Name _____

Date _____

Rocks

Record of My Observations
1
2
3

Reading Selection

Rocks—Here, There, Everywhere

You can find rocks just about anywhere. One rock can be very different from another. Remember the properties you and your partner described when you looked at your rocks? Did you know that the properties of a rock can give you clues about how it was formed?

Rocks Formed under Water

Have you ever seen a rock with layers? Some of these rocks were formed under water. They are made up of pieces of other rocks and things like sand, clay, and mud that settled in layers under water. After a long time, the layers piled up and stuck together.

Sometimes, plants, bones, or sea shells got caught in the layers. They formed fossils. Some fossils are the prints of plants and animals that lived long ago. Other **fossils** are actual parts of plants or animals that have been mineralized. Can you find fossils in any of your rocks?

Do you know what a pebble is? If you look closely, you can see pebbles in some rocks that formed under water.

Because these rocks are formed of **sediment,** or bits and pieces of matter that have settled to the bottom of water, scientists call them **sedimentary** rocks.

Look at your rocks. Which ones might be sedimentary? Why?

Rocks Formed under Ground

Some rocks were formed inside the earth. Deep inside the earth, it is very hot. In fact, it is so hot that rocks melt! Melted underground rock is called **magma.**

Sometimes the magma erupts through the surface of the earth. Rocks, flames, and steam spout toward the sky. When this happens, the magma gets a new name. It is called **lava.** As the lava piles up and hardens, it forms a volcano.

Rocks from volcanoes don't always look the same. Some look like glass. They are smooth. This is because they cooled fast. Other rocks from volcanoes cooled slowly. Gas bubbled out, causing small holes to form. Their surface is often rough.

Volcanoes often erupt more than once. As soon as the lava starts to harden, more lava lands on top of it! Rocks formed this way have bands, or streaks, in them.

Sometimes the magma cools very slowly underground. Rocks formed in this way are very hard and heavy. You can see pieces of minerals in them.

Rocks formed from magma are called **igneous.** Which of your rocks do you think could be igneous? What properties make you think so?

Changed Rocks

Rocks don't always stay where they are formed. Over time, earthquakes move them around. As rocks are moved, they can change. They become twisted. They can even break up.

Think about tearing a piece of a paper. It's easy, isn't it? But could you tear up a telephone book? You'd have to be pretty strong. And do you think anyone could be strong enough to tear up a rock? Probably not. But rocks can tear as a result of underground pressure.

Heat also changes rocks. There is heat just under the surface of the earth. It is not hot enough to turn rocks into liquid, but it is hot enough to change them. Think about what happens to a grilled cheese sandwich. The cheese is solid at first, but as soon as it heats up, it becomes soft. It changes form. The same thing can happen to rocks.

Find rocks 5 and 10. Rock 10 was formed from a rock like 5. How are they alike? How are they different? Rocks that have been changed by underground pressure or heat are called **metamorphic.**

Which other rocks do you think could be metamorphic? What properties make you think so?

Rocks will give us clues about how and where they were formed—if we take time to look at them closely.

Name _____

Date _____

Minerals

Record of My Observations
A
B
C

Feldspar

Feldspar is the German word for "field mineral." Feldspar is the most common mineral in the earth's crust. You can find feldspar almost anywhere in the world. You can see small pieces of it in the sand at the beach. Feldspar is also found in rocks. Some igneous rocks are made almost entirely of feldspar.

Sometimes feldspar is white. A beautiful and very rare gem, called the moonstone, is white feldspar. Feldspar can also be pink, green, or red. Geologists use names like "orthoclase," "microcline," and "plagioclase" to describe these different types of feldspar. You might say that all these minerals are members of the feldspar group or "family." Orthoclase and plagioclase are a source of clay that is used to make dishes and pottery. The clay forms slowly from feldspar during weathering.

Much of the world's best orthoclase is found in England. Kaolin, which comes from a weathered feldspar, is also used in a medicine called Kaopectate™. Have you ever been given Kaopectate™?

Reading Selection

Sulfur

Have you ever smelled a rotten egg? When sulfur burns, it smells just like a rotten egg. In fact, rotten eggs have that smell because eggs contain sulfur! We need minerals such as sulfur in our food. It helps change food into energy and helps bones grow. When you eat eggs, onions, or cabbage, you are taking in sulfur. Where else do you think you might have smelled sulfur? When you watch fireworks on the Fourth of July, what do you think you are smelling? It's sulfur!

Sulfur is also used for making gunpowder, fertilizers, dynamite, and match heads. It's an important ingredient in many medicines. Did you know that sulfur was used during the Civil War and World War I to prevent wound infections?

Sulfur is found in many places. You can find sulfur crystals in some of the igneous rocks that form when volcanoes erupt. Sulfur is also found in limestone.

Which of your minerals do you think is sulfur?

Name _____

Date _____

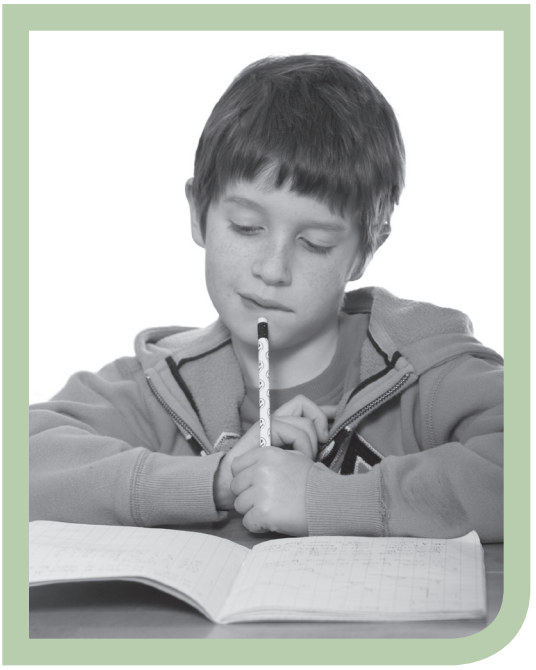
Mineral Profile Sheet

Mineral ☐	**Feel**
	Smell
Streak color	**Luster**
Light	**Magnetism**
Hardness	**Shape**

Performing the Streak Test

1 Gently stroke one edge of mineral A across the surface of the white tile. Now stroke it over the black tile.

2 Record the color of the streak in the space labeled "Streak color" on the profile sheet for mineral A.



3 Repeat this test for each of the other 11 minerals. Record the color of the streak of each mineral on its profile sheet.

4 Wash the tile with water, soap, and a paper towel.

Hematite

Hematite is found all over the world. Some forms of hematite look like a black, bumpy rock. They leave a gray or black streak.

Another type of hematite leaves a red-brown streak that looks like dried blood. Many early peoples, including American Indians in the Southwest United States, ground hematite into powder and mixed it with liquid to make a dark-red paint.

They covered the walls of caves with paintings of horses, buffaloes, and other animals. Today, hematite is still used to color paints.

But hematite has another major use. It is one of the minerals from which we get iron, one of the strongest of all metals.

Graphite

Did you know that you hold graphite in your hand almost every day? Graphite is the "lead" in your pencil. The word "graphite" comes from the Greek word that means "to write." People began writing with sticks of graphite about 400 years ago. That caused a lot of dirty fingers!

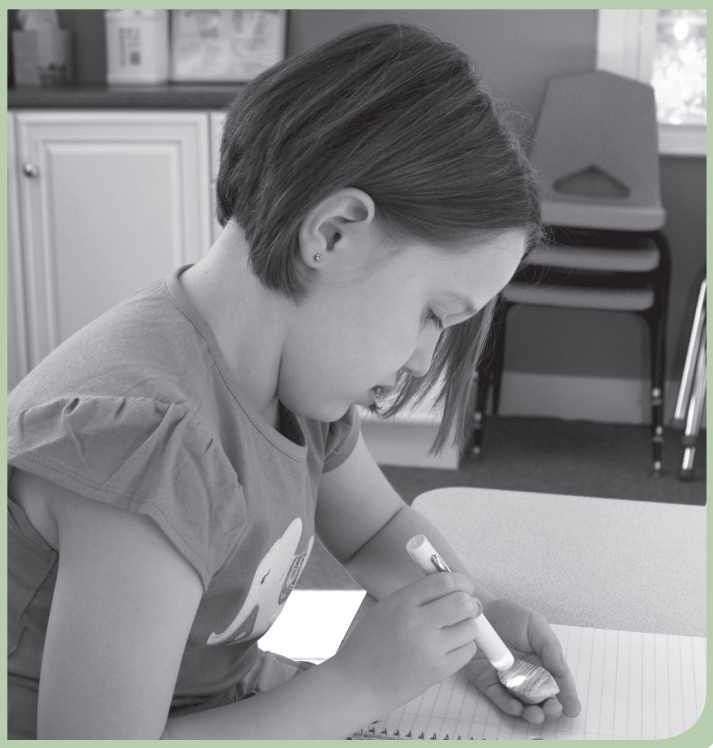
But graphite still had a big advantage over ink—because it is so soft, it's easy to erase mistakes! The wooden pencil was invented in the late 1700s in France.

Graphite has many other uses that are related to its special properties. Graphite feels slippery. It is used for lubricants, which make machine parts slide over one another easily. Graphite can withstand very high temperatures, and it conducts electricity. For these reasons, it is used to make electrodes. Electrodes carry electricity from one place to another.

Do you think one of your minerals might be graphite? Can you describe its streak? How does it feel?

Performing the Light Test

1 Pick up mineral A. Shine the penlight on it.



2 Observe how much light shines through the mineral. Some? A lot? None at all?.

3 Using the terms you have agreed on in class, record results in the space labeled "Light" on your mineral profile sheet.

4 Repeat Steps 1, 2, and 3 for the other 11 minerals.

Reading Selection

Calcite

Have you ever been in a cave and seen the formations that look like icicles? They are called stalactites and stalagmites.

These are rocks that contain a lot of calcite. Calcite is one of the most important minerals found in rocks formed under water. Calcite is also found in clam shells. Sometimes calcite is white. Sometimes it is so clear that you can see through it. Most often calcite is white or another light color.

One kind of clear calcite is called Iceland spar. It has an unusual property. If you placed it on these words, you would see a double image! Because of this property, calcite is used in some kinds of prisms and microscopes. Your teacher has a sample of this on display for you to see.

Which mineral do you think is calcite?

Muscovite

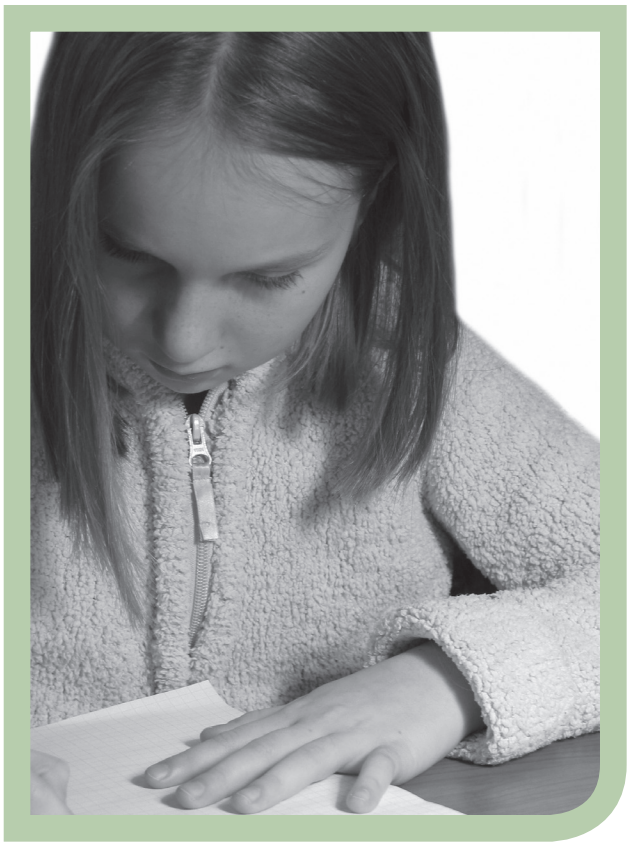
Muscovite is a shiny, silvery-white mineral that has many thin sheets, like the pages in a book. Before glass was easily available, many people in Russia used pieces of muscovite to make windows. The name "Moscow," the capital city of Russia, comes from the Russian word for "glass." Did you know that people from Moscow are called "Muscovites"?

Which mineral do you think is muscovite?

Performing the Luster Test

1 Shine the penlight on mineral A.

2 How does the mineral look under the light? Place it in one of the boxes on your sorting sheet.



3 Record the word from that box in the space marked "Luster" on your profile sheet for mineral A.

4 Repeat Steps 1, 2, and 3 with the remaining 11 minerals.

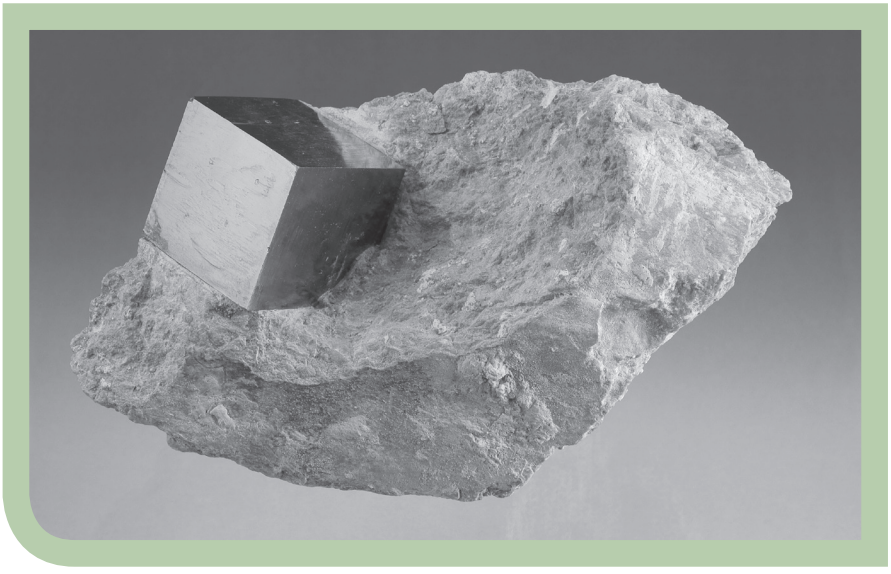
Pyrite

Would you be excited to find a piece of golden rock? It may not be real gold! Pyrite is nicknamed "fool's gold" because its color might fool you into thinking you have found a piece of real gold.

Pyrite is shiny and hard. It is a mineral that can be found almost anywhere in the world. It breaks more easily than gold. Real gold is very difficult to destroy.

Pyrite is made of iron and sulfur. It is sometimes made into pendants and beads for jewelry. Pyrite crystals look like real gold, but do not cost as much as real gold.

The name pyrite comes from the Greek word for fire, possibly because pyrite will make a spark when it strikes steel, iron, or flint. In early colonial times pyrite was used in muskets and pistols and worked much like our modern-day lighters. In a musket or pistol, a little piece of iron pyrite was held in a clamp against a small iron wheel. When the trigger was pulled the wheel released and spun very fast. As the wheel was spinning it would scrape against the pyrite and make sparks. The sparks would fire the gunpowder in the musket or pistol.



Pyrite has not been used in guns since colonial times. Today the sulfur from pyrite is used to make chemicals for industrial purposes.

Can you find pyrite in your minerals? Can you describe its luster?

Gypsum

Gypsum looks dull and earthy. It is usually found in small pieces. These pieces are ground up and used to make plaster of Paris. Have you seen plaster of Paris? What color is it?

Casts for broken bones used to be made from gypsum. Today, gypsum is used to construct walls in homes and buildings. The building material called "drywall" is really "gypsum board."

Artists sometimes use large pieces of a special kind of gypsum to carve beautiful statues. The name of this special gypsum is alabaster. It is pink or white. Have you ever seen an alabaster statue? It looks a lot like polished plaster!

Is gypsum in your set of minerals? What color was its streak?

Sorting Minerals by Luster **Activity Sheet 1**

Name _____

Date _____

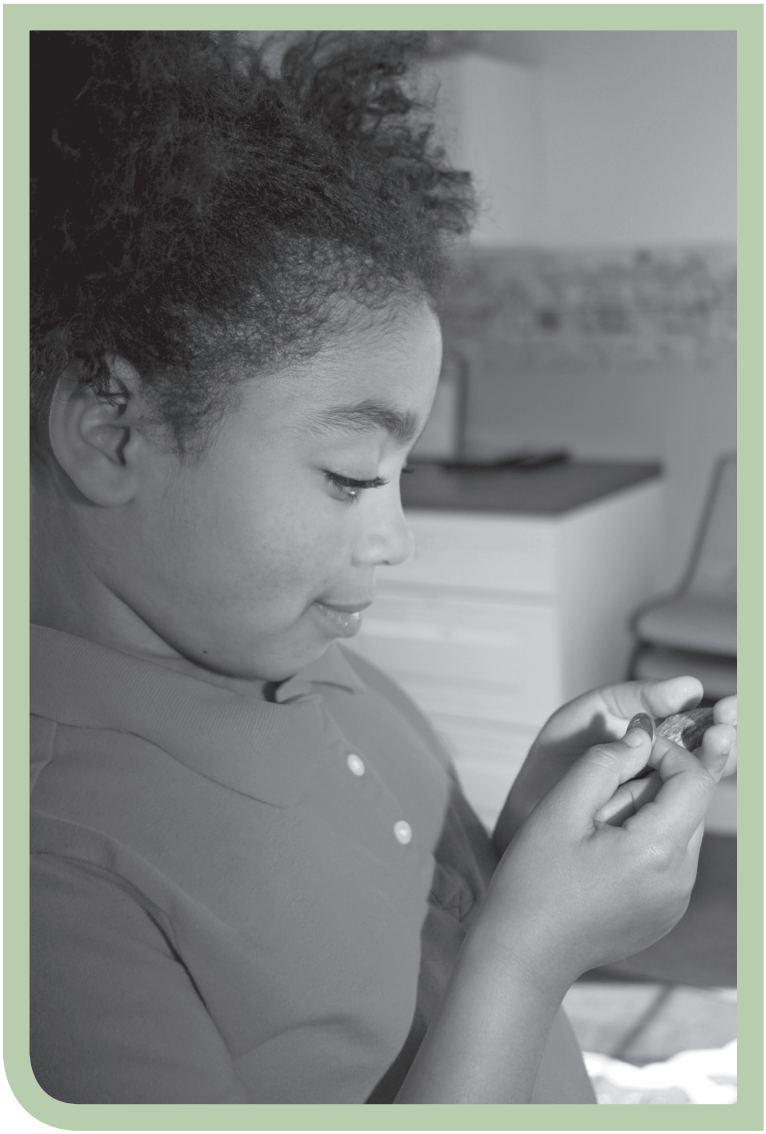
Directions: Place each mineral in one box.

Metallic	Glassy
Dull	**Waxy**

Performing the Hardness Test

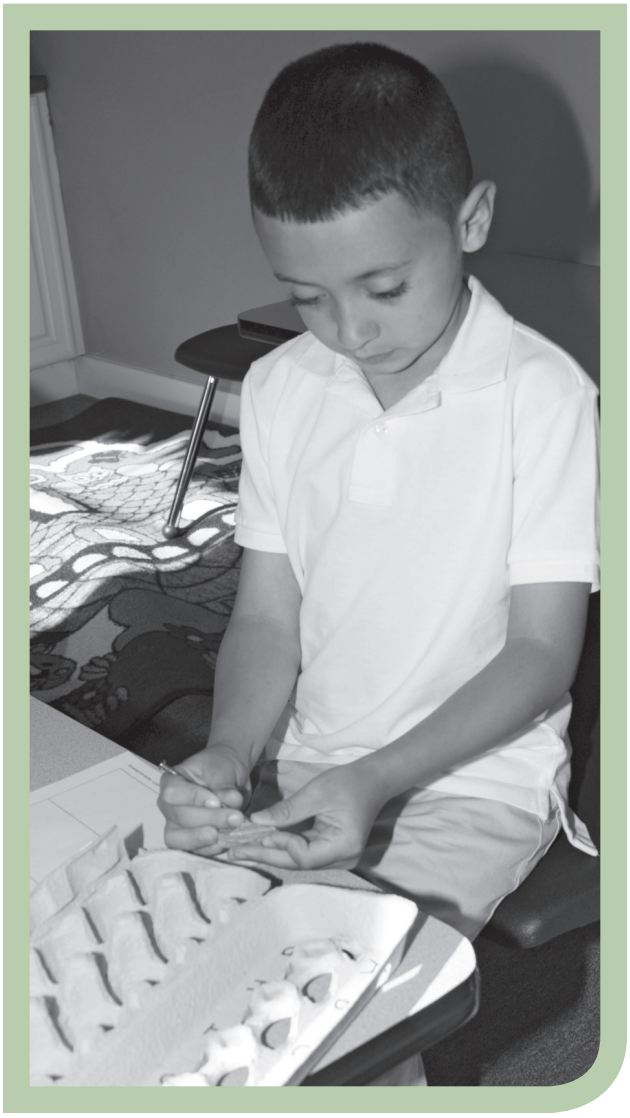
1 Scratch your sample of mineral A with the copper penny.
Note: Scratch the minerals gently. You may damage some of them if you scratch them too hard.

2 If the penny left a scratch on the mineral, place it in the space labeled "Soft" on your **Minerals—Soft, Medium, or Hard** sheet. If the penny did not scratch the mineral, put it back in the carton



3 Test the remaining 11 minerals with the penny. Place each of them in the appropriate space on the sheet or back in the carton.

4 Now focus on the minerals you have placed in the carton. Use the nail to scratch each of them.



5 If the nail scratches a mineral, put it in the space on the sheet that is labeled "Medium." If the nail does not scratch the mineral, place it in the space labeled "Hard."

6 Record your results for each mineral in the space labeled "Hardness" on the mineral profile sheets.

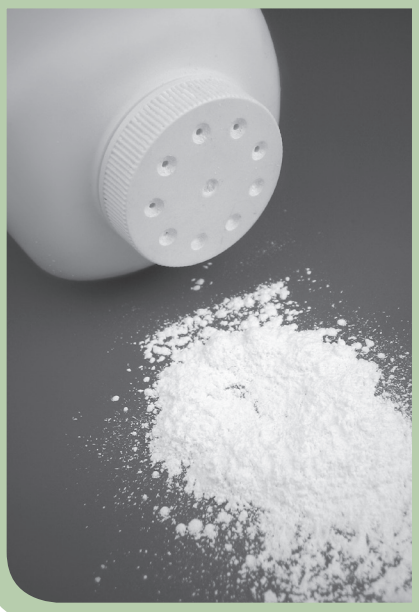
Diamonds

Diamonds are the hardest of all minerals. They were formed long ago in igneous rocks. Today, we mine diamonds in places near extinct volcanoes. But diamonds are also found near old riverbeds. How do you suppose the diamonds got there? Believe it or not, diamonds have even been found in meteorites from outer space!

You probably know that diamonds are used in jewelry. But did you know they are also used in industry? In fact, out of every five diamonds found, only one is used to make jewelry. The others are used for industrial purposes.

For example, diamonds are used to cut, drill, and polish other materials. Powerful drills with diamond tips are used for drilling oil wells. Wire containing diamond bits is used to cut blocks of stone from mining quarries. Diamond powder is used for polishing hard materials such as glass. Surgeons use small knives with diamond blades for delicate eye operations.

Do you think you have a diamond in your set of minerals?



Talc

Talc is one of the softest of all minerals. It has a waxy luster and a slippery feel. It looks like chalk. You may be able to guess one use for talc: to make baby powder. Talc is also used to make ceramics and pottery.

Because talc resists acid, it is used to make sinks and counter tops for chemical laboratories. Talc is a major component of soapstone, a soft rock that is also used to make tabletops.

Can you tell by feeling which of your minerals is talc?

Name _____

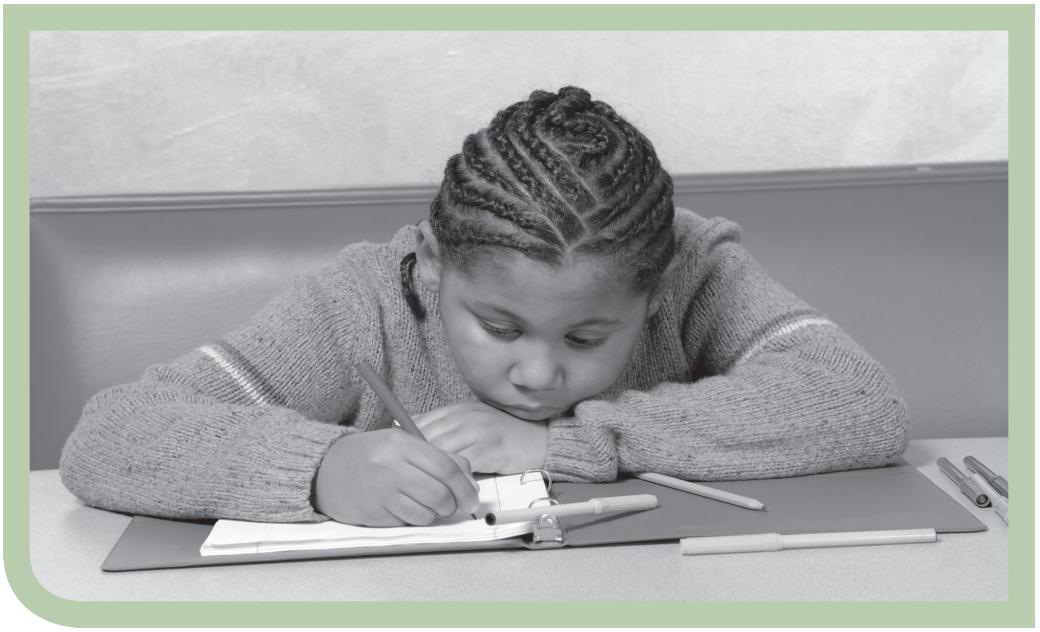
Date _____

Soft
Medium
Hard

Performing the Magnetism Test

1 Hold up mineral A. Touch the magnet to it. Does the mineral stick to the magnet? Record your results in the space labeled "Magnetism" on the mineral profile sheet for mineral A.

2 Test each of the other 11 minerals with the magnet in the same way. Record the results on your mineral profile sheets.



Lodestones Lead the Way

The magnetic compass is one of the most important inventions of all time. Before it was invented, sailors had only the sun, moon, stars, and local winds to guide them as they set out for faraway lands. The compass changed that. It pointed to the north pole. And once you know which way is north, you can figure out where south, east, and west are as well! A mineral called **lodestone,** which is a highly magnetized form of magnetite, makes the compass work.

Who discovered lodestone? No one really knows. According to some stories, it was discovered by shepherds in Asia, who noticed that the iron nails in their sandals sometimes clung to the ground as they walked across a field with rocks that contained lodestone.

Reading Selection

The shepherds were amazed by this. They probably picked up some samples of the mineral and began to tell other people about their discovery. The news spread.

One of the first written references to the mysterious powers of the lodestone is in a book written in China. Around the year A.D. 1000, the Chinese began to use lodestones to guide ships at sea. They did this because of an amazing discovery. If you place a lodestone on a small piece of wood and float it in a cup of water, the lodestone always lines up in a north-south direction! And if you touch the lodestone to an iron needle for long enough, the needle, too, lines up in a north-south direction. The magnetic compass had been invented.

Sailors in Europe started to use the compass about 800 years ago. Then, they gave the lodestone its name. Lode meant "to lead."

For centuries, people believed that the lodestone had secret powers. Magicians used it to tell fortunes. People thought it could cure illness. Sailors believed that onion and garlic would destroy the magnetic force, so they never ate these foods while they were at sea. Because so many seamen feared the powers of the magnetized needle, the ship's pilot kept it hidden away in a special box.

Little by little, these fears disappeared. The compass was brought out on deck, where all the sailors could use it. Christopher Columbus packed extra magnetic needles for his trips across the Atlantic Ocean in late 1400s. Ferdinand Magellan, the first person to sail around the world, carried 35 needles on his flagship!

What if those extra needles lost their magnetic power?

The captain always carried a precious piece of lodestone—to lead his crew safely to new adventures and new lands.

Growing Salt Crystals

Safety Tip: Do this activity only when an adult is present.

Materials

For each student

- Water, 240 ml (1 cup)
- Granulated salt, 240 ml (1 cup)
- Measuring cup
- Small saucepan
- Wooden spoon
- Glass or jelly jar
- Cotton string, 20 cm (8 in)
- Pencil
- Stove (source of heat)
- Small weight (e.g., a metal nut, small washer, paper clip, or button)

1. Make sure that all your equipment is clean.
2. Place the water in the pan and put the pan on the stove. Turn the heat on medium.
3. When the water boils, turn off the heat.
4. Add a spoonful of salt right away. Stir. Keep adding salt and stirring. When some salt sits on the bottom of the pan even after you stir it, stop adding salt.
5. Let the salt water cool.
6. Pour the salt water into the glass.
7. Wet the string. Tie the weight to the end of the string.
8. Tie the other end of the string around the middle of the pencil. Adjust the length of the string so that when you place the pencil across the top of the glass, the weight will hang just above the bottom of the glass.
9. Lay the pencil across the top of the glass. Hang the string in the salt water.
10. Put the glass in a place where it will not be disturbed.
11. Let the glass stand for three to five days. Check it every day. Remove the crystals that form on the surface of the water so that the water can continue to evaporate. Watch what grows on the string!
12. Discuss your results with your adult partner.

Reading Selection

Quartz

Quartz can be one of the prettiest and most colorful of all minerals. Some types of quartz are made up of tiny crystals, but many types display large crystals. Quartz crystals can be clear, purple, brown, or yellow. They are always six-sided, or hexagonal.

Quartz crystals are valued for their beauty. They are often used in jewelry. Geodes are rocks that are lined with crystals. In many cases, these crystals are quartz. Some geodes are bigger than basketballs! Have you ever seen a geode on a desk or bookshelf?

Quartz crystals have many commercial uses. Crystals are used in watches and clocks. The quartz crystals in your wristwatch vibrate more than 30,000 times a second! Quartz crystals are also used in radios, computers, and microwave ovens.

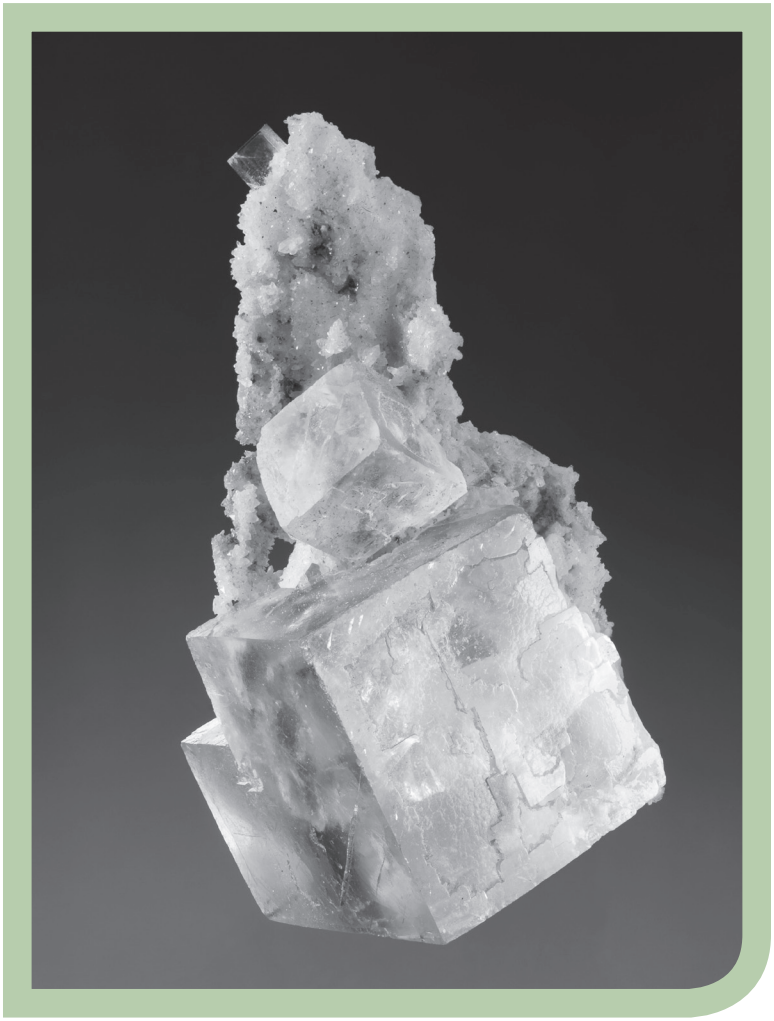
Which crystal do you think is quartz?

Fluorite

Fluorite crystals are shaped like cubes. Sometimes the crystals are so tiny that you can't see them. Fluorite can be clear, yellow, purple, blue, or pale green.

Fluorite is a rather soft and brittle mineral. It is often used for industrial purposes. When fluorite is ground up, it is used as a chemical. This chemical has many uses. It is used in the manufacture of steel to help the melting process. And it even helps fight tooth decay! Fluorite is the source of fluoride, which is probably in your toothpaste.

Do you think you have a fluorite crystal in your set of minerals?



CALCITE

Feel: Rough and smooth
Color: Mostly white and other light colors
Streak: White
Hardness: Soft to medium; scratched by penny (also scratches penny)
Light: Light shines through
Luster: Glassy
Shape: Some flat sides, can be a cube or a slanted cube

FELDSPAR

Feel: Rough
Color: Milky white, pinkish brown, or light greenish gray
Streak: White
Hardness: Medium to hard; barely scratched by nail (may also scratch nail)
Light: No light shines through
Luster: Glassy
Shape: No special shape, flat sides

FLUORITE

Feel: Smooth
Color: Blue, green, yellow, purple
Streak: White or pale
Hardness: Medium; scratched by nail
Light: A little light shines through
Luster: Glassy
Shape: Cube

PYRITE

Feel: Rough and smooth
Color: Brassy yellow or dull gold
Streak: Greenish black or brownish-black
Hardness: Medium; scratched by nail
Light: No light shines through
Luster: Metallic
Shape: Cube

GRAPHITE

Feel: Rough
Color: Silver black
Streak: Black
Hardness: Soft; scratched by penny
Light: No light shines through
Luster: Metallic; sometimes dull or greasy
Shape: No special shape

GYPSUM (ALABASTER)

Feel: Rough; often crumbling at edges
Color: White or light pink, gray, or brown
Streak: White or pale
Hardness: Soft; scratched by penny
Light: A little light shines through
Luster: Waxy, pearly
Shape: No special shape

HEMATITE

Feel: Rough
Color: Black or red
Streak: Gray, black, or reddish brown
Hardness: Medium; scratched by nail
Light: No light shines through
Luster: Metallic or dull
Shape: No special shape

MAGNETITE

Feel: Rough
Color: Black
Streak: Black or gray
Hardness: Medium; scratched by nail
Light: No light shines through
Luster: Metallic
Shape: No special shape

MUSCOVITE

Feel: Smooth, slippery
Color: Clear to yellow or pale brown
Streak: White or pale
Hardness: Soft; scratched by penny
Light: A lot of light shines through in thin places
Luster: Glassy
Shape: Thin, flat layers

Mineral Identification Card STC™/*Rocks and Minerals*

QUARTZ

Feel: Smooth
Color: Clear, white, green, pink, gray, yellow, brown, or red
Streak: White
Hardness: Hard; no scratch
Light: A lot of light shines through
Luster: Glassy
Shape: Six-sided crystal or a crystalline mass

Mineral Identification Card STC™/*Rocks and Minerals*

SULFUR

Feel: Parts smooth and parts rough; crumbly
Color: Yellow
Streak: White
Hardness: Soft; scratched by penny
Light: No light shines through
Luster: Waxy
Shape: Masses not fully crystallized, some crystals

Mineral Identification Card STC™/*Rocks and Minerals*

TALC

Feel: Soft; like powder
Color: Light to medium gray
Streak: White
Hardness: Very soft; scratched by penny
Light: No light shines through
Luster: Pearly, waxy
Shape: No special shape

Mineral Identification Card STC™/*Rocks and Minerals*

Blackline Master

Name _____

Date _____

Mineral Profile Sheet

Mineral ☐	**Feel**
	Smell
Streak color	**Luster**
Light	**Magnetism**
Hardness	**Shape**

BIOTITE

Feel: Smooth
Color: Black or dark brown
Streak: White or light brown
Hardness: Soft; scratched by penny
Light: Some light shines through in places
Luster: Shiny
Shape: Thin, flat layers

Mineral Identification Card STC™/*Rocks and Minerals*

BIOTITE

Feel: Smooth
Color: Black or dark brown
Streak: White or light brown
Hardness: Soft; scratched by penny
Light: Some light shines through in places
Luster: Shiny
Shape: Thin, flat layers

Mineral Identification Card STC™/*Rocks and Minerals*

BIOTITE

Feel: Smooth
Color: Black or dark brown
Streak: White or light brown
Hardness: Soft; scratched by penny
Light: Some light shines through in places
Luster: Shiny
Shape: Thin, flat layers

Mineral Identification Card STC™/*Rocks and Minerals*

BIOTITE

Feel: Smooth
Color: Black or dark brown
Streak: White or light brown
Hardness: Soft; scratched by penny
Light: Some light shines through in places
Luster: Shiny
Shape: Thin, flat layers

Mineral Identification Card STC™/*Rocks and Minerals*

GYPSUM (BLADED SELENITE CRYSTAL AGGREGATE)

Feel: Rough; sharp, rounded edges
Color: Light brown and white
Streak: White
Hardness: Soft; scratched by penny
Light: A little light shines through
Luster: Dull to waxy; small, shiny crystals in some places
Shape: Looks like a flower

GYPSUM (CLEAR SELENITE CRYSTAL)

Feel: Smooth
Color: Clear
Streak: White
Hardness: Soft; scratched by penny
Light: A lot of light shines through
Luster: Glassy
Shape: No special shape

GYPSUM (SATIN SPAR VARIETY)

Feel: Rough
Color: White with traces of pink, red, or brown
Streak: White
Hardness: Soft; scratched by penny
Light: A little light shines through
Luster: Waxy; lines of shiny crystals in places
Shape: No special shape

HALITE

Feel: Smooth
Color: Clear or white
Streak: Gray
Hardness: Soft; scratched by penny
Light: A lot of light shines through
Luster: Glassy
Shape: Cube

Basalt

Basalt is the most common volcanic rock in the world. It often is made up of lava that has cooled and hardened. Sometimes entire islands are formed from volcanic rock. You can see basalt on the slopes of old volcanoes in the state of New Jersey.

Basalt is usually black or gray-black. Although basalt is a volcanic rock, it is not shiny like obsidian, and it is not light like pumice. Basalt is hard and dense. Its texture is fine.

Basalt is a source of iron ore and copper. The basalt in the area around Lake Superior in Canada has large copper deposits. Beautiful dark-blue sapphires, used for jewelry, are among the valuable minerals found in basalt. If you were born in September, the sapphire is your birthstone!

Basalt is one of the strongest and most durable of all rocks. Because of this, it is used for the outside of buildings, for roads, and for tombstones.

Rock Information Card STC™/*Rocks and Minerals*

Conglomerate

Conglomerate is found all over the world. It is a sedimentary rock that forms from small pieces of other rocks that become pressed together at the bottom of a lake or an ocean.

Sometimes conglomerate contains pebbles of older rocks and looks like a chocolate chip cookie! Other times, conglomerate has tiny pieces and looks like a chunk of concrete. The pebbles in conglomerate are usually round and smooth. Sometimes they look polished. This is because they have been worn down by wind, rain, ice, or snow.

Conglomerate is often softer than other rocks. It can wear down easily. Because of this, it is not used by itself to make buildings. Conglomerate is used in concrete building foundations.

Rock Information Card STC™/*Rocks and Minerals*

Gneiss

Gneiss (pronounced "nice") is a hard, coarse metamorphic rock. It is formed when shale and granite are heated and pressed together under the surface of the earth. Gneiss and granite can look alike, even to rock experts. As a joke, they often warn, "Don't take gneiss for granite!"

There are many different kinds of gneiss. Its color may be dark or light. Gneiss often has bands, or layers, that are formed when its minerals flatten under heat and pressure.

Gneiss is found all over the world. It can be seen in mountain ranges such as the Alps in Switzerland, the Andes in South America, and the Rocky Mountains in the western United States.

Polished gneiss is used for the fronts of buildings. It is considered one of the most beautiful rocks in the world. Some gneiss contains garnets, dark-red minerals that look like rubies.

Rock Information Card STC™/*Rocks and Minerals*

Granite

Granite is one of the hardest of all rocks. For this reason, some people call it the "rock everlasting." Granite is the most common rock in the earth's crust. It is an igneous rock, formed when molten rock cools underground.

Granite is usually light in color. It may be speckled or banded. Its crystals may be large and easy to see. Can you see crystals in your granite? What minerals do you think they could be?

Granite is found in high mountains like the Rockies. It is also found in older, smaller mountains like the Appalachians. Granite is common in the eastern United States; in fact, New Hampshire is called "The Granite State." In some places in England, granite blocks as large as houses cover the hillsides. These huge rocks are called "tors."

Granite is used for buildings, monuments, bridges, and curbstones. Tin and copper are mined from granite.

Rock Information Card STC™/*Rocks and Minerals*

Limestone

Limestone is not green and has nothing to do with a fruit! Its name comes from a Latin word that means "mud" and an old English word for "glue."

Limestone is a sedimentary rock. It may be white, gray, or yellowish. Rain and wind can wear it down, making it look rounded.

Fossils are often found in limestone. Some types of limestone are formed from the shells of sea animals. Coral reefs, or fossil reefs, are made up of many thousands of these tiny creatures.

Limestone is used to make cement and glass. It is an ingredient in agricultural lime, which farmers put on soil. Limestone is also used for building materials. Chalk is a form of pure limestone. Gas and petroleum may be found in large limestone deposits.

Limestone was once used in buildings. What do you suppose has happened to some of those buildings?

Rock Information Card STC™/*Rocks and Minerals*

Marble

Marble is a beautiful, very hard metamorphic rock that is formed from limestone. Because it contains thousands of sparkling crystals, marble is sometimes called the "shining stone."

Sculptors use pure white marble, which is rare and expensive. Many of the famous statues of the Italian artist Michelangelo, who lived in the 1600s, are made of white marble. Marble is often streaked with green, rose, or pink. Some marble is even black.

Marble has been used for centuries on the floors, walls, and ceilings of churches and important buildings. The Romans used marble to build their temples.

One of the world's most famous marbles, which is called "Carrara," comes from Italy. In the United States, marble is found in the Adirondack Mountains in New York State and in the Sierra Nevada Mountains in the West. Marble is cut in large blocks from quarries, which are large pits in the earth that have been dug out by miners.

Rock Information Card STC™/*Rocks and Minerals*

Obsidian

Obsidian is sometimes called "natural glass" or "volcanic glass." It is a black, shiny rock that forms when lava erupts from a volcano and quickly cools.

Because obsidian cools very quickly, its crystals are usually very small. Snowflake obsidian, however, is a rare form of the rock that is dotted with large white crystals.

Obsidian got its name from a man who found this rock in Ethiopia, which is in eastern Africa. It is found near volcanoes throughout the world. In the United States, obsidian has been found in Yellowstone National Park in Wyoming.

Obsidian is one of the first materials known to be used in trade among ancient peoples. They used it to make weapons and tools. Knives made of obsidian were used to cut meat.

Can you find obsidian in your set of rocks?

Rock Information Card STC™/*Rocks and Minerals*

Pumice

Pumice is a volcanic rock. Its surface is covered by tiny holes. These holes were made by gases that bubbled out when the lava erupted from a volcano.

Some pumice is so light that it will float in water! According to one story, sailors walked two miles to shore on floating pumice after a volcanic explosion on an island in the Pacific Ocean. Because it is so light, pumice is often used on movie sets. When you see Superman pick up a heavy boulder, it's probably made of pumice!

Around the house, you may use pumice for polishing or cleaning. It's also used in sandpaper. And if you get a callus on your foot, you can smooth it down with a pumice stone. In industry, pumice is used to make heat and sound insulation materials.

Rock Information Card STC™/*Rocks and Minerals*

Sandstone

Sandstone is a sedimentary rock that sometimes looks like pieces of beach sand that have been glued together. The color and strength of sandstone vary. Some sandstones are soft, almost crumbly. The grains may be small, medium, or large. The edges may be rounded or sharp, depending on how much the rock has been weathered.

Red sandstone is common in the canyons and mountains of New Mexico, Utah, and Arizona. Members of ancient American civilizations such as the Anasazi built their homes into the sides of these canyons. If you walk to the bottom of Canyon de Chelly in Arizona, you can still see parts of these ancient homes.

When sandstone is squeezed by underground pressure, it forms quartzite. Quartzite contains quartz crystals. Sounds confusing, doesn't it? But by now you probably can explain the difference between quartz and quartzite. Which is a rock? Which is a mineral? Why?

Sandstone is found worldwide. It is used in building materials. It is also used to make . . . sandpaper!

Rock Information Card STC™/*Rocks and Minerals*

Schist

Schist is a metamorphic rock made from shale and mud. It can be brown, black, or dark green. You can see it when you are riding along a road that cuts through low mountains like the Blue Ridge in the eastern United States. It also is found along glaciers in Alaska.

Schist is broken up and used in making roads. It may have large crystals that can be used in jewelry. For example, garnets, a red gemstone, are often found in schist. Schist sometimes contains shiny flecks of biotite or muscovite.

Do you see minerals in your schist?

Rock Information Card STC™/*Rocks and Minerals*

Shale

Shale is the most common sedimentary rock. It is made of clay and mud. In fact, shale is often called "mudstone," because it smells like mud when it is wet. Shale is very smooth and has a fine texture. It splits easily into flat layers. Shale may be gray, black, red, brown, or yellow. Fossils are often found in shale.

Today, mining engineers drill through the earth's crust to find petroleum, or oil, which formed from decaying sea plants and animals. Oil and natural gas collect in large pools between layers of shale.

Petroleum and natural gas are called "fossil fuels." Do you know why?

Rock Information Card STC™/*Rocks and Minerals*

Slate

Slate is a metamorphic rock that is formed when shale, a sedimentary rock, is put under pressure. Like shale, it splits easily into layers. Slate has a muddy smell when it is wet. It may be gray, green, or even purple. Its texture is very fine and even.

Slate is cut out of quarries in huge blocks. Next, it is split into sheets and cut into pieces. These large, flat pieces of slate, sometimes called flagstone, are used for patios, terraces, and other types of paving. Slate is also used for roofing.

Old-fashioned classroom blackboards are made of slate. Before notebooks were invented, every student carried a "slate" to class every day.

Which rock do you think you could use to write on slate?

Rock Information Card STC™/*Rocks and Minerals*