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Subject Area: Mathematics

Grade Level: 7

Unit Title: This unit's theme is ratios and proportional relationships.

Durations of Lessons:

Lesson 1: 4 class periods

Lesson 2: 2 class periods

Lesson 3: 3 class periods

Overview: This unit is meant to help students learn to compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.

Lesson 1: Build fractions from unit fractions

Lesson 2: Understand ratios, equivalent ratios, rates, unit rate

Lesson 3: Simplify complex fractions

Utah Core Standard: Analyze proportional relationships and use them to solve real-world and mathematical problems. Extend the concept of a unit rate to include ratios of fractions. Compute a unit rate, involving quantities measured in like or different units.

Lesson 1:

Subject Area: Math

Grade Level: 7

Duration: 4 class periods

1. Instructional Goal: Understand a fraction a/b with a >1 as a sum of fractions 1/b. In other words, any fraction is a sum of unit fractions. The students should also learn how to add, subtract, and multiply mixed fractions with the same denominators and how to decompose a fraction into the sum of fractions.

2. Utah Core Standard: Build fractions from unit fractions

3. Multicultural Goals:

a. Students should solve word problems with ratios and fractions that include different cultural foods to help them learn more about different cultures.

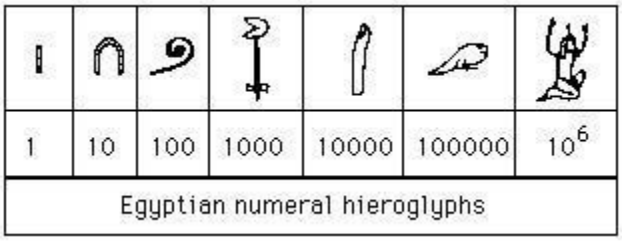
b. Students should develop greater intercultural relationships with their peers by working in groups.

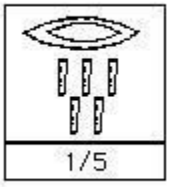
c. Students should learn how the creation and usage of fractions were developed in other cutlures in history.

4. Instructional Procedures/Activities:

Lesson 1

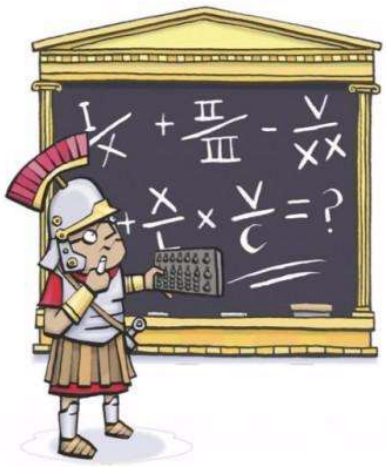
Introduction to fractions through a multi-cultural lens:





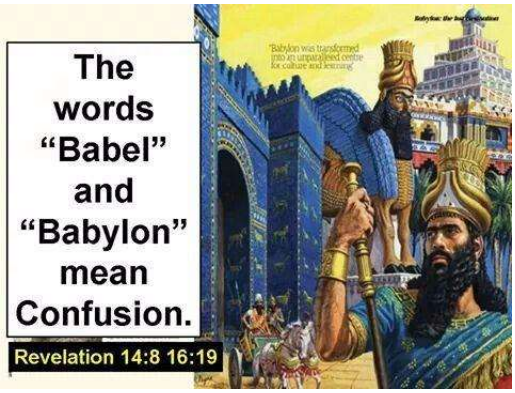
1800 B.C. - Egyptian Contributions to Fractions

- Egyptians based their numeral system using "base ten," this allowed them to create a way in which number could be written.
- They used hieroglyphics to represent these numbers, but soon the Egyptians faced a slight problem. They needed a way to split food among people. This propelled the idea of fractions.
- Egyptians used "unit fractions," which are fractions that have a numerator of one. They used an open mouth above other number symbols to represent a fraction.
- Other fractions were expressed as sums of unit fractions.



Next we have the Romans that used a similar method of representing fractions.

- Romans reported fractions using words to describe part of the whole.
- This system was based on the unit of weight called the "as." The "as," was made up of 12 unica, making fractions centered around twelfths
- Romans used term such as unica (1/12), semunica (1/24) , semis (6/12), scripulum (1/144).
- Using words to describe fractions made it very difficult to calculate with fractions, a similar problem that the Egyptians faced.

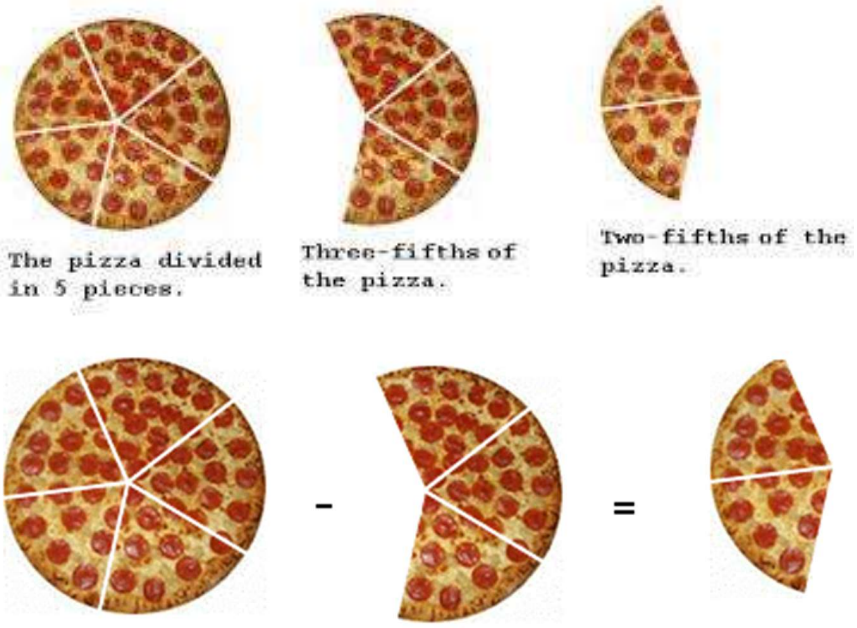


The Babylonian number system was based off of "base 60," thus making fractions based on sixtieths.

- Originally, they did not have a concept for zero or anything like a decimal point which made reading the numbers confusing. It was hard to distinguish fractions from whole numbers.
- However in 311 B.C. the Babylonians developed the concept of a zero but they still had no decimal point which still made it hard to distinguish fractions from whole number.

Then we would move onto some of the more specific material regarding fractions:

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



b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, for example, by using a visual fraction model.

$$\frac{2}{3}=\frac{1}{3}+\frac{1}{3}$$

or

$$\frac{2}{3}=\frac{1}{3}+\frac{1}{5}+\frac{1}{20}+\frac{1}{12}$$

or

$$\frac{2}{3}=\frac{1}{3}+\frac{1}{6}+\frac{1}{30}+\frac{1}{20}+\frac{1}{12}.$$

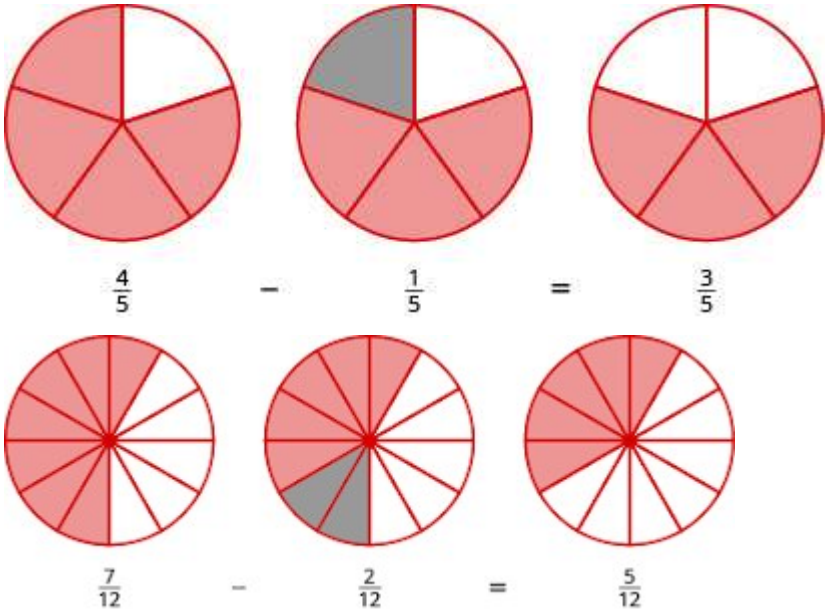
We would try some examples on the board. We would make it a competition with three or four teams. The students could talk amongst themselves in their groups to figure out what they think the answers are and then I would have each student to come up to the white board and put how they solved the problem and their final answer. The team with the most number of correct answers would get to pick a treat as they left the class.

Lesson 2

Next we would do an online activity at this website:

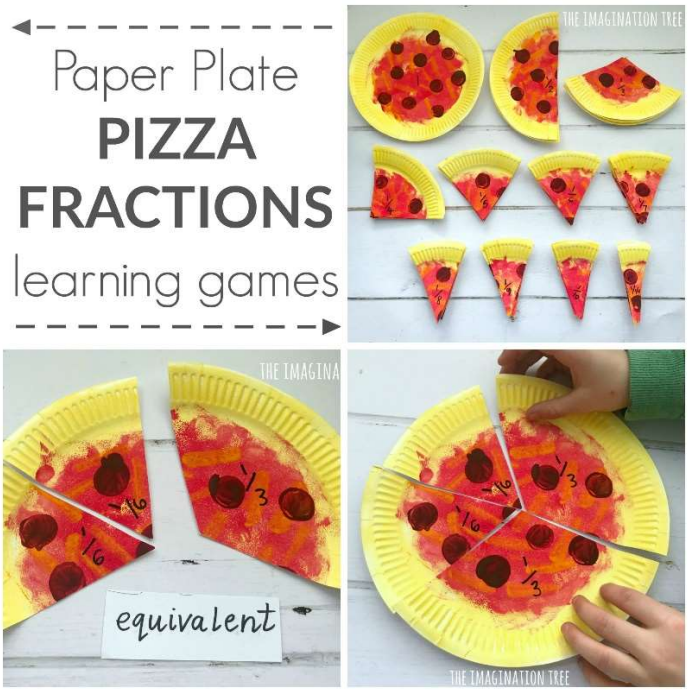
https://courses.lumenlearning.com/mathforliberalartscorequisite/chapter/subtracting-fractions-with-common-denominators/

Using this website, they would discuss in groups about what the following pictures mean and how they can use fraction circles to find the difference between two fractions with like denominators



Then I would have the students work in groups to answer the "try it" problems on that page so they could practice subtracting fractions with a like denominator without fraction circles.

c. Add and subtract mixed numbers with like denominators, for example, by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. For example, 3 1/4 + 2 1/4 = 13/4 + 9/4 = 22/4; 3 1/4 + 2 1/4 = (3+ 2) + (1/4 + 1/4) = 5 + 2/4 = 5 2/4, which is equivalent to 22/4. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, for example, by using visual fraction models and equations to represent the problem.



I would have my students draw their favorite food on a paper plate and talk to their neighbor about why it is their favorite food. Then I would have them do that for 2 more plates. Then I would ask them to cut them into different fractions of the plate and then practice adding and subtracting different fractions of the plates together. Then I would ask them to try using their fractions to combine with a partner's different fractions.

Lesson 3

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

a. Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).
b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5), recognizing this product as 6/5. (In general, n x (a/b) = (n x a)/b).
c. Solve word problems involving multiplication of a fraction by a whole number (for example, by using visual fraction models and equations to represent the problem). For

example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be five people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

To learn these skills, I would explain the above examples and teach those concepts. Then I would organize the students into groups and have them discuss how to solve the problems on the following worksheet. Then I would have the students re-write the fractions in other ways to show the principles:

a.) a fraction a/b is a multiple of 1/b

b.) n x (a/b) = (n x a)/b)

Then I would have them write a word problem that went along with the given numbers.

Name: _____

Multiplying Fractions and Whole Numbers

Sheet 1

Find the product.

1) $\frac{2}{12} \times 14 =$ _____

2) $36 \times \frac{8}{4} =$ _____

3) $42 \times \frac{7}{6} =$ _____

4) $\frac{12}{20} \times 4 =$ _____

5) $\frac{11}{13} \times 5 =$ _____

6) $24 \times \frac{17}{8} =$ _____

7) $3 \times \frac{4}{19} =$ _____

8) $\frac{1}{11} \times 2 =$ _____

9) What is $\frac{5}{3}$ of 18?

_____

10) What is seven-ninths of 11?

_____

11) What is a quarter of 33?

_____

12) What is $\frac{6}{18}$ of 51?

_____

13) What is four-tenths of 15?

_____

14) What is one-seventh of 6?

_____

Name: _____ **Answer Key**

Multiplying Fractions and Whole Numbers

Sheet 1

Find the product.

1) $\frac{2}{12} \times 14 =$ **$\frac{7}{3}$ or $2\frac{1}{3}$**

2) $36 \times \frac{8}{4} =$ **72**

3) $42 \times \frac{7}{6} =$ **49**

4) $\frac{12}{20} \times 4 =$ **$\frac{12}{5}$ or $2\frac{2}{5}$**

5) $\frac{11}{13} \times 5 =$ **$\frac{55}{13}$ or $4\frac{3}{13}$**

6) $24 \times \frac{17}{8} =$ **51**

7) $3 \times \frac{4}{19} =$ **$\frac{12}{19}$**

8) $\frac{1}{11} \times 2 =$ **$\frac{2}{11}$**

9) What is $\frac{5}{3}$ of 18?

30

10) What is seven-ninths of 11?

$\frac{77}{9}$ or $8\frac{5}{9}$

11) What is a quarter of 33?

$\frac{33}{4}$ or $8\frac{1}{4}$

12) What is $\frac{6}{18}$ of 51?

17

13) What is four-tenths of 15?

6

14) What is one-seventh of 6?

$\frac{6}{7}$

5. Assessment:

Lesson 4

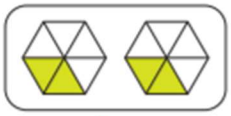
I would ask the students to work on this assignment by themselves so I could see where they are at in their understanding. This quiz is easier than the group assignment above, so I feel like it would be an accurate representation of their abilities.

Name: _____

Multiplying Fractions - Models

Sheet 1

A) 1)

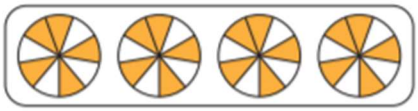


a) How many $\frac{1}{6}$ parts in the model above are shaded?

$2 \times \frac{2}{6} = \_\_\_\_ \times \frac{1}{6}$

b) $2 \times \frac{2}{6} = \_\_\_\_$

2)



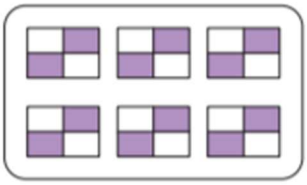
a) How many $\frac{1}{9}$ parts in the model above are shaded?

$4 \times \frac{5}{9} = \_\_\_\_ \times \frac{1}{9}$

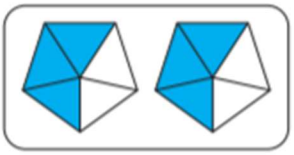
b) $4 \times \frac{5}{9} = \_\_\_\_$

B) Write the multiplication sentence to describe the shaded parts in each model.

1)



2)

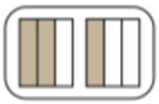


_____ _____

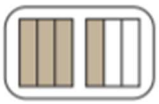
C) Which model represents the product $2 \times \frac{1}{3}$?

a)

b)



c)

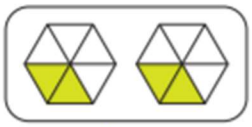


Name: _____ **Answer Key**

Multiplying Fractions - Models

Sheet 1

A) 1)

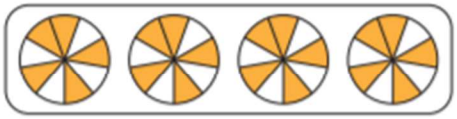


a) How many $\frac{1}{6}$ parts in the model above are shaded?

$2 \times \frac{2}{6} =$ **4** $\times \frac{1}{6}$

b) $2 \times \frac{2}{6} =$ $\frac{\mathbf{4}}{\mathbf{6}}$

2)



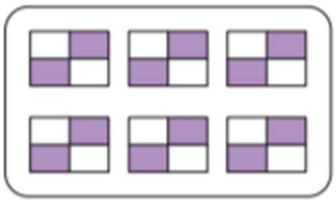
a) How many $\frac{1}{9}$ parts in the model above are shaded?

$4 \times \frac{5}{9} =$ **20** $\times \frac{1}{9}$

b) $4 \times \frac{5}{9} =$ $\frac{\mathbf{20}}{\mathbf{9}}$

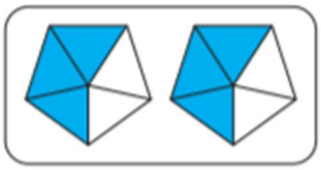
B) Write the multiplication sentence to describe the shaded parts in each model.

1)



$\mathbf{6 \times \frac{2}{4} = \frac{12}{4}}$

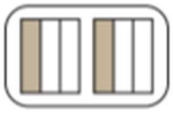
2)



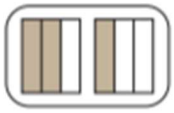
$\mathbf{2 \times \frac{3}{5} = \frac{6}{5}}$

C) Which model represents the product $2 \times \frac{1}{3}$?

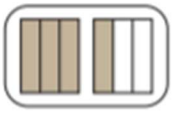
a) ✓



b)



c)



Once they are done taking this assessment, I would want them to trade papers with their neighbor and correct the papers based on the answer key. I would make sure that the grader uses a different color pencil than the student. After grading, I would ask each student to turn to their grader and discuss the problems they missed. After they discussed, if there were any questions we would go over the problem in class. Each student would receive credit for completing this activity regardless of the grade they got on the test. This would just be a check up so I could see how each of the students are understanding the material so I could review the parts that they didn't understand before they take the final test on the module at the end.

6. Rationale: I believe the resources I included in this section will help students learn in a variety of different ways. I included hands on activities like the paper plate activity. I also included teaching about different cultures to help students see how fractions and ratios have changed over time. The group activities will help students develop good social skills and will allow them to help each other fill in any gaps they may not have understood from the lecture. Using an online website to check understanding and work in groups will allow the students to have a change of pace. These activities will prepare them for the assessment which should be relatively easy for them if they understood the material.

7. Resources:

Utah Core Standards from: uen.org,

Egyptian and other cultures information: https://www.sutori.com/story/the-history-of-fractions--QrhwbjJVp1twEVJAgMXmFwMx ,

Pizza picture: https://www.myqbook.com/MathConcept/310/Subtracting-fractions ,

Paper plate activity: https://theimaginationtree.com/paper-plate-pizza-fractions/

Worksheets: https://www.mathworksheets4kids.com/ratio.php

Lesson 2:

Subject Area: Math

Grade Level: 7

Duration: 2 class periods

1. Instructional Goal: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. The following is an example of ratio language: "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak."

2. Utah Core Standard: Understand ratios, equivalent ratios, rates, unit rate

3. Multicultural Goals:

a. Students should learn about classmates' favorite foods and restaurants. This can facilitate learning about peers as well as about different kinds of food (students may discuss foods they have never heard of on the menus)

b. Students should learn how to respect students with different political and other beliefs. They should learn to view differences amongst classmates as assets; they should be taught to appreciate cultural diversity.

4. Instructional Procedure/Activities:

Lesson 1

I would have students gather groups of objects from around the classroom. Then I would have them work with a partner and explain the objects they have in terms of ratios of each other. For example, a student may grab 5 scissors and 10 pens and then say that for ever scissor they had they had 2 pens. They would need to understand how ratios between objects simplify. They would do this with one partner and then switch 4 more times so they could practice this concept with many different students who had different objects.

I would then help the students learn how to solve unit rate problems including those involving unit pricing and constant speed. For example, if it took four hours to mow eight lawns, how many lawns could be mowed in 32 hours? What is the hourly rate at which lawns were being mowed? I would ask the students how fast they have seen their parents drive and then discuss how long it would take the parent to drive a certain distance in miles per hour (we would also have a discussion on how following the speed limit keeps people safe).

We would discuss students' varying opinions about a variety of different things by having students stand when something is said that they agree with or that describes them. We would discuss the students' political opinions, asking which political group they or their family identify with. We would discuss ratio questions using ratio language such as: "For every vote candidate A received, candidate C received nearly three votes." Or "For every 4 Republicans in the room there are 2 democrats." We would ask questions about the students' background by asking ratio questions about the students' number of family members, favorite type of animal, desired profession, etc. For the rest of the class period they would work on this worksheet in groups:

Name : _____

Answer Key

Ratio: Part to Part

Level 1: S1

1) 

The ratio of  to  is **4 : 3** .

2) 

The ratio of  to  is **2 : 8 or 1 : 4** .

3) 

The ratio of  to  is **4 : 5** .

4) 

The ratio of  to  is **6 : 3 or 2 : 1** .

5) 

The ratio of  to  is **3 : 2** .

Name : _____

Ratio: Part to Part

Level 1: S1

1) 

The ratio of  to  is _____ .

2) 

The ratio of  to  is _____ .

3) 

The ratio of  to  is _____ .

4) 

The ratio of  to  is _____ .

5) 

The ratio of  to  is _____ .

Lesson 2

Student should understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, and use rate language in the context of a ratio relationship.

To teach these skills, I would ask each student to bring their favorite dessert recipe to class. We would discuss as a class and then choose one recipe that we wanted to make. The next class period I would bring all of the supplies to class to bake that in front of them. We would first discuss which ingredients the students felt like there should be more of in the dessert. Then we would look at the recipe in detail and discuss ratios of the ingredients. I would allow each student to come up and take a part in the cooking process (whether that be measuring out the ingredients, mixing, or solving the math on the white board). The students would need to use rate language in the context of a ratio relationship the entire time. The following is an example of rate language: "This recipe has a ratio of four cups of flour to two cups of sugar, so the rate is two cups of flour for each cup of sugar." I would ask them to calculate many different measuring cups they could use to come to the same amount of an ingredient. This would help the class to review what we had studied in the previous few class periods.

We would spend the rest of class discussing examples such as, “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." I would ask each of the students to talk about their favorite type of food and then split into groups in the room based off of that. Then I would ask each of the students in each group to pick a restaurant that serves their type of food. Then they would look online at that restaurant’s food menu and pretend order some appetizers. Then they would discuss in their group how they would split up the appetizers amongst each member in their group. Then they would use ratios and fractions to figure out how much their meal cost based off of the total cost of what was ordered. I would ask each group to draw a picture of their meal and each member in the group on a piece of paper. Then they would visually show how much each student ate and how much their portion cost. I would ask them to write down using ratio language how many items they ate compared to each of the other people in their group. Then I would ask the students to hang these pictures around the classroom.

During lunch or another break I would take this and bake it in the teacher’s lounge area in the oven. I would invite all the students to come to my classroom at the end of the school day to pick up a dessert.

5. Assessment: I would ask the students to help their parent cupcakes or ginger bread men at home while following the recipe. I would send home the following worksheet for the student to fill out to show that they understand ratios in cooking. The student would need the parent to sign this form and return it for full credit. (If this is not possible due to extenuating circumstances, I would ask the student to bring me their favorite recipe and we could discuss different things about their recipe.)

Recipe Ratio and Proportion Worksheets

Use these recipes to answer the questions on the worksheet:

Cupcake Recipe - Serves 10

100g butter or margarine
100g caster sugar
2 free-range eggs, lightly beaten
1 tsp vanilla extract
100g self-raising flour
2 tbsp milk
For the buttercream icing
150g butter, softened
2 tbsp milk
200g icing sugar

Gingerbread Recipe - Makes 10 servings

350g plain flour
1 tsp bicarbonate of soda
2 tsp ground ginger
1 tsp ground cinnamon
120g butter
180g light soft brown sugar
1 free-range egg
4 tbsp golden syrup

Recipe Ratio and Proportion Worksheets

Use the recipes to answer the questions on the worksheet:

Cupcake Recipe Questions

1. How many grams of butter would be in each cupcake?

_____

2. How many grams of caster sugar would be in 3 cupcakes?

_____

3. How many eggs would be needed to make 20 cupcakes?

_____

4. How many grams of icing sugar would be needed to make 40 cupcakes? _____

Gingerbread Recipe Questions

1. How many tablespoons of golden syrup would be needed to make 4 servings? _____

2. If 1 tbsp contains roughly 15ml of liquid, how many ml of golden syrup does the recipe contain?

_____

3. The recipe uses 120g butter. How many grams would be needed to make 1 serving? _____

4. What fraction of an egg would be in each serving?_____

Recipe Ratio and Proportion Worksheets- Answers

Cupcake Recipe Questions

1. How many grams of butter would be in each cupcake?

10g butter

2. How many grams of caster sugar would be in 3 cupcakes?

30g caster sugar

3. How many eggs would be needed to make 20 cupcakes?

4 eggs

4. How many grams of icing sugar would be needed to make 40 cupcakes?

800g icing sugar

Gingerbread Recipe Questions

1. How many tablespoons of golden syrup would be needed to make 4 servings?

1.6 tbsp golden syrup

2. If 1 tbsp contains roughly 15ml of liquid, how many ml of golden syrup does the recipe contain?

60ml of golden syrup

3. The recipe uses 120g butter. How many grams would be needed to make 1 serving?

12g of butter

4. What fraction of an egg would be in each serving?

1/10 of an egg

6. Rationale: These activities should foster learning about other classmates while teaching to respect different beliefs. This will foster greater understanding and appreciation for differences, making the classroom a safe environment. Students working in groups and learning about different types of food together will help students form friendships and develop social skills that will help them throughout their lives. Students should also feel as though their voice matters (as they are helping determine the recipe that we will use to make the dessert in class). Students should also bond with their parents while completing the assessment part of this section. They should also learn to appreciate their parents willingness to cook for them all the time.

7. Resources:

Utah Core Standards from: uen.org

Worksheet: https://www.mathworksheets4kids.com/ratio.php

Recipes for assessment: http://co-optech.org/EdIns/CulPS/Week%208/GS-Ratio-recipe-homework.pdf

Lesson 3:

Subject Area: Math

Grade Level: 7

Duration: 3 class periods

1. Instructional Goal: Interpret and compute quotients of fractions using real world problems and be able to explain the meanings of the results. Students should learn how to explain the meaning of quotients in fraction division problems.

2. Utah Core Standard: Simplify complex fractions

3. Multicultural Goals:

a. Students should gain a greater understanding of rap music and culture. Using music from different cultures should help students remember material longer because it may be one of their learning preferences.

b. Students should learn how to share food appropriately with classmates.

c. Students should learn to work well in groups while drawing posters—they should learn to appreciate and appropriately respond to others' ideas.

4. Instructional Procedure/Activities:

Lesson 1

Compute quotients of fractions by fractions, for example, by applying strategies such as visual fraction models, equations, and the relationship between multiplication and division, to represent problems. Use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.)

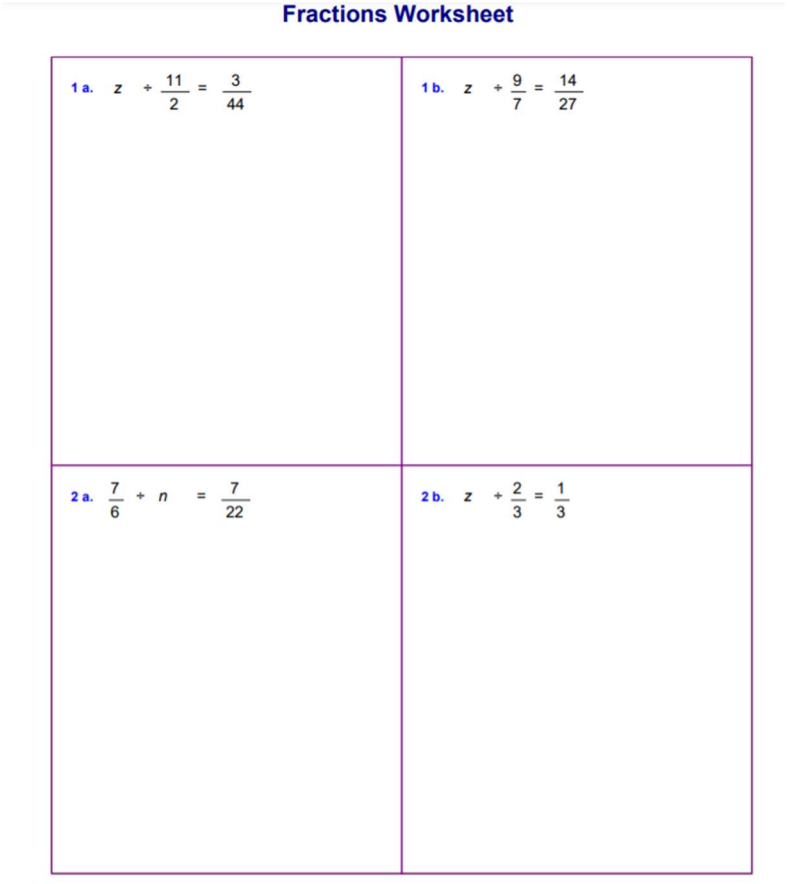
We would watch this short video to see an explanation for how to compute quotients of fractions. This very short video helps apply this concept to real life by asking the question, "how do you share 3 pizzas with 4 hungry friends?" This can help students see how learning quotients of fractions is relevant in their lives.

https://www.youtube.com/watch?v=QzMEqxd2Cr8

Then we would watch this short video to show a simple trick that can help students divide fractions. This method is called the criss-cross method.

https://www.youtube.com/watch?v=PtYDbapTGGs&feature=youtu.be

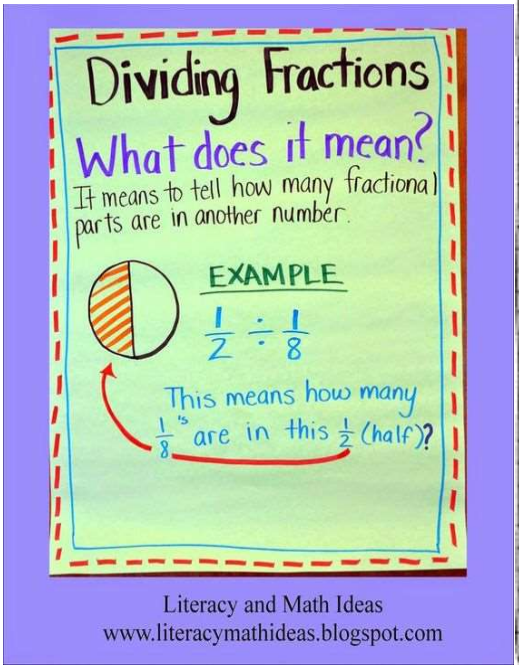
We would go over each of these problems together as a class to learn how we can use algebra to solve for our missing fraction denoted by a variable.

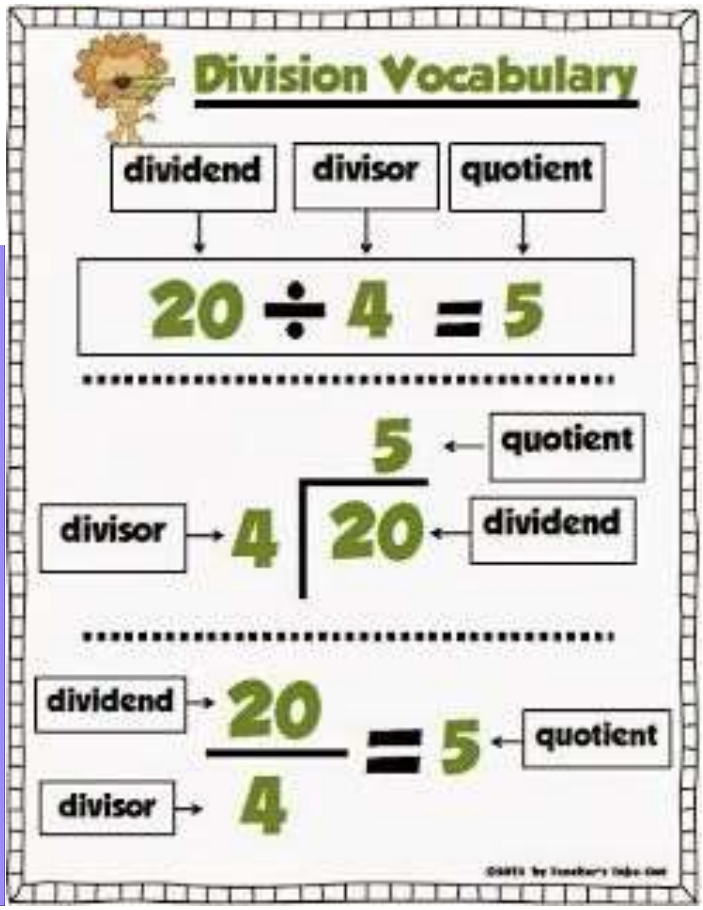


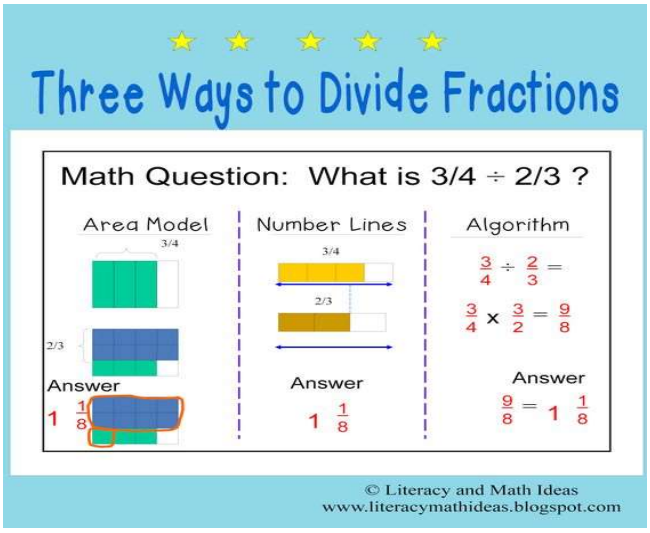
Answer Key

1 a.	$z =$	$\frac{3}{8}$	1 b.	$z =$	$\frac{2}{3}$
2 a.	$n =$	$\frac{11}{3}$	2 b.	$z =$	$\frac{2}{9}$

Then I would have each of the students write down/draw a visual representation of how to divide a fraction by a fraction. Each student would have a sheet of paper to draw a mini poster to show how they understand division. They could draw a picture or write in words a phrase to help them understand. But they must each include a specific example and what the answer is. Each student would put their name on a paper inside a jar and then I would have the students draw out other student's names at random. Then I would ask the student to share their specific example of dividing fractions and how they remember how to do it. Some examples of poster ideas:







$$\frac{3}{4} \div \frac{2}{3} = \frac{3}{4} \times \frac{3}{2}$$

Lesson 2

We would focus on solving real-world problems involving division of fractions by fractions. I would start off class by showing a fun video to help review how to divide fractions by fractions. https://www.youtube.com/watch?v=nMZJKGyu-Kk

The fun rap song in the video may help students have an easier time remembering this concept. Then I would break the class into groups and ask them to write a rap of their own that involves the same concepts with keeping the first fraction, changing the sign to multiplication, and finally flipping the 2nd fraction. If any student is particularly interested in rap music, I would have them explain some of the culture and background of rap and how they got interested in it. Afterwards I would have the students present their rap. (I would ask them to keep their rapt to 30-45 seconds. This should take up about half of the class period. When the students are presenting their raps I would record the audio and then later send it out in a link to the students so they can re-listen to the raps if they would like to. The 2nd half of class we would solve word problems such as: "How much chocolate will each person get if three people share 1/2 pound of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mile and area 1/2 square mile?" We would finish off class by each student getting into a group of 3 or 4 students and doing the math of dividing 3/4 snickers bar with each other. They each would need to turn in their work showing them figure out what fraction of the candy bar each person could have.

5. Assessment:

Lesson 3

This would be the comprehensive final assessment for these units. This would be a timed in class test (students who need accommodations would receive the extra time and other things they need). Students would need to get 80% or higher on this test or they would be asked to take the following class period to re-take the test. During the next class period, students who got 80% or higher on their test would get to play fraction math games on their computers. This could help motivate students to perform well on the exam initially. For students who needed to re-take the test, I would split them into groups and have them review the test and compare their answers with an answer key. They would talk in the group about what they missed and why. I would walk around the classroom to the different groups to help answer questions. Then they would have the remaining time in the class to re-take the test with different, but similar questions. The test would look something like:

FRACTIONS:

Question 1

$\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}=?$

Answer: 5/3

Question 2

What is a quarter of 33?

Answer: 33/4

Question 3

$\frac{13}{7}+\frac{14}{7}+\frac{19}{7}=?$

Answer: 46/7

Question 4

Re-write the following mixed fractions as improper fractions:

$3\frac{1}{4}+2\frac{1}{4}=?$

Answer: $\frac{13}{4}+\frac{9}{4}$

Question 5

$\frac{11}{13}\times 5=?$

Answer: $\frac{55}{13}$

Multiple Choice Questions: Questions 6-9

RATIOS:

Question 1 — 60 seconds

Q. The ratio of **red** counters to **blue** counters is 3 : 1

What fraction of the counters are **blue**?

answer choices

- $^1/_4$
- $^3/_4$
- $^1/_3$
- $^3/_1$

Question 2 — 60 seconds

Q. The ratio of **red** counters to **blue** counters is 3 : 1

What fraction of the counters are **red**?

answer choices

- $^1/_4$
- $^3/_4$
- $^1/_3$
- $^3/_1$

Question 6 — 60 seconds

Q. The ratio of **purple** sweets to **red** sweets is 2 : 5

What fraction of the sweets are **red**?

answer choices

- $^5/_2$
- $^2/_5$
- $^2/_7$
- $^5/_7$

Question 7 — 60 seconds

Q. The ratio of **clubs** to **hearts** in a hand of playing cards is 6 : 1

What fraction of the cards are **clubs**?

answer choices

- $^1/_6$
- $^6/_1$
- $^1/_7$
- $^6/_7$

1/4, 3/4, 5/7, 6/7

Questions 10:

You have 10 marbles total and 3 of them are red and 4 of them are green. The rest of the marbles are orange. What is the ratio of orange marbles to the total?

Answer: 3:10

DIVIDING FRACTIONS:

Questions 11:

You have ¾ a snickers bar, and you divide that with 4 friends. What is the size of snicker bar that one person gets?

Answer: 3/16 snickers bar

Question 12:

$\frac{9}{16} \div \frac{5}{16} = ?$

Answer = $\frac{9}{5}$

Questions 13:

$\frac{12}{17} \div \frac{24}{17}$

Answer = ½

6. Rationale:

Using real world story problems will help students see quotients are relevant in their lives. Using methods like developing raps or creating quotient posters will help students remember the material they are learning so they can remember it on the test. These may also help students learn about rap and its culture as well as more about their fellow classmates. These are also incorporating different learning styles so students will have different opportunities to learn in a style that meets their needs best. Differentiated learning will help students have the necessary opportunities to learn in their unique ways.

7. Resources: Utah Core Standard from uen.org

Worksheet: https://www.homeschoolmath.net/worksheets/fraction_multiplication.php

Dividing fractions what does it mean poster:

https://www.pinterest.com/pin/39899146686942525/

Division vocabulary poster: https://www.pinterest.com/pin/455708056022989750/

3 Ways to divide fractions poster: https://www.pinterest.com/pin/232779874465989936/