

**Targeted Age:**

Elementary School

Activity Structure:

Individual Activity

Indiana Standards and Objectives:K.PS.1, K.PS.2, 1.PS.1, 2.PS.1, 2.PS.4,
3.ESS.3**Introduction**

In this lesson, students will compare types of candy to learn about geological classification. Students will classify and sort different materials by their composition and physical properties.

Background Information

The solid Earth is made of minerals. There are over 4,000 types of minerals known on Earth, each classified by their unique chemical and physical properties. Minerals are inorganic chemical compounds made up of atoms arranged in precise, three-dimensional patterns. In order for a material to be called a mineral, it must fit the following four criteria:

- Minerals are naturally occurring. True minerals are not man-made.
- Minerals are inorganic. They do not typically form from the remains of plants or animals.
- Minerals have a definite chemical composition. The mineral quartz, for example, always consists of one atom of silicon to two atoms of oxygen.
- Minerals have an ordered pattern of atoms. A repeating arrangement of atoms forms a mineral's characteristic crystal shape. For example, quartz crystals form in a hexagonal shape because of the way the atoms of silicon and oxygen join together.

MATERIALS NEEDED

- Heterogeneous “rock” candies (such as Peanut M&M’s, Rolo, Butterfinger, and Hershey Kisses with Almonds)
- Homogeneous “mineral” candies (such as Hershey Kisses, gummy bears, jelly beans, and chocolate chips)
- Magnifying lens (optional)

Minerals are commonly identified by their physical properties. Geologists use measurable characteristics, such as color, streak, hardness, magnetism, luster, and odor, to determine the identity of a mineral. These physical properties can be identified on any size specimen. The mineral quartz, for example, will always test as 7 on the Mohs Hardness Scale regardless of the size of the specimen. A quartz sand grain has the same physical properties as a quartz crystal because the mineral has a definite chemical composition and repeating arrangement of atoms.

A rock is an aggregate of one or more minerals. Rocks do not have a unique crystal structure and may be formed from a variety of minerals in different sizes and shapes. Two rocks will have different physical properties from each other because rocks are made up of different minerals. One sample of granite, for example, may have coarse grains of quartz, feldspar, and mica minerals, while another may have coarse grains of quartz, feldspar, and amphibole minerals. Rocks are classified as igneous, sedimentary, or metamorphic based on how the rock was created.

In this activity, the homogenous candies (such as Hershey Kisses, gummy bears, jelly beans, and chocolate chips) represent minerals because they have uniform physical properties throughout the candy. The heterogeneous candies (such as M&M's, Rolo, Butterfinger, and Hershey Kisses with Almonds) represent rocks because they are made up of a variety of components.

Vocabulary

Mineral – a naturally occurring inorganic substance having a definite chemical composition and repeating arrangement of atoms.

Physical Property – a characteristic of matter that can be measured; color, smell, texture, melting point, density, and so on.

Rock – a naturally occurring aggregate of one or more minerals.

Procedure

1. Distribute eight candies to each student, making sure that they have both “rock” and “mineral” varieties.
2. Ask students to observe the physical properties on the outside of each candy. Have them bite each candy in half and observe the inside. Record observations on the student data sheet.
3. Using the definitions of rock and mineral, have students classify each candy as a rock (R) or mineral (M). Mark predictions on the student data sheet.
4. Review the qualities of minerals, and identify the homogenous “mineral” candies. Mark answers on the student data sheet.
5. Review the qualities of rocks, and identify the heterogenous “rock” candies. Mark answers on the student data sheet.
6. Students may eat the remaining candy once observations are complete.



Figure 1: Heterogeneous candies representing rocks.



Figure 2: Calcite crystals found near Corydon, Indiana.

Encourage students to make careful observations and sort their candies into two groups: rocks or minerals.



Is It a Rock or Mineral?

Lesson Plans and Activities

Name:

Class Period:

MATERIALS NEEDED

- “Rock” candies
- “Mineral” candies
- Magnifying lens (optional)

Vocabulary:

Mineral – a naturally occurring inorganic substance having a definite chemical composition and repeating arrangement of atoms.

Physical Property – a characteristic of matter that can be measured; color, smell, texture, melting point, density, and so on.

Rock – a naturally occurring aggregate of one or more minerals.

Introduction

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Student Data Sheet

Observe the physical properties of each candy and record your observations below. Using your observations, predict if the candy represents a rock (R) or mineral (M).

Candy Name	Observation	Prediction	Answer
1.		R M	R M
2.		R M	R M
3.		R M	R M
4.		R M	R M
5.		R M	R M
6.		R M	R M
7.		R M	R M
8.		R M	R M

Reflection Questions

1. How do scientists classify rocks and minerals?
2. Name three examples of physical properties.
3. Which candy represented a rock? Which candy represented a mineral?
4. Define the vocabulary words below in your own words.

Rock-

Mineral-