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Cooking Up Fractions

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WebQuest Description: Adjusting recipes by adding and subtracting fractions and multiplying fractions by a whole number.
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Introduction

If you like to cook -- or you like to eat -- then you'll love this WebQuest!In this WebQuest you are going to explore how fractions are used in cooking. You will learn about their functions through online activities and practice worksheets. Then you will use your knowledge in real life situations. You have already completed tasks that involve finding equivalent fractions and common denominators as well as adding and subtracting fractions with like and unlike denominators. Today you are asked to adjust fractions in recipes. This means not only adding and subtracting fractions, but also multiplying and dividing them. To do this, you will be given specific tasks that will guide you in developing the skills you need to work with all fractions.

By the end of this WebQuest you will apply your knowledge of fractions to modifying recipes. You will choose two main dishes and one dessert and modify these recipes in order to feed you and your classmates.

Tasks

You've been asked to assist world famous chef, Guy Fieri, in creating a special lunch for your math class. You may choose two main dishes and one dessert. Mr. Fieri has given you a few menu ideas, but you notice most of his recipes feed only six people. You have 30 students in your class. What do you do?

Process

Part One - Review Basics of FractionsIn order to prepare for your tasks, let's first review some basic functions with fractions. Click on the link to practice finding Equivalent Fractions. Answer all seven questions found at the bottom of the webpage.Click on the link to play the game Factor Review.Click on the link to play the game Fraction Dolphins.Click on the link to play the game Equivalent Matching Fractions.Watch the video titled Adding and Subtracting Fractions with Like Denominators for adding and subtracting like fractions.Click on the link Visual Fractions to see how to add fractions with like and unlike denominators. Try both lines and circles to help you "see" how fractions are added and subtracted. Note: read the bottom of the screen for help in writing the solution. Part Two - Learning to Multiply Fractions with Whole NumbersBy now you should be comfortable adding and subtracting fractions with like and unlike denominators. When you change various recipes, sometimes you don't need to add the fractions. Sometimes you need to multiply the fraction by a whole number. For instance to double 1/2 cup of flour means to multiply 1/2 by 2. Here are some websites to help you with multiplying fractions by a whole number. *Don't forget to reduce your answers* Watch this video to help you with multiplying fractions with whole numbers Multiplying Whole Numbers and Fractions Video.This website has a number of videos to help with multiplying all types of fractions Multiplying Fractions.Click on the link for step-by-step instructions for multiplying fractions Multiplying FractionsClick on the link for step-by-step instructions on how to multiply whole numbers with fractions Multiplying Whole and Mixed NumbersClick on the link to practice multiplying fractions with a whole number Multiplying Fractions with Whole Numbers. Scroll down to the Practice section.Click on the link to play the game Soccer Shootout.Click on the link to play the game Mystery Math.Even though you won't need to divide your recipes, it's still a good idea to know how to divide fractions.Watch

this video to show you two ways to divide fractions Do I Have to Invert and Multiply?Here is an excellent site giving you step-by-step instructions on how to divide fractions Dividing Fractions.Watch this video to help you with dividing fractions Dividing Fractions - Flip and Dip Style.Click on the link to play the game Math Basketball.Part Three -- Adjusting Recipe PracticeLet's use what you've learned about fractions to make changes to various recipes. You need to practice before changing Mr. Fieri's recipes. After all, you don't want your dishes to turn out yucky. Before you begin making changes to any recipe, it's a good idea to know measurement equivalents. I have placed a document in Google Docs to help with the equivalents.Open the Nestle's Toll House Cookie recipe. Double the original recipe and type the new amount and ingredients on the bottom.Open the Converting Recipes document. Print this document. Complete this document and hand in.Open AllRecipes.com. Search for a macaroni and cheese recipe you like. Copy the ingredients section of the recipe to a Word document. Double this recipe and type in the new amounts below the original recipe in Word (like you did with the Nestle Toll House Cookie recipe). Print this document showing both original and updated recipes.Go back to the macaroni and cheese recipe at AllRecipes.com. Multiply the serving size by two and click 'Calculate'. Did your answers match the websites new recipe?Part Four - The Final RecipeWhen you have completed all three sections, you're now ready to help Mr. Fieri. Your task is to choose two entrees and one dessert. You will have to adjust the recipes so that everyone in your class (30 students) will enjoy Mr. Fieri's cooking. Once you've adjusted the recipes, we'll let Mr. Fieri do the rest.Access Mr. Fieri's website at Food Network.com. Choose two (2) main dishes and one (1) dessert. Note: Finding Mr. Fieri's desserts is very time consuming. Type in "dessert" in the search field to search within Mr. Fieri's recipes to get to the dessert recipes quickly.Open Word. Copy the name of the dish, how many it originally serves and the ingredients portion of the recipe to the Word document. Paste the information twice in the Word document. The first copy will be the original, the second copy will show your changes.Make your adjustments to the second copy of the recipe. Remember you are feeding 30 people.Below the adjusted recipe, please type in your own words what you did to come up with the new amounts. Remember to use proper terminology.Type your name at the top of your document and print it out. Hand in all documents as you work through the webquest.

Evaluation

You will be evaluated on your written explanations (all work completed in section 4) and ability to demonstrate and apply skills and knowledge of the content delivered in this WebQuest.Below is the rubric for section 4.

Category and Score	4	3	2	1	Score
Strategy/Procedures	Typically, uses an efficient and effective strategy to solve the problem(s).	Typically, uses an effective strategy to solve the problem(s).	Sometimes uses an effective strategy to solve problems, but does not do it consistently.	Rarely uses an effective strategy to solve problems.	Your Score
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.	Your Score
Mathematical Terminology and Notation	Correct terminology and notation are always used, making it easy to understand what was done.	Correct terminology and notation are usually used, making it fairly easy to understand what was done.	Correct terminology and notation are used, but it is sometimes not easy to understand what was done.	There is little use, or a lot of inappropriate use, of terminology and notation.	Your Score
Completion	All problems are completed.	All but one of the problems are completed.	All but two of the problems are completed.	Several of the problems are not completed.	Your Score
				Total Score	

Conclusion

Congratulations! You have completed the Cooking Up Fractions WebQuest. Not only can you let Mr. Fieri do his magic, but you
can easily manipulate any recipe. In case you're wondering, because you can change a fraction in a recipe, you can also change any fraction in real life. You now know how to add, subtract, multiply and divide
any fraction. Bon Appétit!

Teacher Page

In
this WebQuest, students are asked to adjust recipes. This involves adding, subtracting, multiplying and dividing fractions. Students will review adding and subtracting fractions and learn
how to multiply and divide fractions by a whole number. Students will use a variety of methods to

gain an understanding of how to manipulate fractions. Students will also gain an insight as to how fractions are used in their daily lives.
In addition, students will also use proper mathematical terminology to explain processes and concepts.The New Illinois Learning Standards for Mathematics Incorporating the Common CoreCC.5.NF.1 Use equivalent fractions as a strategy to add and subtract fractions. 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. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.CC.5.NF.2 Use equivalent fractions as a strategy to add and subtract fractions. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7 by observing that 3/7 < 1/2. CC.5.NF.3 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?CC.5.NF.4 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.CC.5.NF.4a Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)CC.6.NS.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; 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.) How much chocolate will each person get if 3 people share 1/2 lb 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 mi and area 1/2 square mi?CC.6.NS.2 Compute fluently with multi-digit numbers and find common factors and multiples. Fluently divide multi-digit numbers using the standard algorithm.CC.6.RP.3 Understand ratio concepts and use ratio reasoning to solve problems. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

Reviews

Footer

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