}{8}$ of a sandwich

b. $\frac{1}{4}$ of a sandwich

d. $\frac{4}{8}$ of a sandwich

9. What number should be written in the box?

$$\frac{2}{4} = \frac{\square}{2}$$

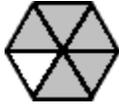
a. 1

b. 2

c. 3

d. 4

10. What fraction of the hexagon is shaded?



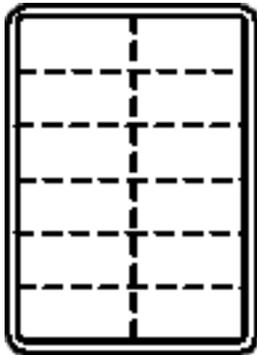
a. $\frac{1}{4}$

b. $\frac{5}{6}$

c. $\frac{5}{8}$

d. $\frac{1}{6}$

11. On Monday, Gordon and Sabrina baked a small pan of brownies. By the end of the week, they had eaten the whole thing. Gordon ate $\frac{5}{12}$ of the pan. How much did Sabrina eat?



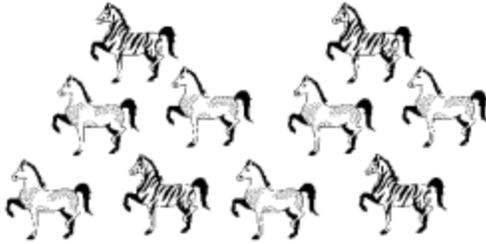
a. $\frac{7}{12}$ of the pan

c. $\frac{1}{6}$ of the pan

b. $\frac{1}{12}$ of the pan

d. $\frac{2}{3}$ of the pan

___12. What fraction of the animals are striped?



a. $\frac{4}{9}$

b. $\frac{4}{6}$

c. $\frac{6}{10}$

d. $\frac{4}{10}$

___13. Which fractions are written from smallest to largest?



a. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$

b. $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}$

c. $\frac{1}{3}, \frac{1}{4}, \frac{1}{2}$

d. $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$

___14. What number should be written in the box?

$$\frac{3}{6} = \frac{\square}{2}$$

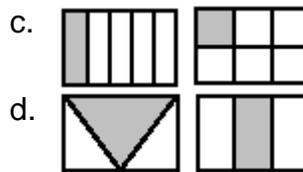
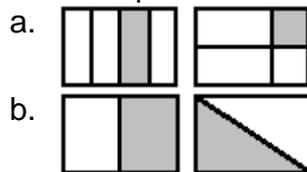
a. 1

b. 2

c. 3

d. 4

___15. In which pair of rectangles is the same amount shaded?



Performance Objective #1

Name: _____ Period: _____ Date: _____

Directions: For each question, circle whether the fraction is proper or improper.

Circle the PROPER fraction	Circle the IMPROPER fraction
1. $\frac{1}{2}$ $\frac{7}{2}$	6. $\frac{14}{3}$ $\frac{2}{6}$
2. $\frac{5}{4}$ $\frac{5}{6}$	7. $\frac{2}{4}$ $\frac{8}{6}$
3. $\frac{8}{3}$ $\frac{9}{10}$	8. $\frac{24}{5}$ $\frac{1}{6}$
4. $\frac{1}{4}$ $\frac{5}{3}$	9. $\frac{6}{8}$ $\frac{4}{3}$
5. $\frac{10}{2}$ $\frac{3}{4}$	10. $\frac{22}{20}$ $\frac{1}{5}$

Performance Objective #2

Name: _____

Date: _____ Period: _____

Change each mixed fraction to an improper fraction

a. $2 \frac{1}{4} =$

b. $8 \frac{3}{8} =$

c. $2 \frac{5}{6} =$

d. $4 \frac{1}{2} =$

e. $5 \frac{1}{3} =$

f. $10 \frac{7}{12} =$

g. $9 \frac{1}{4} =$

h. $6 \frac{5}{6} =$

i. $7 \frac{5}{6} =$

j. $10 \frac{3}{7} =$

**worksheet taken from

<http://www.sterlingpublicschools.org/lincoln/summer/Grade4MathReview/ImproperMixedFractions.pdf>

Add and Subtract Fractions with Same Denominator Date _____ Period _____

Evaluate each expression WITHOUT a calculator

1) $\frac{7}{4} + \frac{5}{4}$

2) $\frac{3}{4} + \frac{5}{4}$

3) $\frac{13}{12} - \frac{5}{12}$

4) $\frac{7}{4} + \frac{1}{4}$

5) $\frac{7}{6} - \frac{1}{6}$

6) $\frac{17}{10} - \frac{1}{10}$

7) $\frac{5}{8} + \frac{9}{8}$

8) $\frac{8}{5} + \frac{7}{5}$

9) $6 + \frac{7}{8}$

10) $\frac{13}{11} + \frac{10}{11}$

Add and Subtract Fractions Same Denominator

Date _____ Period _____

Evaluate each expression WITH a calculator

1) $\frac{17}{10} - \frac{1}{10}$

2) $\frac{13}{8} - \frac{11}{8}$

3) $\frac{13}{11} - \frac{10}{11}$

4) $\frac{5}{6} + \frac{7}{6}$

5) $\frac{5}{12} + \frac{5}{12}$

6) $\frac{5}{4} - \frac{1}{4}$

7) $\frac{23}{12} + \frac{17}{12}$

8) $\frac{12}{7} + \frac{4}{7}$

9) $\frac{9}{5} - \frac{2}{5}$

10) $8 + \frac{6}{11}$

Comparing Fractions

Write the correct sign in the box
(Greater than, Less than, Equal too)

> < =

1 $\frac{6}{7} \square \frac{8}{7}$	2 $\frac{14}{5} \square \frac{17}{5}$	3 $1\frac{2}{5} \square 1\frac{3}{5}$
4 $\frac{6}{9} \square \frac{2}{9}$	5 $4\frac{5}{6} \square \frac{29}{6}$	6 $\frac{11}{3} \square \frac{2}{3}$
7 $\frac{9}{4} \square \frac{13}{4}$	8 $\frac{1}{8} \square 1\frac{1}{8}$	9 $\frac{4}{10} \square \frac{3}{10}$
10 $\frac{12}{5} \square \frac{16}{5}$	11 $\frac{15}{7} \square 2\frac{2}{7}$	12 $\frac{9}{8} \square \frac{6}{8}$

(11 and 12 are bonus!)

**Worksheet taken from <http://www.mathworksheets4kids.com/fractions/compare/like.pdf>

Multiplying Fractions (Proper, Improper, Mixed)

Date _____ Period _____

Find each product **WITHOUT** a calculator

1) $\frac{1}{2} \times \frac{2}{5}$

2) $2\frac{2}{3} \times \frac{1}{2}$

3) $1\frac{1}{3} \times \frac{2}{3}$

4) $\frac{4}{5} \times \frac{5}{3}$

5) $\frac{4}{3} \times \frac{8}{5}$

6) $\frac{5}{3} \times \frac{1}{6}$

7) $\frac{3}{5} \times \frac{2}{3}$

8) $1\frac{5}{6} \times \frac{1}{3}$

9) $\frac{3}{4} \times \frac{5}{6}$

10) $1\frac{2}{3} \times \frac{1}{5}$

Multiplying Fractions (Proper, Improper, Mixed)

Date _____ Period _____

Find each product WITH a calculator

1) $4\frac{2}{3} \times \frac{1}{2}$

2) $2\frac{9}{10} \times \frac{13}{8}$

3) $7 \times \frac{3}{2}$

4) $\frac{2}{3} \times \frac{15}{8}$

5) $1\frac{5}{9} \times \frac{5}{3}$

6) $2 \times \frac{7}{4}$

7) $3\frac{1}{2} \times \frac{2}{5}$

8) $6 \times \frac{3}{2}$

9) $2\frac{4}{7} \times \frac{2}{3}$

10) $2 \times \frac{2}{3}$

Dividing Fractions (Proper, Improper, Mixed)

Date _____ Period _____

Solve the expression WITHOUT a calculator

1) $4\frac{5}{7} \div \frac{6}{5}$

2) $2\frac{4}{7} \div \frac{2}{3}$

3) $\frac{1}{4} \div \frac{1}{2}$

4) $3\frac{3}{4} \div \frac{2}{3}$

5) $\frac{10}{7} \div \frac{11}{7}$

6) $3\frac{1}{3} \div 3\frac{1}{4}$

7) $\frac{2}{5} \div \frac{3}{2}$

8) $\frac{15}{8} \div \frac{9}{8}$

9) $1\frac{5}{6} \div 2$

10) $3\frac{4}{5} \div \frac{10}{7}$

Dividing Fractions (Proper, Improper, Mixed)

Date _____ Period _____

Solve the expression WITH a calculator

1) $\frac{12}{7} \div 2\frac{3}{8}$

2) $2\frac{3}{5} \div 2$

3) $3\frac{5}{6} \div 1\frac{1}{2}$

4) $4\frac{1}{6} \div \frac{3}{7}$

5) $3\frac{1}{2} \div \frac{11}{7}$

6) $1\frac{3}{7} \div 4\frac{6}{7}$

7) $3\frac{7}{8} \div \frac{2}{3}$

8) $\frac{1}{4} \div \frac{5}{4}$

9) $8 \div 4\frac{2}{5}$

10) $\frac{5}{8} \div 2\frac{1}{6}$

Add, Subtract, Multiply, Divide Fractions

Date _____ Period _____

Evaluate each expression WITHOUT a calculator

1) $2\frac{1}{3} + \frac{2}{7}$

2) $\frac{1}{2} + 4\frac{1}{8}$

3) $\frac{1}{3} + \frac{5}{8}$

4) $2\frac{1}{6} + \frac{7}{8}$

5) $\frac{12}{7} + \frac{1}{3}$

Find each quotient WITHOUT a calculator

6) $1\frac{7}{8} \div \frac{1}{2}$

7) $5\frac{1}{4} \div 5\frac{1}{8}$

8) $9 \div \frac{2}{5}$

Find each product WITHOUT a calculator

9) $\frac{7}{8} \times \frac{5}{3}$

10) $3\frac{1}{3} \times \frac{3}{2}$

Add, Subtract, Multiply, Divide Fractions

Date _____ Period _____

Evaluate each expression WITH a calculator

1) $\frac{1}{2} + 8\frac{3}{5}$

2) $1\frac{3}{7} + \frac{1}{2}$

3) $4\frac{1}{3} + \frac{7}{5}$

4) $3\frac{1}{6} - \frac{1}{7}$

5) $4\frac{6}{7} + 1\frac{1}{6}$

Find each quotient WITH a calculator

6) $\frac{5}{4} \div 2\frac{1}{5}$

7) $4\frac{2}{7} \div 2\frac{2}{3}$

8) $2\frac{5}{6} \div \frac{5}{8}$

Find each product WITH a calculator

9) $1\frac{1}{2} \times \frac{1}{2}$

10) $4\frac{1}{5} \times \frac{5}{4}$

Fraction Post-Test

Name: _____

Multiple Choice Identify the choice that best completes the statement or answers the question.

___1. Which fraction is less than $\frac{1}{2}$?

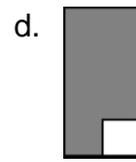
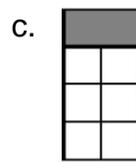
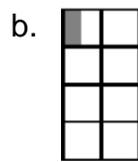
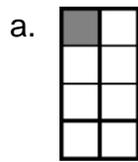
a. $\frac{5}{12}$

b. $\frac{3}{6}$

c. $\frac{3}{5}$

d. $\frac{3}{4}$

___2. Which picture shows $\frac{1}{8}$ shaded?



___3. Which fractions are in order from least to greatest?

a. $\frac{2}{3}, \frac{1}{3}, \frac{1}{2}$

b. $\frac{1}{3}, \frac{1}{2}, \frac{2}{3}$

c. $\frac{2}{3}, \frac{1}{2}, \frac{1}{3}$

d. $\frac{1}{2}, \frac{1}{3}, \frac{2}{3}$

___4. What fraction should be written at point A?



a. $\frac{1}{2}$

b. $\frac{1}{3}$

c. $\frac{5}{8}$

d. $\frac{4}{5}$

___5. What number names $\frac{1}{2}$ of 16 clowns?



a. 4

b. 9

c. 8

d. 12

___6. A cake was divided into 8 equal pieces. Four of those pieces were eaten. What fraction of the cake was eaten?

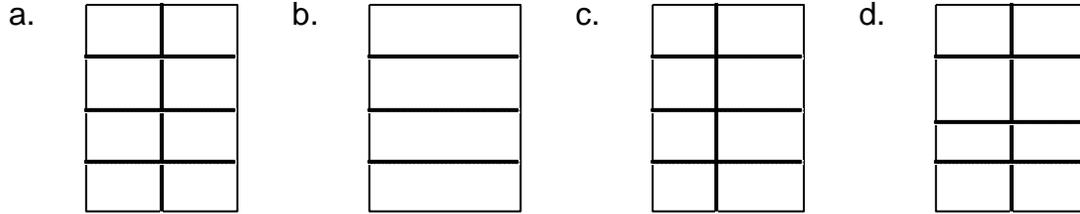
a. $\frac{1}{8}$

b. $\frac{4}{8}$

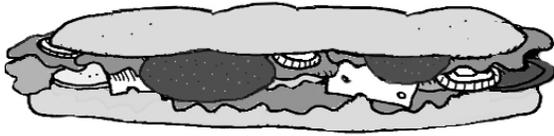
c. $\frac{8}{4}$

d. $\frac{4}{10}$

___7. Before Ray can begin his art assignment, he must divide his piece of paper into 8 equal parts. Which shows the piece of paper divided into 8 equal parts?



___8. If 8 people share a submarine sandwich equally, how much does each person get?



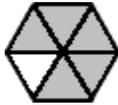
- a. $\frac{1}{2}$ of a sandwich
 b. $\frac{1}{4}$ of a sandwich
 c. $\frac{1}{8}$ of a sandwich
 d. $\frac{4}{8}$ of a sandwich

___9. What number should be written in the box?

$$\frac{2}{4} = \frac{\square}{2}$$

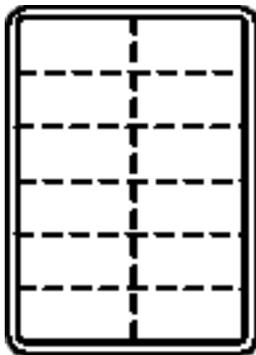
- a. 1 b. 2 c. 3 d. 4

___10. What fraction of the hexagon is shaded?



- a. $\frac{1}{4}$ b. $\frac{5}{6}$ c. $\frac{5}{8}$ d. $\frac{1}{6}$

___11. On Monday, Gordon and Sabrina baked a small pan of brownies. By the end of the week, they had eaten the whole thing. Gordon ate $\frac{5}{12}$ of the pan. How much did Sabrina eat?



- a. $\frac{7}{12}$ of the pan c. $\frac{1}{6}$ of the pan
 b. $\frac{1}{12}$ of the pan d. $\frac{2}{3}$ of the pan

___12. What fraction of the animals are striped?



- a. $\frac{4}{9}$ b. $\frac{4}{6}$ c. $\frac{6}{10}$ d. $\frac{4}{10}$

___13. Which fractions are written from smallest to largest?



- a. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ b. $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}$ c. $\frac{1}{3}, \frac{1}{4}, \frac{1}{2}$ d. $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$

___14. What number should be written in the box?

$$\frac{3}{6} = \frac{\square}{2}$$

- a. 1 b. 2 c. 3 d. 4

___15. In which pair of rectangles is the same amount shaded?



Appendix B: Grading Rubric

Performance Objective Class/Student Rubric

Performance Objective	Student #1	Student #2	Student #3	Student etc.
1 ___/10 (80% mastery)	/10	/10	/10	/10
2 ___/10 (80% mastery)	/10	/10	/10	/10
3 ___/10 (80% mastery)	/10	/10	/10	/10
4 ___/10 (80% mastery)	/10	/10	/10	/10
5 ___/10 (80% mastery)	/10	/10	/10	/10
6 ___/10 (80% mastery)	/10	/10	/10	/10
7 ___/10 (80% mastery)	/10	/10	/10	/10
8 ___/10 (80% mastery)	/10	/10	/10	/10
9 ___/10 (80% mastery)	/10	/10	/10	/10
10 ___/10 (80% mastery)	/10	/10	/10	/10
11 ___/10 (80% mastery)	/10	/10	/10	/10

References

Teachers Pay Teachers. 2014. Piece of Cake Fractions. Retrieved on May 20, 2014 from

<http://www.teacherspayteachers.com/Product/Fractions-Piece-of-Cake-727569>

Teachers Pay Teachers. 2014. Adding Fractions. Retrieved on May 17, 2014 from

<http://www.teacherspayteachers.com/Product/Adding-Fractions-1182669>

Teachers Pay Teachers. 2014. Fractions Unit Bundle. Retrieved on May 14, 2014 from

<http://www.teacherspayteachers.com/Product/Fractions-1003273>

Teachers Pay Teachers. 2014. Fractions Wars. Retrieved on May 17, 2014 from

<http://www.teacherspayteachers.com/Product/Fraction-War-A-Game-of-Comparison-Gr-3456-710167>

Cool Math 4 Kids. 2014. Improper Fractions. Retrieved on May 20, 2013 from

<http://www.coolmath4kids.com/fractions/fractions-07-improper-01.html>

Simplifying Radicals. 2014. Greatest Common Factor and Least Common Multiple Foldable.

Retrieved on May 20, 2014 from

<http://simplifyingradicals2.blogspot.com/2013/09/gcf-and-lcm-foldable.html>

Teachers Pay Teachers. 2014. Four in a Row. Retrieved on May 20, 2014 from

<http://www.teacherspayteachers.com/Product/Fractions-Four-in-a-Row-547671>

Teachers Pay Teachers. 2014. Multiplying Fractions. Retrieved on May 28, 2014 from

<http://www.teacherspayteachers.com/Product/Multiplying-Fractions-Smartboard-Math-Lesson-81410>

Math is Fun. 2014. Dividing Fractions. Retrieved on May 25, 2014 from

http://www.mathsisfun.com/fractions_division.html

Worksheet Works. 2014. Retrieved on October 1, 2014 from

<http://www.worksheetworks.com/math/basic-operations/math-bingo.html>

Fractions Test. 2014. Retrieved on October 1, 2014 from

www.tacoma.k12.wa.us/academics/curriculum/math/UnitMaps/3rd%20Grade%20Math/Fractions/Quizzes_Assessments/3rd%20grade%20fractions%20pretest%20with%20standards.rtf

Evans, T. Making Math More Fun. 2008. Retrieved on October 1, 2014 from:

<http://www.makingmathmorefun.com/>

Math Worksheets 4 Kids. 2014. Numerator and Denominator Practice. Retrieved on October 1, 2014 from

<http://www.mathworksheets4kids.com/fractions.html>

Math Worksheets 4 Kids. 2014. Fraction Practice. Retrieved on October 1, 2014 from

<http://www.mathworksheets4kids.com/fractions.html>

Visual Fractions. 2014. Shading Fractions. Retrieved on October 1, 2014 from

<http://www.visualfractions.com>

Adding and Subtracting Fractions. 2014. Retrieved on October 1, 2014 from

<http://www.fractionlibrary>

Teachers Pay Teachers. 2014. Fractions Wars. Retrieved on May 17, 2014 from

<http://www.teacherspayteachers.com/Product/Fraction-War-A-Game-of-Comparison-Gr-3456-710167>

Teachers Pay Teachers. 2014. Fraction Task Cards. Retrieved on October 1, 2014 from

<http://www.teacherspayteachers.com/Product/Fractions-Free-1182669>

GCF and LCM. 2014. Retrieved on October 1, 2014 from

<http://www.fractionlibrary>

Teachers Pay Teachers. 2014. Factor Race. Retrieved on October 1, 2014 from

<http://www.teacherspayteachers.com/Product/FREE-Factor-Race-Math-Game-225089>

Comparing Fractions. 2014. Retrieved on October 1, 2014 from

<http://www.fractionlibrary>

Multiplying Fractions. 2014. Retrieved on October 1, 2014 from

<http://www.fractionlibrary>

Teachers Pay Teachers. 2014. Add and Subtract Task Cards. Retrieved on October 1, 2014 from:

<http://www.teacherspayteachers.com/Product/Task-Card-Templates-1308081>

Teachers Pay Teachers. 2014. Multiplying Mixed Numbers. Retrieved on October 1, 2014 from:

<http://www.teacherspayteachers.com/Product/Multiplying-Mixed-Numbers-QR-Codes-1077851>

Dividing Fractions. 2014. Retrieved on October 1, 2014 from

<http://www.fractionlibrary>

Jeopardy. 2014. Retrieved on October 1, 2014 from

<http://www.csun.edu/~ms4288/646/assignments/games/doc/Review%20Jeopardy%20Worksheets.pdf>

Teachers Pay Teachers. 2014. Color by Fraction. Retrieved on October 1, 2014 from:

<http://www.teacherspayteachers.com/Product/Operations-with-Fractions-Color-by-Number-687511>