

# OVERVIEW

## PEBBLES, SAND, AND SILT



### GOALS

The **Pebbles, Sand, and Silt Module** consists of four sequential investigations, each designed to introduce concepts in earth science. The investigations provide experiences that heighten students' awareness of rocks as earth materials and natural resources. They will come to know rocks by many names and in a variety of sizes. Pebbles and sand are the same material—just different in size.

### FOSS EXPECTS STUDENTS TO

- Develop a curiosity and interest in the physical world around them.
- Observe, describe, and sort earth materials based on properties.
- Separate earth materials by size, using different techniques.
- Observe the similarities and differences in the materials in a river rock mixture: silt, sand, gravel, and small and large pebbles.
- Explore places where earth materials are found and ways that earth materials are used.
- Compare the ingredients in different soils.
- Organize and communicate observations through drawing and writing.
- Acquire the vocabulary associated with earth materials.

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# PEBBLES, SAND, AND SILT MODULE MATRIX

## SYNOPSIS

## SCIENCE CONTENT

## THINKING PROCESSES

### 1. FIRST ROCKS

Students are introduced to the mineral portion of the planet on which they live. They investigate several kinds of rocks and begin to understand the properties of rocks. Students rub rocks, wash rocks, sort rocks, and describe rocks. They also begin to organize a class rock collection.

- Rocks have a variety of properties including color, hardness, shape, texture, and size.
- Rocks can be sorted by their properties.
- Rocks are all around us.
- Rocks are the solid material of the earth.

- Observe several kinds of rocks.
- Compare properties of different rocks.
- Sort rocks in different ways.
- Observe rocks interacting with each other and with water.

### 2. RIVER ROCKS

Students investigate a river rock mixture of earth materials of different sizes. They separate the rocks, using a series of three screens to identify five sizes of rocks: large pebbles, small pebbles, large gravel, small gravel, and sand. They add water to a vial of sand to discover silt and clay.

- Rocks can be categorized by size.
- Screens and water can be used to sort the sizes of earth materials.
- Five sizes of rocks, from smallest to largest are clay, silt, sand, gravel, and pebbles.

- Observe properties of pebbles, gravel, sand, silt, and clay particles.
- Separate and group river rocks based on particle size by using screens.
- Separate and observe sand and silt in water.
- Observe the properties of clay particles when dry and when wet.

### 3. USING ROCKS

Students learn how people use earth materials to construct objects. They make rubbings from sandpaper, sculptures from sand, decorative jewelry from clay, and bricks from clay soil. They go on a schoolyard field trip to look for places where earth materials occur naturally and where people have incorporated earth materials into building materials.

- Earth materials are natural resources.
- The properties of different earth materials make each suitable for specific uses.
- Earth materials can be used in a variety of constructions.

- Observe and compare different grades of sandpaper.
- Observe how a matrix binds sand particles in a sand sculpture.
- Observe the properties of clay that make it useful in creating jewelry or beads.
- Observe and compare how earth materials are used in human constructions.
- Observe how the properties of clay are used to make bricks.

### 4. SOIL EXPLORATIONS

Students put together and take apart soils. They are introduced to humus as an ingredient in soil. Homemade and local soils are compared, using techniques introduced in Investigation 2.

- Soil is a mixture of earth materials.
- Soils vary from place to place.
- Soils have properties of color and texture.
- Soils differ in their abilities to support plants.
- Soils can be composed of humus and different amounts and sizes of rocks.

- Observe the ingredients that combine to make soil.
- Separate and sort the ingredients in soil.
- Observe and record the results of shaking soil and water in a vial.
- Compare soil samples from different locations.

**Language Extensions**

- Make a geologist tool kit.
- Make a rock record book.
- Set up a rock store.
- Make stone soup.
- Write about magic pebbles.
- Use pattern sentences.

**Math Extensions**

- Solve two problems.

**Art and Science Extensions**

- Make rock people or pets.
- Assemble a rock aquarium.
- Find your rock.
- Start a rock collection.

- *Exploring Rocks*
- *Colorful Rocks*

Students design matching games, using the attributes of rocks.

**Language Extension**

- Write the journey of your rock.

**Math Extensions**

- Solve two problems.

**Social Studies and Science Extensions**

- Visit a quarry.
- Make large river rock shake-up bottles.
- Set up a screening station.
- Set up a series of river rock vials.
- Set up a sand exploration center.
- Look for clay soils.

- *The Story of Sand*

Students play a game of I Spy with their family to describe objects by comparative size.

**Language Extensions**

- Discuss earth materials as natural resources.
- Find out about pottery.
- Make tracks and molds.

**Math Extensions**

- Solve two problems.
- Graph the rocks in use.

**Art and Science Extensions**

- Look at construction materials.
- Make sand paintings.
- Layer sand, gravel, and pebbles.
- Make sandpaper prints.
- Research animals and earth materials.
- Sand some wood.

- *Rocks Move*
- *Making Things with Rocks*

Students look for uses of earth materials at home and in the neighborhood.

**Language Extensions**

- Write directions for making soil.
- Start a vial-drawings book.

**Math Extension**

- Add up rocks.

**Science Extensions**

- See what grows.
- Make an earthworm habitat.
- Plant seeds in sand and soil.
- Set up a screening station.
- Set up a magnification station.
- Collect vacation soil samples.

- *What Is in Soil?*
- *Testing Soil*
- *Fossils*

Students compare the rate at which water moves through different kinds of soils.

