

**Learning Objectives**

- 1) Understand that minerals are like the “ingredients” that make up rocks. For example, Granite is a rock made of the minerals: quartz, mica, and other minerals.
- 2) Know that rocks and minerals are found in the earth’s crust.
- 3) Realize that rocks and minerals are used to produce many important materials.
  - a) Concrete is an important material that is used in the foundations of houses and in sidewalks. Concrete is made of aggregate, sand, and limestone.
  - b) Bricks are widely used for building and for decoration. They are made from clay and shale. Different colored clay is used to make different colored bricks.
  - c) Glass is one of the most useful manufactured substances. It is made when sand, limestone, and soda ash are melted together. The molten glass can then be drawn and flattened to produce windows, molded into cooking pans, and blown into bottles and vases.
  - d) Asphalt is an extremely important material, because the roads that people use for transportation are made out of it. Asphalt is produced when aggregate is mixed with an oil substance called liquid asphalt. The asphalt mixture is then dumped on a base of rocks, flattened, and left to dry. Once the asphalt is dry, people can drive over its smooth surface.
  - e) Steel is a very important material that is an essential component in the production of automobiles. The production of steel involves heating coal, limestone, iron ore, and other minerals together until liquid steel forms. This molten steel is then molded into various sizes and shapes that can easily be made into parts for vehicles.
  - f) Gemstones are valued for their rarity and beauty. Gems are cut and polished to bring out their natural brilliance and then placed in jewelry.
- 4) Know how rocks and minerals are obtained from the earth’s crust.

- a) Some minerals, like aggregate, are mined from the surface of the earth in open pit mines.
- b) Other minerals that are found deep within the earth’s crust must be extracted through deep mine shafts.
- 5) Realize that most rocks and minerals are combined to form products like steel, glass, bricks, concrete, and asphalt. However, some rocks and minerals taken from the earth’s crust are used directly after being polished, cut, or ground. Some of these rocks and minerals include marble and slate, which are cut and polished to make beautiful floors and countertops; gemstones, which are cut and polished to produce beautiful jewelry; and talc (soapstone), which is ground to make absorbent talcum powder.
- 6) Understand that mining can cause harm to the earth by scarring the land, killing plants, and causing animals to leave their homes. Because of these problems, the government requires mining companies to restore the land after a mining project is finished. In addition, people can prevent excess mining by recycling materials, so that they may be used again.

**Suggested Activities**

- 1) Before viewing the video:
  - a) Ask the class to list the things that are made from rocks and minerals. Ask the class to name some rocks and minerals. Find out more by watching the video.
- 2) After viewing the video:
  - a) Make a numbered class list of all the products made from rocks and minerals shown on the video. Compare with the list developed in activity 1a.
  - b) Make a numbered list of all the kinds of rocks and minerals from the video. Compare with the list from activity 1a.
  - c) Make a class book on the uses of rocks and minerals. Using the numbers on the list above of the things made from rocks and minerals, number the class. For example if there are eight items on the list, number the students off from one through eight until the entire class is numbered. Each student is to work on the

- product made from rocks and minerals that corresponds to his/her assigned number.
- d) Grades K-1: The students are to draw pictures of their assigned products and label them or write sentences about them.
  - e) Grades 2-3: Have the students write paragraphs about their items.
  - f) Grades 4-6: Each student is to draw a picture, write a paragraph, and do a written report, which includes research in the library and reviewing the video about one of the following processes: making cement, asphalt, bricks, glass, steel, lead for pencils, or the harmful effects of mining and how they can be corrected. Combine the reports to make a book.

**Vocabulary**

**Aggregate** – Gray bands of soil near the surface of the earth containing small rocks and sand

**Crust** – The top part of the earth that contains all of the rocks and mineral which people use for the production of many goods

**Iron Ore** – A mineral that contains iron (iron in its natural state)

**Mineshaft** – A deep tunnel in the earth from which rocks and minerals are taken

**Minerals** – Naturally occurring substances taken from the ground that are the “ingredients” that form rocks

**Open Pit Mine** – An excavation at the surface of the earth from which rocks and minerals are taken

**Rock** – A combination of minerals

