Lab Framework

Text: AMME

Unit number and title: Unit 8.0 Covert PEMDAS Operations

Short Description: In this activity, students will group the multiplication operation to simplify expressions and then use the addition operation to finish the expression. Then they will try the addition operation first then the multiplication to show that it is not possible. This shows there is an order to simplifying expressions.

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Lab Title

Covert PEMDAS operations

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
  SWBAT comprehend the order of operation to simplify algebraic expressions
- **Statement of pre-requisite skills needed**
  Multiplication skills, addition concepts
- **Vocabulary**
  Operation
  Group
  Multiplication
  Addition
- **Materials List**
  Direction Handout with activity sheet
  Paperclips (or other small material found in classroom)

State Standards addressed

Math: A1.1.A, M1.1A Select and justify functions and equations to model and solve problems.

Reading: 2.1.4 Apply comprehension monitoring strategies for informational and technical materials, complex narratives, and expositions: use prior knowledge.

Writing: 3.1.1 Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples.

3.3.6 Uses complete sentences in writing.

Leadership Skills

Work in pairs

SCAN Skills/Workplace Skills

Arithmetic

A. Performs basic computations

Writing

A. Communicates thoughts, ideas, information, and messages in writing

Mathematics

A. Approaches practical problems by choosing appropriately from a variety of mathematical techniques.

- **Set-up information**

Before beginning instruction, be sure that your students are well versed in the required vocabulary and times and addition tables

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**

  Day 1 –
  Pair students (elbow partners)
  Review addition and multiplication tables.
  Review vocabulary.
  Present information, examples, demonstration
  Cover the handout directions and activity sheet
  Students begin lab
  Day 2 –
  Reflect individually
  Discuss with partner after reflection complete

- **Teacher Assessment of student learning**

  See Lab Write-Up with Rubric

  5 algebraic expressions with multiplication, division, addition and subtraction.

- **Summary of learning**

  -discuss real world application of learning from lab
  -opportunity for students to share/present learning
  -reflection of learning

- **Optional activities**

  Students will simplify exponential expressions and parentheses to complete the operations

- **Career Applications**

  Multiplication usage with simplifying algebraic expressions using order of operations

LAB TITLE: Covert PEMDAS Operations

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  Order of operations to simplify problem
  PEMDAS pyramid

- **Grouping instructions and roles**
  Students will form elbow partner pair

- **Procedures** – steps to follow/instructions
  1. On lab sheet solve #1 algebraic expression
  2. Using the paper clips and work sheet, demonstrate the simplification process
  3. Try the same expression and solve a different way, which is correct?
  4. Using paper clips and work sheet, demonstrate the simplification process.
  5. Reflect, stating the order of operation necessary to receive correct answer.

- **Outcome instructions**
  Reflection lab sheet
  Use rubric for grading

- **Assessment instructions** (peer-teacher)
  5 algebraic operations using PEMDAS procedure

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