TEACHER PAGE

EDIBLE ROCKS

Objective
Upon completion of this activity, students will be able to:

- observe and describe physical characteristics of an edible sample in preparation for describing rock or meteorite samples.
- work cooperatively in a team setting.
- use communication skills, both oral and written.

Instructional Time
45 minutes

Materials
Prepared edible samples
Small plastic bags for samples
Plastic Knife
"Field Note" sample descriptions of candy bars, enlarged and cut into numbered segments
"Edible Rocks" student worksheet
Colored pencils for each team
Pencil/Pen

Procedure—Preparation

1. Prepare samples.
2. Cut samples so that a flat interior surface is exposed. Keep reserves for treats.
3. Place each sample for student teams (2 students) in a small plastic bag.
4. Copy Student Procedures sheets, one for each team.
5. Cut enlarged "Field Note" Sample Descriptions into numbered segments.
6. Arrange one set of prepared "Field Note" descriptions on a table so that students may easily read and reach each of them.
7. Have answer key available.
8. Have a variety of rock samples available.

TEACHER PAGE

EDIBLE ROCKS

Procedure—Classroom

1. Distribute sample and procedure sheet to team. Allow student teams to choose sample if possible.
2. Explain that each team is responsible for describing and sketching its sample. Encourage students to describe their observations using familiar vocabulary; however, use no food terms.
3. Emphasize that working together is important.
4. When sketch and description of sample are complete, students take them, along with their sample and pair them with the prepared written descriptions. Emphasize that their observations will not be exactly like the "Field Notes." They will like try several matches before they have the accurate paring. Throughout this step, the teacher will verify correct pairs. When they have found the "Field Note" that describes their sample, students should place their sketch, description, and sample next to the correct "Field Note" description. Reward students by allowing them to eat the reserved part of the candy or other treat.
5. When all students have successfully matched their samples, each team may describe its sample to the class. The class should have access to the sample and prepared written description during this sharing. Sketches may be displayed.
6. Conduct a discussion that includes the following points which emphasize basic skills needed to be good scientists:
    a. The students made detailed **observations** of a sample.
    b. The task was accomplished by using **teamwork**.
    c. Although the student's descriptions differed from those provided and each team had a different style, the skills and processes used to **observe** and **record** the data were the same for each group.
    d. The students **communicated** their observations and then shared the findings **verbally** and in **writing**.
7. During the discussion, the teacher may expand and help define the meteorite and geologic vocabulary in context and encourage students to apply it to their own samples as they progress to the next step. Pay particular attention to vocabulary for the first six samples that use some words pertinent to meteorites.
8. Have students test their observation skills again by sketching and describing real rocks.

Vocabulary

Testure, density, matrix, breccia, phases, fusion crust, chondrules, inclusions, vesicles, bleb, friable, platy, porous, unfractured, unconsolidated, regolith

TEACHER PAGE

EDIBLE ROCKS

Answer Key

1. Peanut Brittle (chondrites)
2. Rocky Road (chondrites)
3. Chocolate (iron without fusion crust)
4. 3 Musketeers (achondrite with fusion crust)
5. Rice Cereal Treats (meteorite regolith breccia)
6. Chocolate brownie (carbonaceous chondrites)
7. Snickers
8. Milky Way
9. “Bar None”
10. Hershey Bar
11. Twix
12. Butterfinger
13. Skor
14. Rolo
15. Kit Kat
16. Symphony
17. M&M
18. Nestle Crunch
19. Whatchamacallit
20. Mounds
21. P.B. Max
22. Mr. Goodbar
23. Hershey with Almonds

TEACHER PAGE

EDIBLE ROCKS

1. Sample is a thin layer. There is a golden matrix surrounding tan rounded or broken inclusions. The inclusions have a reddish brown rim or crust.

2. Sample consists mainly of white, soft rounded or angular blebs completely surrounded by a uniform dark brown matrix.

3. Sample is a solid dark brown dense mass with no obvious fusion crust.

4. Sample has a homogeneous light brown interior with a few small vesicles. The exterior looks like a fairly regular, dark brown fusion crust with some patterning.

5. Sample appears to have been distorted. The dominant phase is made of rounded light tan fragments containing many void spaces. A dark brown thin layer fills space between some rounded fragments. There are some large foreign inclusions.

6. Sample is totally dark brown with two phases. The dominant phase is shiny and crumbly. The other phase is dense and slightly lighter in color. A light fusion crust appears on only one side.

EDIBLE ROCKS

7. Outside: Thin medium-brown layer with ripple-marks on the bottom. Inside: Bottom has flat dense buff layer, top has pebbles consolidated in a fine grained tan matrix.

8. Outside: Thin medium brown layer with wavy ripples on the bottom. Inside: Bottom has poorly consolidated light tan porous layer, top has shiny smooth medium tan layer.

9. Outside: Medium brown layer, very thin on bottom and side, the thicker top contains angular inclusions. Inside: Thin alternating horizontal layers of smooth dark brown and fragmented dark brown

10. Dense medium brown sample, flat on the bottom with three parallel ridges on top.

11. Outside: Thin medium brown layer with wavy ripples on the bottom. Inside: (Bottom) Poorly consolidated light tan porous layer. (Top) Shiny smooth medium tan layer.

EDIBLE ROCKS

12. Outside: Thin medium brown layer. Inside: Poorly consolidated, friable, shiny to dull golden platy fragments.

13. Outside: Medium brown layer, very thin on bottom and side, thicker on top with large wavy ripples. Inside: Thin dense layer of shiny light-golden unfractured material.

14. Outside: Thin, medium brown, edges higher on outside of top, sides slanted. Inside: Smooth material that is yellowish brown and sticky.

15. Four segments of layered material. Outside: thin, medium brown. Inside: Alternating light and medium colored material.

16. Solid medium brown throughout, single dense layer with a valley or dip in the top.

17. Sample consists of unconsolidated pebbles with various colors and regular shape. Each individual pebble has a medium brown interior with a thin, hard colored shell.

EDIBLE ROCKS

18. Sample has a thin layer of dense brown material, containing very light inclusions at the bottom. The sample top has a depression in the middle with a ridge on each side.

19. Sample has a rectangular layer of rounded light pebbles surrounded by a thin coating of medium brown. Some yellowish brown sticky material is above the pebbles.

20. Sample interior consists of white, moist-looking fragments. These are surrounded by a dark brown exterior layer.

21. Irregular sample. Outside: Bumpy medium brown. Inside: Yellow brown solid material resting on light tan fragments, some large tan fragments are found near the top.

22. Outside: Dense layer of medium brown with a dip in the top. Inside: Light tan pebbles that have settled to the bottom.

23. Dense sample of medium brown material, rounded on the top and flat on the bottom, with a few light brown pebble inclusions.

Student Name _____ Date _____

EDIBLE ROCKS

SAMPLE DESCRIPTION AND SKETCH

DIRECTIONS. Read and follow the procedures listed below.

Procedures

1. With your partner, choose **one** sample.
2. Carefully observe the sample. You may remove the sample from the bag, but handle it carefully and **do not taste**.
3. Make a large, detailed sketch of the sample. The sketch should show the **interior** cut surface that is flat and any important details of the exterior. You may use the back of this paper for your sketch.
4. Write 2-3 sentences describing the physical characteristics of the **cut surface** of the sample. **Do not use any food terms**. For example, do not use the word chocolate. Make your description as clear and complete as you possibly can.
5. When you have completed procedure 4, take your description; sketch and sample to the table where the "Field Note" descriptions of the food samples are located. Find the description that fits your sample. Check with your teacher to see if you identified the correct match. You will like try several of the descriptions before you find the one that describes your sample. You may get help from others. Try checking with the teacher or a dictionary for unfamiliar words.
6. Place your description, sketch, and sample beside the "Field Note" description for your sample.
7. Your effort will be rewarded with another part of the sample to eat.

Write a description of your sample below. Draw a sketch of your sample on the back of this sheet.