

General Information:

- Teacher - Ms. Karyakose
- Subject Area - Math
- Lesson Title - Order of Operations
- Grade Level - 6th

Essential Question(s):

- What is the importance of Math Rules?
- How do you remember what PEMDAS stands for?

Summary:

- Students will learn order of operations over the course of a two day lesson. Students will start by learning 2-step operations and work all the way up to 4-step operations. At the conclusion of the lesson the students will make a digital story illustrating the 4 steps Order of Operation for a practice problem, they choose.

Objective(s):

- Students will be able to demonstrate the process of Order of Operations when solving a multi-step math problem
- Students will create a 1-2 minute digital story telling example of PEMDAS

State Content Standard(s)/ Benchmark(s):

- 6EE2c - Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

Technology Standard(s):

- Creativity and Innovation
- Communication and Collaboration
- Critical Thinking, Problem Solving, and Decision Making
- Digital Citizenship

Procedures:**Day 1 Anticipatory set**

- Write PEMDAS in big letters across the board (leave enough room to write "please excuse my dear aunt sally" between the large letters) with the direction to "Make a acronym for the word"
- Once class starts write "Please Excuse, My Dear, Aunt Sally"
- Below it Write "Parenthesis, Exponents, Multiply, Divide, Add, Subtract"

Day 1 Direct Instruction

- Explain that "This is just one acronym that can be used for order of operations. Today we are going to learn about order of operations, that is that when an equation has Multiplication and Subtraction in the same problem which do we do first."
- Have the students take **notes** as you do the problems on the

board ([correct and incorrect solutions - teacher reference for instruction](#)) as you do the problems
Parentheses Exponents Multiplication Division Addition Subtraction in their respective colors

- $6 \times (5+3)$ to teach parentheses first - the answer will be 48
- 5×2^2 to teach Exponents before Multiplication - the answer will be 20
- $2+5 \times 3$ to teach Multiply before Adding - the answer will be 17
- $30 / 5 \times 3$ to teach left to right - the answer should be 18

Day 2 Check for Understanding

- Have the students try some simple practice problems (using their colors to circle the operations) from there [books](#) (Pg 39 1- 9 odd)
- As the of students are finishing have them check their answers with a partner, if they have the correct answer have a volunteer show their work on the board
- Students who are struggling can then copy down the work as there classmate explains the steps

Day 1 Independent Practice

- Give the students the remainder of the hour to start their homework (pg 39 # 10 - 34 even)

Day 2 Anticipatory set

- Upon entering class the [Fox Trot comic](#) will be projected onto the board as a 5 minute warm up to get their brains thinking.
- After five minutes ask the student what numbers he should push? (most students will get -593, the correct answer is 1)
- **If a students correctly figures out the problem** - have them come to the board and show there steps.
- **If no one comes up with the answer 1** - The teacher will write the problem on the board twice. Show what would happen if we did it without parentheses and then with the correct parentheses.



Day 2 Direct Instruction

- Take a vote of the homework problem that the class found was hard. As a class walk through the toughest 3-4 problems.

Day 2 Check for understanding

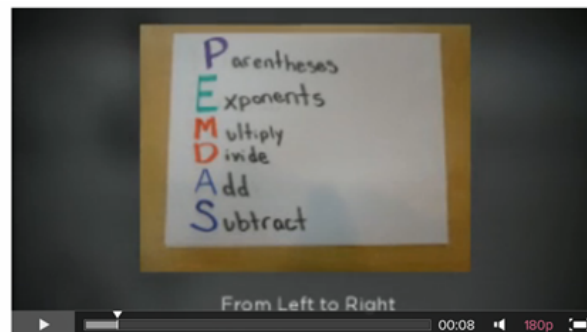
- Students will then work in their table groups (3-4 students per group) to solve 5 multi-step order of operation problems. (vertical half of the worksheets either 1-5 or 6-10 [1](#), [2](#), [3](#), [4](#))

Day 3 Assessment

- In groups they will pick the toughest problem from the day before to make a Digital Storytelling of the step by step process of solving it, following the [rubric](#)

Marzano Instructional Strategies:

- Summarizing and note taking (2)
- Reinforcing effort and providing recognition (3)
- Homework and Practice (4)
- Cooperative learning (6)
- Setting objectives and providing feedback (7)



Technology Integration:

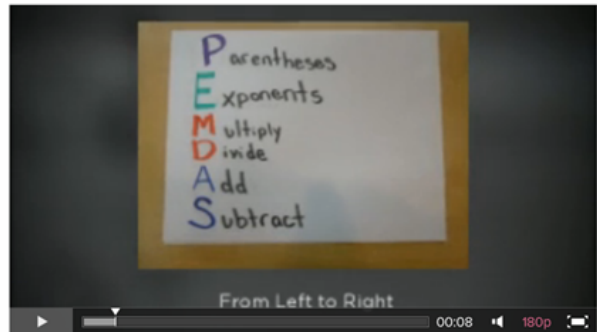
- [Digital Storytelling](#) - Students took pictures of the step by step process of solving their order of operation practice problems. Students then captions the needed slide to make a story from their pictures.

Materials and Resources:

- 6th grade [Math Textbook](#) (access code: D6F8688EC1)
- [Fox Trot Comic](#)
- TI 30XII Calculators
- Order of Operation worksheets [1](#), [2](#), [3](#), [4](#)
- Coloring utensils (students bring)
- Computer Paper
- [Rubric](#)

Assessment Method(s):

- Digital Storytelling - [Rubric](#)

**Notes:**

- Tell students to bring colored pencils or markers with them all three days
- Computer Lab needed day three
- Purple Green Red Blue Markers dry erase markers needed