



# Space Day: Prospecting for Knowledge

## 4-Edible Rocks - Teacher Page

**Purpose:** To observe and describe physical characteristics of edible samples chosen as models of real rocks or meteorites.

**Background:** Meteorites are mostly pieces of rock, though a few are metal, that fall to Earth from space. Most meteorites come from the break-up of small asteroids that never accreted to form a planet. Meteorites give us clues to the origin and history of the solar system.

Meteorites come in a variety of types and a wide range of sizes and shapes, but most meteorites have two things in common: they have dark brown or black glassy crusts on the outside and contain enough iron metal to attract a magnet. The outside crust of the meteorite is produced as the rock is heated by friction when it comes through the atmosphere. The outer part melts and forms dark fusion crust that often has flow marks or indentations like thumbprints. The inside stays cool and is usually light gray to black in color, but some may be tan or, if weathered and rusted, brown.

**This Activity:** This activity has been designed as a comfortable introduction to describing meteorites. It helps students become better observers by making a connection between the familiar (candy bars) and the unfamiliar (meteorites).

Edible "rocks" are used in a scientific context, showing students the importance of observation, teamwork, and communication skills. Using everyday terms, students draw and describe the food.. They attempt to match their observations with short descriptions written in geologic "Field Note" style.

These six candies most closely represent meteorite characteristics:

1. Peanut Brittle (chondrites)
2. Rocky Road (chondrites)
3. Thick Bar, Solid Chocolate (iron without fusion crust)
4. 3 Musketeers TM (achondrite with fusion crust)
5. Rice Cereal Treats (meteorite regolith breccia)
6. Chocolate brownie (carbonaceous chondrites)

### Preparation:

1. Obtain the samples.
2. Cut the samples so that a flat, cut face exposes the interior. Reserve part or most of each sample to be eaten by the students afterwards.
3. Place each sample in a small plastic bag. Each team of two students will have one bag containing one sample.
4. Give one student sheet to each team.
5. Cut apart the "Field Note" sample descriptions. These descriptions are written the way a scientist might take notes in a field record book.
6. Arrange the "Field Note" sample descriptions on a table so that students may attempt to match their own descriptions with these "key" descriptions.

### Recipes:



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## Rocky Road

170 g (6 oz.) semi-sweet chocolate pieces; melted  
120 g (2 cups) mini-marshmallows

Butter a small pan (8 cm x 15 cm x 5 cm deep) and pour in about half of the melted chocolate. Add marshmallows and mix until coated. Pour remaining chocolate over the marshmallows and spread flat. Refrigerate until cold. Cut into small squares, so that vertical surfaces are exposed.

## Rice Cereal Treats

240 g (1/2 cup) butter or margarine; melted  
300 g (10-11 oz.) mini-marshmallows  
200 g (8 cups) crispy rice cereal  
170 g (6 oz.) semi-sweet chocolate pieces; melted several  
jelly beans, chocolate chunks, or other large edible lumps

Melt butter and marshmallows together; stir until smooth. Pour over cereal in large bowl, and stir until coated. Press half of mixture into buttered baking pan (20 cm x 25 cm x 5 cm deep) and top with layer of melted chocolate. Press remaining cereal mixture on top of the chocolate layer. When cooled but still moldable, cut one cube about 5 cm square. Cut this square again once or twice. Embed one or two jelly beans and other lumps into the cut cube. Mold these cut pieces together again to form a "breccia". Allow to harden. Recut to expose interior and jelly bean and other lumps.

## Chocolate Brownies

Use any recipe for dark chocolate brownies or box mix. Add large chunks of chocolate pieces; enough so that the pieces will be exposed on a cut surface. Bake according to directions and cool completely. Cut into small squares.

**In Class:** Distribute a sample and student sheet to each team. Note: Content vocabulary should not be expected initially. The processes of observing and recording should be kept simple. Explain that each team is responsible for describing and sketching its sample. Encourage teams to describe their observations using familiar vocabulary; however, use no food terms. Emphasize that working together is important. When finished, students should go to the "Field Note" sample descriptions which you have arranged on the "key" table. Emphasize that their observations will not be exactly like the "Field Notes". They will likely try several matches before they have the accurate pairing. Reward the students with pieces of the reserved candies.

Have each team share their descriptions and sketches with the class. Conduct a discussion that includes the following points which emphasize basic skills needed to be good scientists: (1) The students made detailed observations of a sample, (2) The task was accomplished by using teamwork, (3) Although the student's descriptions differed from those provided and each team has a different style, the skills and processes used to observe and record the data were the same for each group. The students communicated and shared their observations and sketches. During the discussion, you may expand and help define the meteorite and geologic vocabulary in context and encourage students to apply it to their own samples.



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## 4-Edible Rocks – Student Page

**Purpose:** To observe and describe physical characteristics of edible samples chosen as models of real rocks or meteorites.

**Background:** Good observations set the foundation for good interpretations. The ability to carefully observe and describe things improves with practice. Here is a chance to practice your observation skills on something you are already familiar with: candy! Can you describe the physical characteristics of these edible samples without using food terms? Could you or someone else identify the sample after reading your description? Try it!

**Materials:** Prepared edible samples in transparent bags; Sketch paper

### Procedure:

1. Choose a sample to observe and describe. You may remove the sample from the bag, but handle it carefully and do not taste.
2. Make a detailed sketch of the sample. Show the interior and exterior details. You may label parts of the sketch, but do not use any food terms.
3. Write 2 to 3 sentences describing the physical characteristics of the interior and exterior 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.
4. How descriptive were you? If all the samples were placed in a row, could a classmate match your description to the correct sample? Try it. Can you match your description to the "Field Note" Sample Descriptions on the "key" table? Try it.