



SeaWorld/Busch Gardens Beaches

4-8 Classroom Activities

Sand Lab

OBJECTIVE

The student will examine sand samples to classify and identify common geological components.

ACTION

1. Begin activity by asking students for a definition of sand. How is it different than silt, clay, or gravel? For this activity, use the following definition and write it on the board: "Sand is defined by size, no larger than 2 mm and no smaller than 0.125 mm." Brainstorm with students what kind of particles these might be. Possibilities are rock (quartz, granite, volcanic basalt), shells of animals, fossils, or oolites (small smooth grains coated with carbonate).
2. Distribute sand samples, paper plates, magnifying lens, sand sieve, "My Sand Samples" and "Simple Sand Key" to each student group. If students have internet access in the classroom, go to <http://www.jaster.20m.com/Minerals/Minerals.html> or <http://microscope-microscope.org/applications/sand/microscopic-sand.htm> for additional help identifying grains.
3. Allow time for students to identify, draw, and describe at least three different sand grains.
4. Have student groups present their findings to the class. Were some minerals such as quartz common? Any uncommon or unusual components?
The Web site <http://www.jaster.20m.com/SendUsSand.html> offers the opportunity for students to post their sand grains on the Internet.

DEEPER DEPTHS

What is sand? Sand is defined as granular material that passes through different sizes of strainers or “sieves.”

Generally, sand grains are smaller than 2.0 mm and larger than 0.125 mm.

Grains bigger than 2 mm are called gravel and grains smaller than 0.125 mm are called silt.

Most sand around the world is rich in quartz grains. Quartz is found in rocks. As mountains and other land forms break down due to wind and rain, the quartz is broken into smaller and smaller fragments. Rivers carry quartz to the coast where the particles gather on beaches, forming sand. Other than quartz, most beaches contain anywhere from 16 to 20 different minerals.

Sand is used every day to create concrete, bricks, bathroom tile, glass, sandpaper, computer chips, and fiber-optic wire.

MATERIALS

For each student group:

- three samples of sand (students or instructor may collect. Samples sites may be from a beach along an ocean, lake, or river; sand dunes or desert sand; mountain tops, quarries, or areas next to dormant volcanoes; “packaged” sand from hardware or art store)
- three small paper plates
- one sheet black construction paper
- dissecting microscope or hand magnifying lens (10x to 40x magnification is good)
- sand sieve (small kitchen sieve or window screen with about 2 mm openings)
- small flashlight or pen light (optional)
- small magnet (optional)
- white board or chalk board
- access to internet or library. Web sites to refer to

<http://www.jaster.20m.com/index.html>

<http://www.ed.uri.edu/homepage/projects/ocean/Sand4.htm>

<http://www.scienceart.nl/Sandbank.htm>

<http://www.sandcollector.com>

<http://microscope-microscope.org/applications/sand/microscopic-sand.htm>
pages of different types of sand

Simple Sand Key

Color, shape, and size are easy ways to identify the different components of sand. Sand may have bits of shells, rocks, and/or fossils. To help see the colors and shape of your sand, use the black construction paper under the sample. You can also shine a flashlight on the sand.

Use the following key to identify some common components of sand.

Size:

Sand is defined as particles that range in size from 2.0 mm to 0.125 mm. The easiest method to select this range is with a sand sieve. Pour your sand through the sieve to eliminate any large particles.

Color:

Minerals

shiny white: quartz

orangey: feldspar

shiny black: mica, hornblend or magnetite; if the grains are pulled by a magnet then the mineral is magnetite

dull black: basalt from lava flows

green: olivine

variable dark colors: iron-containing minerals like pyroxenes and amphiboles

Biological

many colors: shells from clams and snails. Usually large pieces (1 mm or more)

dull white: corals, foraminifers (small drifting ocean animals)

Shape:

sharp edges: shells or “hard” rocks

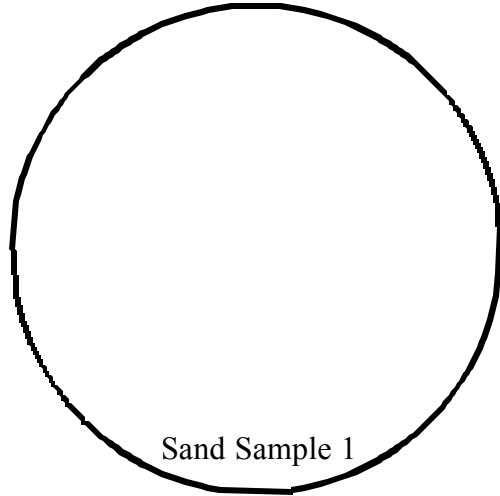
smooth edges: well-worn “soft” rocks

Name _____

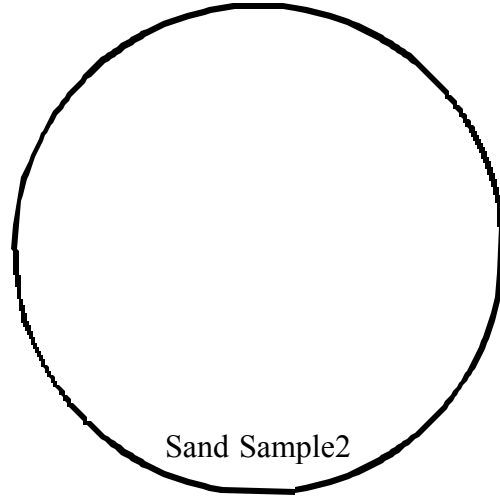
My Sand Samples

Use the circles below to draw some of the grains in your sand samples.

Sand Sample 1 description



Sand Sample 2 description



Sand Sample 3 description

