

MNLA Curriculum Unit B, Lesson 4

UNIT TITLE: Using Math to Create Functional Landscapes:

LESSON 4: How Many Plants will Fit on a Bench? Measuring Pot Sizes; 30-40 minutes

MINNESOTA ACADEMIC STANDARDS IN SCIENCE:

- 3.1.3.4.1 -- Use tools, including rulers, thermometers, magnifiers and simple balances, to improve observations and keep a record of the observations made.
- 4.2.1.1.1 -- Measure temperature, volume, weight and length using appropriate tools and units.

MINNESOTA ACADEMIC STANDARDS IN MATH:

- 3.2.2.1 -- Understand how to interpret number sentences involving multiplication and division basic facts and unknowns. Create real-world situations to represent number sentences.
- 3.3.2.3 -- Measure distances around objects.
- 4.1.1.5 -- Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.

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GRADE LEVEL/SUBJECT: 3 -4 Science ; 3-4 Math

OVERVIEW: This lesson will reinforce third and fourth grade student's ability to measure accurately and solve word problems using multiplication. In this activity students will measure the size of a variety of pots. Students will then use multiplication to calculate how many potted plants can be grown on a greenhouse bench given the size of the pot.

OBJECTIVE:

As a result of this activity, students will be able to:

1. apply math skills to calculate the size of growing pots and the number of potted plants that can be grown on a greenhouse bench.

MATERIALS:

- Measuring tapes or rulers. Flexible rulers are preferred over stiff rulers.
- Growing pots; a minimum of 3 different sizes. One pot of each size for each student.
- Plants - plugs or pack liners-- for students to transplant into one of the pots.
- Potting media, enough for each student to fill one pot. To shorten the time of the activity, have one pot per student pre-filled and ready for transplanting.
- (Optional) Pictures of plants growing on a greenhouse bench.
- (Optional) Examples of plants growing in different sizes of pots.

ACTIVITIES AND PROCEDURES:

1. Introduce yourself and briefly tell what you do. Use the titles of your position and those of your colleagues to provide students with a vision of career opportunities.
2. Explain why multiple sized pots are used in the industry including that plants are sold at different sizes due to age, species and convenience of shipping. Explain that growers need to know what the size of the pot is so they use the right container for a particular plant and a particular use/market.
3. Describe a greenhouse growing bench. Note the vocabulary difference between a greenhouse and a green house. Explain that if a grower wants to figure out how many pot will fit on his/her bench they need to know the size of the pots.
4. Pass out the measuring tapes or rulers, worksheets and pots, one pot size at a time. Instruct students to measure the pots and enter the measurements onto the worksheet. Demonstrate how to accurately measure a pot including the diameter, height/depth and circumference (eliminate circumference if flexible measuring tools are unavailable). Assist students as needed. Drawing diagrams on the board may help them understand the concepts and procedures.
5. Upon completion of the worksheet as students to share their answers and explain how they solved the problems.
6. Pass out one young plant per student, plug or pack liner. Describe for students how to fill a pot with potting media and how to transplant the plant into one of the pots they measured. Describe to the students how to care for their plant at home, include appropriate light and watering practices.

ASSESSMENT: Students will complete the worksheet provided.

HANDOUTS AND WORKSHEETS:

- " How Many Plants Can the Greenhouse Grower Grow?"

Using Pot Sizes to Figure Out How Many Plants Will Fit onto a Greenhouse Bench

1. Measure the pots and enter the measurements in the chart below.

| | Diameter across the pot (inches) | Depth or height of the pot (inches) | Circumference (inches) |
|--------------|-------------------------------------|--|---------------------------|
| Pot 1 | | | |
| Pot 2 | | | |
| Pot 3 | | | |

2. A greenhouse grower is growing geraniums in 4" wide square pots.

a. How many pots can the grower line up on a 1 foot long bench if they line the

pots up so they touch each other (growing them pot to pot) ? _____

b. How many pots can be lined up on a bench that is 3 feet long? _____

3. A greenhouse grower is growing potted lilies on a greenhouse bench. There are 10 rows of pots with 9 pots in each row. How many plants do they have for sale?

4. A crop of chrysanthemums in 6" wide pots are being grown on a greenhouse bench. The bench is 60" wide. How many rows of pots will fit across the bench?

5. If there are 10 rows of 5" potted poinsettias on a bench, with 12 pots in each row, how many pots of poinsettias does the grower have for sale?