

# MEASUREMENTS DAY

## Third Grade – Rahr Memorial School Forest

### ENDURING UNDERSTANDING

Scientists use measurements to help them better understand the natural world.

### ASSESSMENT

Students will demonstrate understanding by using a thermometer to measure soil temperature and a meter stick and ruler to measure distance. Students will be able to graph soil temperature and verbally explain what the graph conveys.

### WISCONSIN STATE ACADEMIC STANDARDS

Science: A.4.1, A.4.2, C.4.2, C.4.4, C.4.5, C.4.6, D.4.4

Environmental Education: A.4.1, A.4.2, A.4.3, A.4.4, C.4.1

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### CLASS OUTLINE

- I. Set-up
- II. Sample schedule
- III. Introduction
- IV. Measuring in Meters
- V. Soil Depth vs. temperature
- VI. Distance from Lake vs. Soil Temperature
- VII. Conclusion
- VIII. Clean-up

Safety

Optional/ Rainy Day Activities

Additional Information

Resources

School Forest map

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### MATERIALS

#### Soil Depth vs. Temperature

Rulers  
Hand shovels  
Thermometers  
Data sheets  
Clipboards  
Pencils

#### Distance from Lake vs. Soil Temperature

Meter sticks  
Thermometers  
Data sheets  
Clipboards  
Pencils

#### Measuring in Meters

Meter sticks  
Data sheets  
Clipboards  
Pencils  
Labeled trees

### CLASS PROCEDURES

#### I. Set-up

After setting a date with the School Forest Coordinator, teachers are also responsible for filling out and turning in a field trip request form. Teachers should also schedule a time when the School Forest Coordinator can meet with them at school to discuss the visit. Teachers will be asked to teach or co-teach one of the activities while the student groups rotate through the activities during the day. The School Forest Coordinator can also teach at one of the stations during the day. Preparation time will be needed to review the activity.

All of the materials needed for this day may be set-up at the School Forest. Please notify the School Forest Coordinator regarding supply requests. Teachers will need to bring a few things from school: first aid kits, emergency contact information, extra clothing, and any additional activities they feel necessary for the class. Students will need to bring a bag lunch (with a drink and nothing that needs a microwave) and adequate clothing for the day.

## II. Sample Schedule:

9:00	Depart from School
9:30	Arrive at School Forest
9:30 – 9:50	Welcome and Introduction
9:50 – 10:45	rotation 1
10:50 – 11:45	rotation 2
11:45- 12:20	Lunch
12:20- 1:15	rotation 3
1:20 – 2:10	large group activity/ hike
2:15 – 2:25	Conclusion
2:30	Depart from school forest
3:00	Arrive at school

## III. Introduction

Today we are going to be scientists. We are going to be scientists that study soil temperate and also trees. Trees depend on soil to survive. We are going to be doing measurements and learning more about the forest through what we measure.

Review the rules and expectations of the class for their visit.

## IV. Measuring in Meters (volleyball court)

Students predict and measure the distance to different trees using the meter sticks and record their findings on the data sheets. Then spend some time discussing the different types of trees and sketching their leaves.

## V. Soil Depth and Temperature (sand dunes)

Hike to the sand dunes. Discuss soil temperature and how it affects plants and humans. Students can predict if they think the soil will get warmer or cooler as they dig down deep. Then they can measure the soil temperature as they dig down into the sand dunes. It is recommended to dig at intervals of 10 centimeters and then to measure the temperature at the bottom of the hole before digging deeper. The results can be recorded in the box on the right side of the data sheets. When a group is complete, they can fill in the graph. A note, for time management, the teacher may want to set a depth to go to (like 60 centimeter) instead of trying to do the full 100 centimeters that is listed on the data sheet.

## VI. Distance from Lake vs. Soil Temperature (Beach)

Hike to the beach. If it is very windy, start instruction in the forest so you are protected from the elements. Discuss soil temperature, how it affects things that live in the soil, and why scientists might want to study the soil temperature. Predict if the soil temperature will rise or fall as you travel away from the water's edge. Then measure the soil temperature as they go away from Lake Michigan toward the forest. Teachers may want to make a "starting line" in the sand near the water's edge. The results can be recorded in the box on the right side of the data sheets. When a group is complete, they can fill in the graph. A note for time management, the teacher may want to set a distance to go to (like 9 meters) instead of trying to do the full 14 meters that is listed on the data sheet.

## VII. Conclusion

Review the results from the day. Discuss why it is important to know the soil temperature in an area. Why do scientists keep track of soil temperature?

## VIII. Clean-up

- Return supplies to building
- Take garbage out to dumpster
- Close windows, shut off all lights, lock doors, shut driveway gate
- Give the School Forest Coordinator feedback on how to make this trip better in the future.

## IX. Safety

While at the School Forest, teachers should carry first aid kits. You can bring these from your school or use the ones at the School Forest. The first aid stations can be found in the Ehlert Lodge office, the upstairs of the Krejcarek Building, and in the ELC. Please report any safety issues to the School Forest Coordinator.

Students should be supervised at all times. If you decide to go off trail, go in a clear area where branches cannot swing back and hit someone. Be aware of the plants you are traveling around so as not to pass by thorn covered plants.

**Optional / Rainy Day Activities** - These activities can be done if the weather is poor or if there is extra time. Please notify the School Forest Coordinator if you plan to teach any of these activities. ***You may want to teach these at school after your School Forest trip as a follow-up.***

### Cookie and block measurements

If you would like to use the blocks and tree cookies, notify the School Forest Coordinator. The tree cookies and blocks can be used to teach measurements through estimating and measuring.

### Rain Measurements

Use graduated cylinders to measure rain. Make estimates, then measure rain fall vs. time, then graph.

Additional Information – see following pages

## Resources

Tekiela, Stan. Trees of Wisconsin. Adventure Publications, MN. 2002

Department of Natural Resources. Forest Trees of Wisconsin. DNR, Madison, WI. 1990

LEAF. <http://www.uwsp.edu/cnr/leaf>

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