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Ratios and Proportions [6th grade]

Lisa Murphy
Trinity University

UNDERSTANDING BY DESIGN

Unit Cover Page

Unit Title: Ratios and Proportions

Grade Level: 6th

Subject/Topic Area: Math

Designed By: Lisa Murphy

Time Frame: 4 weeks

School District: North East Independent School District

School: W.W. Jackson Middle School

Brief Summary of Unit:

In this unit students will be introduced to ratios and proportions. Students will have practice identifying ratios from pictures, graphs, models and word problems. Using these skills, students will then be able to identify proportional ratios and use ratios to describe proportional situations as well as to predict outcomes.

To demonstrate their knowledge of ratios and proportional reasoning, students will complete a project assessment. The students will be given a recipe and then have to calculate the amounts of ingredients needed for various numbers of servings. The students will write down new versions of the recipes to be included in a class recipe book. To ensure that the recipes do have proportional amounts of ingredients, students may bring in a sample of their recipe to share with the class.

Unit: Ratio and Proportion
Grade: 6th

Stage 1: Desired Results

Understandings

Students will understand that…

There is more than one way to solve a problem. (Overarching understanding for the year)

Ratios can be used to describe proportional situations (Proportions are two ratios that are equal).
Ratios and proportions can be represented in different ways (fraction, decimal, percent).

Essential Questions

Why are ratios and proportions important?
How are they used in the real world?

Does my answer make sense?

How can I compare two different things?
(How can we show the relationship between two quantities or values?)

How should I solve it?
(What number form should be used to solve a problem?)

Knowledge & Skill

(NEISD scope & sequence; TEKS; Core; etc.)

TEKS

6.1b, 6.2c, 6.3a, 6.3b, 6.3c, 6.4a, 6.5a

6.11a, 6.11b, 6.11c, 6.11d, 6.12a, 6.12b, 6.13a, 6.13b

Key Terms:
Ratio, proportion, percent, equivalent

Students will know:

The relationship between ratios and proportions.
The different forms that are used to represent ratios.

How ratios and proportions can be used in everyday situations (the real world).

Students will be able to:

Describe proportional situations with ratios.
Make predictions using ratios.
Represent proportions in various forms (models, fractions, decimals, percents).
Solve problems using ratios and proportions.

Stage 2: Assessment Evidence

Performance Task:

Rachel Ray needs your help! She is making desserts for two upcoming holiday parties and she is having a little trouble. All of the recipes she has make 12 servings. The organizers for one party have asked Rachel to bring 3 servings of several different recipes. The organizers of the second party are expecting a larger turn-out and have asked that Rachel bring 24 servings of each recipe. Rachel doesn't know what to change so that she makes the right number of servings. She has asked you to help her figure out what changes need to be made to her recipe so that she can make 3 servings and 24 servings of one of her dessert recipes. To thank you for your help, Rachel is going to take your new recipes and publish them in a new recipe book.

Other evidence:

(quizzes, tests, academic prompts, etc.
note – these are usually included where appropriate in Stage 3 as well)

Quiz
Test
Math Measures
Daily Warm-Ups
Agile Mind guided assessment
Exemplar Problem – Raisin or Sneaker Problem

Stage 3: Learning Activities

(Steps taken to get students to answer Stage 1 questions and complete performance task)

Day One

Intro to Unit/Blue and Yellow Make Green

To begin the unit on ratio and proportions, introduce the Essential Questions: Why are ratios and proportions important? How can I compare two different things? How should I solve it?
The questions will be creatively written on poster size sheets of paper (For the first question the words ratio and proportion will be written in different yet proportional sizes, for the second question include various pictures of items to compare and for the third question write the possible forms that could be used to express an answer).
Throughout the coming weeks we will be trying to answer these questions. The questions will be posted around the classroom where they can be easily seen by the students. They will be referenced throughout the unit.

Students will be introduced to the concept of ratio and proportions by observing a Water Dye Coloring activity. Colored dye will be added to two beakers of water in different ratios. Students will record what happens to the color of the water. This will lead into a discussion of ratios and proportional ratios. The terms ratio and proportion will be formally introduced on Day Two.

Day Two

Ratios All Around

Students will use their composition notebooks to take notes on the definitions and written forms of ratios and proportions. To practice finding ratios the class will determine the ratios of their

class (boys to girls, girls to whole class, etc.). 'Our Class Ratios' will be pasted into the composition notebooks. Students will also work in groups to complete the Ratio Rumba project. Each group will create a playlist with songs from at least 5 genres. They will then calculate the ratios between the different genres of music. Students will complete a Math Measure at the end of class to assess their own understanding of what was discussed during class.

Day Three
Ratio Rummy

Students will play Ratio Rummy. The object of the game is collect an equivalent set which includes a ratio, fraction, percent, decimal and model. This activity connects ratios with the just completed unit on fractions, decimals and percents. During the activity, each team will use Rally Coach to verify equivalent sets.

Day Four
Ratio Towers/Proportions

Students will use manipulative blocks to build various ratios. Students will then be challenged to use the blocks to build a structure with the same ratio as an earlier construction but with a different number of blocks than the original. The idea of proportion will be reintroduced. Students will practice building proportional ratios with the blocks. Students will complete a Math Measure at the end of class to assess their own understanding of what was discussed during class.

Day Five
Proportional Ratios

As a class, discuss what a proportional situation is. Give students several examples of how to set up a ratio and then a proportional ratio based on a word problem. Students will then rotate to different groups around the classroom. Each group will contain manipulatives and a proportional situation. Each group will be responsible for setting up the initial ratio and then using that ratio to find the proportional ratio. Students will complete a Math Measure at the end of class to assess their own understanding of what was discussed during class.

Day Six
Predicting with Proportions

Students will play "I have, who has" to practice solving proportions. Some of the cards will have word problems where students will need to set up a proportion and solve for the missing number and others will have straightforward proportions where students will need to solve for the missing number.

Day Seven
Ratio and Proportion Quiz
Facets of Understanding: Explain, Interpret/Analyze, Apply

Day Eight
Exemplars – Raisin or Sneaker Problem

Students will use their knowledge of ratios and proportions to solve a word problem. Students

will be graded using a rubric that scores for understanding, reasoning, accuracy and communication.

Day Nine
Exemplars – Raisin or Sneaker Problem

Students will use their knowledge of ratios and proportions to solve a word problem. Students will be graded using a rubric that scores for understanding, reasoning, accuracy and communication.

Day Ten
Computer Day

Students will go to the computer and complete an Agile Mind Project on using ratios. Students will work through an overview of what information they will be covering. Then they will move into the exploring part of the lesson. This will include exploring and applying proportional reasoning. The students will finish the lesson with a summary section. Then the students will complete the guided assessment.

Day Eleven
Start What's Cooking

Students will be introduced to the unit assessment project. In groups they will brainstorm about how they will approach the problem. This brainstorming will allow students to connect the math they have learning about to the real life problem that they have now been presented with.

Day Twelve
Complete What's Cooking

Students will be given a recipe for which they will need to convert the amount of ingredients. Each student should use the plan that they developed during the previous day to accomplish this task. One student from each group will be given the same recipe so students can compare their completed conversions with another student before writing up the final copy of the recipe.

Day Thirteen
Review for Test

The class will play Whole Class Around the World to review for the next day's test. Review questions will include determining ratios based on pictures and word problems, finding proportional ratios, and using ratios to make predictions and solve problems.

Day Fourteen
Ratio and Proportion Test

Day Fifteen
Share What's Cooking Desserts / Unit Wrap Up

Students will be able to bring small samples of their recipes from the What's Cooking project. As we share desserts we will revisit the Essential Questions that were posed at the beginning of

the unit. In groups students will discuss possible answers for each question. Each group will be responsible for sharing at least one answer during class discussion.

Ratio and Proportion UbD Unit Calendar

Day 1 Blue and Yellow Make Green	**Day 2** Ratios All Around Interactive Homework	Day 3 Buffer	**Day 4** Ratio Rummy FDP tie-in	Day 5 Building Ratio Towers Introduce Proportions
Day 6 Finding Proportional Ratios/Situations – what is the best form to use	Day 7 Predicting with Proportions Cross Multiplying	Day 8 Quiz	Day 9 Exemplars Raisins or Sneaker Problem	Day 10 Buffer
Day 11 Computer Day	**Day 12** Brainstorming for What's Cooking	Day 13 What's Cooking	**Day 14** Review for Test	Day 15 Test
Day 16 Share What's Cooking Desserts	Day 17 Buffer	Day 18 Buffer	Day 19 Benchmark	Day 20 Benchmark

Pink = Lessons plans are written out for these days.

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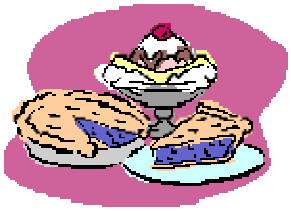
What's Cooking?



Rachel Ray needs your help! She is making desserts for two upcoming holiday parties and she is having a little trouble.

All of the recipes she has make 12 servings. The organizers for one party have asked Rachel to bring 3 servings of several different recipes. The organizers of the second party are expecting a larger turn-out and have asked Rachel to bring 24 servings of each recipe.

Rachel doesn't know what to change so that she makes the right number of servings. She has asked you to help her figure out what changes need to be made to her recipe so that she can make 3 servings and 24 servings of one of her dessert recipes.

To help Rachel remember her new recipes, we will collect your recipe cards and send them to Rachel. To make sure that our changes to the ingredients still taste good, you may choose to bring in a small sampling of your recipe at the end of the project.

Name:_____ Period: ( ) Date:_____

What's Cooking?

How Can You Help Rachel?

Brainstorm with your group and answer the following questions.

After you have finished brainstorming and you have a game plan, each of you will write a short note to Rachel.

The note should include:

*** that you are willing to help Rachel**

*** a brief description of how you are going to help Rachel.**

1) Why did she ask you to help?

2) What do you have to offer her?

3) What kind of math are we going to use?

4) What is your game plan when you get your recipe?

Name:_____ Period: ( ) Date:_____

What's Cooking?

Changing Recipes

You have been given one of Rachel's recipes that makes 12 servings. Rachel needs to know how to change the recipe so that it makes 3 servings and 24 servings.

Use a sheet of notebook paper to show your work for changing the recipes.

Since this new recipes will be put in a recipe book, you will need to write the new recipes on recipe cards. You will only need to write the new ingredient quantities. A copy of the original recipe with the cooking directions will also be put in the recipe book.

Recipe_____ **Serves**_____

from the kitchen of _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

www.kidsdomain.com/craft

Recipe _____ Serves _____

from the kitchen of _____

Ingredients

Recipe _____ Serves _____

from the kitchen of _____

Ingredients

www.kidsdomain.com/craft

Exemplars Mathematics Rubric

MATH STUDENT RUBRIC[3]

Rookie Veteran Starter All Star

	Understanding	Reasoning	Accuracy	Communication
Expert 4	• I can show a deep understanding of the problem. • I completely address all parts of the task. • I got it! I can use big math ideas to solve the problem	• I can use powerful and thorough strategies to get to effective solutions. • I can explore, analyze, and justify all my claims. • I can observe and make connections beyond the problem to real-life situations.	• My procedures are organized so others can follow it. • All of my work is correct. • I can label every item.	• I clearly explain how I solved the problem. • I use visual designs to show how my ideas match the solution. • I can use math language to explain my thinking.
Practitioner 3	• I have a thorough understanding of the problem. • I address the important parts the task. • I logically use big math ideas to solve the problem.	• I use effective strategies for the solutions. • I give evidence for my claims. • I can observe and make connections.	• My procedures are organized and can be followed by others. • If I made mistakes, they are not important ones. • I can label most of the items.	• I explain how I solved the problem. • I use visual designs to show my ideas. • I can use some math language.
Apprentice 2	• I show a limited understanding of the problem. • I address some of the important parts of the task. • My big math ideas did not work very well to solve the problem.	• My strategies worked for part of the problem. • I did not give clear evidence for my claims. • I tried to observe and make connections.	• My procedures are difficult for others to follow. • I have many mistakes in my work. • Some of my items are labeled.	• I did not explain how the problem was solved very well. • My visual designs do not match the solution. • I can use a little math language.
Novice 1	• I did not show that I understand the problem. • I did not address the important parts of the task. • My solution does not use big math ideas.	• I did not use a strategy that helps solve the problem. • The evidence for my claims does not make sense. • I did not make connections to the problem.	• My procedures are not organized for others to follow. • There are too many big mistakes in my work. • None of my items are labeled.	• I did not explain how my solution works to solve the problem. • I did not create designs to help explain the solution. • I did not use math language

These are the four recipes that will be used. The recipes will be written onto the project sheet.

Frosted Flakes Snack

Ingredients:

4 cups mini marshmallows
¼ cup margarine
1/3 cup peanut butter
7 ½ cups Frosted Flakes cereal

3	24
1	8
1/16	½
1/12	2/3
1 7/8	15

Directions:

Use a 4-quart microwave bowl to melt miniature marshmallows. Add margarine. Set microwave on high for 3 minutes; then stir halfway. Stir in peanut butter until mix is smooth. Add Frosted Flakes. Stir until well-coated. Use a buttered spatula and press mixture into a lightly greased 9x13 pan. Let mixture set for about 5 minutes. Cut into small bars.

Old Fashioned Sugar Cookies

Ingredients:

1 cup butter, unsalted
1 cup white sugar
2 eggs, lightly beaten
1 teaspoon of vanilla
3 cups flour
2 teaspoons baking powder
1 teaspoon salt

3	24
1/4	2
1/4	2
2/4	4
1/4	2
¾	6
2/4	4
¼	2

Directions:

In a bowl, cream the butter and sugar. Beat in the eggs and vanilla. In a second bowl, combine and mix well the flour, baking powder, and salt. Stir flour into butter mixture 1 cup at a time. Chill dough for 3 to 4 hours. Roll out dough and cut into shapes with cookie cutters (or spoon dough balls onto cookie sheet). Optional: Brush with milk and sprinkle with colored sugar. Preheat oven to 350 degrees. Place cookies on baking sheet and bake for 10-15 minutes.

No-Bake Cookie Bars

3	24
1	8
1/2	4
1/2	4
1/2	4
1/4	2
1/4	2
7/20	3
¼	2

Ingredients:

4 cups	Cheerios
2 cups	Rice Krispies Cereal
2 cups	dry roasted peanuts
2 cups	candy coated chocolate candy pieces
1 cup	light corn syrup
1 cup	sugar
1 ½ cup	creamy peanut butter
1 teaspoon	vanilla extract

Directions:
In a large bowl, combine the first four ingredients; set aside.
In a saucepan, bring corn syrup and sugar to a boil, stirring frequently. Remove from the heat; stir in peanut butter and vanilla. Pour over cereal mixture and toss to coat evenly. Spread into a greased 15x10x1 inch baking pan. Cool. Cut in 3x3 bars.

Cheerio Bars

3	24
1/4	2
1/4	2
1/4	2
1 1/2	12

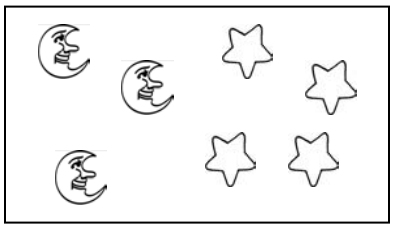
Ingredients:
½ cup peanut butter
½ cup sugar
½ cup honey
3 cups Cheerios

Directions:
Bring Honey to a boil in 2 quart saucepan. Remove from heat, stir in peanut butter until blended. Pour in cheerios and mix until well coated. Spread in buttered pan and let cool. Cut in squares.

Good Luck to:_____ Period:____ Date:_____

Ratio and Proportion Test

1. Use the picture to answer the following questions.



What is the ratio of moons to stars?

Draw or write in numbers an equivalent ratio to the above picture.

Use the chart below to answer questions 2-3.

Number of Hours Since Park Opening	Number of Guests at the Park
2	100
3	150
5	250
7	

2. Write a rule that describes the data in the chart.

3. Use the rule to find the number of guests at the park after 7 hours.

4. Which of the following is NOT equivalent to 32% ? Explain why.
a) 8:25 b) 6 to 24 c) 32/100 d) 50:16

5. In a package of star stickers there are 15 red stars, 25 gold stars and 10 green stars.

a) What is the ratio of red to gold stars (in simplest form) ?

b) What is the ratio of green stars to the total number of stars?

c) Set up proportions to show how many red, gold and green stars would there be in 6 packages of stickers? Show all of your work.

6. John can buy 3 books for $18. How many books could John buy for $54?

7. Allison can read 80 pages in 2 hours. How many hours will it take her to read 240 pages?

8. The ratio of pens to pencils is 2/7. If you counted 84 pencils, how many pens would you expect to find?

In questions 9-12 solve for X in the proportions. Show all of your work?

9. 4/5 = 32/x

X = _____

10. 6/x = 42/49

X = _____

11. 3/8 = x/40

X = _____

12. x/9 = 8/36

X = _____

13. Use the chart below to answer the following questions.

Write a proportion that would help you find the number of white blocks if there were 21 black blocks.

What would be the number of white blocks?

14. Albert owns a bakery that specializes in chocolate chip cookies. He has very specific standards for his cookies. Albert personally checks the cookies before they are sold. This is the table he uses when checking cookies.

Number of Cookies	Number of Chocolate Chips
2	30
4	60
5	75
7	105

Which of the following equations can be used to find *CC*, the number of chocolate chips you can find on any number of *C*, cookies?

a) $C = 28 + CC$

b) $C = 15 + CC$

c) $C = 15 \times CC$

d) $C = 30 \times CC$

Good Luck to:_____ Period:____ Date:_____

Quiz

For questions 1-3: If proportional explain why. If not proportional change the second ratio to make a correct proportion.

1. 4:9 = 2:3

Understandings
Explain
Interpret/Analyze
Apply

2. 4:6 = 6:9

3. 3:5 = 6:15

4. Write three different proportions that are equivalent to 40%.

5. Complete the following chart:

Red Marbles	2	4		8	10
Blue Marbles		6	9		15

Explain how you were able to fill out the chart:

6. Cheryl shed 32 tears when she cut 2 onions. How many tears should she expect to shed if she cut 6 onions? Show work and explain your answer.

7. Is the following relationship proportional? Prove why or why not.
   Jade bought 3 hamburgers and 2 hotdogs while Richard bout 9 hamburgers and 6 hotdogs.

Name:_____ Period:_____ Date:_____

Raisins

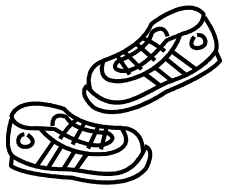
A package of Sun-Maid® Baking Raisins contains approximately 380 raisins. I like to make gingerbread people and decorate them using raisins for their eyes and buttons. If I make the gingerbread look like the one below, how many dozens of cookies can I decorate with 1 package of Sun-Maid® Baking Raisins?

Name:_____ Period:_____ Date:_____

Sneakers

You are an owner of a sports outlet store. The table shows data about your sneaker sales in a recent week.

Type of Sneaker	Pairs Sold
Addidas ®	40
Nike ®	30
Tiger ®	20
Saucony ®	10



Next week, you plan to order 420 pairs sneakers.
Explain how you can use the data to decide how many dozen of each type to order.

Day One

Unit: Ratios and Proportions

Lesson: Introduction to Ratios and Proportions

Model: Inductive (Modified Concept Formation)

Objectives: SWBAT describe ratios and proportions with physical examples.
SWBAT describe ratios and proportions with numbers.

TEKS:
6.1a, 6.3a, 6.3b, 6.11a

Materials:
- Two beakers of water
- Blue and Yellow food coloring
- Blue and Yellow Make Green Observation Sheet
- Math Measure

Warm-Up: A frequently missed question on the Fractions, Decimals and Percents test

Introduction:
Tell students that we are beginning a new unit on ratios and proportions. Throughout the coming weeks we will be trying to answer the following questions:
Why are ratios and proportions important?
How can I compare two different things?
How should I solve it?
The questions should be posted around the classroom where they can be easily seen by the students. Be sure to make reference to the questions throughout the course of the unit.

<u>Blue and Yellow Make Green Dye Activity</u>

Have two beakers filled with water at the front of the classroom. Have two charts drawn on the board**.** Students should have a handout with the same charts.

Part I: Instruct students to observe the changes that are going to happen to the water. Explain that in the first beaker you will be in 2 drops of yellow food coloring and 3 drops of blue food coloring. Ask for students to conjecture about what will happen and ask for students to share what actually does happen. After some discussion, fill in the chart on the board with the number of yellow and blue drops and the resulting water color. Students should do the same on their worksheet. Repeat the process again using the same proportion of yellow and blue drops. Students should observe that the green color gets darker and darker each time.

Part II: Tell students to closely observe what changes happen to the water in this beaker. This time, there will not be a constant proportion of colors added. Tell students each time the proportion that you will be adding. Again, ask for students' conjectures about what will happen each time the color is added. Fill out the chart on the board while students fill out their worksheet. Students should observe that the shade of green varies with each iteration.

As a class, discuss what the differences were between the two beakers. (The colors changed because the number of drops of color changed.)

Introducing New Material:

Ask students what the ratio of yellow to blue drops was in the first beaker. Did it change or remain constant? What was the ratio of yellow to blue drops in the second beaker? Did it change or remain constant?

Discuss that we call the relationship between the numbers of drops a ratio. When the ratio remains constant we call it a proportion.

Homework: none

Assessment: Students will glue their data charts in their composition notebooks which will be collected and graded.

Name:_____ Date:_____ Class Period:_____

Blue and Yellow Makes Green
Observation Sheet

Beaker # 1

# of Yellow Drops Added	Total # of Yellow Drops	# of Blue Drops Added	Total # of Blue Drops	Color

Beaker # 2

# of Yellow Drops Added	Total # of Yellow Drops	# of Blue Drops Added	Total # of Blue Drops	Color

What happened to the color of the water?

Beaker # 1

Beaker # 2

What was the difference between Beaker #1 and Beaker #2?

Day Two

Model: Deductive (Direct Instruction)

TEKS:
6.1a, 6.3a, 6.3b, 6.11a

Materials:
- Student Composition Notebooks
- Our Class Ratio cutouts
- Glue
- Ratio Rumba Worksheet
- Interactive Homework Worksheet

Warm-Up: If I person can bring 4 friends to a concert, how many friends could 2 people bring? Explain your reasoning.

Review:
Have students summarize what was covered yesterday.
Discuss any questions or clarifications that were posed in yesterday's Math Measures.

Teaching New Material:
Pass out students composition notebooks.

Title the notes Ratios and Proportions.

Define Ratio and Proportion on the overhead.
Ratio-A comparison of two numbers by division
Proportion-An equation that show two ratios are equal
Discuss the different ways of writing proportions:
2:3 2 to 3 2/3
Emphasize that all ways are correct. Students may use any form they wish.

Look at an example of ratios:
Have students count the number of students in the class.
Ask the girls to stand up. How many girls are there?
Ask the boys to stand up. How many boys are there?

Have students glue Our Class Ratios into their notebooks.
As the class to determine the ratio of
- girls to the whole class
- boys to the whole class
- girls to boys
- boys to girls
- teacher to the whole class

After determining each ratio, be sure to write the proportion in the three ways discussed earlier.
Students should be copying all of these answers onto their sheets in the notebooks.

Guided Practice:
Each group will develop a playlist of songs that they would play on their ipod.

Each playlist must contain five different genres of music and at least 10 songs.
As a class, brainstorm different genres of music that might be used.
After creating the playlist, the group must determine the song ratio between each combination of genres.
The completed playlists and ratios will be posted by group number around the room.

Independent Practice:
Interactive Homework:
Students will be given an interactive homework assignment that is to be completed at home with a family partner. The assignment will consist of finding the ratio of several items around the house as well as finding some proportional objects. Students will be given 3 days to complete and turn in their interactive homework.

Informal Assessment:
During the last minutes of class, have the students fill out a Math Measure.

Feedback:
Collect and read Math Measures. Pull any Measures that are lower than 3. Address these questions during the next class period.

Name:_____ Date:_____ Class Period:_____

Our Class Ratios

Our Class Numbers

Number of students: _____

Girls: _____

Boys: _____

Teacher: _____

What is the ratio of:

Girls to the whole class	_____	_____	_____
Boys to the whole class	_____	_____	_____
Girls to Boys	_____	_____	_____
Boys to Girls	_____	_____	_____
Teacher to the whole class	_____	_____	_____

Name:_____ Date:_____ Class Period:_____

Ratio Rumba

- In groups of four you will create an ipod playlist.
- Your group's playlist must contain at least 10 songs from at least 5 different genres of music.
- Be sure to include the song title, genre and artist's name for each song on the playlist. You may use the internet.
- When your group has built the playlist, your group will examine the ratios on your playlist.
- Each member of the group will fill one of the following roles:
    - Recorder – This person will make sure things are properly recorded.
    - Song Info Finder – This person will look for the title, artist and genre.
    - Compromiser – This person will be in charge of settling decisions about songs.
    - Ratio Finder – This person will be in charge of double checking the ratios.

Before You Begin

What does genre mean?_____

_____

What are some possible types of music genres?_____

_____

_____

Time to Rumba

Use this space to brainstorm songs for your playlist.

Group Names:_____

Class Period:_____ Date:_____

Ratio Rumba Playlist

Song Title	Artist	Genre

1. List how many songs are in each genre. Label each genre 1 through 5.

2. What is the ratio of songs between Genre 1 and Genre 2?
   Remember to show your work.

3. What is the ratio of songs between Genre 2 and Genre 3?
Remember to show your work.

4. What is the ratio of songs between Genre 3 and Genre 4?
Remember to show your work.

5. Find an equivalent ratio to the ratio of Genre 4 and Genre 5?
Remember to show your work.

6. Find an equivalent ratio to the ratio of Genre 5 and Genre 1?
Remember to show your work.

7. Find an equivalent ratio to the ratio of Genre 3 and Genre 4?
Remember to show your work.

Ratio Rumba Sample Playlist

Song Title	Artist	Genre
Bless the Broken Road	Rascal Flatts	Country
Some Hearts	Carrie Underwood	Country
This Kiss	Faith Hill	Country
Canon in D	Johann Pachabel	Classical
Breakaway	Kelly Clarkson	Pop
Home	Michael Buble	Easy Listening
Good Vibrations	Beach Boys	Oldies
Yellow Submarine	The Beatles	Oldies
Hey Ya!	Outkast	Pop
Take Five	The Dave Brubeck Quartet	Jazz

Name:_____ Period: ( ) Date:_____

Ratio and Proportion Scavenger Hunt

Objective: To find ratios and proportions at home.

Dear Family Partner,

In math we are studying ratios and proportions. I hope that you enjoy this activity with me. This assignment is due_____.

Sincerely,

_____

(Student's Signature)

Look This Over:

As you answer these questions, explain your work to your family partner.

1. What is the height to length ratio of the house using the stars? Express the ratio in all three forms.

Remember

Proportional Ratios are two ratios that are equal to each other.

Ex: 3/4 = 9/12

2. List two ratios that are proportional to the height and length ratio of the house.

Try this together:

Use some object in your house (piece of paper, spoon, soup can, etc.) to measure you and your family partner's height and arm span.

1. What are you using to measure?_____

2. Measure your partner's height:_____ arm span:_____

3. What is your partner's height to arm span ratio?_____

4. Have your partner measure your height:_____ arm span:_____

5. What is your height to arm span ratio?_____

6. Are your height to arm span ratios proportional?_____

Scavenger Hunt:

It's time to find some of the cool ratios that you live around. First decide who will be Player 1:_____ and Player 2:_____.

Using the same measuring object from the height and arm span ratio, Player 1 will find the ratio of two objects. Write the ratios in the chart as well as the room location of the object. Then Player 2 will use the measuring object to search for an object with that ratio and then record their guess in the chart. After Player 2 has guessed, together go over the guess. If the guess is different than the object that Player 1 selected, Player 2 can justify they guess that they made. After reviewing, Player 2 can find two new ratios repeating the same process.

	Object Ratio	Room Location	Partner's Guess
Player 1 Ratio #1			
Player 1 Ratio #2			
Player 2 Ratio #1			
Player 2 Ratio #2			

After completing the Ratio Scavenger hunt, choose on of the ratios from the chart. Together try and find an object that has a proportional ratio.

Ratio Chosen from Chart:_____

Proportional Object:_____

Proportional Ratio:_____

Home to School Communication:
Dear Family Partner,
Please give me your reactions to your child's work on this activity. Write YES or NO for each statement.
_____1. My child understands the homework and was able to discuss it.
_____2. My child and I enjoyed the activity.
_____3. This activity helped me know what my child is learning in math.

Other comments:
_____
_____
_____
_____

Family Partner's Signature:_____

Day Four

Model: Cooperative Learning

TEKS:
6.1a, 6.3a, 6.3b, 6.11a

Materials:
- Ratio Rummy Cards
- Homework

Warm-Up: Draw a picture with 6 stars and 10 triangles. What is the ratio of stars to triangles? And what is the ratio of triangles to the total number of objects?

Teaching New Material:
In groups, students will play Ratio Rummy.
Go over the rules of Ratio Rummy with the students.

The goal of the game is to collect a group of cards containing an equivalent ratio, percent, and fraction, model and decimal. Each player will start with five cards. The remaining cards will be in a stack in the center. The top card of the middle stack will be placed face up on the table next to the stack. This will begin the discard pile. On their turn, the player may choose to draw a card or pick up the top card from the discard pile.

Stress the importance of this part of the rules: When a player gains a set of five, they may set it down, and verbally explain why the set is equivalent. The other group members are responsible for listening. If the person with the set makes a mistake, the person to the right is responsible for coaching the person to make the correction. Coaches should use positive and encouraging language. The other two members of the group are responsible for listening and alerting the coach to action if the there is something wrong.
* This is a cooperative learning technique called Rally Coach.

If correct, the student may draw a new set of five again. At the end of the playing time, the group will total the score of each player (a set of equivalency equals ten points). The winner from each group will be given a Math Point.

Guided Practice:
Demonstrate what an equivalent hand will look like. Have a set prepared. Let students see the first card. Ask what an equivalent fraction would be for this ratio. After you have determined the answer as a class, show the students the fraction card. Continue with this question and answer format until you have shown the class an equivalent hand.

Independent Practice:
Let's Be Rational

Assessment:
Homework will be graded and returned within two days.

Feedback:
Return the graded homework. Review and/or re-teach any concepts that students struggled with on the homework.

Name:_____ Period:____ Date:_____

Let's Be Rational

1. What is the ratio of suns to beach umbrellas?_____

Draw two equivalent (proportional) ratios to the suns and beach umbrellas using circles and triangles.

2.  

What is the ratio of pens to books?_____

What is the ratio of books to pens?_____

Which ratio below has the same ratio as the pens to books?_____
How did you decide?

a) 6 to 8 b) 8 to 6

Day Twelve

Model: Cooperative Learning

TEKS:
6.1a, 6.3a, 6.3b, 6.11a

Materials:
- What's Cooking Problem Sheet
- What's Cooking Problem Sheet Transparency
- What's Cooking Brainstorm Sheet
- 8 ½ x 11 white paper
- Markers

Warm-Up: Daniel can read 120 pages in 2 hours. How many pages can he read in 180 minutes?

Introduction:
As a class, read over the What's Cooking Problem Sheet.

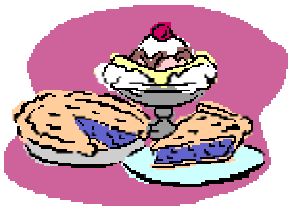
Guided Practice:
In groups students will work on the What's Cooking Brainstorming Sheet. Tell students that in 10-15 minutes we will be sharing our ideas as a class. Each person must be prepared to share something for each question. Students should write down their group's ideas on their sheets. Use Numbered Heads for class sharing. Have the group representatives share in the order that they stood up. On the overhead jot down some of the ideas shared.

Independent Practice:
After the group sharing, students may start working on the letter that they will send to Rachel Ray. Remind the students of what must be included as well as placing the requirements on the overhead. Remind students that this letter is to a television celebrity, they should write a letter that they would be proud of. They may choose to decorate it if they wish.

Assessment:
Students will finish their letters for homework.

Feedback:
Students' letters will be read. Before beginning on the conversion assignment discuss with the class some of the ideas that were brainstormed for the assignment.

What's Cooking?



Rachel Ray needs your help! She is making desserts for two upcoming holiday parties and she is having a little trouble.

All of the recipes she has make 12 servings. The organizers for one party have asked Rachel to bring 3 servings of several different recipes. The organizers of the second party are expecting a larger turn-out and have asked Rachel to bring 24 servings of each recipe.

Rachel doesn't know what to change so that she makes the right number of servings. She has asked you to help her figure out what changes need to be made to her recipe so that she can make 3 servings and 24 servings of one of her dessert recipes.

To help Rachel remember her new recipes, we will collect your recipe cards and send them to Rachel. To make sure that our changes to the ingredients still taste good, you may choose to bring in a small sampling of your recipe at the end of the project.

Name:_____ Period: ( ) Date:_____

What's Cooking?

How Can You Help Rachel?

Brainstorm with your group and answer the following questions.

After you have finished brainstorming and you have a game plan, each of you will write a short note to Rachel.

The note should include:

*** that you are willing to help Rachel**

*** a brief description of how you are going to help Rachel.**

5) Why did she ask you to help?

6) What do you have to offer her?

7) What kind of math are we going to use?

8) What is your game plan when you get your recipe?

Day Fourteen

TEKS:
6.1b, 6.2c, 6.3a, 6.3b, 6.3c, 6.4a, 6.5a, 6.11a, 6.11b, 6.11c, 6.11d, 6.12a, 6.12b, 6.13a, 6.13b

Materials:
- Dry Erase Boards
- Dry Erase Markers
- Erasers
- Review Questions

Warm-Up: Which of the following sets of ratios are proportional?
1. 2/3 = 8/12
2. 1:4 and 3:12
3. 15/18 = 5/6
4. 2:5 and 4:8
5. 4/9 = 2/3
6. 7/2 = 21/6

If they are not proportional, rewrite one ratio so that the set is proportional.

Review:
In order to review for tomorrow's test, students will play Whole Class Around the World. Students are already familiar with the game. Just remind students of how to move throughout the desks, that no doodling on the white boards is allowed, and in order to continue playing the game, everyone must move quietly in between each question.

Independent Practice:
* Due to the nature of the game, the students practice individually first and then we review (guided practice) after each students has had a chance to answer.

Place a question on the overhead. The students will work out the question individually on their white board. When they are done answering, they will hold their board up to be checked by the teacher. If the answer is correct, they wait quietly until the discussion. If it is incorrect they may attempt the problem again. They may continue to show answers until the discussion, but they will not be allowed to move because they did not answer correctly the first time.

Guided Practice:
After every student has had the chance to answer once, review the problem as a class on the overhead. Students may look over their work and make sure that they were on track. Questions about the problem may also be asked at this time.
After all questions have been answered, the students that got the answer right on the first try may quietly move to the next available seat.

The student that has moved the greatest number of seats will be given a Math Point.
In order to study for the test, students may take home their composition notebooks.

Assessment:
Ratio and Proportion Unit Test

Feedback:
The test will be reviewed once it has been graded. Students will be able to come into to tutoring to make test corrections.