



## Minerals and the Products of Mining

### Lesson Plan 1:

#### OBJECT OR PURPOSE:

1. Students learn to identify some of the mineral products they use each day and give examples of mineral products in the classroom.
2. Classroom discussion highlights the importance of certain minerals in everyday products.
3. The extension experiment further investigates the formation of mineral deposits.

#### Time Required:

Each activity is designed to be completed in 1 classroom period, unless noted otherwise.

#### Activity 1: What's it made of?

#### MATERIALS REQUIRED:

- What's it made of? students' handout

#### PROCEDURE

1. Divide the class into pairs.
2. Give the pairs five minutes to list all the man-made objects they can see in the classroom. One might identify the objects while the other writes them down on a sheet of paper.
3. Hand out the "What's it Made of?" lists for students to look up the minerals used to make each product they listed.
4. Use discussion to come to some conclusions:
  - What minerals are commonly used to make classroom objects?
  - What minerals are common to all (or most) of those objects?
  - What would life be like without a specific mineral? (i.e.,; Copper)





## Activity 2: Mineral Products from A to Z

### MATERIALS REQUIRED:

- Teacher's Mineral Products from A to Z

### PROCEDURE

1. Starting with the letter "A", go around the room and have each student name a mineral product that begins with each letter of the alphabet.
2. Write each one on the board and at the end you'll have a list of mineral products from A to Z.

You can use your Mineral Products from A to Z list if a student gets stuck on a particular letter.

### Extension Experiment: Erosion:

### MATERIALS REQUIRED:

- Bar of soap
- Faucet that can be made to drip slowly.

### PROCEDURE OR INSTRUCTIONS:

1. Position a bar of soap in a sink with a slow, steady drip of water splashing on it from the faucet above.
2. Have students form a hypothesis about what will happen to the soap if left there overnight.
3. Check the soap the next day. The water has left a "hole" on the surface of the soap. This is similar to the effect of rain and the tides on the Earth's crust. This is also how imprint fossils were formed, after thousands of years of pressure, plants and bones left their marks on the rock.
4. Relate the erosion of soap to the deposition or finding of useful minerals.
5. What minerals are used to make soap?

### EVALUATION:

1. We mine many different minerals from Earth, which provide us with almost any product or technology imaginable.
2. All of these products exist in limited supply on and under the Earth's surface, so it's important that we realize what they are and where they came from.





## Background:

Everything we use on Earth that is not made of plants or animals is made of minerals. These minerals are our natural resources. They are mined so that we can have all of the products we're used to using. Even though over 99 percent of the Earth's surface has never been mined, it's important to remember that minerals exist in limited supply. We should be aware of what products they provide us with and use our mineral resources wisely.

## Student Handout:

# What's it Made of? (minerals and elements)

**Batteries:** Antimony, Cadmium, Lead, Zinc  
Silver, Lithium, Nickel

**Bicycle:** Aluminum, Clay, Diatomite, Mica,  
Sulfur, Selenium, Wollastonite, Zinc.

**Books:** Clay, Limestone, Sodium Sulfate,  
Feldspars

**Bricks:** Bauxite, Chromites, Zircon,  
Silica, Graphite, Kyanites, Andalusite,  
Sillimanite, Clays.

**Car:** Platinum, Iron, Aluminum, Lead, Coal,  
Barite, Boron, Calcium Carbonate, Bentonite,  
Silica, Chromium, Partite, Wollastonite, Mica,  
Industrial Diamonds, Zeolite, Clays

**Carpet:** Limestone, Selenium, Lime, Soda Ash,  
Zeolites, Bentonite, Titanium, Sulfur,  
Diatomite, Petroleum Products

**Cement:** Limestone, Gypsum, Iron, Clays,  
Diatomite, Feldspar

**Chalk:** Limestone

**Clothing:** Boron, Halite, Molybdenum, Sulfur

**Computer:** Aluminum, Antimony, Barite,  
Beryllium, Cobalt, Columbium, Copper,  
Gallium, Germanium, Gold, Indium, Iron,  
Lanthanides, Lithium, Manganese, Mercury,  
Mica, Molybdenum, Nickel, Platinum, Quartz,

**Glass:** Silica Sand, Feldspar, Trona

**Lights:** Aluminum, Copper, Beryllium  
(fluorescent), Tungsten, (fluorescent),  
Tin, Nickel

**Linoleum:** Limestone, Clay,  
Wollastonite, Petroleum Products

**Magazine:** Clay, Kaolin, Sodium Sulfate  
Titanium

**Paint:** Titanium Oxide, Clays, Lime-  
stone, Mica, Talc, Silica, Copper,  
Fluorspar, Iron, Tungsten, Zinc  
Cadmium

**Paper:** Boron, Clay, Kaolin, Sulfur,  
Talc, Titanium, Trona

**Pencils:** Graphite, Clays

**Pencil Sharpener:** Iron, Copper,  
Zinc

**Pens:** Limestone, Wollastonite,  
Mica, Talc, Clay, Silica, Petroleum  
Products, Sulfur

**Photograph:** Chromium, Silver,  
Sulfur

**Plaster Wall:** Gypsum, Perlite

**Plastic:** Limestone, Wollastonite,





Rhenium, Selenium, Silver, Strontium,  
Tantalum, Tellurium, Tin, Tungsten,  
Vanadium, Yttrium, Zinc, Zirconium  
**Cosmetics:** Iron, Silica, Limestone, Talc  
**Desk:** Copper, Iron, Zinc, Nickel  
**Digital Alarm Clock:** Boron, Copper,  
Gold Quartz  
**Doorknob:** Iron  
**Drinking Glass:** Boron, Silica  
**Electrical Cords, Outlet (electricity):**  
Coal, Copper

Coal, Talc, Silica, Petroleum  
Products  
**Rubber:** Sulfur  
**Sidewalk:** Sand, Gravel, Gypsum,  
Iron, Dolomite, Diatomite, Limestone  
**Skateboard:** Aluminum, Calcium  
Carbonate, Clay, Coal, Iron, Mica,  
Sulfur, Silica, Talc, Wollastonite  
**Soda Can:** Aluminum

**Telephone:** Aluminum, Beryllium, Coal, Copper, Gold, Iron, Limestone, Silica, Silver,  
Talc, Wollastonite  
**Television Set:** Aluminum, Antimony, Barite, Beryllium, Cobalt, Columbium, Copper,  
Europium, Gallium, Germanium, Gold, Indium, Iron, Kaolin, Lanthanides, Limestone,  
Lithium, Manganese, Mercury, Mica, Molybdenum, Platinum, Rhenium, Selenium,  
Silica, Strontium, Tantalum, Tellurium, Terbium, Tin Titanium, Vanadium, Yttrium, Zinc,  
Zirconium  
**Tennis Racket:** Graphite  
**Wallpaper:** Mica, Trona  
**Window:** Feldspar, Iron, Silica, Trona





## Teacher's List:

# Mineral Products from A to Z

Accordion	Hardware	Oboe	Vase
Airplane	Highway	Opal	Videotape
Apartment	House	Office	Vault
Art	Hanger	Organ	Velcro
Automobile	Helmet	Outerwear	Vacuum Cleaner
Bicycle	Iron	Paper	Window
Blackboard	Ice Skates	Pencil	Weapons
Bus	Illustrations	Plaster	Wallpaper
Brass Bed	Ink	Paint	Walkie Talkie
Batteries	Ice Maker	Plastic	Watch
Can	Jewelry	Quarter	Xylophone
Carpet	Jet	Quartz	X-rays
Computer	Jazz	Questionnaire	Xerox Machine
Chalk	Jacks	Queen's Crown	
Clothing	Joystick	Quiz	Zipper
			Zoo
Desk	Keys	Rubber	Zest Soap
Doorknob	Kitchen	Radio	
Drinking Glass	Kitty Litter	Railroad	
Dime	Kaleidoscope	Remote Control	
Diamond Ring	Kettle	Retainer	
Electricity	Light Bulbs	Skateboard	
Electric Shaver	Lipstick	Sandpaper	
Elevator	Ladder	Stationery	
Engines	Locks	Statue	
Eiffel Tower	Lens	Staples	
Fire Truck	Magazine	Television	
Fan	Machines	Telephone	
Freight Train	Makeup	Tennis Racket	
Film	Microscope	Train	
Flagpole	Medicine	Taxicab	
Gears	Needle	Umbrella	
Glue	Nail	Underwear	





Games  
Garage  
Glass

Nintendo  
Newspaper  
Nickels

Urban Centers  
Urn  
Utensils

