

BATTLE CREEK AREA

Mathematics &  
Science Center

Student Journal  
3ES

# Earth and Me



A Third Grade Unit  
supporting the  
Michigan Science K-7 Content Expectations

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

A C T I V I T Y  
**Collecting and Sorting Rocks**



1

1. Draw and label a picture of your rock.

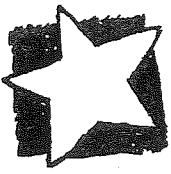
2. Complete the chart that describes the properties of your rock.

**Rock Observations**

Size	Color	Shape	Texture	Hard or Soft	Sink or Float







A C T I V I T Y  
**Rocks and Minerals**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**2**

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1. Draw your rock specimen and label your observations.

2. Predict what you think the different colored particles are that make up your rock specimen.

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Name: \_\_\_\_\_

Date: \_\_\_\_\_



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1. What evidence in the activity shows that rocks are made up of minerals?

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2. Two friends are collecting rocks. They found a speckled one with different colors and an all white, shiny one. Which one was probably a mineral? Explain your answer.

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Name: \_\_\_\_\_

Date: \_\_\_\_\_



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1. Record what you found in the soil sample.

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2. What other materials might you find in a sample of soil?

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3. Give evidence to support the statement: soil is a mixture.

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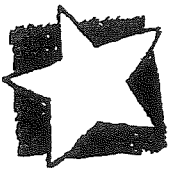
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A C T I V I T Y

**Earth Materials and Water**

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Date: \_\_\_\_\_

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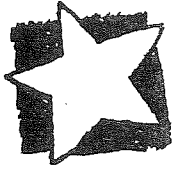
1. Write what you think will happen when the different earth materials are mixed with water.

Earth Material	Prediction

2. Make a chart to record your observations.

Name: \_\_\_\_\_

A C T I V I T Y  
Earth Materials and Water (cont.)



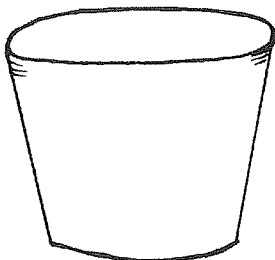
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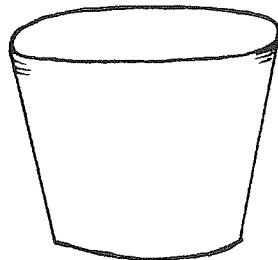
3. Record your observations of each earth material when placed on the surface of water.

Earth Material	Observation

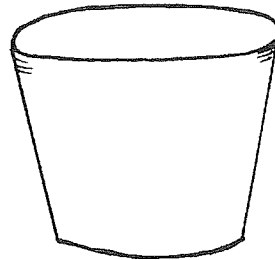
4. Draw what you observed.



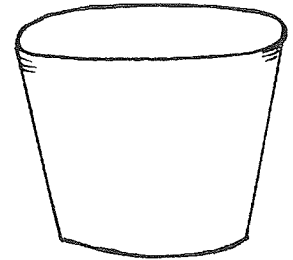
gravel



sand



silt



clay



Name: \_\_\_\_\_

Date: \_\_\_\_\_

**5**

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1. Predict what you think will happen to the soil sample when placed on the surface of the water.

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2. Draw what you think will happen.

Name: \_\_\_\_\_

A C T I V I T Y  
Earth Materials and Water (cont.)



Date: \_\_\_\_\_

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**5**

3. Draw what you observed.

4. Tell why you think that happened.

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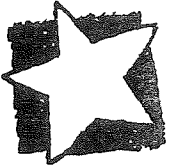
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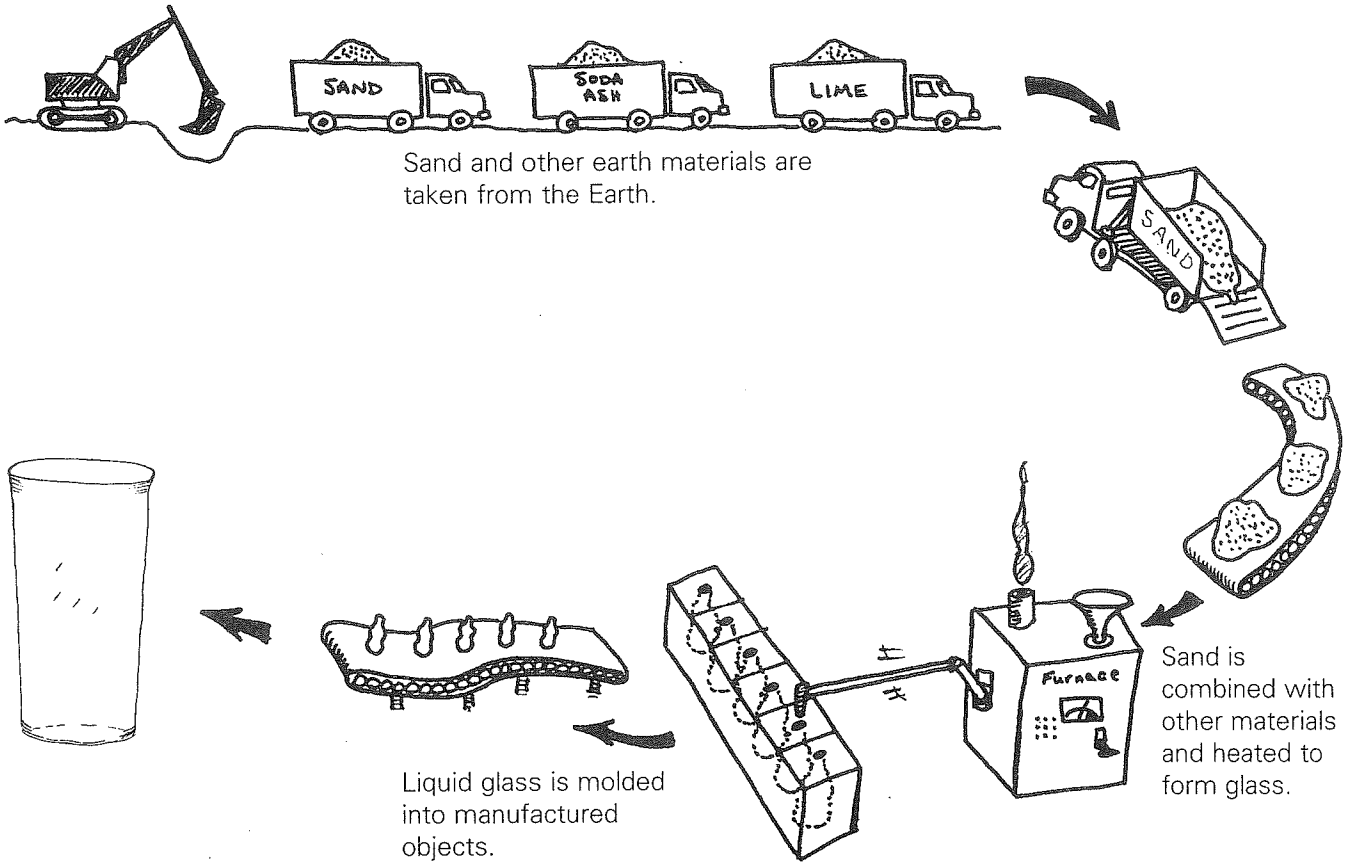
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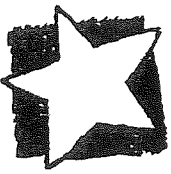
ACTIVITY  
Uses of Materials Taken  
From the Earth



6

Manufacturing of Glass





ACTIVITY  
Uses of Materials Taken  
From the Earth (cont.)

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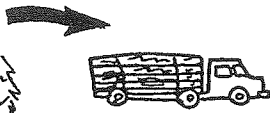
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6

Manufacturing of Paper



Trees are cut down  
in a forest.



Lumber Mill

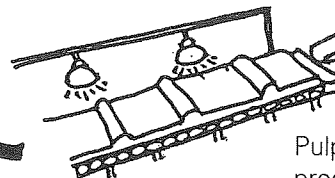
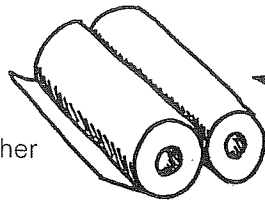
Logs are cut into wood for  
building materials.



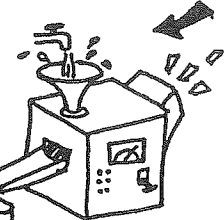
Wood waste is  
ground into  
pieces and  
added to water  
to make a pulp.



Paper is used to make other  
manufactured objects.



Pulp is poured out,  
pressed, and dried  
to make paper.



Name: \_\_\_\_\_

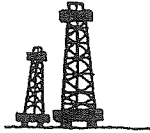
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ACTIVITY  
Uses of Materials Taken  
From the Earth (cont.)

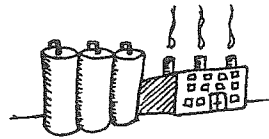


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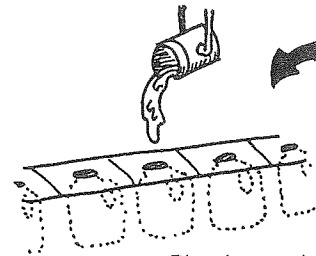
Manufacturing of Plastics



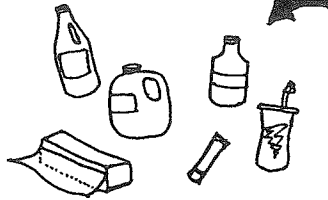
Oil and natural gas are pumped out of the ground.



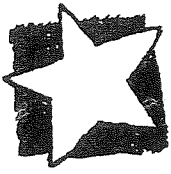
Oil is combined with other materials to form plastic and is taken to different manufacturers.



Plastic can be heated and molded into manufactured objects.







Name: \_\_\_\_\_

Date: \_\_\_\_\_

6

1. Write a list of five different objects you used today. Place an **X** in the box that classifies each item as a natural resource or manufactured material.

Objects I Used Today	Natural Resource	Manufactured Material
1.		
2.		
3.		
4.		
5.		

2. Glass is made from sand and sand is a non-renewable resource. Write why it is important to reuse and recycle glass and not throw it away.

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

JOURNAL  
Uses of Materials Taken  
From the Earth (cont.)



6

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3. Paper is made from the wood pulp of trees. Write why it is important to recycle paper.

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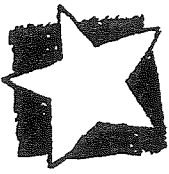
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Name: \_\_\_\_\_

Date: \_\_\_\_\_

**7**

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1. Draw and label your model of a brick after it has dried.

2. Write about the properties of your brick. Include the size, shape, texture, and color.

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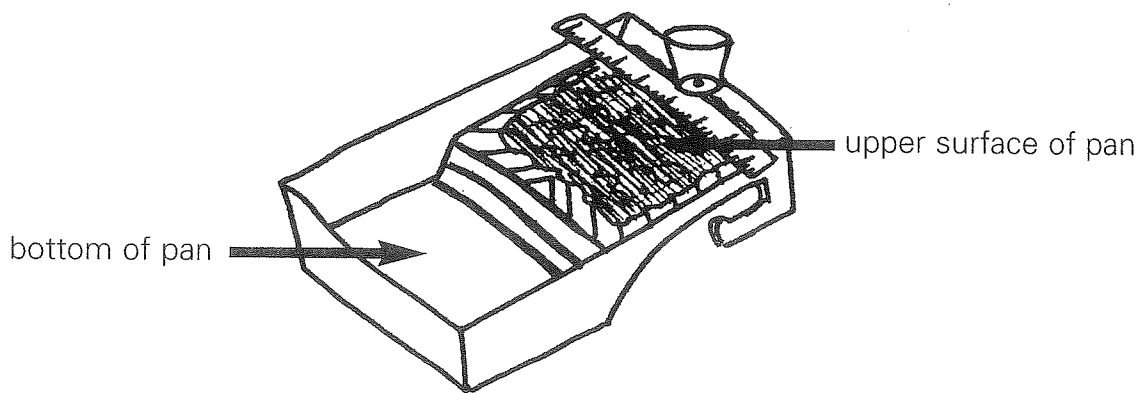


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## 8

1. Pour all the dry earth material only over the upper surface of the paint pan. Smooth out the surface of the earth material.
2. Place the ruler 4 cm across the top edge of the paint pan.
3. Balance the soufflé cup between the top edge of the paint pan and the edge of the ruler.



4. Measure 100 ml of water into the graduated cylinder.
5. Pour the water gradually from the graduated cylinder into the soufflé cup with a hole.
6. Allow the water to flow out of the cup and into the bottom of the pan.
7. Record your observations of the earth materials and the water by drawing what you see happening in each trial in the boxes on the next page.
8. Remove any water that collects at the bottom of the pan by using the pipettes. Put the water from the pipette into the graduated cylinder to measure the amount of runoff water.
9. Record the total amount of runoff water in the Data Table under the column labeled "Amount of runoff water."
10. Repeat steps #5 through #10 for the next three trials.









A C T I V I T Y  
**Resource Use (cont.)**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**9** .....

3. Record your observations and data.

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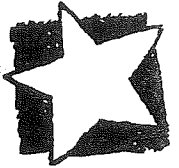
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Date: \_\_\_\_\_



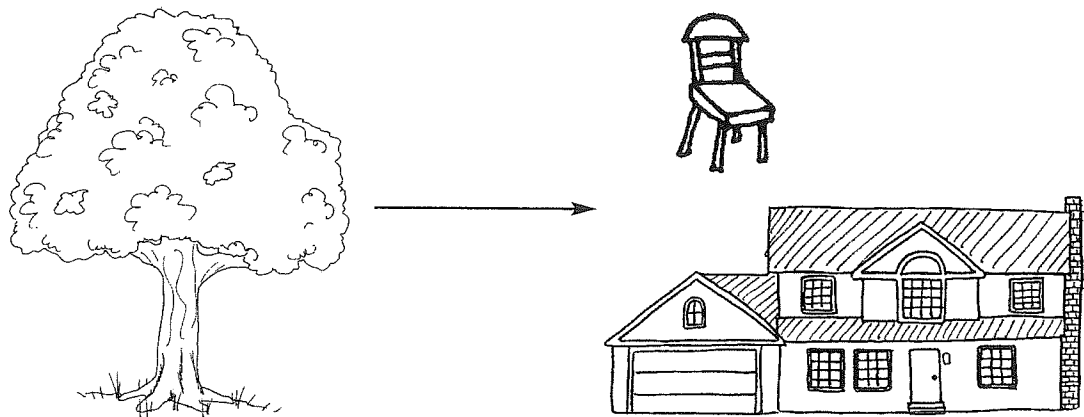
**Wood Products**

The source for making wood products is trees. Many species of trees are in demand for making furniture, telephone poles, railroad ties, toys, buildings such as homes, office buildings, churches, and much more. Look around you and find as many things as you can that are made with wood. Where does all that wood come from? Trees!

Wood is a renewable resource. New trees can be planted again and grown over time to make new wood products. However, it takes a very long time to grow a forest.

Products made of wood should be reused and refurbished to conserve and reduce the use of wood. Wood products that are discarded and go to the landfill break down and eventually rot and become part of the soil. It is a biodegradable product so it will become part of the soil over time. Some wood products are painted or treated and leave toxins in the soil after they rot.

The number of trees cut down in order to make wood products is enormous! Some furniture and wood product companies look for special trees to make their products more sturdy and beautiful. Companies plant new trees, but the new, younger trees take a very long time to grow and cannot replace the value of a large mature tree. Trees are a major contributor to the oxygen in the air that is necessary for all living things on Earth. Large, leafy trees are far more beneficial to the environment than small, new trees.





Name: \_\_\_\_\_

Date: \_\_\_\_\_

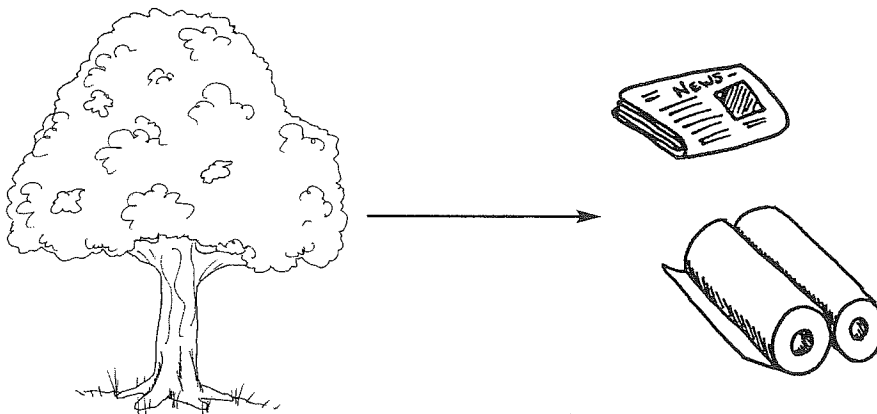
**10****Paper Products**

The primary source of material for paper is wood that is purposefully harvested or cut for making into paper. Wood fiber from sawmills is also used to make paper. Other materials that are used in manufacturing paper are cloth, such as cotton and linen, and chalk, clay, and starches.

The wood used for making paper is considered a renewable resource. New trees can be planted and some farmers grow fields of trees primarily for paper and other lumber uses. The primary uses for paper are for written communication, packaging, toilet paper, paper towels, and cardboard boxes.

The conservation of paper includes reducing the use of paper by reusing paper. Too often paper is discarded before it is completely used up. Students can help to reduce the use of paper by writing on both sides of the paper and using "scrap" paper when jotting down notes. Wrapping paper and packaging paper can be reused to wrap other gifts and packages instead of crumpled and thrown away in one use. Can you think of other ways to reduce the paper that you use? Paper is also a product that can be recycled. Paper can be shredded and made into pulp and then manufactured into "recycled paper."

The number of trees and other plants cut down in order to make paper is enormous! Paper companies plant new trees, but the new, younger trees take a very long time to grow and cannot replace the value of a large mature tree. Trees are a major contributor to the oxygen in the air that is necessary for all living things on Earth. Large, leafy trees are far more beneficial to the environment than small, new trees.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

A C T I V I T Y  
**Analyzing Waste and Packaging  
of Materials (cont.)**



**10**

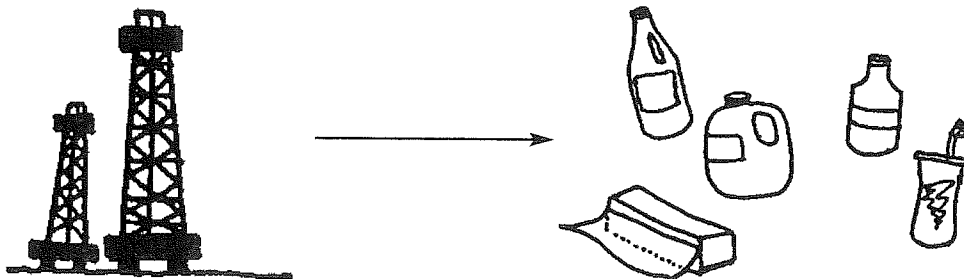
**Plastic Products**

Plastic products are made of many different materials. Plastic resins are made from non-renewable natural resources that could be used for a variety of other applications or conserved. Most plastics are made from crude oil or the same natural gas used in homes to heat water and cook.

Plastics are durable and degrade very slowly. In some cases, burning plastic can release toxic fumes. Also, the manufacturing of plastics often creates large quantities of chemical pollutants. Look around you. Make a list of everything you see that is made of plastic or has plastic parts. Plastics are used to make bottles, containers, computers, DVD's, televisions, radios, pens, notebooks, toys, telephones, dishes, hospital supplies, and so much more. Now consider just plastic bottles. Think of all the things that are in your home and school that are in plastic bottles – soda pop, juice, water, milk, lotion, shampoo, dish soap, laundry soap, hand soap, hair spray, hair gel, air freshener, and so much more. If you really want to be a plastic sleuth, find all the things you can that are wrapped in plastic!

Plastic is the most common of materials used to make products we use every day, yet plastic is made from a non-renewable resource and is difficult to recycle. The recycling process of plastic also causes chemical pollutants in the water and air.

The most efficient way to conserve oil and gas used in making plastic is to reduce the use of plastic and reuse plastic containers over and over before they are placed in the recycle bin or thrown away. Think of ways you can reuse some of the plastic containers in your home and school. Now think of some things you purchase that are plastic that you might be able to purchase in a different material.





Name: \_\_\_\_\_

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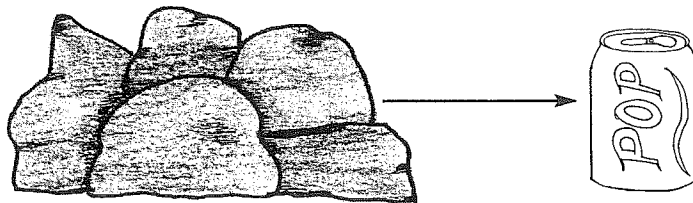
**10****Metal Products**

Metals are materials found within the Earth. Examples of metals commonly used to make products are aluminum, iron, copper, silver, tin, and gold. There are many more metals that are also used or combined to make metal products for our use.

Metals are removed from the Earth through mining. Metals are a non-renewable resource. It takes millions and millions of years for the Earth to form new metals. Some metal mines dig deep into the Earth, making vast tunnels. Thousands of tons of metals are removed from the mines every day. Some metals are found closer to the surface of the Earth and are collected through surface or strip mines. The top soils are removed and sifted to find the minerals and metals for manufacturing. The mining of metals makes a large effect on the Earth's soils and habitats for many plants and animals.

Metals are made into materials that are very strong, making them useful for machines that carry heavy loads and resist damage from accidents. Automobiles, trucks, vans, and semis are all manufactured from metal. Look around your classroom and think of the materials in your home that are made of metals. Metals are used to make your pots and pans because they can be heated without damaging them. Metal is used to make appliances that are sturdy and last a long time. Metals are also used to make motors and machinery because of its durability and ability to withstand heat and constant motion of parts. Metals are in the walls of your home! Metals are good conductors of heat and electricity. The wires in your home that give you electricity for lights and heat for appliances are made of copper and other metals.

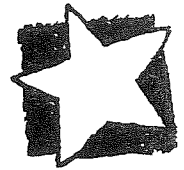
Metals can be recycled. For home and school recycling, the most common metal recycled is aluminum. Aluminum cans are recycled into new aluminum cans. Used beverage cans are recycled and may be back on the grocery shelf in 6 to 8 weeks. Aluminum can also be recycled over and over again. Other metals such as copper, iron, steel, and tin are also recyclable. Metal containers can be reused for many different objects. Reducing the use of metal containers helps to reduce the amount of mining and damage to the Earth through the mining process. Aluminum containers are a good choice for any recycling program!





Name: \_\_\_\_\_

Date: \_\_\_\_\_



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### Food Products

The food source for humans comes from plants and animals. Farmers grow and harvest many different varieties of plants and people use the different plant parts for food. Corn, beans, peas, tomatoes, strawberries, apples, lettuce, wheat, broccoli, carrots, celery, pineapple, and so many more crops are grown on large farms across the country. Farmland is a renewable resource and management of farmland helps to keep the soil rich for growing new plants.

Animals are also a part of the diet for many people. Cows, chickens, turkeys, fish, and pigs are common farm animals that are raised and sold for food. Food waste includes the parts of the animals and plants that do not get consumed. Plant and animal food waste is called biodegradable. That means that if discarded, it will break down and eventually become part of the soil.

Household fruit and vegetable scraps, grass clippings, leaves, and bits of wood are organic matter and can be recycled back into the soil by using a compost bin or pile. Compost is actually rotting organic matter. After decomposing it can be used to fertilize your garden. When mixed with some soil, the worms, insects, and bacteria in the soil eat the rotting waste and release the nutrients back into the soil! They are nature's recyclers.

The compost makes a good fertilizer and is a good way to reduce the amount of material that goes to the landfill or down the garbage disposal. Composting is an easy thing to do at home. Here are some tips for easy composting:

- Find a plastic garbage can with a lid or a corner of the yard.
- Instead of throwing away or putting down the garbage disposal, add your vegetable kitchen scraps, egg shells, coffee grounds, grass, and leaves to the bin or pile.
- Add some plain dirt to the mixture of scraps now and then.
- Stir the pile with a shovel or hoe once in a while to circulate air in your mixture of waste.
- When the rich, dark, earthy material is all ready, add it to the garden or around your trees. Your plants will love it.

You may want to talk to your family or school about starting a compost to recycle food back into the soil where it was grown!



A C T I V I T Y

Analyzing Waste and Packaging  
of Materials (cont.)

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**10**

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1. What waste material are you exploring?

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2. What is the main idea of your reading?

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3. List three facts about your material.

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

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1. Write the question you are investigating.

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2. Write what you already know about how water moves on earth materials.

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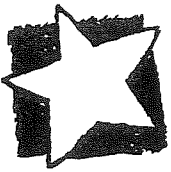
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3. List the materials you will use.







Name: \_\_\_\_\_

Date: \_\_\_\_\_

12

**Building an Earthquake Model**

Materials:

- 2 pieces of cardboard with holes
- tape
- 4 pieces of yarn (12 inches long)
- cookie sheet
- 2 cups of earth material (sand, silt, clay, soil, gravel)

1. Write the earth materials your team chose to use for the earthquake model.

2. Write what you think will happen.

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Name: \_\_\_\_\_



Date: \_\_\_\_\_

3. Steps:

1. Tie one piece of yarn into each hole in the cardboard.
2. Tape the cardboard pieces together along the sides without holes.
3. Place the cardboard pieces on the cookie sheet.
4. Place the earth materials over the top of the cardboard pieces. Make sure the earth material is completely covering both pieces.
5. With your partner, gently begin to pull outward on the yarn and observe as it simulates an earthquake.
6. Continue to pull on the yarn until the tape breaks and you have changed the surface of your model.

4. Results: Draw and write your observations of the model of an earthquake.

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Name: \_\_\_\_\_



Date: \_\_\_\_\_

Martha M. Godchaux

Martha Godchaux was born in 1941. She studied for a long time to become a geologist. A geologist is a person who studies the materials that make up the Earth and the changes in those materials over time. Martha is a special kind of geologist called a volcanologist who studies volcanoes.

Martha studied at three different colleges and now works at Mount Holyoke College in Massachusetts as a professor of geology. She teaches geology to students and takes them on trips to study mountains and active volcanoes. She also works with geologists from other colleges to share and learn new ideas.

Martha has investigated mountains and volcanic areas in many parts of the United States. Right now, she is studying the Snake River Plain in Idaho for a special kind of volcanic activity called hot spots. She is very interested in observing natural changes in the Earth's surface and in finding ways to predict rapid changes caused by volcanoes.

Besides studying volcanic areas, Martha is especially interested in studying mountains on opposite sides of the United States. She is interested in studying the active mountains in the west and the older inactive mountains in the east. She also enjoys activities that help her with mountain-climbing skills, such as running and biking.

1. As a geologist, what are some of the things Martha does?

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2. Why is it important to study volcanoes?

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**boulder** - A boulder is a large mass of rock.

**clay** – Clay is an earth material with particles smaller than silt.

**constructed environment** - A constructed environment is any environment that is manufactured or built by humans.

**earth materials** – Solid natural materials that come from the earth are called earth materials. Minerals, rocks, sand, silt, clay, and soil are examples of earth materials.

**earthquake** – An earthquake is a violent shaking or vibration of the ground, due to movement of sections of rock in the Earth. An earthquake causes rapid changes to the Earth's surface features, buildings, and roads.

**energy conservation** - Wood, coal, oil, and natural gas cannot be used again once they are burned as fuels to release heat energy. Energy conservation describes ways to make these natural resources last longer.

**erosion** - Erosion is usually a slow cause of change on the surface of the Earth. Erosion happens when wind and/or water carries weathered particles from one place to another.

**farmland** - Farmland is relatively large areas of land used to grow crops and graze farm animals.

**forests** - Forests are growths of trees and underbrush covering a large area. Forests are a renewable natural resource.

**fresh water** - Fresh water refers to water on Earth that is not salt water or waste that has been polluted or tainted with chemicals.

**fuels** - Fuels are substances (such as oil) that can be burned to produce heat or power.



## Key Terms (cont.)

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**garbage** - Garbage is a word that most often refers to waste food and other items that are thrown away because they have little or no worth.

**glacier** - A glacier is a large body of ice and snow that moves down a slope or over a wide area of land. The slow moving glacier causes erosion and changes in the surface of the Earth.

**gravel** - Gravel is an earth material with small pieces of rock and stone that are larger than a grain of sand.

**habitat** - A habitat is the natural type of environment in which a plant or animal grows or lives. A frog lives in a wetland habitat.

**habitat destruction** - When an environment is disturbed or harmed so plants and animals can no longer live in it, habitat destruction is the result.

**land management** - Land management is involved when humans think about and choose certain ways to use land that have less negative effects on the environment.

**landslide** - Landslides are the rapid movement of large areas of earth materials on a hill or mountain that slide to a lower level. Heavy rains or earthquakes can cause landslides.

**metals** - Metals are natural resources, such as gold, tin, copper, and bronze, that have a more or less shiny appearance and are good conductors of heat and electricity.

**mineral** - A mineral is an earth material that makes up rocks.

**mixture** - A mixture is a combination of two or more materials that keep their own properties and can be separated from one another.

**natural environment** - A natural environment is any environment that occurs in nature and is not manufactured.



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**natural resource** - Any material from the Earth that humans use to make things or to produce energy is called a natural resource. Water, soil, metals, oil, trees, and other plants are all examples of natural resources.

**non-renewable resource** - A non-renewable resource is an earth material or natural product that cannot be regrown or made again. Oil and sand are examples of non-renewable resources.

**observation** - Observation is to look at something closely, using the senses to find out about it.

**oil** - Oil is a greasy, usually liquid substance from plant, animal, or mineral substances. Oil does not dissolve in water and is used as lubricants, fuels, and food.

**pollution** - Pollution is the process where chemicals or materials that are thrown away affect the quality of water, soil, or air. Pollution harms or destroys living things and affects the environment.

**properties** - Properties include the characteristics of different substances that can be observed and measured. Properties help people tell the difference between substances.

**recycle** - Recycle is to put a material into use again after it has been changed.

**reduce** - Reduce means to use less of a product or material.

**renewable resource** - A renewable resource is an earth material or natural product that can be regrown or made again. A forest is an example of a renewable resource.

**renewal** - Renewal is the act of making or becoming new, fresh, or usable again.



## Key Terms (cont.)

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**resource management** - Resource management is involved when humans think about ways to obtain and use natural resources in ways that have less negative effects on the environment.

**reuse** – Reuse is to put again into use or service without changing the product or material.

**rock** – A rock is a natural, solid earth material that is made of one or more different minerals. Rocks form a major part of the Earth's surface.

**runoff** - Runoff is water that does not soak into the ground, but flows downhill. Runoff carries earth materials from one place to another.

**sand** - Sand is an earth material produced by the natural breaking up of certain types of rocks.

**silt** – Silt is an earth material with particles smaller than sand.

**soil** - Soil is an earth material that is a mixture of sand, silt, clay, and once living plant and animal materials.

**volcanic eruptions** - Volcanic eruptions are occurrences when volcanoes burst forth lava and ash.

**volcano** - A volcano is an opening in the Earth through which molten rock and other materials reach the surface. Volcanoes can cause rapid changes in the surface by producing hills, mountains, or landslides.

**weathering** - Weathering is the wearing away of rock and soil due to sun, wind, ice, rain, and moving water.