



Teacher Name Theresa E Wills School Francis C Hammond Middle School
 Subject Area Math Grade/level 7

Lesson Plan Template
 based on Understanding by Design by Jay McTighe and Grant Wiggins

Title of Lesson	Math in History
Unit Topic	Order of Operations Writing and Solving Expressions Writing and Solving Equations
Exact title and link to an image from the LOC to be used in the web publication of your lesson plan	http://memory.loc.gov/learn/features/civilrights/learn_more.html#civilrights Rosa Parks, seated on bus, looking out window, her face in profile
Enduring Understanding	As a result of this lesson, students will understand: Why it is important to use the correct order of operations The reasons why completing the steps in the incorrect order will lead to incorrect answers Historical situations can present mathematical problems. [The best methods and approaches to solving everyday math problems. They will also have an appreciation of History, and be able to discuss ways in which math is used in history.]
Content Knowledge	As a result of this lesson, students will know The order of operations. [how to write and compute mathematical sentences using the correct order of operations]
Skills	As a result of this lesson, students will be able to Write and compute mathematical sentences using the correct order of operations.

	[understand why it is important to use the correct order of operations, and the reasons why incorrect steps will lead to incorrect answers.]
SOLs addressed	<p>Mathematics</p> <p>7.2 The student will simplify expressions that contain rational numbers (whole numbers, fractions, and decimals) and positive exponents, using order of operations, mental mathematics, and appropriate tools.</p> <p>7.4 The student will a) solve practical problems using rational numbers (whole numbers, fractions, decimals) and percents.</p> <p>7.5 The student will formulate rules for and solve practical problems involving basic operations (addition, subtraction, multiplication, and division) with integers.</p>
Length of Lesson	45 minutes
Overview of lesson	Students will be introduced to key words used to make mathematical sentences, the order of operations, and the PEMDAS strategy. They will use these strategies to compete in a Jeopardy quiz game using word problems about history to compute an answer.
Prior Knowledge	Students will need to be able to add, subtract, multiply, divide, and compute exponents for integers and decimals.
Resources needed	<p>Civil Rights School integration, Barnard School, Washington, D.C., 1955. http://memory.loc.gov/cgi-bin/query/r?pp/ils:@fileq:@field(NUMBER+@band(ppmsca+03119))+@field(COLLID+cph))</p> <p>Waiting for courtroom seats, 1953. Prints and Photographs Division http://www.loc.gov/exhibits/brown/brown-brown.html</p> <p>March on Washington, August 28, 1963. http://lcweb2.loc.gov/ammem/aahtml/exhibit/aopart9b.html</p> <p>Martin Luther King Jr., three head-and-shoulders portraits, facing left http://lcweb2.loc.gov/cgi-bin/query/i?pp/ils:@field(NUMBER+@band(cph+3c16776)):displayType=1:m856sd=cph:m856sf=3c16776</p> <p>Domestic servants waiting for the streetcar on their way to work early in the morning in Atlanta, Georgia, 1939 http://memory.loc.gov/cgi-bin/query/r?pp/fsaall:@field(NUMBER+@band(fsa+8a40005))</p>

Rosa Parks, seated on bus, looking out window, her face in profile
http://memory.loc.gov/learn/features/civilrights/learn_more.html#civilrights

Brands

<http://memory.loc.gov/learn/features/branding/index.php>

Potatoes -- Idaho

Oranges -- Riverside, California

Hershey's Chocolate -- Hershey, Pennsylvania

Coca-Cola sign -- Georgia

Kool-Ade -- Nebraska

Labor

Interior of Magnolia (Miss.) Cotton Mills and Spinning

<http://www.loc.gov/exhibits/treasures/trm032.html>

National Women's Trade Union Seal

<http://www.loc.gov/exhibits/treasures/trm167.html>

Chinese laborer in potato field. Walla Walla, Washington

[http://memory.loc.gov/cgi-](http://memory.loc.gov/cgi-bin/query/r?ammem/fsaall:@filreq(@field(NUMBER+@band(fsa+8b27965))+@field(COLLID+fsa)))

[bin/query/r?ammem/fsaall:@filreq\(@field\(NUMBER+@band\(fsa+8b27965\)\)+@field\(COLLID+fsa\)\)](http://memory.loc.gov/cgi-bin/query/r?ammem/fsaall:@filreq(@field(NUMBER+@band(fsa+8b27965))+@field(COLLID+fsa)))

California as I saw it <http://lcweb2.loc.gov/ammem/cbhtml/cbhome.html>

America at work <http://memory.loc.gov/ammem/awlhtml/awlwork.html>

Inventions

First Flight, December 17, 1903

[http://memory.loc.gov/cgi-](http://memory.loc.gov/cgi-bin/query/r?pp/ils:@filreq(@field(NUMBER+@band(cph+3a53266))+@field(COLLID+wri)))

[bin/query/r?pp/ils:@filreq\(@field\(NUMBER+@band\(cph+3a53266\)\)+@field\(COLLID+wri\)\)](http://memory.loc.gov/cgi-bin/query/r?pp/ils:@filreq(@field(NUMBER+@band(cph+3a53266))+@field(COLLID+wri)))

Wilbur and Orville on porch in Dayton, 1909

[http://memory.loc.gov/cgi-](http://memory.loc.gov/cgi-bin/query/r?pp/ils:@filreq(@field(NUMBER+@band(cph+3b13001))+@field(COLLID+cph)))

[bin/query/r?pp/ils:@filreq\(@field\(NUMBER+@band\(cph+3b13001\)\)+@field\(COLLID+cph\)\)](http://memory.loc.gov/cgi-bin/query/r?pp/ils:@filreq(@field(NUMBER+@band(cph+3b13001))+@field(COLLID+cph)))

Edison sitting at the door of the ore-milling plant in New Jersey in 1895

http://www.americasstory.gov/aa/edison/aa_edison_fail_3_e.html

Farm boys eating ice-cream cones. Washington, Indiana

[http://memory.loc.gov/cgi-](http://memory.loc.gov/cgi-bin/query/r?pp/fsaall:@field(NUMBER+@band(cph+3c29115)))

[bin/query/r?pp/fsaall:@field\(NUMBER+@band\(cph+3c29115\)\)](http://memory.loc.gov/cgi-bin/query/r?pp/fsaall:@field(NUMBER+@band(cph+3c29115)))

One of the early horseless carriages.

[http://memory.loc.gov/cgi-](http://memory.loc.gov/cgi-bin/query/r?ammem/ngp:@field(NUMBER+@band(ndfahult+b402)))

[bin/query/r?ammem/ngp:@field\(NUMBER+@band\(ndfahult+b402\)\)](http://memory.loc.gov/cgi-bin/query/r?ammem/ngp:@field(NUMBER+@band(ndfahult+b402)))

	<p>Elections Three women cast their votes in New York City http://www.americaslibrary.gov/cgi-bin/page.cgi/jb/reform/vote_3</p> <p>Voters at the voting booths in 1945 http://www.americaslibrary.gov/cgi-bin/page.cgi/jb/reform/vote_2</p> <p>American Leaders Speak http://memory.loc.gov/ammem/nfhtml/nfhome.html Famous GOP women arrive http://memory.loc.gov/ammem/nfhtml/nfexpe.html</p> <p>James Cox, Governor of Ohio, half-length portrait, facing left, seated at desk, reading. http://memory.loc.gov/ammem/nfhtml/nfexpe.html</p> <p>Other resources: Warm Up Worksheet Key Words Worksheet What I know/ want to know Worksheet</p>
<p>Process of lesson</p>	<ol style="list-style-type: none"> 1. Warm-up: Give the students the warm-up worksheet and allow them to spend 10 minutes answering the questions. <p>May want to provide samples</p> <ol style="list-style-type: none"> 2. Key Words worksheet: Each student should fill in the key words with the appropriate operation, then allow time to share their answers with other students and correct any that they missed. 3. Key Words worksheet: Have students fill in PEMDAS with a phrase that will help them remember the order of operations. Ex: Please Excuse My Dear Aunt Sally 4. My Interests: Hand out the “my interests” worksheet. Explain the directions, and have students fill this worksheet out during the game. Explain that the worksheet will be discussed at the end of the lesson. 5. Math in History Quiz Show: RULES <ul style="list-style-type: none"> • Assign students to six groups and hand out Eggspert* Buzzers. • Make sure Eggspert* is set to only allow one student to buzz in at a time. • Start the quiz show by reading each of the categories as they appear. • Game plays similar to Jeopardy, make sure to deduct points for incorrect answers. This approach makes sure that students are working together and checking their answer before buzzing in. • Be sure to go over each problem after the question has been

	<p>answered.</p> <ul style="list-style-type: none"> • Click on Topic at top of left hand corner to go back to the main page. Ex. Elections \$300 • Group with the most points at the end wins. <p>6. My Interests: Have students share their interests worksheet with 3 other students or discuss as a group.</p> <p>* Eggspert link: http://www.learningadvantage.com/eggspert.html</p>
Evaluation	<p>Informal Assessment: Watch the students as they work through the problems. If you see a student “giving up” explain the question after the answer has been given. As a teacher you will be able to see patterns of incorrect responses, and focus re-teaching on these areas.</p>
Extension Activities	<p>More practice with order of operations. Let the students visit the LOC website and create their own word problem.</p>
Possibilities for Differentiation	<ul style="list-style-type: none"> * Have students show their work on a white board. (This method works well for advanced students, they are made to actually see and do each step, rather than figuring it out in their heads) * Allow calculator use for students with learning disabilities. * Read each question aloud and use a projector to project the words on the board for reading. * Go over each question to make sure students understand how to do the next question. * Allow students to use the Key words worksheet who are struggling with the vocabulary.

Warm up – History and Math

1. What are your 3 favorite topics that you have studied in social studies?
2. Use one of these topics and make up a word problem that uses addition.
3. Use another topic and make up a word problem that uses subtraction.
4. Use the last topic to make up a word problem that you think is very hard to solve.

Key Words

Directions: Next to each key word, write the symbol that it stands for. Ex: +, x, -, ÷, =.

<u>Key Words</u>	<u>Operation</u>
Plus	+
More Than	
Quotient	
Product	
Less Than	
Difference	
Sum	
Decreased by	
Increased by	
Less	
Is	

P E M D A S



My Interests

Directions: Play QUIZ SHOW and write down at least 3 things that you know additional information about, and 3 things you find interesting that you would like to learn more about. At the end of the game, we will share this worksheet.

