

Title: Minerals and the Products of Mining

Level: Intermediate, Middle School

Time: 1-2 Days

KERA Goals: 2.33, 2.3

Objectives: Students will learn to identify some of the mineral products they use each day, give examples of mineral products in the classroom, and know the importance of minerals in everyday products.

Materials: Copy of worksheet found below

Background Information:

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.

VOCABULARY: Plants, Animals, Minerals

Activity 1:

Directions:

1. Start 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 that begins with each letter of the alphabet.

List of Mineral Products from A to Z

Accordion
Airplane
Apartment
Art
Automobile

Bicycle
Blackboard
Bus
Brass Bed
Batteries

Can
Carpet
Computer
Chalk
Clothing

Desk

Minerals and the products...Primary

Doorknob
Drinking Glass
Dime
Diamond Ring

Electricity
Electric Shaver
Elevator
Engines
Eiffel Tower

Fire Truck
Fan
Freight Train
Film
Flagpole

Gears
Glue
Games
Garage
Glass

Hardware
Highway
House
Hanger
Helmet

Iron
Ice Skates
Illustrations
Ink
Ice Maker

Jewelry
Jet
Jazz
Jacks
Joystick

Keys
Kitchen
Kitty Litter
Kaleidoscope
Kettle

Minerals and the products...Primary

Light Bulbs
Lipstick
Ladder
Locks
Lens

Magazine
Machines
Makeup
Microscope
Medicine

Needle
Nail
Nintendo
Newspaper
Nickels

Oboe
Opal
Office
Organ
Outerwear
Paper
Pencil
Plaster
Paint
Plastic

Quarter
Quartz
Questionnaire
Queen's Crown
Quiz

Rubber
Radio
Railroad
Remote Control
Retainer

Skateboard
Sandpaper
Stationary
Statue
Staples

Minerals and the products...Primary

Television
Telephone
Tennis Racket
Train
Taxicab

Umbrella
Underwear
Urban Centers
Urn
Utensils

Vase
Videotape
Vault
Velcro
Vacuum Cleaner

Window
Weapons
Wallpaper
Walkie Talkie
Watch

Xylophone
X-rays
Xerox Machine
Zipper
Zoo
Zest Soap

Activity 2

Directions:

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?" list for students to look up the mineral makeup of 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)

Student Handout: What's it Made of?

Batteries: Antimony, Cadmium, Lead, Zinc

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

Books: Clay, Limestone, Sodium Sulfate, Feldspar

Bricks: Bauxite, Chromite, Zircon, Silica, Graphite, Kyanite, Andalusite, Sillimanite, Clays

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

Carpet: Limestone, Selenium, Lime, Soda Ash, Zeolite, 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, 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

Glass: Silica Sand, Feldspar, Trona

Lights: Aluminum, Copper, Beryllium (florescent), Tungsten (incandescent), Tin, Nickel

Linoleum: Limestone, Clay, Wollastonite, Petroleum Products

Minerals and the products...Primary

Magazine: Clay, Kaolin, Sodium Sulfate, Titanium

Paint: Titanium Oxide, Clays, Limestone, 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, 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

Activity 3: Erosion

Content:

External forces like wind and rain alter the Earth's surface, or crust. This modified crust can

be rich with mineral deposits.

Materials needed:

Bar of soap

Faucet that can be made to drip slowly

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.

Provided by Caterpillar, Inc.