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ABSTRACT

One component of the Maryland School Performance Program (MSPAP) is the state's performance-based assessments, criterion-referenced tests that require students to apply what they know and can do to solve problems and display other higher-order thinking skills. This document helps parents, teachers, students, and other citizens understand the tasks of the MSPAP by presenting information and materials related to "Soil Investigations," one of the nine operational MSPAP tasks that have been selected to illustrate the types of response the MSPAP requires of students. Actual operational test materials are presented for this third-grade science activity. The "Student Response Book" contains questions and other directions to students and space for students to enter their responses. "Soil Investigations" asks the third grader to be a geologist and consider the information needed to study the soil, as well as ways to approach its study. The "Student Resource Materials Book" gives directions for handling the actual soil samples students work with in the performance task, and the "Examiner's Manual" contains teacher task preparation directions and the directions the teacher gives the students. (SLD)

MSPAP
Public Release Task

Soil Investigations

Grade 3

Science

Maryland State Department of Education
July 1994

State of Maryland
William Donald Schaefer, *Governor*

Maryland State Department of Education
Division of Planning, Results, and Information Management

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INTRODUCTION

Background and Purpose of This Document

Maryland public schools have embarked on an important mission: to "re-form" and improve Maryland public schools so that all children can learn, attend schools in which they can progress and learn, and have a real opportunity to learn equally rigorous content. The Maryland State Department of Education launched the Maryland School Performance Program, its strategy for improving public education, in 1989. One component of the Maryland School Performance Program is the state's performance-based assessments, often referred to as the "CRTs" (for criterion-referenced tests). These assessments require students to apply what they know and can do to solve problems, reason, explain, recommend, and display other "higher order" thinking skills. These assessments are officially called the Maryland School Performance Assessment Program (MSPAP).

The primary focus of MSPAP is *school performance.* However, individual student scores from MSPAP are also available. MSPAP assessment tasks assess student performance in grades 3, 5, and 8 in relation to the Maryland Learning Outcomes. These outcomes focus on what students should know and be able to do in reading, writing, language usage, mathematics, science, and social studies. MSPAP tasks and the learning outcomes they assess are sometimes confused with "outcome based education," an approach to teaching, learning, and managing schools which has its share of supporters and detractors. The purpose of this document is to help parents, teachers, students, and other Maryland citizens understand what MSPAP tasks are like.

This Document

This document contains information and materials related to one of nine operational MSPAP tasks that have been selected for public release. These nine tasks were selected to illustrate the types of activities, questions, and responses that MSPAP requires of students.

Contained in this document are actual operational test materials, including:

- *Student Response Book/Answer Book:* Contains questions and other directions to students and space for students to enter their responses.
- *Student Resource Materials Book/Resource Book:* Contains background reading and other information. Only some tasks require such background material.
- *Manipulatives:* Additional materials necessary for tasks (e.g., spinners for the mathematics task "School Fair").
- *Examiner's Manual:* Contains directions to teachers who administer MSPAP, including the directions they read to students verbatim.

Information on scoring these tasks is available in the *Scoring Guide — Introduction, Scoring Tools, and Sample Responses.* This document explains how student responses to the MSPAP are scored. It also contains criteria used to score student responses and sample student responses to all assessment activities in the task.

As you examine this document you will quickly see the complexity of the materials related to each MSPAP assessment task. Because of this complexity, MSDE distributes these tasks at the request of citizens only in conjunction with a brief guided presentation of the materials by an MSDE or local school system educator.

We hope you find the materials interesting and informative. We also expect that you will recognize the power that assessments like MSPAP have for guiding and goading improvements in school performance and student learning and for raising standards for performance for all Maryland public schools.

STUDENT RESPONSE BOOK

Task 3 Day 5
Topic: Soil Investigations

DIRECTIONS:

You are a young geologist. A geologist is a person who studies earth features such as streams, hills, slopes, and soils. You are to study different types of soil to find out how they are alike and how they are different. You will be using a hand lens, potting soil, soil from a place near the school, clear vials, and water to study your soil samples. You will do seven activities in which you will share what you already know about soil, collect data, compare two soil samples, and communicate your findings. Use as many senses as you can to investigate your soil samples. BUT DO NOT TASTE THEM.

1 Scientists think about what they know about a topic before they start a new investigation. Work by yourself to write at least three things you know about soil.

2 Work with your partner to investigate two soil samples. You and your partner will be sharing soil samples throughout this task. Open your Student Resource Materials Book to page 27 and read the directions carefully. Discuss them with your partner to be sure each of you understands them. One of you should prepare the vial with "Local" soil, the other should prepare the vial with "Potting" soil according to the directions. When you have completed preparing the soil/water vials, you may begin working alone on activities 3 through 7.

3 Think about the following question and write your answer below: Why do you think it was important to shake the two soil/water vials the same number of times?

4

STEP **A**

Put a spoonful of soil from each bag onto a paper towel. Use all your senses (but not TASTE) and the materials provided to observe your soil samples. Observe the samples to discover at least five properties of each soil. Make a list of at least five properties of each sample using the following chart:

Potting Soil	Local Soil

STEP B

Now you will make soil smears on a separate sheet of paper. DO NOT SMEAR THE SOIL IN THIS RESPONSE BOOK. Label your sheet of paper "Potting Soil Smear" and "Local Soil Smear." Dip one finger into the water and then into one soil sample, and make your smear on the paper by wiping your finger down the space for that sample. Clean your finger with a paper towel. Make a smear from the second sample. Clean your hands with a clean paper towel.

STEP C

In the space below each soil smear, write a list of at least five words that describe your observations of that smear.

Potting Soil Smear	Local Soil Smear

5 Without touching your vial setups, observe what has happened in each vial. Observe ways they are alike and ways they are different. As you make your observations, use any of the materials and instruments you were given that you think will help you. Make a drawing of each vial in the space below. Be sure you label your drawings.

6 As a young geologist you have discovered that soils can be alike in some ways and different in others. Write a paragraph that contains at least four comparisons you discovered in your two soil samples. Be sure to use information from all of the investigations you have completed in this task. Write your paragraph in the space below.

7 Draw a circle around the number below that shows how easy or how hard it was for you to complete the activities in this task.

1	2	3	4	5
Very easy	Somewhat easy	About average	Somewhat hard	Very hard

STUDENT RESOURCE MATERIALS BOOK

Directions for the Preparation of Soil/Water Vials

1. Protect your work surface with paper towels. Save some towels to use later.
2. Measure one centimeter up the tape from the bottom of each vial and make a mark with your pencil on the tape at that measure.
3. Fill your vial labeled "Local" or "Potting" to the one-centimeter mark with the matching soil from the bag labeled "Local" or "Potting."
4. Fill your vial about 3/4 full of water. Pour carefully.
5. Put the lid on your vial.
6. Shake your vial ten times ONLY and set it on your work surface beside your partner's. Remove the lid. Be careful not to move the vials any more. You will compare the soils in the two vials later without touching them.

STOP

EXAMINER'S MANUAL

Day 5

Secure information pertaining to other tasks

has been removed from this area.

Task 3, Day 5 Topic: Soil Investigations

Materials needed by the examiner and each pair of students:

Have the following items in each container:

- sandwich-size clear plastic bag, approximately 1/4 full of commercial potting soil and labeled "Potting"
- sandwich-size clear plastic bag, approximately 1/4 full of schoolyard soil (or soil not commercially prepared) and labeled "Local"
- 10-ounce plastic cup containing 250 mL (1 cup) of water

- 2 plastic spoons
- 2 clear, lidded vials of approximately 50 mL capacity with a vertical 5-centimeter strip of masking tape labeled "LOCAL" and "POTTING"
- 2 hand lenses
- metric ruler
- 8 paper towels for protection of work surfaces and for cleaning hands during the investigation
- 2 pencils
- water should be available in the classroom

Copy the task summary table on the board for students to refer to during testing.

Activity Number	How Students Work	Suggested Time in Minutes
Activity 1	Individual	5
Activity 2	Pairs	4
Activity 3	Individual	15
Activity 4	Individual	5
Activity 5	Individual	5
Activity 6	Individual	5
Activity 7	Individual	1
		40 minutes

Assign students to pairs for activity 2.

SAY **Today you will have opportunities to investigate soil samples and communicate your findings. There is a task work summary on the board that gives you suggested times for each activity. We will follow it as closely as possible to help us complete the task.**

Open your Student Response Book to page 87 and begin to work on your own.

Circulate among students throughout the task to make certain that they are progressing in a timely manner. Remind them of the task work summary on the board. At the end of the assigned task time, have the students clean up their work areas by placing their spoons, vial setups, rulers, plastic bags of soil, markers, and hand lenses in the containers. Have them discard the used paper towels and leftover water, group by group, saving the plastic cups for recycling or other uses.

When students have finished the activities in the task, distribute the Student Biographical/ Survey Documents.

SAY **Open your Student Biographical/Survey Document to page 6 and complete questions 54 and 55. You will have 10 minutes to complete these questions.**

Write on the chalkboard the question numbers that the students are to complete. After 10 minutes, collect all testing materials.

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