Lesson Plan 1

Name: _____ **Course:** Math 8 **Grade:** 8

Unit: Describing and Extending Patterns

Big Idea: "Using vocabulary and expressions to describe arrangements of numbers."

Subconcept: **"Compare different arrangements/arrays of numbers."**

Literacy Strategy(s): Frayer and Pairs Check

Lesson: **Representing Quantities** **Date Taught:** 10/19/09 -10/20/09

Learning Objective(s):

Students will be able to	Describe an array as having rows and columns.
Students will be able to	Write different ways to represent a quantity.

Idaho Standards (or National Standards if no Idaho Standards exist):

8.M.1.3.5 Formulate conjectures and justify (short of formal proof) why they must be or seem to be true. (338.02.c)

Detailed Description of Lesson:

Day 1

1. Have students complete Frayer cards for the words conjecture, array, and justify.
2. Show students 2 piles of pennies and ask them to compare which is larger/smaller, taller/shorter.
3. Ask them to make a conjecture on how many pennies are in each pile.
What would be the best ways to arrange the pennies?
4. Working in pairs, give each student a pile of pennies and ask them to arrange them in an array that would make it easy for another student to calculate the quantity. (Three groups should be given the same amount of pennies.)
5. The students should then write as many expressions as they can that represent their array.
6. The students are then to rotate through the classroom and find the groups that have the same amount of pennies as theirs.
7. They should compare arrays and determine which one is the easiest to visually determine how many pennies are in the group.

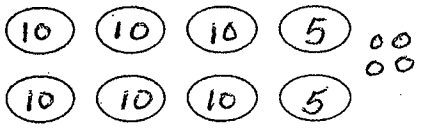
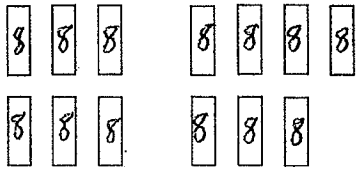
Day 2

1. Review with the organizing and representing quantities worksheet (I did not keep copies of student work.)
2. Pairs Check-see attached

Pairs Check

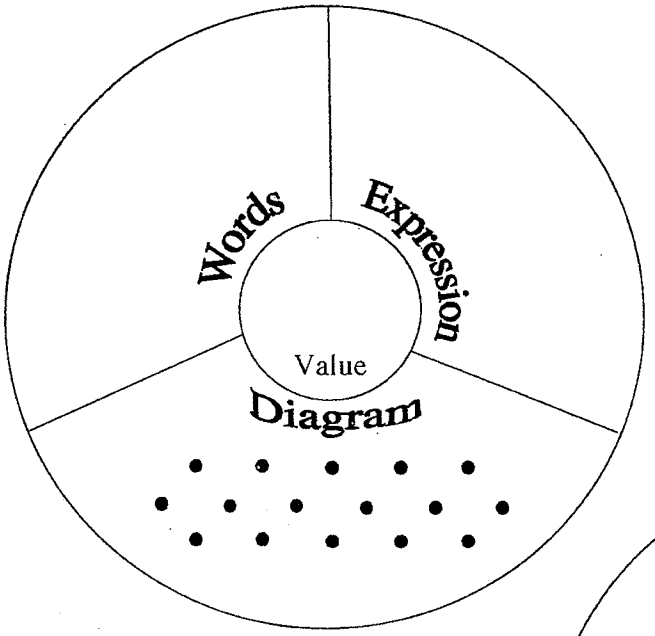
Directions:

1. Each pair has one pencil and paper.
2. Student #1 writes what Student #2 explains for question 1. Only student #2 talks.
3. Then the roles are reversed for the second problem.
4. The pair then check their work and if satisfied with their answers, circle the check.
5. Then each pair checks their work with another study team pair.
6. Repeat steps 2-5 for the next problems.

Student #1 recorder _____	Student #2 recorder _____
1. Write as many expressions as you can to represent these groups of pennies.  ✓	2. Write as many expressions as you can to represent these groups of pennies.  ✓
3. Draw a different way to represent your pennies with a diagram and number expression. ✓	4. Draw a different way to represent your pennies with a diagram and number expression. ✓

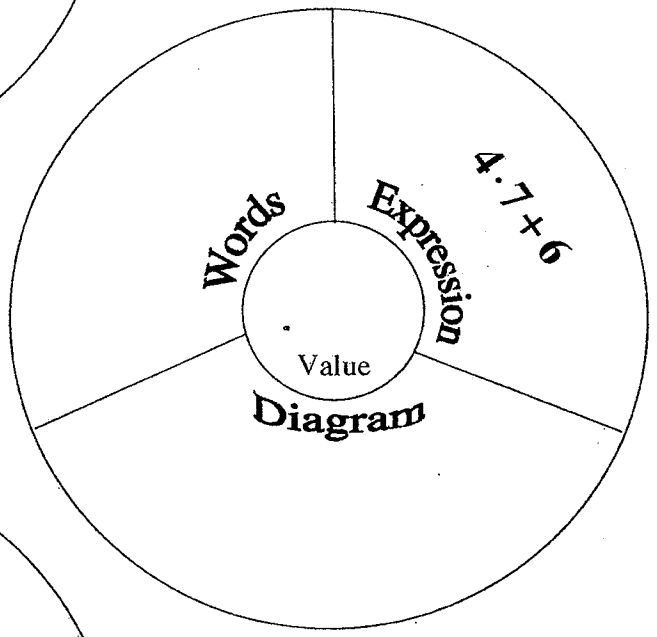
Working together, write a comparison statement for both your groups ($\leq, <, \geq, >$)

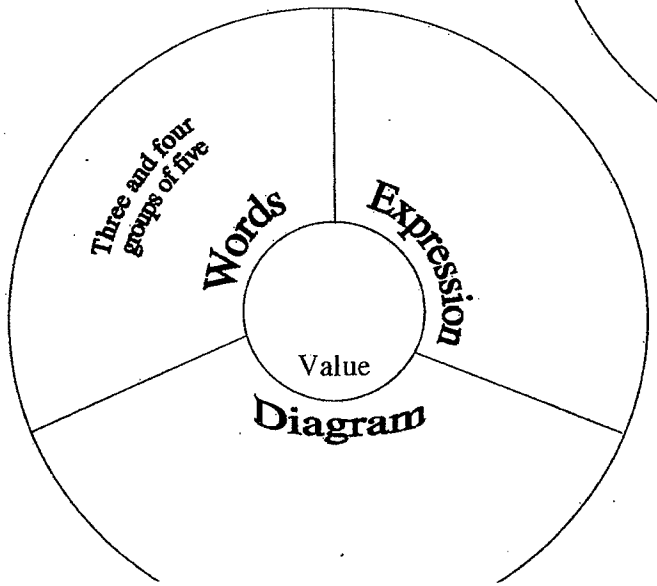
Organizing and Representing Quantities



Task

1. Complete each circle with all 4 representations.
2. Use colors to show connections between the representations of each quantity.





Reordering a Paragraph to Make Sense

1. Directions: Place the statements in sequential order starting with the * . When you have glued all the sentences. *In order to make a conjecture about how many pennies were used to construct this Ziggurat, I would count the number of pennies in the bottom corner stack. There are 10 pennies in the stack.*

- You need to count how many stack of tens are on the bottom.
- Then I count the number of pennies there are in the second to last row.
- Then you need to take the amount of stacks there are by ten and do the same for the next row and the next row.
- You could estimate how many stacks of pennies there are and add them all up.
- I would count the number of pennies on one side then times it by four because there's 4 sides.
- If there are 10 in a stack, count how many stacks until you get to the top
- Then I would add all of the info and calculations together and have my answer.
- I would count how many there were and keep doing that as I go up the row.
- I would count how many layers there are.

2. Directions: Place the statements in sequential order starting with the * . When you have glued all the sentences. Finish the problem (there is a pattern.)

* *In order to make a conjecture about how many pennies were used to construct this Ziggurat, I would count the number of pennies in the bottom corner stack. There are 10 pennies in the stack.*

- There are 10 pennies in the bottom corner stack.
- There are 27 stacks along the front row.
- I am estimating that there are 5 stacks where the stairs are.
- This makes a total of about 27 stacks of ten pennies in each row.
- There are 27 rows in the bottom layer.
- I would then multiply the 27 rows times the 27 stacks times the 10 pennies in one stack.
- This equals 7,290 pennies in the first layer.
- The second layer has 25 stacks x 25 rows x 10 pennies = 6250 pennies in the second layer.

LIMSST Project Literacy Lesson Reflection Form

Name: _____ **Date lesson was taught:** 10/19/09 - 10/20/09

Lesson Title/Topic Areas:

Representing Quantities

Literacy Strategies Used:
I used the Frayer cards which they have had practice with, organizing quantities circles and the Pairs Check.

Student Response to the Lesson:

This lesson went really well. The students love to move stuff around. The students recognized immediately who had the easiest arrays to calculate. They even went back and re-formed their arrays. The organizing circles were pretty easy for them because of they had practiced how to write verbal expressions at the beginning of the year. The pairs check to me a lot about their number sense and ability to follow directions. This was the first time I used the pairs check and that is what could have caused the problem. I tried to have them do the next one online but the computer either saved the information wrong or I typed the form wrong. They were much more engaged when they could type the information.

Lesson Reflection:
I wouldn't change anything about this lesson. I think if flowed well and the students enjoyed it. I would love to have some training on how to use the database to have students write like Johnny does in his class. Because of the nature of this class, I think the students felt less threatened when they were typing their responses.

Relationship to Previous Instruction:
This is the first time I have taught this lesson. I am using the CPM curriculum which compliments the strategies in the LIMSST class.