Academic/Career & Technical Related/Demonstration Lesson Plan

Instructor Julie Lewis
Program/Class Tech Math

State Indicator/Competency:

- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

Instructional Objective(s):

- Students will be able to follow proper order of operations to simplify expressions with 90% accuracy.
- Students will solve word problems involving addition and subtraction with 90% accuracy.

Materials:

- Worksheet- "Order of Operations Practice" and calculator

Method of Instruction:

- Independent

Activities:

1) Simplify the expression following the correct order of operations. Show all steps.

$$\frac{4 + 6 \times 4}{18 \div 9 \times 2 - 1.25}$$

Solution:

(a) Complete 1 step in the numerator (multiplication) and one step in the denominator

(division), following the correct order of operations (Parenthesis, Exponents, Multiplication/Division from left to right, Addition/Subtraction from left to right) to get:

$$\frac{4+24}{2\times 2}-1.25$$

(b) Finish simplifying the numerator and denominator to get:

$$\frac{28}{7}-1.25$$

(c) Next complete the division to get 4 – 1.25

Final answer = 2.75

2) Simplify the expression below if x = 2, y = 3, and z = 4

$$xy^2 - xz + y$$

Solution:

(a) Rewrite the expression, filling in the numbers in place of the variables. Remember that when 2 variables are written next to each other without any sign between, it means to multiply them, so be sure to insert the multiplication sign when you recopy the problem with numbers:

$$2\times 3^2 - 2\times 4 + 3$$

(b) Follow order of operations (PEMDAS). Since there are no parentheses, exponents need to be done first. Recopy the problem only completing 3^2 which means 3*3 or 9:

$$2\times 9 - 2\times 4 + 3$$

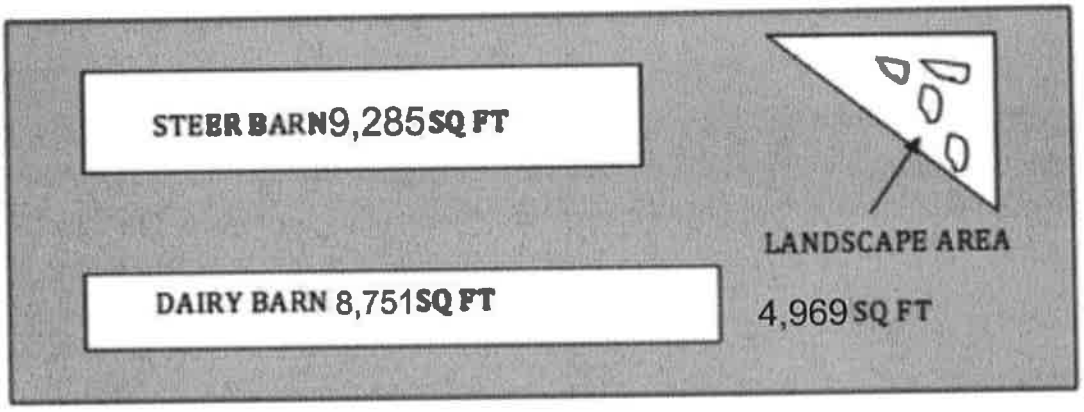
(c) Next comes multiplication/division as they occur from left to right. So we will do 2*9 and 2*4 to get:

$$18 - 8 + 3$$

(d) Now complete addition/subtraction as they occur from left to right (subtract first to get 10 + 3, then add to get 13).

Final Answer = 13

3) The north section of a local county fairground is shown in the diagram below. To provide parking space, a paving contractor is hired to pave the area not occupied by buildings or covered by landscaped areas. The entire section of land contains 65,211 square feet. How many square feet of land are paved?



Solution:

Add together the square footage of the barns and the landscape area (9,285 + 8,751 + 4,969) to get 23,005. Subtract this from the total area (65,211) to get42,206 square feet.

Assessment:

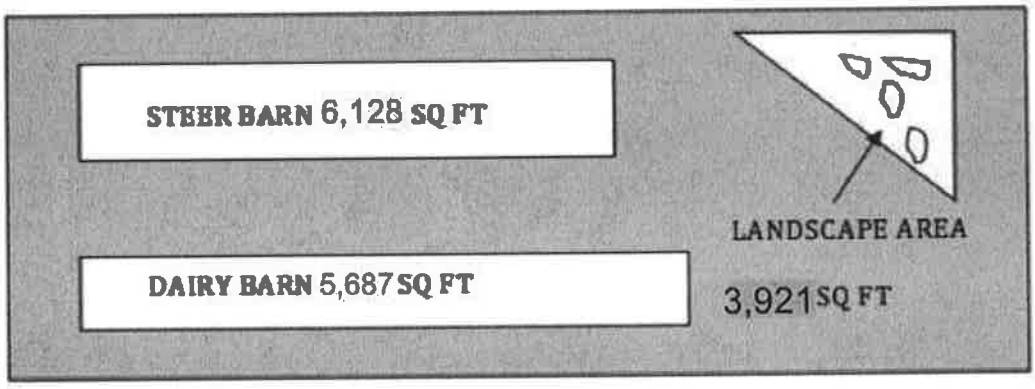
Order of Operations Worksheet (see below) 10 points

Lewis Tech A Pd 4 day 3

Name_____

Order of Operations Practice

1) The north section of a local county fairground is shown in the diagram below. To provide parking space, a paving contractor is hired to pave the area not occupied by buildings or covered by landscaped areas. The entire section of land contains 45,116 square feet. How many square feet of land are paved?



Follow the proper order of operations to simplify each expression below.

2) $5^3 - 4.5 + 8.5 \times 11$

3) $15-12\times3-1\times3+2$

4) $m + mx - m^2x$ where m = 9 and x = 5.5

5) $^{x-y}{}_{x}{}^{+}{}_{2}{}^{yz}$ where x = 2, y = 7 and z = 12