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Order of Operations

WebQuest Description: This a WebQuest is designed for students at the 5th grade, Pre A.P. level.
Grade Level: 6-8
Curriculum: Math
Keywords: Order of operations, PEMDAS, definition, mathching game.
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Introduction

Can you go to your classes whenever you want or do you have to follow the order of the schedule you were assigned? Will your locker open if you use the three numbers in any order? Does it matter if you turn the lock to the left or to the right first? Does 2 + 5 x 3 equal 21 or 17? You will be using this WebQuest to find out the order of operations that must be followed when evaluating mathematical expressions so that everyone gets the same answer.

Tasks

You are going to determine the order of operations that is used to evaluate mathematical expressions. Once you have done this, you will discover memory devices the United States uses to remember the order of operations and compare them to those that other countries use. Then create your own mnemonic and illustrate it using Microsoft Word. There will be several checks for understanding along the way including a matching challenge and an online quiz. Finally, you will work with a partner to analyze a problem that was done incorrectly and create a PowerPoint presentation that identifies the error in the problem and demonstrates the correct way to evaluate the problem with a step-by-step explanation.

Process

1. What is the order of operations?Obtain a copy of the "Order of Operations" hand-out from your teacher.Go to Order of Operations - PEMDAS and answer questions 1-4 on yourWebQuest handout.Play the Matching Game, assess how you didand circle your response on your WebQuest handout (#5). If you feel you needmore practice, try playing the Matching Game again or read the lesson Order of Operations With Exponents andtry the five problems after the tutorial.2.What are some memory devices used to remember the order of operations?Go to Wikipedia's definition of Order of Operations andscroll down to the Acronyms and More examples sections. Answer questions 6-7 onyour WebQuest handout. View the illustrated mnemonics Please Excuse My Dear Aunt Sally and Panda Express Makes Delicious Avocado Soup. Create your own mnemonic andillustrate it using Microsoft Word. Fill in #8 on your WebQuest handout.3.Find the error.With a partner, take theonline Order of Operations Quiz. Answer questions 9 and 10 on your WebQuest handout.Youand your partner will create a small PowerPoint slideshow. The answers to each problem are NOT correct. You will need toidentify the error that was made, find the correct answer, and explain how toevaluate the problem. You will present your slideshow to the class. Check tomake sure you have met all the requirements for your slideshow by filling inquestion 17 on your WebQuest handout.

Evaluation

Order of Operations WebQuest Rubric

Category and Score	Beginning	Developing	Accomplised	Examplary	Score
WebQuest Hand-out	1-2 answers correct	3-5 answers correct	6-9 answers correct	10-11 answers correct	11
Participation	Off task, talkative during presentations, frequently requires assistance	Requires frequent reminders to stay on task, needs assistance, some talking during presentations	Stays on task, self-motivated, good listener during presentations	Stays on task, self-motivated, good listener during presentations, helps others	16

Category and Score	Beginning	Developing	Accomplised	Examplary	Score
Finding My Error PowerPoint Slideshow	Made several formatting mistakes, was unable to correctly identify the error and failed to explain how to solve the problem	Made several formatting mistakes, was unable to correctly identify the error or correctly explain how to solve the problem	Followed almost all of the formatting requirements, great description of the error and how to evaluate the problem	Chose one of the challenge problems, followed all of the formatting requirements, excellent description of the error and how to evaluate the problem	12
Partner Skills and Presentation	Did not cooperate, presentation was unclear	One person did most of the work, only one person spoke during the presentation, some difficulty cooperating	Helped each other, took turns, both spoke during the presentation, some difficulty speaking	Helped each other, took turns, both spoke clearly and loudly during the presentation	16
				Total Score	55

Conclusion

You completed the Order of Operations WebQuest! Not only did you learn the correct order of operations, you also created a mnemonic to help you remember them. During this WebQuest, you were not asked to evaluate any problems with integers, but if you would like an extra challenge, try a few of the games that will help you with your order of operation skills! Here are a few games that you may like...The Language of Algebra Game(with introduction preview) - http://www.math.com/school/subject2/practice/S2U1L2/S2U1L2Pract.htmlThe Order of Operations Millinaire Game - http://www.math-play.com/Order-of-Operations-Millionaire/order-of-operations-millionaire.htmlFunBrain Game - http://www.funbrain.com/cgi-bin/alg.cgiArithmitic Game - http://www.mathplayground.com/order_of_operations.html

Teacher Page

Conclusion - Students will work collaboratively and independently. This WebQuest will provide tutorials, memory devices, quizzes, games, and problems to analyze that will help students use the order of operations to evaluate mathematical expressions. Students will use algebraic terminology to explain how to evaluate problems during a PowerPoint presentation to the class.This WebQuest requires students to think critically and be able to work collaboratively. The Math Standards   Addressed include: Using the correct order of operations to evaluate algebraic expressions, Algebra and Functions. Evaluating expressions involving integer powers, Number Sense.Using algebraic terminology correctly, Algebra and Functions.Expressing the solutions clearly and logically using symbolic and verbal work to explain the solutions, Mathematical Reasoning.Specific Common Core Standards included: [5.OA.1.] Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. [5.OA.2.] Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.Credits: http://imet.csus.edu/imet10/portfolio/esquivel_w/284/webquest.html#topThe above address is where I retrieved the majority of my information, however, many of the things I retrieved were altered to better suit this individual WebQuest.

Standards

Credits

Other