Minerals R Us

Exploration

Challenge: What are the characteristics of minerals and how are minerals different from non-minerals?

Materials: various samples of minerals and non-minerals

Let's Dig In:

Examine the samples of minerals labeled 1 through 8. Choose five characteristics or properties to observe for each mineral sample. Prepare a data table in which to record these characteristics for each of the samples. Be sure to give the data table a title and use a ruler to make the table. Once the table is completed, record your observations for mineral samples 1 through 8.

Using your five categories of properties, examine samples 9, 10, 11 and 12. These are non-minerals. Record your observations in your data table.

Go Figure:

1. Compare the mineral samples 1-8 with the non-mineral samples 9-12. Based on your data, describe three differences between minerals and non-minerals.
2. Describe at least two similarities between minerals and non-minerals.

Teacher Notes

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GEOMES Topic: Structure and Composition of the Earth - Minerals

Lab setup:	none	easy	**moderate**	difficult
Reasoning level:	**easy**	moderate	difficult	
Time required:	**20-40 minutes**	40-60 minutes	60-90 minutes	
Process skills:	**observing**	**inferring**		

Objective: Students will learn to group minerals based on the observable physical properties of the minerals.

National Science Education Standard:

Content Standard: Earth and Space Science - Structure of the earth system
Science as Inquiry: Abilities necessary to do scientific inquiry

Materials: 1 egg carton per groups of 2 students
8 samples of minerals
4 samples of non-minerals

Teaching Strategies:

Advanced Preparation: Samples 1-8 are to be minerals. Choose mineral samples that have characteristics that are easily distinguished from one another. Some good choices might be, halite, galena, sulfur, calcite, quartz, pyrite, gypsum fluorite, hematite, biotite, corundum, and graphite. Samples 9-12 are to be non-minerals. It is important for the non-minerals to have significantly different properties than the mineral samples. Some possible non-minerals samples to use are a chunk of concrete, a leaf, a bolt, a piece of cloth, a sponge, a toothpick, a chicken bone, soil, water, etc. Label the egg carton partitions with the number 1-12. Label each mineral and non-mineral sample with a number and place them in the corresponding compartment. Emphasize to the students which samples ARE minerals and which samples AREN"T minerals in the egg carton.

Students should list at least 5 different properties for each mineral. Do not encourage students to taste their samples, although some may. Some students will list size of the samples as a property. Hopefully through teacher inquiry, you can help students realize that sample size is irrelevant.

Teachers will want to follow this activity by a concept development lesson describing the main properties of minerals and introduce the correct terminology, such as luster, fracture, cleavage, etc. at that time.

Sample Data: Students data tables will vary. Some of the properties they might include are shown below.

Sample Data Table

Sample	Shiny or Dull	Color	Shape	Texture	Rough or flat edges	Sample size
1-8	Answers	will	vary			
9. chicken bone	dull	tan	cylinder with larger ends	hard	flat	medium
10. concrete	dull	gray & tan	squarish	hard	flat	medium
11. water	shiny	colorless	takes shape of the container	wet	not applicable	medium
12. leaf	dull	green	flat	soft	edges are uneven	small

Sample Answers to Go Figure:

1. The minerals all seem to be made in nature, some of the non-minerals are made by people, like the bolt and concrete. Minerals are not made of living things, some non-minerals are parts of living things, like the chicken bone or leaf. Some minerals look like they are crystalline, none of the non-minerals have crystals. Minerals are solids and some non-minerals are liquids, like the water.
2. Minerals and non-minerals have a variety of colors, shapes, and sizes.

Internet Connection:

What are resources about minerals?

Search Engine Key Words: Minerals AND database