

Activity: Nature's Measure

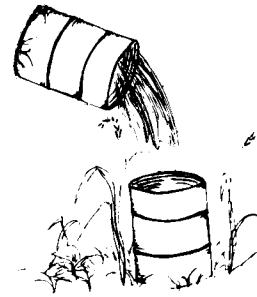
Grade Level: Grade 2

Major Emphasis: Measuring and Recording Data

Major Curriculum Area: Mathematics

Related Curriculum Areas:

- Refer to Outdoor Education Curriculum Matrix K-2
- Human Relations
- Science
- Language Arts



Program Indicator:

The student will demonstrate and apply measurement concepts using standard units.

Student Outcomes: The student will:

1. measure length using specific units (standard or metric).
2. determine perimeter.
3. determine area.
4. measure a liquid.
5. measure time using a watch or stop watch.
6. measure air temperature and soil temperature (standard or metric).
7. recognize solid geometric shapes in a natural environment.

Readiness:

1. Introduce vocabulary:

absorb	cone	Fahrenheit	liquid	rectangular prism
area	cube	feet	meter	sphere
Celsius	cylinder	inches	perimeter	square units
centimeter	degrees	length	quart	yard
2. Have students practice using measurement tools: meter or yardstick, quart or liter, thermometer and watch.
3. Have students practice using square units. Have students practice calculating area of a region.
4. Have students practice calculating the perimeter of a region.
5. Introduce and discuss five solid geometric shapes: cone, cylinder, cube, rectangular prism and sphere.

Materials:

yardsticks	pencils	quart or liter measure
air thermometers	hand lenses	5 wooden objects (cube, cone, rectangular prism,
soil thermometers	trowels	sphere, cylinder)
watch or stopwatch	stakes	Supplement A (one per plot)
clipboards	yarn	blocks (1'x1' pieces of cardboard)

Procedures: (DL1,2&4)

1. Organize group into several small groups with approximately two to four students per group.
2. Record starting time of the activity on Supplement A.
3. Review key vocabulary and the proper use of equipment.
4. Assign each student team a plot of ground. Students sit by their plot and observe what is there. Talk about how the plot looks and how it needs to be left following this activity.
5. Introduce procedures for setting up plot study area.
 - a. Have students measure and record length (i.e., 4 feet) of one side. Proceed to measure all four sides.
 - b. Have students use a twig or stake to mark off the four corners of the plot. Use yarn or rope to mark off the perimeter around the plot.
 - c. Calculate the area of the plot in number of 1'x1' blocks. Fill in plot with blocks and record the number on the Tally Sheet; or calculate the area by multiplying the length times the width.
6. Have students perform the following tasks in their plot.
 - a. Dig a hole approximately 6 inches by 6 inches.
 - b. Measure a quantity of water (quart or liter) and pour it into the hole. Measure and record the time the water takes to percolate into the soil.
 - c. Measure and record the air temperature using an air thermometer.
 - d. Measure and record the soil temperature using a soil thermometer.
7. Using the solid geometric shapes, review names of objects. Name similar shapes in the natural environment beginning with the plot area. Possible suggestions are:
 - ! cube = box
 - ! sphere = sun, ball
 - ! cone = pine tree
 - ! cylinder = trash can
 - ! rectangular prism = picnic table top
8. Record time at the end of activity. Calculate elapsed time.

Summary: (DL3&4)

1. Have teams review data. Compare times for water absorption. Compare soil temperatures and air temperatures. Discuss possible reasons for the differences.
2. Have students observe various shapes in the natural environment.

Follow-Up: (DL2&4)

1. Construct a picture or bar graph based on the Tally Sheet.
2. Take a walk around the school; measure the ball field and measure the air temperature.
3. Look for shapes in the classroom.

Extension Activities:

1. Draw the perimeter for a picture then draw a picture of a tree six inches tall and two inches wide within that perimeter.
2. Find the perimeter of other items at school. Examples are: book, desk and chalkboard.

Teacher Resources:

Books:

- < *Hug a Tree, Rockwell, Robert, et al. pp. 75-76.
- < *Sharing Nature with Children, Cornell, Joseph. pp. 72-73. 507



Nature's Measure Tally Sheet



M E A S U R E M E N T				
	Group 1	Group 2	Group 3	Group 4
Starting Time				
Length of Plot				
Width of Plot				
Perimeter of Plot				
Area of Plot				
Absorption Rate				
Air Temperature				
Soil Temperature				
Finishing Time				

