**Name:** Kaitlin Taelman & Shelby Martin **BSU Instructor:** Mrs. Brown

**Classroom Teacher:** Ms. Reason **Grade Level:** 4th/5th Split

**Unit Theme:** Fractions and Decimals **Due Date:** 16 October 2016

**Umbrella Standard for Unit Theme:** Fractions, Decimals, Percents

**Unit Objectives:** Fractions and Decimals

**Discipline Areas in Unit:** Math

**Culminating Activity/Assessment:** Unit Assessment

**Curriculum Mapping:**

**Lesson #1:**

Topic: Decimals

Subject area(s): Math

Standard(s): 5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

Objective: Students will ***create*** a flipbook to ***demonstrate*** the different ways of adding, subtracting, multiplying, and dividing decimals.

Lesson Plan Ideas/Activities: Make a flipbook of addition, subtraction, multiplication, and division to learn and review the steps for each type of problem.

**Lesson #2:**

Topic: Decimals

Subject area(s): Math

Standard(s): 5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

Objective: Students will ***demonstrate*** their knowledge of fractions and decimals by filling in a hundreds chart with their name. Students will ***show*** their knowledge by correctly turning improper fractions into fractions at least 75% of the time.

Lesson Plan Ideas/Activities: Give each student multiple hundreds charts on a piece of paper. They will "bubble letter" their name (each letter of their name goes on a separate hundreds chart). Then they will count the amount of blocks that are colored in and write this number as a fraction. They will then add the fractions together to create an improper fraction. Finally, they will simplify this fraction.

**Lesson #3:**

Topic: Fractions

Subject area(s): Math

Standard(s): 5.C.4: Add and subtract fractions with unlike denominators, including mixed numbers.

Objective: Students will ***successfully*** add the fractions presented on the dominos and present the equations to the teacher by filling out a worksheet with the correct answers.

Lesson Plan Ideas/Activities: Using dominos, the students will be in groups of two or three to add the fractions the dominos create. This will allow the students to work with unlike denominators and create improper fractions that they need to make proper.

**Lesson #4:**

Topic: Fractions, decimals, and percents

Subject area(s): Math

Standard(s): 6.NS.5: Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator.

Objective: Students will ***implement*** their knowledge of fractions, decimals, and percents by planning a trip to Disney World given a set of scenarios.

Lesson Plan Ideas/Activities: Students will plan a trip to Disney World. Students will be given a budget, as well as costs for airfare, hotel accommodations, and park entry fees. Using these, students will be asked to find the cost of various aspects of their trip and determine whether they stayed on budget. They will also be asked to find the cost of items given a discount or promotional deal for the day.

**Lesson #5:**

Topic: Fractions

Subject area(s): Math

Standard(s): 5.C.5: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.

Objective: Students will ***apply*** the Brownie Pan Model to work through problems of multiplying fractions with 75% accuracy.

Lesson Plan Ideas/Activities: We will discuss a new way of multiplying fractions. Next students will show what they learned by using a series of hundreds charts

to solve problems. Examples of this process will be used on the bingo cards that will be used for the next lesson.

http://www.mathfireworks.com/2015/10/brownie-pan-model-multiplying-fractions/

**Lesson #6:**

Topic: Fraction

Subject area(s): Math

Standard(s): 5.C.5: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.

Objective: Students will correctly ***answer*** the multiplication problems on their bingo cards to create bingo.

Lesson Plan Ideas/Activities: Students will have bingo cards that have fraction multiplication problems and the teachers will call out the answers. Students will have to solve the problems to find the answer and where they can mark on their card.

**Lesson #7:**

Topic: Science, Engineering

Subject area(s): Success

Standard(s): 3-5.E.2 Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Objective: Students will ***demonstrate*** the understanding of why the outcome of their egg happened by writing a paragraph ***explaining*** why they believe the egg did or did not break.

Lesson Plan Ideas/Activities: Students will be put in groups of 3-4 to create a carrier for their eggs. Each group is responsible for creating their own carrier for the egg out of the materials given. Once the groups have 15-20 minutes to create their carrier, the teachers will drop them from a given level onto a tarp (to help with the clean up). The groups will see if their egg breaks or not and then return to their desks. On their own, each student will write a paragraph explaining why they think their egg broke or why they think it did not.

**Lesson #8:**

Topic: Fractions

Subject area(s): Math

Standard(s): 5.AT.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

Objective: Students will ***demonstrate*** their knowledge of fractions by ***assembling*** a whole pizza using various fractions parts with 75% accuracy.

Lesson Plan Ideas/Activities: Bottom 3 groups will be placed into groups where they are all given the same fractions and they will decorate and cut pizzas from a paper plate. After an allotted amount of time for this, students will be brought back together as a class and then they will be separated individually to create one whole pizza using various fractions from each group (10 minutes). After 10 minutes, the class will come

back together and we will discuss what fractions the students used to create a whole pizza.

**Lesson #9:**

Topic: Fractions

Subject area(s): Math

Standard(s): 5.AT.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

Objective: Students will ***demonstrate*** their knowledge of fractions by ***assembling*** a whole pizza using various fractions parts with 75% accuracy.

Lesson Plan Ideas/Activities: Similar to lesson 9, but students will work individually. Each student will be given their own fractions, which will be more difficult than the ones in the previous lesson. On their own, they will cut their pizzas into fractions rather than a whole group cutting out the same fractions. If the students don't create a whole pizza, we will discuss why they weren't able to do this and what fractions they would still need to create a whole pizza.

**Lesson #10:**

Topic: Profit

Subject area(s): Success (economics)

Standard(s): 4.4.8: Define profit* and describe how profit is an incentive for entrepreneurs.

*Profit: revenues from selling a good or service minus the costs of producing the good or service

Objective: Students will ***compute*** the total profit made after completing various orders at a pizza parlor they own with 75% accuracy.

Lesson Plan Ideas/Activities: Students will take ownership of a pizza parlor in which they will determine the amount of profit after completing a series of pizza orders. Each student will be given a paper that list the types of pizzas sold, the cost it takes to make the pizzas, and what the pizzas will be sold for. They will then be given the list of orders that they will use to determine their profit.

# Lesson 1

**IN Standards and Indicator:** 5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

**Lesson Objective:** Students will ***create*** a flipbook by correctly answering the sample problems to ***demonstrate*** the different ways of adding, subtracting, multiplying, and dividing decimals.

**Materials/Media:**

- Construction paper
- Pencils

**Motivation:** I will show a short video about decimals and the different things you can do with them. https://www.youtube.com/watch?v=0JB3bNfLqEM

**Rationale:** "Today you are going to help me fill out this flip book and create one for yourself. This will be something you can use when you are having trouble remembering the steps to solve the problems."

**Teach:** We will work together to figure out how we want our flipbooks to look. Since we are recalling information already learned, we will work as a group to fill out how you add, subtract, multiply, and divide decimals. I will ask the students to explain in their own words how to do the problems step by step. Asking questions like "what comes next," or "after we do this step what do we do next" will help get the students involved with their learning. We will go into great detail on how you do each step, so that the students have something to go back and look at. On each page of the flipbook, the students will teach the teacher how to solve the problem. The teacher will intervene if the process is not going well.

**Check for Understanding:** Each student will demonstrate their understanding by correctly solving a problem to provide an example, for each of the pages in the flipbook. Once the class has finished an example as a group, each student is responsible for coming up with their own example. The teacher (and co-teachers) will walk around to check to make sure they are creating and solving the problems correctly.

**Activities:** Students will create a page that lists the steps to addition, subtraction, multiplication, and division. Each page will also have two example problems to serve as an example. For gear up, the students will come up with their own example problem and explain it to the class. For gear down, the teachers will be able to help them with their examples.

**Assessment/Evaluation of Student Learning:** Students will demonstrate their understanding of the steps of all the types of problems by actively participating in creating the steps as a group. They will also use their flipbooks to answer a few questions

on a white board. The teacher will write the problem on the board while the students work silently at their desks. The students will hold up the white boards when they are finished, allowing for the teacher to see their work.

**Review:** We will go over each addition, subtraction, multiplication, and division one last time. I will ask the students to teach me. This means I would have them tell me exactly how to work out the problem. I will be standing at the white board working on the problem. The students will walk me step by step through the problem.

**Resources:**

Dun Dun Dunnnn. Fractions. *Freebie! (n.d.). Retrieved December 07, 2016, from http://buzzingwithmsb.blogspot.com/2012/03/dun-dun-dunnnn-fractions-freebie.html

T. (2012). DECIMALS SONG by Heath. Retrieved December 07, 2016, from http://www.youtube.com/watch?v=0JB3bNfLqEM

**Lesson 2**

**IN Standards and Indicator:** 5.C.8: Add, subtract, multiply, and divide decimals and fractions to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

**Lesson Objective:** Students will ***successfully*** fill each letter of their name into a hundreds chart and apply their knowledge of fractions by converting the amount of spaces filled by the letter in their name to a fraction over 100. Students will ***show*** their knowledge by correctly turning improper fractions into fractions at least 75% of the time.

**Materials/Media:**

- Hundreds charts
- Markers, crayons, colored pencils
- Paper

**Motivation:** Show the students the hundreds charts already filled out in the teacher's name. This will allow the students to see what they are doing and see that they can have fun with it. Make sure the example is visually appealing. This will help get the students interested. This will get the students motivated because this group of students enjoys artistic activities. They have made that known while working with them.

**Rationale: "**Everyone will be filling out their own name! You can pick how you design it and what you do but you have to make sure each letter is bubble lettered! We will then make fractions out of each hundreds chart. We will then add the fractions together to create an improper fraction."

**Teach:** Show the students the hundreds charts already filled out in the teacher's name. This will allow the students to see what they are doing and see that they can have fun with it. Make sure the example is visually appealing. Each student will write each letter of their name in the hundreds box. "Today we are going to design our names letter by letter on the hundreds charts" Once the students finish that they will count how many boxes each letter takes up. They will turn this into a fraction out of 100. "Once you make your fractions out of 100, add the fractions together." Then they will add each fraction up to create an improper fraction. We will go over what improper fractions are. "When a fraction's numerator is larger than the denominator it is called an improper fraction. To make this fraction into a mixed number you see how many times the denominator can go into the numerator. This number because a whole number while the remainder becomes the new numerator. Once this is done, the students will turn the improper fraction into a correct fraction.

**Check for Understanding:** Students will show their work to the teacher before they add the fractions together and then again after they fix the improper fraction.

**Activities:** Give each student multiple hundreds charts on a piece of paper. They will "bubble letter" their name (each letter of their name goes on a separate hundreds

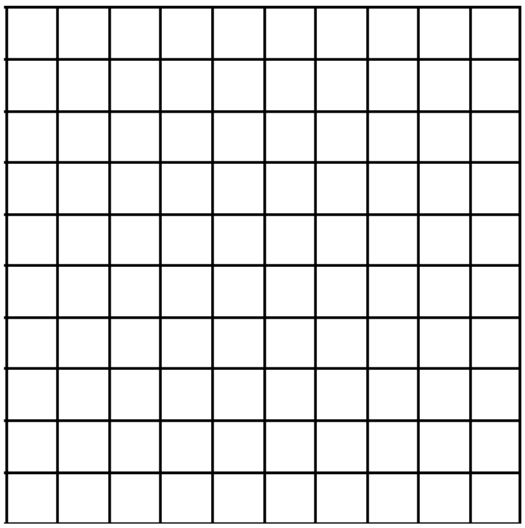
chart). Then they will count the amount of blocks that are colored in and write this number as a fraction. They will then add the fractions together to create an improper fraction. Finally, they will simplify this fraction. For students that get done quickly, have a shorter name, or need the activity geared up, they will do their last name as well. For students who are struggling, the students who understand will offer their help to teach. The teacher needs to make sure the students are teaching and not just doing the work for them.

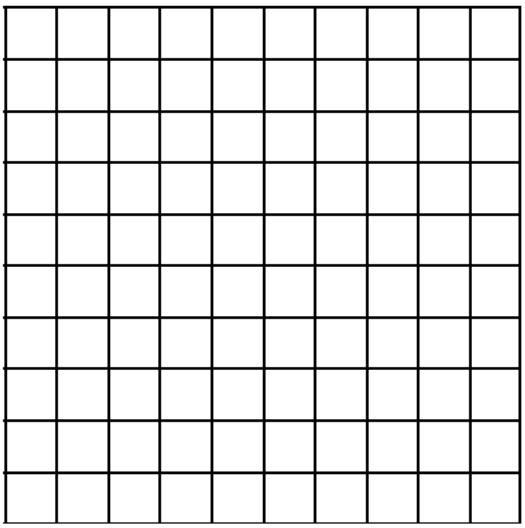
**Assessment/Evaluation of Student Learning:** Each student will turn in their hundred charts and the paper that shows how they worked out the fractions. If they did the math on a separate piece of paper make sure to collect that as well. I will check to see if the fractions are done correctly, it is less important to have to exact amount of spaces filled in but rather the fractions be added together and correctly made into a mixed number.

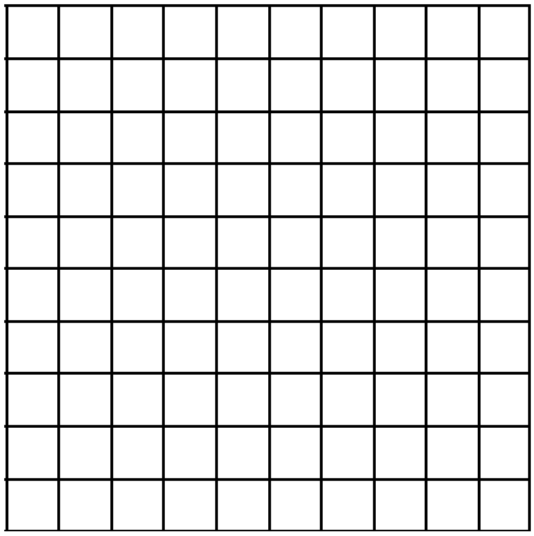
**Review:** What is an improper fraction? Why is it important to change an improper fraction to a regular fraction with whole numbers?

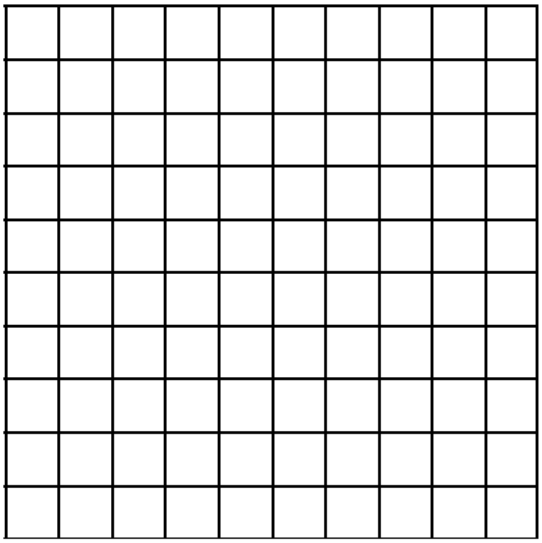
**Resources:**

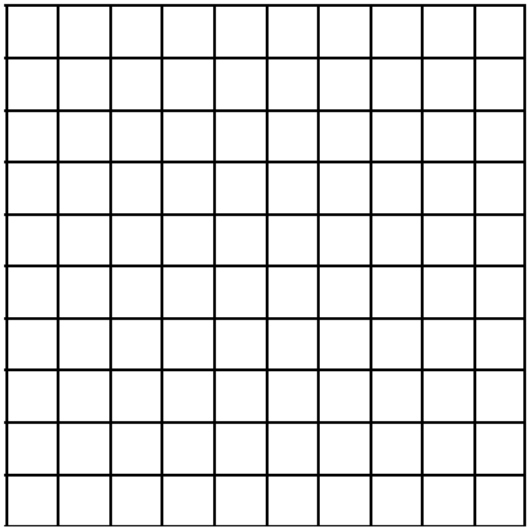
Brown, E. (1970). Name Art. Retrieved December 07, 2016, from http://adventuresinthirdgrade-brown.blogspot.com/2002/04/name-art.html

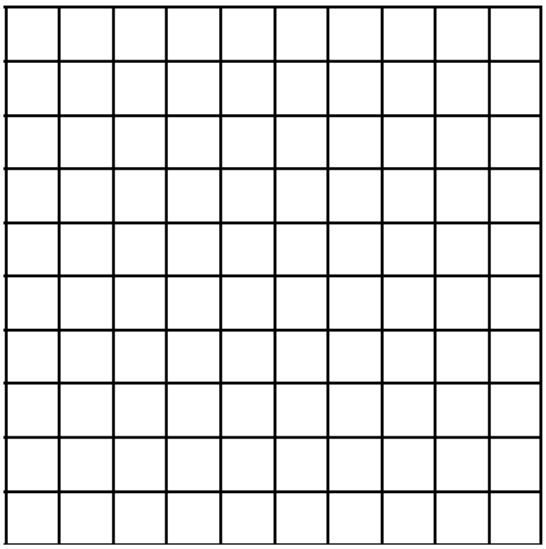












# Lesson 3

**IN Standards and Indicator:** 5.C.4: Add and subtract fractions with unlike denominators, including mixed numbers.

**Lesson Objective:** Students will ***successfully add*** the fractions presented on the dominos and present the equations to the teacher by filling out a worksheet with the correct answers.

**Materials/Media:**

- Dominos
- Worksheet
- Pencils

**Motivation:** Have the dominos set up in a line before the students come back to the classroom. Once they are sitting down, I will push the first domino down causing a domino effect.

**Rationale:** "Today we are going to use dominos to help us understand fractions. We will use them to create different addition problems with unlike denominators."

**Teach:** "Everyone get one domino." The dominos will be faced down. I will take the dominos out that have a 0 on them. These dominos would not work in the lesson. "Between the two of you, decide which is the numerator and denominator for each domino. You will then work together to add the fractions together. You will create all types of fractions; make sure you simplify your answers. Once you finish with the two dominos in your group, you will return them to the pile face down. Take two new domino and repeat the steps to find the answers." The students will be set to create and solve five problems. The will bring their papers up to the teacher and have her randomly check one of the problems to see if they did them correctly. If they did not, the teacher will sit down and work that problem out with them. The students then have the chance to go back and check all the rest of their problems.

**Check for Understanding:** Students will show the teacher their work while they are doing it. They will explain how they got their answer.

**Activities:** Using dominos, the students will be in groups of two or three to add the fractions the dominos create. This will allow the students to work with unlike denominators and create improper fractions that they need to make proper. Gear up and gear down will be used by pairing students with each other. The teacher will pair the students who need more help with the students that understand fractions a little bit better.

**Assessment/Evaluation of Student Learning:** As a group we will talk about the steps it takes to add unlike denominators. Students will also turn in their worksheet they did. Students will demonstrate their knowledge and understanding by turning in the worksheet with their answers on it. They should be getting at least 7/10 of the problems correct.

**Review:** What is an unlike denominator? Do the steps to solve the problem change if the denominator is that same?

**Resources:**

5 Fall Themed Fraction Centers for Grades 4-5! Equivalent Fractions, Adding and Subtracting Fractions, Dividing Whole Numbers by Fractions,. (n.d.). Retrieved December 07, 2016, from http://indulgy.com/post/uLJl1O9cc1/fall-themed-fraction-centers-for-grade

**Lesson 4**

**IN Standards and Indicator:** 6.NS.5: Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator.

**Lesson Objective:** Students will ***implement*** their knowledge of fractions, decimals, and percents by planning a trip to Disney World given a set of scenarios.

**Materials/Media:**

- Projector/Smart Board
- Computer
- YouTube video
- Worksheet
- Pencil
- Scratch paper

**Motivation:** I will play a short promotional video for Disney World to get the students excited to plan a trip. https://www.youtube.com/watch?v=JFkB9e11-H0

**Rationale:** "Now that you have had a chance to get a glimpse of Disney World, how about we take a trip there? Today, you are going to be partnered up and tasked with planning a trip using what we have learned about fractions, decimals, and percents. Knowing how to convert between these will be useful to know whenever you are using, such as at a store or a restaurant."

**Teach:** We will review converting fractions and percents to decimals by doing some examples on the board. To convert a fraction to decimal, students will find a number that you can multiply the bottom number by to equal 10, 100, or 1000. Once done with this step, you will then multiply the top number by the same number you multiplied the bottom number by. The top number is now your decimal but you must remember to move your decimal point to the correct place. To convert a percent to a decimal, you will move the decimal point two places to the left. I will then do an example of each type of conversion that we discussed.

**Check for Understanding:** I will have each student do a percent to decimal conversion and a fraction to a decimal conversion.

**Activities:**

- Students will do a series of conversions:
  - ¼ to a decimal
  - ⅓ to a decimal
  - ½ to a decimal
  - ⅔ to a decimal
  - ¾ to a decimal

    - 25% to a decimal
    - 50% to a decimal
    - 64% to a decimal
- Gearing up will include a series of more difficult conversions.
- Gearing down- n/a

**Assessment:** Students will demonstrate their understanding of conversions by planning a trip to Disney World. Each student will now receive the worksheet that contains all of the information they need to plan their trip to Disney World. Also on this sheet, students will find the questions they will need to answer to complete the activity. Students must answer at least 8 questions of the questions from this worksheet correctly to pass the assessment.

**Review:** How do we convert fractions into a decimal? How do we convert percents into a decimal?

**Resources:**


Adler, D. A. (2010). *Fractions, decimals, and percents* (First ed.). New York: Holiday House. This is a book that can be used to introduce fractions, decimals, and percents. The book starts about introducing the concepts of these three concepts and discusses how they are parts of a whole. Later on in the story, the author shows how fractions, decimals, and percents can be converted. I used this book as a back up motivation for this lesson, in case there was an issue with the technology in the classroom.

Convert Fractions to Decimals. (n.d.). Retrieved October 15, 2016, from https://www.mathsisfun.com/converting-fractions-decimals.html
I used this resource to gain knowledge on how to convert fractions to decimals so that I could effectively teach my students.

H. (2013). Walt Disney World online promo. Retrieved October 15, 2016, from https://www.youtube.com/watch?v=JFkB9e11-H0
I used this video to motivate my students to plan their trip to Disney World.

Percent to Decimal Calculator. (n.d.). Retrieved October 15, 2016, from http://www.calculatorsoup.com/calculators/math/percent-to-decimal-calculator.php
I used this website to gain knowledge on how to effectively teach my students how to convert percents to decimals.

Pinterest. Retrieved October 15, 2016, from https://s-media-cache-ak0.pinimg.com/originals/47/11/21/4711217abacadc77b418ec975a39e2f2.jpg
This resource gave me the idea for the activity I used for the assessment. I tweaked what the original author put for their activity, as well as added extra questions to help the activity tie into the objective.

Name: _____

# You're Going to Disney World!

Your budget: $6,000

You and your friend are going to Disney World for six days. You will fly there and back, stay in a five star hotel, and spend all six days in the theme parks.

- v Hotel: $69.58 a night
- v Airfare: $232.79 one-way
- v Two-day park pass: $36.00

1. How much will your hotel cost for you and your friend to stay all four nights?

2. How much will you and your friend spend on airfare?
Round trip:
There:
Back:

3. How much will it cost you and your friend to go to the theme parks for six days?

4. How much will it cost you for the hotel, airfare, and the six days at the theme park for both you and your friend?

5. How much will you have to spend on food in the parks each day?

6. You were awarded a 25% off coupon for one park pass. What was the total discount? What is the new price of the pass?

7. Congratulations! You were discounted 1/3 of the price for one night at the hotel. What is your total discount? What is the new cost for the night?

8. You missed your flight! To get a new flight, you must pay a fee of 35% of the original ticket price. What is the additional fee you must pay? What is the new price of your plane ticket?

9. You were an hour late vacating your hotel room. Due to the late vacation, you are charged a ¼ of the cost of a night in the hotel. What is the total of the additional charge?

10. With all of the additional fees and discounts, were you still able to stay under budget?

**Lesson 5**

**IN Standards and Indicator:** 5.C.5: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.

**Lesson Objective:** Students will ***apply*** the Brownie Pan Model to work through problems of multiplying fractions with 75% accuracy.

**Materials/Media:**

- Worksheet
- Problems
- Pencil
- Crayons/markers/colored pencils
- White board
- Dry erase markers
- Recipe
- Student white boards

**Motivation:** I will post a brownie recipe on the board and ask students to think about what they are seeing and why they think I posted this on the board.

Ingredients

- 2 cups white sugar
- 1 cup vegetable oil
- 4 eggs
- 1 ½ cups flour
- 1 teaspoon baking powder
- 1 teaspoon salt
- ½ cup cocoa
- 2 teaspoons vanilla
- 1 cup nuts (I like pecans) (optional)

Directions

1. Beat together sugar, eggs, and oil.
2. Sift flour, baking powder, salt, and cocoa together.
3. Add to sugar-egg mixture.
4. Add vanilla and nuts (if desired).
5. Pour into two cake pans (8x8x2) lined with foil.
6. Bake at 350 degrees for 35 to 40 minutes.
7. Cut when cool and dust with powdered sugar.

**Rationale:** "Now I know you guys are probably hoping that we are going to be making brownies or eating them but today, I am going to introduce you to a new strategy for multiply fractions using hundreds charts. This new way is called the Brownie Pan

Model. This model can be used as an alternative multiplication tool to use when taking tests that may be easier to use."

**Teach:** This strategy is used to help people visualize finding parts of parts. To do this, you need 3 boxes and 2 different colored crayons. We will do ¾ x ⅗. You will divide your first box into 4 parts. Color 3 of these parts in, with one color. Next, you will divide the second box into 5 parts. You will now color in 2 of the parts in a different color. Your third box should be divided into 4 columns by 5 rows. Make sure you color in the same parts that you colored in for the individual boxes with the corresponding color you used. You will now see that some of your boxes have been colored in with both colors. This is your numerator. The denominator is the total number of parts in the whole box.

**Check for Understanding:** Students will solve a problem on their own, using the Brownie Pan Model.

**Activities:** Working with a partner, students will be given 2 separate problems in which they will solve on a white board.

- Gear Up: Students will work by themselves to do 5 problems using the Brownie Pan Model.
- Gear Down: Students will work in groups of 3-4 to solve 2 problems using the Brownie Pan Model.

**Assessment/Evaluation of Student Learning:** To assess what the students learned throughout the lesson, they will be given a worksheet that has four sets of boxes. Using this worksheet, students will solve four separate problems. Students must get three of the four problems correctly to meet the lesson objective.

**Review:** Students will do the problem, ½ x ⅔ using the Brownie Pan Model.

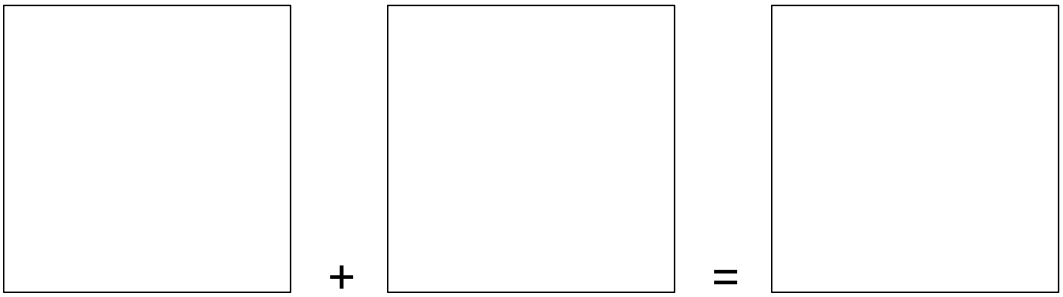
**Resources:**

Brownie Pan Model - Multiplying Fractions - Math Fireworks. (2015). Retrieved October 15, 2016, from http://www.mathfireworks.com/2015/10/brownie-pan-model-multiplying-fractions/.
This website helped explain how to use this method and also gave an example of how I would teach the method to my students.

The Worlds Best Brownies Recipe. (n.d.). Retrieved October 15, 2016, from http://www.food.com/recipe/the-worlds-best-brownies-66084
This is the website where I got the recipe for my motivation.

Name:_____

Date:_____



## Lesson 6

**IN Standards and Indicator:** 5.C.5: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.

**Lesson Objective:** Students will correctly **answer** the multiplication problems on their bingo cards to create bingo.

**Materials/Media:**

- Bingo cards
- Bingo markers (m&m's or skittles)
- Bingo caller cards

**Motivation:** Pass out a bag of the M&Ms. This will get the students excited to see what we are doing and when they get to eat the M&Ms. "Before you get to enjoy your bag of M&M's, we will enjoy playing a few games of bingo."

**Rationale:** "Today we are going to use our M&Ms to play fraction bingo! You are going to solve the problems on the board to try and get a bingo!"

**Teach:** Students will be given bingo cards that have different type of fraction multiplication problems. They will be given time to solve the problems before we start playing the game. Students will then use their m&m's to mark their boards. Teacher will call out the answers they draw. "You will have 10 minutes to work out as many problems on your board as you can. I advise you to work out the ones that you think are going to be more difficult first so you will already have the answers for those problems when we are playing bingo."

**Check for Understanding:** Students will call out bingo if they have created a bingo. The teacher will check their work to see if they came up with the correct answer.

**Activities:** Students will have bingo cards that have fraction multiplication problems and the teachers will call out the answers. Students will have to solve the problems to find the answer and where they can mark on their card. The gear up and gear down will be done before the bingo cards are handed out. The students who need to be more challenged will have a harder bingo card that will help stretch their minds. The students who need more help will have equations that are more basic to allow them to get the students to learn the basics better.

** See separate document for BINGO cards. **

**Assessment/Evaluation of Student Learning:** We will go over certain problems on the board that seemed to give some students trouble and have other students help talk them through them. There is not much of an evaluation possible with this lesson besides having

them tell you the answers when the students get bingo. This will allow the teacher to see if they understand the problem, however not every student will get a bingo.

**Review:** What is the difference between multiplication and addition in fractions? If you multiply fractions together, how do you find the answer?

**Lesson 7**

**IN Standards and Indicator:** 3-5.E.2 Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

**Lesson Objective:** Students will ***demonstrate*** the understanding of why the outcome of their egg happened by writing a paragraph ***explaining*** why they believe the egg did or did not break.

**Materials/Media:**

- Dozen eggs
- Garbage bags/tarp
- Styrofoam cups
- Tissues
- Tape
- Duct tape
- Cotton balls
- Paper
- Styrofoam balls
- Anything else found when going to get these items that they could use to keep the egg from breaking.

**Motivation:** I will be dropping an egg from the given height so we can see it break open over the tarp or garbage bags.

**Rationale:** "Today we will be working on engineering and creating a way to drop an egg from the same height I just dropped my egg from without your eggs breaking! We will be learning different ways to manipulate objects to become better engineers."

**Teach:** The students will be working in their groups that are either assigned by Mrs. Reason or within the groups they sit in. Students will be given a certain amount of materials to work with. They will not get extra materials. They are to use the ones given to them to create something to protect the egg from breaking. The teachers will walk around to make sure everyone is getting along but they are not to help the students create the egg protector. This will help the students learn to work together and problem solve. Once the amount of time is up, we will drop the eggs from the given height. We will look at each egg to see if it broke or not. The groups will talk about why they think their egg did or did not break. Then as a whole class we will talk about why we think certain eggs broke. We will talk about how the fall changes depending on how many materials are on their egg protectors. We will talk about the different ways we could of kept the egg from breaking. We will talk about what materials worked and which ones did not, and why we think it happened that way.

**Check for Understanding:** Once the eggs are all dropped, we will open them all. We will look at the types of materials used and how on the eggs that broke and on the ones

that did not brake. In their small groups, they will discuss why they think their egg broke or did not break.

**Activities:** Students will be put in groups of 3-4 to create a carrier for their eggs. Each group is responsible for creating their own carrier for the egg out of the materials given. Each group will get two or three different materials. Each group will have different materials. Once the groups have 15-20 minutes to create their carrier, the teachers will drop them from a given level onto a tarp (to help with the clean up). The groups will see if their egg breaks or not and then return to their desks. On their own, each student will write a paragraph explaining why they think their egg broke or why they think it did not. I will have the students that need it geared up work alone. This is important because there is students who need/ work better alone. For gear down I will

**Assessment/Evaluation of Student Learning:** The students will write a paragraph or two about what materials worked and why they thought it worked.

**Review:** Once the paragraphs are turned in, we will go over which ones worked and which materials did not.

**Resources:**

H. (2016). STEM for Kids: Egg Drop Project - Buggy and Buddy. Retrieved December 07, 2016, from http://buggyandbuddy.com/stem-kids-egg-drop-project/

# Lesson 8

**IN Standards and Indicator:** 5.AT.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

**Lesson Objective:** Students will ***demonstrate*** their knowledge of fractions by ***assembling*** a whole pizza using various fractions parts with 75% accuracy.

**Materials/Media:**

- Paper plates
- Construction paper
- Scissors
- Markers
- Crayons
- Colored pencils
- Glue
- Math journal or lined paper
- Pencil

**Motivation:** Q: What is a dog's favorite pizza? A: PUParonni!

**Rationale:** "Who loves pizza? I know I do, and I'm sure if my dogs have the chance to eat pizza, they would love it too! Would you guys like to make your own pizzas today? Well, you are going to do exactly that, but you will be making them using construction paper and a paper plate. In life, you may be given a bunch of parts to something and be asked to reassemble the original item. Practicing putting something together, like a pizza, is a great way to practice this skill."

**Teach:** Do you think we can make create a whole using different fractions? We can use various fraction parts to make one whole, even if the fractions have different denominators. Let's discuss some common fractions that you have come across in previous lessons. How do we add fractions? You need to make sure that the bottom number is the same for both fractions. If they are not the same, then you need to multiply the top and bottom numbers by a number so that they have the same denominator. Next, you will add the numerators or the top numbers. Lastly, you may need to simplify the fractions. Let's do an example.
1/3 + 1/6 =

**Check for Understanding:** Students will do two fraction problems using addition.
¼ + ½ =
1/3 + 1/8 =

**Activities:** The bottom 3 math groups will be placed into groups where they are all given the same fractions, and they will decorate and cut pizzas from a paper plate. After an allotted amount of time, students will be brought back together as a class so that I can then separate them to individually create one whole pizza using various fractions from each group (10 minutes). Students must trade with their classmates to get new "slices." After 10 minutes, the class will come back together, and we will discuss what fractions the students used to create a whole pizza.

- Gear Down: Students will work with a partner to create their whole pizza.
- Gear Up: Each student will be given a fraction to cut their pizza in after they decorate their pizzas. Once done with this, a timer will be set for 10 minutes and they will be tasked with trading "slices" with their classmates. Their goal is to have one whole pizza by the time the timer goes off. Students must be able to use prior knowledge of fractions and what they learned about adding fractions to create one whole.

**Assessment/Evaluation of Student Learning:** Students will take out a piece of paper (or write in their math journals) and write 3-5 sentences describing what fractions they used to make one whole pizza during the activity. Next, they will write 2-4 sentences describing another way they could make one whole pizza. Lastly, students will describe one problem they came across during the previous activity and how they may overcome it.

| | Good- 5 points | Average- 3 points | Needs Work- 0 points |
|---|---|---|---|
| 3-5 sentences describing what they did to make one whole. | Students had the 3-5 sentences describing what they did during the activity to make one whole. | Students had 1-2 sentences describing what they did during the activity to make one whole. | Students did not describe how they made one whole. |
| 2-4 sentences describing another way they could make one whole. | Student wrote 2-4 sentences describing another way they could make one whole. | Student wrote one sentence describing a new way that they could make one whole. | Students did not describe a new way of making one whole. |
| Describes one difficulty they came across and how they could overcome it. | Students describe the difficulty they came across and how they could change overcome it. | Student wrote the difficulty they came across but wrote how they could overcome it. | Students did not describe a difficulty they came across. |
| | | | _____/15 points |

**Review:** What were some ways you were able to make one whole?

**Resources:**

Adding Fractions. (n.d.). Retrieved October 16, 2016, from https://www.mathsisfun.com/fractions_addition.html
I used this website to show me the steps on how to add fractions so that I could effectively teach my students how to do so.

King, A. (1998). *Making fractions*. Brookfield, CT: Copper Beech Books.
This book contains another variation of the pizza activity. The activity included in this book is for small groups or individual students and could be used as a gear down for this lesson.

Pizza Jokes. (n.d.). Retrieved October 15, 2016, http://www.jokes4us.com/miscellaneousjokes/foodjokes/pizzajokes.html.
I used this website to find a joke for my motivation.

**Lesson 9**

**IN Standards and Indicator:** 5.AT.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

**Lesson Objective:** Students will ***demonstrate*** their knowledge of fractions by ***assembling*** a whole pizza using various fractions parts with 75% accuracy.

**Materials/Media:**

- Paper plates
- Construction paper
- Scissors, markers
- Crayons
- Colored pencils
- Glue
- Math journals or lined paper
- Pencil

**Motivation:** Q: What does an aardvark like on its pizza? A: Ant-chovies!

**Rationale:** "I don't know about you, but I don't think I would like ants or anchovies on my pizza, so why don't we create pizzas that we would like! Today, you will be using what you know about fractions to piece together a whole pizza. In life, you may be given a bunch of parts to something and be asked to reassemble the original item. Practicing putting something together, like a pizza, is a great way to practice this skill."

**Teach:** Do you think we can make create a whole using different fractions? We can use various fraction parts to make one whole, even if the fractions have different denominators. Let's discuss some common fractions that you have come across in previous lessons. How do we add fractions? You need to make sure that the bottom number is the same for both fractions. If they are not the same, then you need to multiply the top and bottom numbers by a number so that they have the same denominator. Next, you will add the numerators or the top numbers. Lastly, you may need to simplify the fractions. Let's do an example.
½ + ¼ =

**Check for Understanding:** Students will do two fraction problems using addition.
1/6 + 1/8 =
1/3 + 1/4 =

**Activities:** Each student will be given a fraction to cut their pizza in after they decorate their pizzas. Once done with this, a timer will be set for 10 minutes and they will be tasked with trading "slices" with their classmates. Their goal is to have one whole pizza

by the time the timer goes off. Students must be able to use prior knowledge of fractions and what they learned about adding fractions to create one whole.

- Gear Up: Students will have to trade two of their pieces and receive two pieces in return. This will make it more difficult for the students to get a whole pizza using different fraction parts.
- Gear Down: Students will be placed into groups where they are all given the same fractions, and they will decorate and cut pizzas from a paper plate. After an allotted amount of time, students will be brought back together as a class so that I can then separate them to individually create one whole pizza using various fractions from each group (10 minutes). Students must trade with their classmates to get new "slices." After 10 minutes, the class will come back together, and we will discuss what fractions the students used to create a whole pizza.

**Assessment/Evaluation of Student Learning:** Students will take out a piece of paper (or write in their math journals) and write 3-5 sentences describing what fractions they used to make one whole pizza during the activity. Next, they will write 2-4 sentences describing another way they could make one whole pizza. Lastly, students will describe one problem they came across during the previous activity and how they may overcome it.

| | Good- 5 points | Average- 3 points | Needs Work- 0 points |
|---|---|---|---|
| 3-5 sentences describing what they did to make one whole. | Students had the 3-5 sentences describing what they did during the activity to make one whole. | Students had 1-2 sentences describing what they did during the activity to make one whole. | Students did not describe how they made one whole. |
| 2-4 sentences describing another way they could make one whole. | Student wrote 2-4 sentences describing another way they could make one whole. | Student wrote one sentence describing a new way that they could make one whole. | Students did not describe a new way of making one whole. |
| Describes one difficulty they came across and how they could overcome it. | Students describe the difficulty they came across and how they could change overcome it. | Student wrote the difficulty they came across but wrote how they could overcome it. | Students did not describe a difficulty they came across. |
| | | | _____/15 points |

**Review:** What were some ways you were able to make one whole?

**Resources:**

Adding Fractions. (n.d.). Retrieved October 16, 2016, from
https://www.mathsisfun.com/fractions_addition.html
I used this website to show me the steps on how to add fractions so that I could effectively teach my students how to do so.

King, A. (1998). *Making fractions*. Brookfield, CT: Copper Beech Books.
This book contains another variation of the pizza activity. The activity included in this book is for small groups or individual students.

Pizza Jokes. (n.d.). Retrieved October 15, 2016,
http://www.jokes4us.com/miscellaneousjokes/foodjokes/pizzajokes.html.
I used this website to find a joke for my motivation.

# Lesson 10

**IN Standards and Indicator:** 4.4.8: Define profit* and describe how profit is an incentive for entrepreneurs.

*Profit: revenues from selling a good or service minus the costs of producing the good or service

**Lesson Objective:** Students will ***compute*** the total profit made after completing various orders at a pizza parlor they own with 75% accuracy.

**Materials/Media:**

- Paper
- Pencil
- Worksheet

**Motivation:** Q: Why did the man go into the pizza business? A: He wanted to make some dough!

**Rationale:** "Today we will pretend we are entrepreneurs or businessmen. We will learn about what profit is and how you find the total profit made from selling a good. Knowing how to find profit will be beneficial to know when working with money."

**Teach:** A profit is the revenue from selling a good or service minus the cost of producing the good or service. To find the profit of a sale, you would take the total sale minus what it cost to make the good or do the service. If I sold a cake for $35.95 and it only cost me $16.34, what is the total profit I made off of this sale? $35.95 - $16.34 = $19.61 I made a total profit of $19.61. I will ask students what each number represents (what number represents the price the good or service was sold as and what number represents the total cost to produce the good or service), what a good is, and what a service is?
Examples:

- $16.52 – $9.37 =
- $54.76 - $35.49 =
- $224.68 - $187.62 =
-

**Check for Understanding:** What is a profit? How can you find the total profit made?

**Activities:** With a partner, you will fill a series of pizza orders at your pizza parlor. You are tasked with finding out the total cost and profit of each order and what the cost to make and the profit made from all of the orders together. Students will fill out the worksheet provided.

**Assessment/Evaluation of Student Learning:** Define profit in your own words. Describe how you would find the profit made from selling something.

| | Good- 3 points | Needs Work- 0 points |
|---|---|---|
| Defines the term profit. | Gives a definition of profit written in their own words. | Does not give a definition. |
| Describes how you find the total profit made. | Describes how you would find the total profit made from selling a good. | Does not give a description on how one would find the total profit from selling a good. |
| | | _____/ 6 points |

**Review:** What is a profit? How can you find the total profit made?

**Resources:**

Otfinoski, S. (1996). *The kids guide to money: Earning it, saving it, spending it, growing it, sharing it*. New York: Scholastic/Reference.
I used this book as a student resource. The book can be used to get a definition of a profit and gives and example of how you would find profit.

Pizza Jokes. (n.d.). Retrieved October 15, 2016, http://www.jokes4us.com/miscellaneousjokes/foodjokes/pizzajokes.html.
I used this website to find a joke for my motivation.

Name:_____

| Pizza: | Cost to make: | Sold as: |
|---|---|---|
| Pepperoni | $10.56 | $14.95 |
| Sausage | $10.23 | $14.50 |
| Cheese | $8.92 | $10.75 |
| Hawaiian | $11.36 | $14.50 |
| Veggie | $9.89 | $11.50 |
| Dessert | $7.43 | $10.00 |

**Orders:**

**Emily- 2 Hawaiian**
**Nick- 1 Cheese & 1 Pepperoni**
**Trevor- 3 Pepperoni, 1 Cheese, & 1 Dessert**
**Sara- 1 Cheese, 1 Pepperoni, 1 Sausage, & 1 Dessert**
**Annie- 1 Cheese & 1 Veggie**
**Sophie-1 Hawaiian, 1 Veggie, & 2 Sausage**
**Phillip- 1 Pepperoni, 1 Sausage, & 2 Dessert**
**Kara- 6 Pepperoni, 4 Sausage, 3 Cheese, 2 Veggie, & 5 Dessert**
**Carl- 1 Hawaiian, 1 Pepperoni, & 1 Dessert**

**1. What is the total cost to make each order?**

**2. What is the profit from each order?**

**3. What is the total cost to make all of the orders together?**

**4. What is the profit of all of the orders together?**

**Resources:**


5 Fall Themed Fraction Centers for Grades 4-5! Equivalent Fractions, Adding and Subtracting Fractions, Dividing Whole Numbers by Fractions,. (n.d.). Retrieved December 07, 2016, from http://indulgy.com/post/uLJl1O9cc1/fall-themed-fraction-centers-for-grade

Adding Fractions. (n.d.). Retrieved October 16, 2016, from https://www.mathsisfun.com/fractions_addition.html

Adler, D. A. (2010). *Fractions, decimals, and percents* (First ed.). New York

Brown, E. (1970). Name Art. Retrieved December 07, 2016, from http://adventuresinthirdgrade-brown.blogspot.com/2002/04/name-art.html

Brownie Pan Model - Multiplying Fractions - Math Fireworks. (2015). Retrieved October 15, 2016, from http://www.mathfireworks.com/2015/10/brownie-pan-model-multiplying-fractions/.

Convert Fractions to Decimals. (n.d.). Retrieved October 15, 2016, from https://www.mathsisfun.com/converting-fractions-decimals.html

Dun Dun Dunnnn. Fractions. *Freebie! (n.d.). Retrieved December 07, 2016, from http://buzzingwithmsb.blogspot.com/2012/03/dun-dun-dunnnn-fractions-freebie.html

H. (2013). Walt Disney World online promo. Retrieved October 15, 2016, from https://www.youtube.com/watch?v=JFkB9e11-H0

H. (2016). STEM for Kids: Egg Drop Project - Buggy and Buddy. Retrieved December 07, 2016, from http://buggyandbuddy.com/stem-kids-egg-drop-project/

King, A. (1998). *Making fractions*. Brookfield, CT: Copper Beech Books.

Percent to Decimal Calculator. (n.d.). Retrieved October 15, 2016, from http://www.calculatorsoup.com/calculators/math/percent-to-decimal-calculator

Pinterest. Retrieved October 15, 2016, from https://s-media-cache-ak0.pinimg.com/originals/47/11/21/4711217abacadc77b418ec975a39e2f2.jpg

Pizza Jokes. (n.d.). Retrieved October 15, 2016, http://www.jokes4us.com/miscellaneousjokes/foodjokes/pizzajokes.html.

T. (2012). DECIMALS SONG by Heath. Retrieved December 07, 2016, from http://www.youtube.com/watch?v=0JB3bNfLqEM

The Worlds Best Brownies Recipe. (n.d.). Retrieved October 15, 2016, from http://www.food.com/recipe/the-worlds-best-brownies-66084