

6-Page Template, Page 1

Unit Cover Page

Unit Title: Catering to Fractions

Grade Levels: 5-7

Topic/Subject Areas: Math - Equivalent Fractions

Key Words: Equivalent Fractions

Designed By: Michelle Collins, Darcy Eickoff, Dave Stacy Time Frame: 4-5 Days

School District: CCSD# 1 - DMS, CCSD#2 - Glenrock Middle, UCSD #1 - Uinta Meadows

Brief Summary of Unit (including curricular context and unit goals):

As a partial review for PAWS, students continue exposure to fractions and recognizing and converting equivalent fractions.

Students demonstrate an understanding of fractions as parts of wholes.

Unit design status: Completed template pages – stages 1, 2, 3

Completed blueprint for each performance task

Completed rubrics

Directions to students *and* teacher

Materials and resources listed

Suggested accommodations

Suggested extensions

Status: Initial draft (date: _____)

Revised draft (date: _____)

Peer Reviewed Content Reviewed Field Tested Validated Anchored

6 – Page Template Page 2

Stage 1 – Identify Desired Results

Established Goals:

NUMBER OPERATIONS AND CONCEPTS

Students use numbers, number sense, and number relationships in a problem-solving situation.

MA5.1.6 Students demonstrate an understanding of fractions as parts of wholes.

MA6.1.6 Students demonstrate an understanding of fractions and decimals by:

- representing fractions as division of whole numbers;
- writing fractions in equivalent forms;
- using parts of a set;

MA7.1.5 Students multiply and divide fractions and mixed numbers.

What understandings are desired?

Students will understand that:

Fractional parts are equal shares or equal-sized portions of a whole or unit. Two equivalent fractions are two ways of describing the same amount by using different sized fractional parts.

What essential questions will be considered?

Would you rather have $\frac{9}{12}$ or $\frac{21}{28}$ of pizza?

How can fractional parts be modeled?

How can numbers be decomposed into their smallest parts?

What key knowledge and skills will students acquire as a result of this unit?

Students will know...

Term equivalent fractions

There are various represent the same fractional amount.

Fracitons represent part of a whole.

Students will be able to...

Identify and write equivalent fractions representing the same fractional amounts.

6-Page Template, Page 3

Stage 2 – Determine acceptable Evidence

What evidence will show that students understand?

Performance Tasks* (Summary in GRASPS form):

You are a caterer who has hired a new employee and need to create a method for them to adjust your recipes to feed a varying number of guests. You will choose two of the enclosed recipes (1 main dish and 1 dessert); create a table or a conversion chart so the new employee can provide quotes quickly. You will also create another representation using pictures, numbers or words to help explain to the new person how equivalent fractions can be made.

**Complete a Performance Tasks Blueprint for each task (next page)*

Other Evidence (quizzes, tests, prompts, observations, dialogues, work samples)

Pretest “brownies and cake”

Quiz

Daily Check for understanding - "ticket out the door"

Student Self-Assessment and Reflection:

Journal Prompt – How has what you’ve learned changed your thinking about fractions and equivalent fractions?

6-Page Template, Page 4

Performance Task Blueprint

What understandings and goals will be assessed through this task?

Students demonstrate an understanding of fractions as parts of wholes.

Identify and develop equivalent fractions.

Students create a table or chart showing equivalent fractions.

Another representation using pictures numbers or words explaining how to write equivalent fractions.

What criteria are implied in the standards and understandings *regardless* of the task specifics?

What qualities must student work demonstrate to signify that standards were met?

Multiplicative reasoning.
Proportional reasoning.

Accurate conversion table.
Through explanation in other representation

Through what authentic performance task will students demonstrate understanding?

You are a caterer who has hired a new employee and need to create a method for them to adjust your recipes to feed a varying number of guests. You will choose two of the enclosed recipes (1 main dish and 1 dessert); create a table or a conversion chart so the new employee can provide quotes quickly. You will also create another representation using pictures, numbers or words to help explain to the new person how equivalent fractions can be made.

What student products and performances will provide evidence of desired understanding?

Students create a table or chart showing equivalent fractions.

Another representation using pictures numbers or words explaining how to write equivalent fractions.

By what criteria will student products and performances be evaluated?

Students must accurately convert fractions to an equivalent fractions.
Students must demonstrate understanding fraction less than a whole.

Explains how to find equivalent fractions.
Various models of fractions to relating to real life.

6-Page Template, Page 5

Stage 3 – Plan Learning Experiences and Instruction

Consider the WHERETO elements

W-Equivalent fractions are used in everyday life.

H-Would you rather have $\frac{9}{12}$ or $\frac{21}{28}$ of pizza?

E-Representations and models to explore and discuss

R-cooperative learning, self evaluation, seeing other representations, reteach.

E-What do you understand about equivalent fractions?

T-Cooperative learning; concrete, iconic, symbolic representations

O-

Day 1-

Hook - Would you rather have $\frac{9}{12}$ or $\frac{21}{28}$ of pizza?

Pre-assess- Brownine (attachment 1)

Discuss fractions used in recipes - show some examples.

Ticket out (check understanding) e.g. What did you learn today?

Day 2-

Open - $\frac{1}{4}$ of a pound of sausage is $\frac{2}{3}$ of a serving. How much sausage is 1 whole serving? ($\frac{1}{4}=\frac{2}{8}$; $\frac{1}{8}=\frac{1}{3}$; $\frac{3}{8}$ is $\frac{3}{3}$)

Given different fraction models (Pattern Blocks, Fraction Strips, Circle Models) students in cooperative learning groups experiment with finding different combinations to represent the same amount (e.g. two of the fourths, four of the eighths, six of the twelfths is same as $\frac{1}{2}$) students create a table showing equivalent fractions.

TPS-What do you notice? Do you see any patterns?

Ticket out (check understanding)

Day 3 –

Open – In-Out Box (attachment 2)

Fraction Match Game (Attachment 3)(Rubenstein. *Teaching & Learning Middle Level Math.*

Fraction Card Game) Add a blank card to create a representation of an equivalent fraction e.g. for $\frac{1}{2}$ could draw a candy bar showing $\frac{2}{4}$)

Ticket out (check understanding)

Day 4 –

Performance task

A pan of brownies and a cake was sitting on the dining room table when Mark and Sue got home.

Sue ate $\frac{1}{4}$ of the brownies.

Mark ate $\frac{1}{3}$ of the cake.

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Sue laughed at Mark and said he was going to get in more trouble since he ate more of the cake than she ate of the brownies because $\frac{1}{4}$ is smaller than $\frac{1}{3}$.

Was she right? Explain.

How could Mark or Sue proof they are right?

Complete the In-Out boxes.

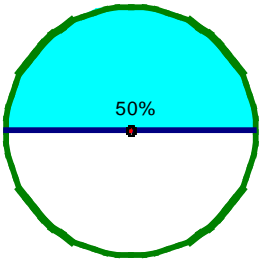
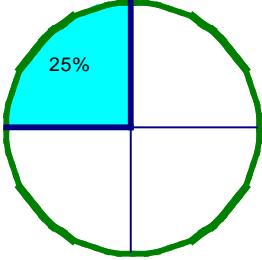
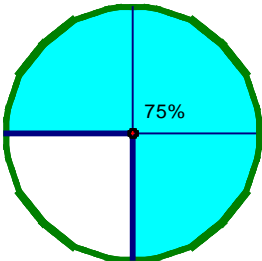
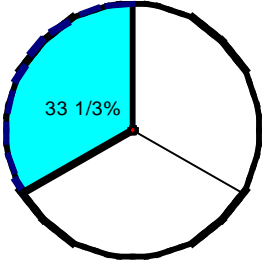
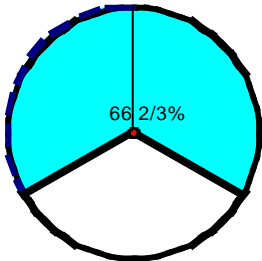
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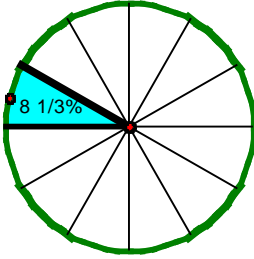
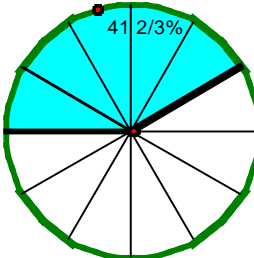
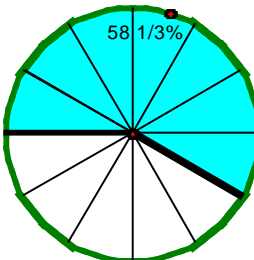
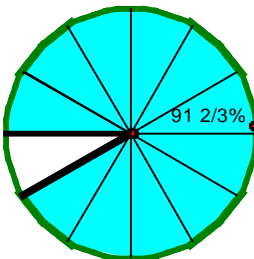
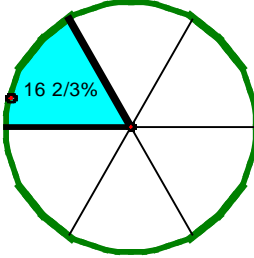
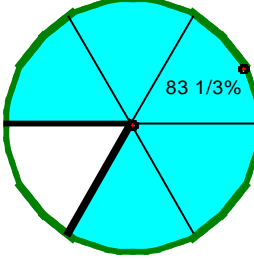
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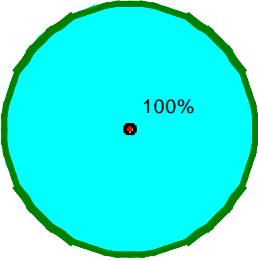
What's the rule?

3	7	6	4
15	35	36	20

Attachment 3 – Fraction Card Game

$\frac{1}{2}$	<p>6 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td>O</td><td></td><td></td><td></td> </tr> <tr> <td>O</td><td>O</td><td>O</td><td></td><td></td><td></td> </tr> </table>	O	O	O				O	O	O				<p>30 minutes in an hour</p>	
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$\frac{1}{4}$	<p>3 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td></td><td></td><td></td><td></td> </tr> <tr> <td>O</td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	O	O					O						<p>15 minutes in an hour</p>	
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$\frac{3}{4}$	<p>9 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td></td> </tr> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td></td><td></td> </tr> </table>	O	O	O	O	O		O	O	O	O			<p>45 minutes in an hour</p>	
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$\frac{1}{3}$	<p>4 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td></td><td></td><td></td><td></td> </tr> <tr> <td>O</td><td>O</td><td></td><td></td><td></td><td></td> </tr> </table>	O	O					O	O					<p>20 minutes in an hour</p>	
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$\frac{2}{3}$	<p>8 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td></td><td></td> </tr> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td></td><td></td> </tr> </table>	O	O	O	O			O	O	O	O			<p>40 minutes in an hour</p>	
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$\frac{1}{12}$	<p>1 egg in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	O														<p>5 minutes in an hour</p>	 <p>8 1/3%</p>
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$\frac{5}{12}$	<p>5 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td>O</td><td></td><td></td><td></td><td></td> </tr> <tr> <td>O</td><td>O</td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	O	O	O					O	O						<p>25 minutes in an hour</p>	 <p>41 2/3%</p>
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$\frac{7}{12}$	<p>7 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td></td><td></td><td></td> </tr> <tr> <td>O</td><td>O</td><td>O</td><td></td><td></td><td></td><td></td> </tr> </table>	O	O	O	O				O	O	O					<p>35 minutes in an hour</p>	 <p>58 1/3%</p>
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$\frac{11}{12}$	<p>11 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td></td> </tr> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td></td><td></td> </tr> </table>	O	O	O	O	O	O		O	O	O	O	O			<p>55 minutes in an hour</p>	 <p>91 2/3%</p>
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$\frac{1}{6}$	<p>2 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>O</td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	O							O							<p>10 minutes in an hour</p>	 <p>16 2/3%</p>
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$\frac{5}{6}$	<p>10 eggs in a dozen</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td></td><td></td> </tr> <tr> <td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td></td><td></td> </tr> </table>	O	O	O	O	O			O	O	O	O	O			<p>50 minutes in an hour</p>	 <p>83 1/3%</p>
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1	12 eggs in a dozen <table border="1"><tr><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td></tr><tr><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td></tr></table>	O	O	O	O	O	O	O	O	O	O	O	O	60 minutes in an hour	
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Sardinian Spaghetti

Recipe courtesy Food Network Magazine

Prep time: 30 minutes, Cook Time: 40 minutes

Serving size: 6



Ingredients

- 5/6 cup extra-virgin olive oil
- 1 1/2 pounds sweet Italian fennel sausage, cut into 1-inch pieces
- 2 28-ounce cans whole peeled tomatoes, drained, seeded and halved, with 1/2 cup juice reserved
- 2 cloves garlic, sliced
- 2 bay leaves
- 5/8 teaspoon fennel seeds
- 1/4 teaspoon red pepper flakes
- 2/3 teaspoon saffron threads
- 1/4 cup chopped fresh parsley
- 1 1/2 cups fresh basil leaves, torn
- Kosher salt
- 3/4 pound spaghetti
- 1 cup shredded pecorino cheese

Directions

Heat the oil in a large heavy skillet over medium heat. Add the sausage and cook, stirring occasionally, until brown, about 7 minutes. Push to one side of the skillet and increase the heat to high. Add the tomatoes, stirring to break them up a bit, and cook until the edges brown and the oil turns red, about 6 minutes. Stir the sausage and tomatoes together.

Add the garlic, bay leaves, fennel seeds and red pepper flakes to the skillet, then scatter the saffron over the mixture. Cook stirring, about 2 minutes. Add the parsley, 1 cup basil and 1 teaspoon salt. Reduce the heat to medium and cook, stirring occasionally, about 15 minutes.

Remove and discard the bay leaves.

Meanwhile, cook the spaghetti in a large pot of salted boiling water until al dente. Drain reserving 1/2 cup pasta water. Add the spaghetti, cooking liquid and reserved tomato juice to the sausage sauce and toss, about 3 minutes. Top with the pecorino and the remaining 1/2 cup basil.

****RECIPIES HAVE BEEN ADAPTED FOR TEACHING PURPOSES!****

Oatmeal Peanut Butter Energy Bars

Recipe courtesy Dana Angelo White

Prep time: 10 minutes

Cook Time: 5 minutes

Serving size: 14 bars

Ingredients

- Cooking spray
- 9/16 cup honey
- 1/2 cup natural creamy peanut butter
- 2 tablespoons maple syrup
- 1 tablespoon canola oil
- 3/4 cup light brown sugar
- 1/4 teaspoon ground cinnamon
- 1 teaspoon vanilla extract
- 2 cups rolled oats
- 2 cups crisp brown rice cereal
- 1/4 cup toasted wheat germ
- 4/7 cup chopped roasted peanuts
- 6/8 cup chopped dried apricots
- 2/3 cup chopped dried figs
- 1/8 teaspoon kosher salt

Directions

Spray a 9 by 13-inch baking dish with cooking spray and set aside.

In a small saucepan over medium heat, combine honey, peanut butter, maple syrup, canola oil, brown sugar, cinnamon. Stir and cook until mixture just begins to bubble, about 3 to 5 minutes. Remove from heat and stir in vanilla extract.

In a large bowl, combine oats, rice cereal, wheat germ, peanuts, apricots, figs and salt.

Pour peanut butter mixture over oatmeal mixture and stir gently with a spatula until well combined. Transfer to baking dish, cover with parchment paper and press firmly into dish. Allow to cool completely (will cool faster in the refrigerator). Cut into squares or bars.

****RECIPIES HAVE BEEN ADAPTED FOR TEACHING PURPOSES!****

Macaroni and 4 Cheese

Recipe courtesy Ellie Krieger

Prep time: 20 minutes

Cook time: 40 minutes

Serving size: 8



Ingredients

- Cooking spray
- 1 pound elbow macaroni
- 2 (10-ounce) packages frozen pureed winter squash
- 2 cups 1 percent lowfat milk
- 1 1/3 cups extra-sharp Cheddar, grated
- 2/3 cup Monterey Jack cheese
- 1/2 cup part-skim ricotta cheese
- 1 teaspoon salt
- 1 teaspoon powdered mustard
- 1/8 teaspoon cayenne pepper
- 2 tablespoons grated Parmesan
- 2 tablespoons unseasoned bread crumbs
- 3/4 teaspoon olive oil

Directions

Preheat the oven to 375 degrees F. Coat a 9 by 13-inch baking pan with cooking spray.

Bring a large pot of water to a boil. Add the macaroni and cook until tender but firm, about 5 to 8 minutes. Drain and transfer to a large bowl.

Meanwhile, place the frozen squash and milk into a large saucepan and cook over a low heat, stirring occasionally and breaking up the squash with a spoon until defrosted. Turn the heat up to medium and cook until the mixture is almost simmering, stirring occasionally. Remove the pan from heat and stir in the Cheddar, Jack cheese, ricotta cheese, salt, mustard and cayenne pepper. Pour cheese mixture over the macaroni and stir to combine. Transfer the macaroni and cheese to the baking dish.

Combine bread crumbs, Parmesan and oil in a small bowl. Sprinkle over the top of the macaroni and cheese. Bake for 20 minutes. Then broil for 3 minutes so the top is crisp and nicely browned.

****RECIPIES HAVE BEEN ADAPTED FOR TEACHING PURPOSES!****

Irish Soda Bread (with raisins)

Recipe courtesy Cathy Lowe

Prep time: 30 minutes

Cook time: 45 minutes

Serving size: 5

Ingredients

- 2 cups flour
- 1 teaspoon baking soda
- 1/2 teaspoon salt
- 1/2 teaspoon ground nutmeg
- 1 7/8 tablespoons sugar
- 6 tablespoons solid shortening (recommended: Crisco)
- 2/3 cup raisins, brown or golden or mixed
- 2 teaspoons caraway seeds
- 1 cup buttermilk

Directions

Preheat oven to 375 degrees F.

In a large bowl sift together the flour, baking soda, salt, nutmeg, and sugar. Using a pastry blender or fingertips, work the shortening into the flour until the consistency is the same as that of small peas. Stir in the raisins and caraway and mix to distribute evenly. Gradually stir in the buttermilk, 1/4 cup at a time, using only enough to allow the dough to come together. Knead the dough for 1 to 2 minutes. Shape the dough into a round loaf and place on a greased baking sheet. Cut an X on the top and over the sides of the loaf. Bake for 45 minutes or until the bread sounds hollow when tapped. Cool on a rack

****RECIPIES HAVE BEEN ADAPTED FOR TEACHING PURPOSES!!****

Catering to Fractions – Performance Task Rubric

Criteria	Level 4	Level 3	Level 2	Level 1
<p>Knowledge and Understanding Demonstrates understanding of quantity and proportional relationships by explaining and demonstrating: -Equivalent fractions -Patterns involving fractions</p>	<p>-fully understands and explains that the ratio between the two values remains constant even though the values change -shows thorough understanding by using all relevant concepts related to equivalent fractions</p>	<p>-accurately lists equivalent fractions but unable to explain that the ratio between the two values remains constant even though the values change</p>	<p>-may only be able to partially explain and demonstrate</p>	<p>-unable to explain or demonstrate -unable to recognize multiplicative relationships -randomly uses numbers, operations, or strategies -unable to link the two measures</p>
<p>Application – Accuracy With accuracy, creates a table or chart of equivalent fractions.</p>	<p>High degree of effectiveness. No errors.</p>	<p>Considerable effectiveness. Few errors. Errors do not impede demonstration of multiplicative / proportional reasoning.</p>	<p>Some effectiveness, Several errors. Understanding of multiplicative / proportional reasoning is evidently in question.</p>	<p>Limited effectiveness. Many errors. multiplicative / proportional reasoning not present.</p>
<p>Communication Presents work, describes procedures, and expresses mathematical thinking clearly, using appropriate mathematical language.</p>	<p>Presents work, describes procedures, and expresses mathematical thinking clearly, precisely, and confidently, using range of appropriate mathematical language.</p>	<p>presents work, describes procedures, and expresses mathematical thinking with general clarity and precision, usually using appropriate mathematical language</p>	<p>presents work, describes procedures, and expresses mathematical thinking with some clarity, precision, and mathematical language</p>	<p>need assistance to present work, describe procedures, and express mathematical thinking; often unclear and imprecise with little mathematical language</p>