



Cooking with Fractions

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Target Grade: 6th grade, Math

Time Required: 180 minutes

Standards

Common Core Math Standards:

- CCSS.MATH.CONTENT.5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
- CCSS.MATH.CONTENT.6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.
- CCSS.MATH.CONTENT.6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Lesson Objectives

Students will:

- Create scaled recipes using multiplication of fractions and mixed numbers.
- Calculate cost of a party using decimal operations.

Central Focus

Students will use their knowledge of fractions and decimals to plan and price out a party. Students will scale a recipe to feed the desired number of people. Then, they will price out how much their party will cost and create an advertisement for their event. Students will be multiplying fractions and mixed numbers. They will also have to compute with decimals in order to find the total cost of their party and how much they will earn.

Key terms: real world scenario, fraction, decimal



Background Information

To multiply fractions, multiply the numerators of the fractions to get the new numerator. Multiply the denominators of the fractions to get the new denominator. In the example to the right, 5 is multiplied by 3 and 6 is multiplied by 4 to get 15/24. This number has a common multiple of 3 and can be simplified to 5/8.

$$\begin{array}{r} 5 \\ \hline 6 \end{array} \times \begin{array}{r} 3 \\ \hline 4 \end{array} = \frac{15}{24} = \frac{5}{8}$$

$$\begin{array}{r} 25 \\ \hline 6 \end{array} \times \frac{3}{4} = \frac{17}{6} \times \frac{3}{4} = \frac{51}{24} = 2\frac{3}{24} = 2\frac{1}{8}$$

Similarly, in order to multiply mixed numbers, change each number to an improper fraction first and follow the steps for multiplying fractions. As seen in the example to the left, the whole number 2 must be multiplied by 6 (the denominator)

and then added to the numerator (5). The fraction is then able to be solved the same as above.

To add fractions, first find the least common denominator, or the lowest number that is a common multiple of both denominators. For instance, in the example to the right, the least common denominator for the fractions would be 12. Multiply both the numerator and denominator to reach the

$$\frac{5}{6} + \frac{3}{4} = \frac{10}{12} + \frac{9}{12} = \frac{19}{12} = 1\frac{7}{12}$$

common denominator. In the example, 5/6 is multiplied by 2 and 3/4 is multiplied by 3. From here, add the numerators together, which in this case causes an improper fraction that must be reduced to get 1 7/12, which cannot be reduced further.

$$\begin{array}{r} ^{\frac{1}{4}} ^{\frac{2}{2}} \\ 2.53 \\ \times 12.8 \\ \hline 1 2024 \\ 5060 \\ + 25300 \\ \hline 32384 \end{array}$$

To multiply decimals, align the numbers, but do not align the decimal point. Multiply the numbers as normal. Count the number of decimal places in both original numbers. Move the final decimal the same number of places to the left. As seen in the example to the left, there is a total of three decimal places in the original numbers. In the product, the decimal place must be moved three to the left to

account for the decimals.

To add decimals, align the decimal point and add zeros to the right of the last number (past the decimal) make the numbers even, as seen in the example to the right. Then add the numbers together to find the product.

$$\begin{array}{r} ^{\frac{1}{1}} \\ 2.53 \\ + 12.80 \\ \hline 15.33 \end{array}$$



Materials

- Project outline (attached)
- Project recipes (attached)
- Paper
- Calculators (optional)
- Pencils
- Materials for creating an advertisement (devices if the project will be digital, paper and markers if it will not be digital)

Instruction

Day 1: 60 minutes

- Students will be presented with the project guidelines and recipes.
- Each student will choose one event to cater so they will know how many people to prepare food for.
- Next, each student needs to choose three recipes, one appetizer, one main course, and one dessert. Each recipe has the number of people that the recipe serves, as well as the price of ingredients per person.
- In order to serve their party, each student must scale the recipe to feed the required number of guests. Students must determine how many times that recipe must be made in order to feed everyone. Having more food than required is fine, but students may not have too little.

Day 2: 60 minutes

- Once they know how many times each recipe must be multiplied, they need to create the scaled up recipes by multiplying each ingredient in the recipe to create a new scaled recipe.
- All work must be shown and the 2 recipes should be presented together to see the new scaled recipe. Students may check their calculations with a calculator (if desired).
- Next, students must calculate how much their event will cost based on the cost to feed each person. Remember to take into account any extra food that will be made for the recipes but not eaten (ie: The recipe serves 60, but there will only be 50 guests).
- Students should decide how much they will be charging per person based upon the cost of food for the event.
- Students should calculate how much money they will earn from the event once each person pays, and the food is also paid for.

Day 3: 60 minutes



- Students can now create an ad for their event. Be as creative as possible. Make sure to create a theme of some sort to entice guests. Also, the cost per guest must be included and a 2 paragraph description to get people excited about the event.

Differentiation

For students that may need more help, you can change the number of guests that each recipe feeds to make the math make more sense to them, or just provide a set number that their recipes must be scaled by. You can also eliminate the calculations for how much they will earn for the party.

For advanced students, you can have them find and scale their own recipes. They could also check actual prices for groceries that would be needed to cater the event and do real life calculations for per person food costs.

Assessment

Formative Assessment:

- The teacher will check mathematical computations and recipe conversions throughout the project.

Summative Assessment:

- The students will be assessed on their final calculations.
- The students will be assessed on their advertisement for the event, making sure that students include two paragraphs and costs.

Fractions Unit Project

Cooking with Fractions!

You are the owner of your own catering company. Today is the big day you have been waiting for! You are cooking and catering an exciting party! You have been hired to cater at the most famous and fancy restaurant in the area. You will get paid based on the cost per person per recipe!

Each party should have a theme and you will need to serve an appetizer, a main course, and a dessert at 1 of the 4 parties listed below:

Class Picnic:

Guests: 50

Bearden Dinner with the Stars

Guests: 35

Fashion Show Event

Guests: 96

Sports Banquet

Guests: 40

You must choose one of the chef's recipes posted below to feed your party. You will need to change the recipes at your event so as to provide every guest with one serving of each of the recipes you choose.

Guidelines:

1. To accomplish the task, YOU must choose and adjust ingredients for an appetizer, main dish, and dessert. A total of 3 recipes are chosen and adjusted (1 appetizer, 1 main dish, 1 dessert). It is ok to have MORE food than you need for your party, but you cannot have less.
2. Calculate the amount of money you will make based on the number of people per party and the cost to feed each person per recipe. This will be done by taking the amount of money that you charge each guest and subtracting the total cost of feeding all of the guests.
3. Include a TITLE PAGE for this project. Each recipe must be LABELED with the name of the recipe, the original number it serves and its original ingredients. Then, underneath or next to the original recipe list the adjusted amounts and the new number of people it is serving.

4. Final part of project: Sell your event! Pretend that you are the host of one of your catered events. You want to make sure that all of the guests that are invited actually attend.

Create a 1-page ad for the newspaper that makes people want to come to the event. Included in the ad should be the theme of the event, the title of the event, and the cost that you are charging per person for the event. Your ad should be colorful and should tell what kinds of food would be served. You need to have at least 2 paragraphs written that will persuade people to attend your event instead of going to someone else's. You may use any method you would like to create your ad.

This is the fun part. Make your ad POP so that it will catch the attention of the reader.

Your Project Checklist

- 3 recipes including:
 - Name of the recipe
 - Number of people the recipe serves
 - Cost to feed each person
 - Original ingredients and quantities
- The 3 recipes from above, adjusted to serve the catered event
- The amount of money you will earn for each event calculated from the number of people at the event and the cost per person of each menu item
- You must SHOW ME how you calculated the recipe conversions and your earnings for each event. You may use a calculator, but you still must show me the calculations that you used.
- 1-page ad for your event including:
 - Title and theme of the event
 - Cost per person (this is not the cost of food. This is how much you are charging per person.)
 - Colorful
 - 2 persuading paragraphs

RECIPES

APPETIZER RECIPES

Buffalo Chicken Wings – Serves 12 people; \$5.50 per person

- 4 skinless, boneless chicken breast halves - cut into finger-sized pieces
- 1/4 cup all-purpose flour
- 1 teaspoon garlic powder
- 1 teaspoon cayenne pepper
- 1/2 teaspoon salt
- 3/4 cup bread crumbs
- 2 egg whites, beaten
- 1 tablespoon water

Guacamole – Serves 16 people; \$4.20 per person

- 3 Haas avocados, halved, seeded and peeled
- 1/2 teaspoon kosher salt
- 1/2 teaspoon ground cumin
- 1/2 teaspoon cayenne
- 1/2 medium onion, diced
- 2 Roma tomatoes, seeded and diced
- 1/4 tablespoon chopped cilantro
- 1 clove garlic, minced

Mini Sliders – Serves 20 people; \$3.50 per person

- 2 pounds ground sirloin
- 1/2 medium onion, peeled and cut in 1/2
- 1/8 tablespoons Worcestershire sauce, eyeball it
- 2 chipotles in adobo and 2 tablespoons of adobo sauce
- 2 1/2 tablespoons grill seasoning, a couple of palm fulls
- 1 1/4tablespoon extra-virgin olive oil, plus some for drizzling
- 3 1/3 cloves garlic, finely chopped
- 3 tablespoons brown sugar
- 2 1/4 cup vinegar
- 1 (15-ounce) can crushed fire roasted tomatoes, about 2 cups
- Salt and pepper
- 12 ¾ slices, brick-cut smoked Cheddar or sharp Cheddar
- 20 small round rolls, split

Lemon Garlic Shrimp and Grits – serves 15 people; \$8.00 per person

- 3/4 cup instant grits
- 1/4 cup grated parmesan cheese
- 3 1/5 tablespoons unsalted butter
- 1 1/4 pounds medium shrimp
- 2 large cloves garlic, minced
- 1 Pinch of cayenne pepper (optional)

- Juice of 1/2 lemon, plus wedges for serving
- 2 2/5 tablespoons roughly chopped fresh parsley

Mozzarella Sticks – Serves 24 people; \$6.75 per person.

- 1 1/2 cups Italian seasoned bread crumbs
- 1/2 teaspoon garlic salt
- 1 2/3 cup all-purpose flour
- 3 1/3 cup cornstarch
- 1 quart oil for deep frying
- 12 mozzarella cheese sticks

MAIN DISH RECIPES

Lime Glazed Pork Chops- Serves 18 People; \$15.95 per person

- 2 1/3 cup orange marmalade
- 1 ½ jalapeno pepper, seeded and finely chopped
- 2 tablespoons lime juice
- 1 teaspoon grated fresh ginger root
- 4 (8 ounce) bone-in pork loin chops
- 4 5/7 teaspoons minced fresh cilantro leaves

Three cheese bake ziti- Serves 16 people; \$12.50 per person

- 1 container ricotta cheese
- 3 1/4 cup grated Parmesan cheese
- 1 package ziti pasta, cooked and drained
- 1 jar Ragu® Chunky Pasta Sauce
- 1 6/7 cup shredded mozzarella cheese

Chicken Enchiladas- Serves 24 people; \$15.00 per person

- 10 Mission® Small/Fajita Flour Tortillas
- 2 cups diced cooked chicken breast meat
- 1 can of reduced fat and sodium cream of chicken soup
- 1/3 cup reduced fat sour cream
- 1 can of diced green chile peppers, undrained
- 1 2/3 teaspoon ground chipotle pepper
- 1/2 teaspoon of ground cumin
- 1/2 teaspoon of ground coriander
- 3 5/6 tablespoons chopped fresh cilantro
- 2 ¾ teaspoons canola oil

Spanish Chicken and Rice – Serves 12 people; \$20.50 per person

- 2 tablespoons all-purpose flour
- 1 teaspoon salt, divided
- 1/4 teaspoon pepper
- 2 bone-in chicken breast halves
- 1 tablespoon butter or margarine
- 1/2 cup chopped onion
- 1/4 cup chopped green pepper
- 1 garlic clove, minced
- 1 (2.5 ounce) jar sliced pimientos, drained
- 1/2 cup uncooked rice
- 1 1/4 cups chicken broth
- 1/2 teaspoon ground turmeric
- 1/8 teaspoon chili powder

Finger Steaks- serves 4; \$22.75 per person

- 1/4 cup and 2 tablespoons all-purpose flour
- 1-1/4 teaspoons seasoned salt
- 1/4 teaspoon ground black pepper
- 1 tablespoon and 1-1/2 teaspoons buttermilk
- 1 tablespoon and 1-1/2 teaspoons dark beer
- 1 teaspoon hot pepper sauce (such as Frank's RedHot®)
- 3/4 pound flat iron steaks
- 1/4 teaspoon seasoned salt
- 1-1/2 cups vegetable oil for frying

Dessert Recipes

Flan – Serves 10 people; \$10.85 per person

- 1/8 teaspoon salt
- 1 (12 fluid ounce) can evaporated milk
- 1 teaspoon vanilla
- 1/4 cup brown sugar

POPCORN POP-STICKS– SERVES 24 PEOPLE; \$4.50 per person

- 12 cups popped, salted popcorn
- 2/3 tablespoons butter
- 1/8 cups brown sugar
- 1/2 cups cold water
- 4/9 cup cooking oil or margarine
- 5/6 cups raisins (optional)

Ice cream sundae- serves 12 people; \$7.90 per person.

- 1 cup semisweet chocolate chips
- 1/2 (12 ounce) can evaporated milk
- 1/4 teaspoon salt
- 1/2 (12 ounce) package vanilla wafers, crushed
- 1/4 cup butter or margarine, melted
- 4 cups vanilla ice cream or flavor of your choice, softened

Sugar Cookies – Serves 10 people; \$2.50 per person

- 1 tablespoon white sugar
- 3 tablespoons all-purpose flour
- 1 tablespoon butter, softened
- 1/8 teaspoon vanilla extract
- 1/8 teaspoon salt

Tiramisu – Serves 8 people; \$7.30 per person

- 1/2 cup mascarpone cheese
- 3/4 cup heavy whipping cream
- 1 tablespoon confectioners' sugar
- 1/8 teaspoon vanilla extract
- 2-1/4 teaspoons coffee-flavored liqueur
- 1/4 teaspoon instant coffee granules
- 1/4 (10 inch) angel food cake
- 1 tablespoon unsweetened cocoa powder

Chocolate Cream Pudding – Serves 10 people; \$4.60 per person

- 1 cup white sugar
- 2 tablespoons cornstarch
- 1/4 teaspoon salt
- 2 (1 ounce) squares unsweetened chocolate, chopped
- 2 tablespoons butter
- 2 teaspoons vanilla extract

