

Real World Science: Rocks & Minerals

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Congratulations!

You have chosen a learning program that will actively motivate your students AND provide you with easily accessible and easily manageable instructional guidelines designed to make your teaching role efficient and rewarding.

The AIMS Teaching Module provides you with a video program keyed to your classroom curriculum, instructions and guidelines for use, plus a comprehensive teaching program containing a wide range of activities and ideas for interaction between all content areas. Our authors, educators, and consultants have written and reviewed the AIMS Teaching Modules to align with the Educate America Act: Goals 2000.

This ATM, with its clear definition of manageability, both in the classroom and beyond, allows you to tailor specific activities to meet all of your classroom needs.

RATIONALE

In today's classrooms, educational pedagogy is often founded on Benjamin S. Bloom's "Six Levels of Cognitive Complexity." The practical application of Bloom's Taxonomy is to evaluate students' thinking skills on these levels, from the simple to the complex: Knowledge (rote memory skills), Comprehension (the ability to relate or retell), Application (the ability to apply knowledge outside its origin), Analysis (relating and differentiating parts of a whole), Synthesis (relating parts to a whole), and Evaluation (making a judgment or formulating an opinion).

The AIMS Teaching Module is designed to facilitate these intellectual capabilities, AND to integrate classroom experiences and assimilation of learning with the students' life experiences, realities, and expectations. AIMS' learner verification studies prove that our AIMS Teaching Modules help students to absorb, retain, and to demonstrate ability to use new knowledge in their world. Our educational materials are written and designed for today's classroom, which incorporates a wide range of intellectual, cultural, physical, and emotional diversities.

ORGANIZATION AND MANAGEMENT

To facilitate ease in classroom manageability, the AIMS Teaching Module is organized in four sections. You are reading Section 1, Introduction to the Aims Teaching Module (ATM).

SECTION 2,

INTRODUCING THIS ATM

will give you the specific information you need to integrate the program into your classroom curriculum.

SECTION 3,

PREPARATION FOR VIEWING

provides suggestions and strategies for motivation, language preparedness, readiness, and focus prior to viewing the program with your students.

SECTION 4,

AFTER VIEWING THE PROGRAM

provides suggestions for additional activities plus an assortment of consumable assessment and extended activities, designed to broaden comprehension of the topic and to make connections to other curriculum content areas.

FEATURES

INTRODUCING EACH ATM

SECTION 2

Your AIMS Teaching Module is designed to accompany a video program written and produced by some of the world's most credible and creative writers and producers of educational programming. To facilitate diversity and flexibility in your classroom, your AIMS Teaching Module features these components:

Themes

The Major Theme tells how this AIMS Teaching Module is keyed into the curriculum. Related Themes offer suggestions for interaction with other curriculum content areas, enabling teachers to use the teaching module to incorporate the topic into a variety of learning areas.

Overview

The Overview provides a synopsis of content covered in the video program. Its purpose is to give you a summary of the subject matter and to enhance your introductory preparation.

Objectives

The ATM learning objectives provide guidelines for teachers to assess what learners can be expected to gain from each program. After completion of the AIMS Teaching Module, your students will be able to demonstrate dynamic and applied comprehension of the topic.

PREPARATION FOR VIEWING

SECTION 3

In preparation for viewing the video program, the AIMS Teaching Module offers activity and/or discussion ideas that you may use in any order or combination.

Introduction To The Program

Introduction to the Program is designed to enable students to recall or relate prior knowledge about the topic and to prepare them for what they are about to learn.

Introduction To Vocabulary

Introduction to Vocabulary is a review of language used in the program: words, phrases, usage. This vocabulary introduction is designed to ensure that all learners, including limited English proficiency learners, will have full understanding of the language usage in the content of the program.

Discussion Ideas

Discussion Ideas are designed to help you assess students' prior knowledge about the topic and to give students a preview of what they will learn. Active discussion stimulates interest in a subject and can motivate even the most reluctant learner. Listening, as well as speaking, is active participation. Encourage your students to participate at the rate they feel comfortable. Model sharing personal experiences when applicable, and model listening to students' ideas and opinions.

Focus

Help learners set a purpose for watching the program with Focus, designed to give students a focal point for comprehension continuity.

Jump Right In

Jump Right In provides abbreviated instructions for quick management of the program.

AFTER VIEWING THE PROGRAM

SECTION 4

After your students have viewed the program, you may introduce any or all of these activities to interact with other curriculum content areas, provide reinforcement, assess comprehension skills, or provide hands-on and in-depth extended study of the topic.

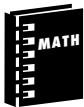
SUGGESTED ACTIVITIES

The Suggested Activities offer ideas for activities you can direct in the classroom or have your students complete independently, in pairs, or in small work groups after they have viewed the program. To accommodate your range of classroom needs, the activities are organized into skills categories. Their labels will tell you how to identify each activity and help you correlate it into your classroom curriculum. To help you schedule your classroom lesson time, the AIMS hourglass gives you an estimate of the time each activity should require. Some of the activities fall into these categories:



Meeting Individual Needs

These activities are designed to aid in classroom continuity. Reluctant learners and learners acquiring English will benefit from these activities geared to enhance comprehension of language in order to fully grasp content meaning.



Curriculum Connections

Many of the suggested activities are intended to integrate the content of the ATM program into other content areas of the classroom curriculum. These cross-connections turn the classroom teaching experience into a whole learning experience.



Critical Thinking

Critical Thinking activities are designed to stimulate learners' own opinions and ideas. These activities require students to use the thinking process to discern fact from opinion, consider their own problems and formulate possible solutions, draw conclusions, discuss cause and effect, or combine what they already know with what they have learned to make inferences.



Cultural Diversity

Each AIMS Teaching Module has an activity called Cultural Awareness, Cultural Diversity, or Cultural Exchange that encourages students to share their backgrounds, cultures, heritage, or knowledge of other countries, customs, and language.



Hands On

These are experimental or tactile activities that relate directly to the material taught in the program. Your students will have opportunities to make discoveries and formulate ideas on their own, based on what they learn in this unit.



Writing

Every AIMS Teaching Module will contain an activity designed for students to use the writing process to express their ideas about what they have learned. The writing activity may also help them to make the connection between what they are learning in this unit and how it applies to other content areas.



In The Newsroom

Each AIMS Teaching Module contains a newsroom activity designed to help students make the relationship between what they learn in the classroom and how it applies in their world. The purpose of In The Newsroom is to actively involve each class member in a whole learning experience. Each student will have an opportunity to perform all of the tasks involved in production: writing, researching, producing, directing, and interviewing as they create their own classroom news program.



Extended Activities

These activities provide opportunities for students to work separately or together to conduct further research, explore answers to their own questions, or apply what they have learned to other media or content areas.



Link to the World

These activities offer ideas for connecting learners' classroom activities to their community and the rest of the world.



Culminating Activity

To wrap up the unit, AIMS Teaching Modules offer suggestions for ways to reinforce what students have learned and how they can use their new knowledge to enhance their world view.

VOCABULARY

Every ATM contains an activity that reinforces the meaning and usage of the vocabulary words introduced in the program content. Students will either read or find the definition of each vocabulary word, then use the word in a written sentence.

CHECKING COMPREHENSION

Checking Comprehension is designed to help you evaluate how well your students understand, retain, and recall the information presented in the AIMS Teaching Module. Depending on your students' needs, you may direct this activity to the whole group yourself, or you may want to have students work on the activity page independently, in pairs, or in small groups. Students can verify their written answers through discussion or by viewing the video a second time. If you choose, you can reproduce the answers from your Answer Key or write the answer choices in a Word Bank for students to use. Students can use this completed activity as a study guide to prepare for the test.

CONSUMABLE ACTIVITIES

The AIMS Teaching Module provides a selection of consumable activities, designed to specifically reinforce the content of this learning unit. Whenever applicable, they are arranged in order from low to high difficulty level, to allow a seamless facilitation of the learning process. You may choose to have students take these activities home or to work on them in the classroom independently, in pairs or in small groups.

CHECKING VOCABULARY

The Checking Vocabulary activity provides the opportunity for students to assess their knowledge of new vocabulary with this word game or puzzle. The format of this vocabulary activity allows students to use the related words and phrases in a different context.

TEST

The AIMS Teaching Module Test permits you to assess students' understanding of what they have learned. The test is formatted in one of several standard test formats to give your students a range of experiences in test-taking techniques. Be sure to read, or remind students to read, the directions carefully and to read each answer choice before making a selection. Use the Answer Key to check their answers.

ADDITIONAL AIMS MULTIMEDIA PROGRAMS

After you have completed this AIMS Teaching Module you may be interested in more of the programs that AIMS offers. This list includes several related AIMS programs.

ADDITIONAL READING SUGGESTIONS

AIMS offers a carefully researched list of other resources that you and your students may find rewarding.

ANSWER KEY

Reproduces tests and work pages with answers marked.

Real World Science: Rocks & Minerals

THEMES

Real World Science: Rocks & Minerals explores various characteristics of rocks. It describes the properties of each basic type of rock: igneous, metamorphic and sedimentary. Students are also introduced to the various ways that rocks can be changed in nature. The changing of rock from one type to another is also described in detail.

OVERVIEW

All rocks are made of one or more minerals, which are the basic building blocks of the earth. Different kinds of rock are found in each layer of the earth, starting with the top layer, or crust. The second layer of the earth is called the mantle. There are three basic kinds of rock. Igneous rock is formed from melted earth material called magma. Sedimentary rock is formed from tiny pieces of material such as sand. Metamorphic rock is changed by heat or pressure. Rocks are broken down into smaller pieces by a process called weathering. These rocks are reduced in size until they become tiny particles known as soil. One example of this is loam, which is made of decayed animal and plant material. Another example is clay, which holds water well and is often used to make pottery.

OBJECTIVES

- ▶ To list various uses and properties of rocks and minerals.
- ▶ To identify common rocks and minerals based on their physical characteristics.
- ▶ To label the layers of the earth.
- ▶ To explain how various types of rocks are formed and changed.
- ▶ To use vocabulary appropriately when writing and speaking about rocks and minerals.

Use this page for your individual notes about planning and/or effective ways to manage this
AIMS Teaching Module in your classroom.

Our AIMS Multimedia Educational Department welcomes your observations and comments.
Please feel free to address your correspondence to:

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INTRODUCTION TO THE PROGRAM

Everything solid in nature began as a mineral. Over the years, weather, water and the effects of time changed many of these minerals into various forms of rock. We rely on many of these rocks and minerals in our daily lives. Rocks are used to build our streets and houses, to shape the land, and to create works of art. By studying different rocks, we can develop an understanding of how they are formed and changed by nature.

INTRODUCTION TO VOCABULARY

Before starting the program, write the following words on the board. Ask the class to discuss the meaning of each word, and review the terms that are unfamiliar to students.

erosion - process by which wind and water wear away rock

glacier - large body of ice that spreads onto land

element - substance that cannot be chemically broken down into a simpler form

property - color, shape and feel of an element or object

FOCUS

Rocks tell us a great deal about the history of the earth. Each layer of rock in the earth's crust is full of information about the plants and animals who once roamed that area. Ask students to keep this in mind as they begin to explore the world of rocks and minerals.

DISCUSSION IDEAS

Ask students to look around the room. How many objects do they see that originated from rocks or minerals? What are some things outside the classroom that originated from rocks or minerals? (Some possible answers inside the classroom include floors, tabletops or desks, and walls. Some answers outside the classroom include tools, buildings, roads and highways, statues, walkways and landscape walls.)

JUMP RIGHT IN

HOW TO USE THE *REAL WORLD SCIENCE: ROCKS & MINERALS* AIMS TEACHING MODULE

Preparation

- ▶ Read *Real World Science: Rocks & Minerals* **Themes, Overview,** and **Objectives** to become familiar with program content and expectations.
- ▶ Use **Preparation for Viewing** suggestions to introduce the topic to students.

Viewing *REAL WORLD SCIENCE: ROCKS & MINERALS*

- ▶ Set up viewing monitor so that all students have a clear view.
- ▶ Depending on your classroom size and learning range, you may choose to have students view *Real World Science: Rocks & Minerals* together or in small groups.
- ▶ Some students may benefit from viewing the video more than one time.

After Viewing *REAL WORLD SCIENCE: ROCKS & MINERALS*

- ▶ Select **Suggested Activities** that integrate into your classroom curriculum. If applicable, gather materials or resources.
- ▶ Choose the best way for students to work on each activity. Some activities work best for the whole group. Other activities are designed for students to work independently, in pairs, or in small groups. Whenever possible, encourage students to share their work with the rest of the group.
- ▶ Duplicate the appropriate number of **Vocabulary, Checking Comprehension,** and consumable activity pages for your students.
- ▶ You may choose to have students take consumable activities home, or complete them in the classroom, independently, or in groups.
- ▶ Administer the Test to assess students' comprehension of what they have learned, and to provide them with practice in test-taking procedures.
- ▶ Use the **Culminating Activity** as a forum for students to display, summarize, extend, or share what they have learned with each other, the rest of the school, or a local community organization.

SUGGESTED ACTIVITIES

Hands On

Many people collect rocks as a hobby. Sometimes these people are called “rock hounds.” They dig in riverbanks, quarries and other rocky areas to find rare and interesting specimens for their collections.

Tell students that they are going to be rock hounds by searching the school grounds for different types of rocks. Provide each student with a bag for storing specimens. Some rocks may need to be pried from the ground. Serious rock collectors use a small hammer for this purpose, but students can use popsicle sticks or emery boards instead. To make the process easier, require students to find rocks smaller than a golf ball.

Encourage the class to look for rocks that differ in color, texture and shape. Obtain a rock encyclopedia or reference book to help students identify the types of rocks they locate.



60 Minutes

Connection to Science

More than 98 percent of the rocks in the world are made of eight basic elements: oxygen, silicon, aluminum, iron, calcium, sodium, potassium and magnesium. Since these elements are common, most rocks are not worth a lot of money. However, rocks that contain rare minerals are very valuable.

Based on this information, what might some of these rare minerals be? (Some of the rarest and most valuable minerals in the world are gold, silver, pearl, diamond and other precious gems.)

The hardness of a rock is tested by scratching it with minerals listed in the Mohs scale. The hardest substance on the Mohs scale is also the hardest naturally occurring substance known. For these reasons, it is one of the most valuable items on earth. What might this substance be? (diamond)



10 Minutes

Connection to Art

Mosaic is a form of art that uses small stones or minerals to form an image. Ask students to work together as a class to plan and create a mosaic using the rocks they discovered in the “Hands On” activity. Smaller rocks will work better than larger ones.

First, ask the class to sort the rocks by color. These color groups will help to determine their subject. After deciding on a subject, the class should elect one or two students to draw the basic design. Everyone can contribute ideas and opinions. After the drawing is completed on a sturdy sheet of poster board, allow students to work together to glue different colored stones to the drawing.



60 Minutes

Meeting Individual Needs

Ask students to make sentences using the following words. Encourage them to use a dictionary if they are unsure of the meanings. Make sure that their sentences display an understanding of the words as they relate to the program.



25 Minutes

- rock - hard, solid parts of the earth's crust
- mineral - solid matter found in nature
- geologist - person who studies rocks to learn about the history of the earth
- mineralogist - person who studies minerals and their atomic structures

Link to the World

There are many famous and fascinating rock formations in the world. Stonehenge is an ancient calendar constructed of huge boulders. The Garden of the Gods, located near Colorado Springs, Colorado, is filled with natural sandstones formations. One of the formations, Balanced Rock, is a huge block of sandstone that is delicately balanced on a small base. Mount Rushmore National Memorial in South Dakota and Stone Mountain in Georgia feature giant man-made carvings on the sides of mountains.



20 Minutes

Ask students if they have ever seen any of these structures. Have they seen other rock formations or rock sculptures? If so, have them describe what they saw to other class members.

Writing

Each rock in the world has its own unique personality. Ask each student to choose a rock type from the list below. Using library books or encyclopedia, have them write a summary of the rock type. Encourage them to include details about the rock's appearance, color, structure, surface features and texture.

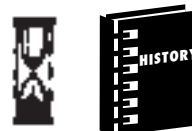


60 Minutes

Basalt
Lava
Granite
Pumice
Slate
Marble
Soapstone
Chalk
Coral
Flint

Connection to History

Since ancient times, people have been fascinated by the variety of minerals in the world. The Egyptians were some of the earliest people to use minerals in jewelry. As early as 300 B.C. the Greeks studied minerals and wrote books about their findings.



15 Minutes

In the early 1600s, scientists became very curious about the characteristics of minerals. Why were some minerals hard and others soft? Why did some minerals crumble while others broke off into sheets? It wasn't until the 1900s that scientists were able to understand the internal structure of minerals. By using the X-ray, they learned how atoms were arranged in different kinds of minerals. Different arrangements led to different characteristics.

Today, mineralogists are still answering questions about minerals by performing experiments. Ask students if they would enjoy a career as a mineralogist. What would it be like to solve the mysteries of crystals and rare minerals? Would they prefer to work in a laboratory setting or out in nature digging for stones?

Critical Thinking

Geologists are scientists who study rocks to learn about the history of the earth. One of the easiest ways for a geologist to recognize a sedimentary rock is to look for layers of different colors. Some people have referred to these layers as "tiny time capsules." How do you think they got this name? What causes the layers to form? (Since sedimentary rocks contain materials that were once plants, animals or older rocks, each layer tells a story about the history of the rock and the history of the area where the rock is found.)



20 Minutes

Pumice is a rock that begins as volcanic lava filled with hot gases. As the lava hardens, the gases escape, leaving millions of tiny holes. How might this explain why pumice floats when placed in water? (The holes are filled with air, which makes the pumice less dense than water. Anything will float if it is less dense than the material it is placed in.)

Culminating Activity

Using what they have learned in the unit, ask each student to write a question related to the program. Collect the questions and use them to write a review quiz. After giving the quiz, ask students if they enjoyed designing the test. How would they feel about designing more tests in the future?



60 Minutes

VOCABULARY

The following terms are from *Real World Science: Rocks & Minerals*. Fill in the number of each term next to its closest definition.

- | | |
|----------------|----------------|
| 1. rock | 6. metamorphic |
| 2. minerals | 7. erosion |
| 3. loam | 8. igneous |
| 4. sedimentary | 9. clay |
| 5. sand | 10. magma |

- ___ process by which wind and water slowly break down rock into soil
- ___ type of soil made of large loose grains of the mineral quartz
- ___ type of soil that is rich in decayed plant and animal matter
- ___ rock formed from tiny particles such as mud, sand and clay
- ___ rock formed by changes in heat and pressure
- ___ hot liquid that forms inside the earth
- ___ solid forms of matter found in nature, such as silver, quartz and sulfur
- ___ rock formed from magma or lava
- ___ type of soil that holds water very well and is used for pottery
- ___ hard part of the earth's crust; made of one or more minerals

CHECKING COMPREHENSION

Read the following sentences and circle the letter of the word that best fills each blank.

All rocks are made of one or more ___1___ , which are the basic building blocks of the earth. Different kinds of rock are found in each layer of the earth, starting with the top layer or ___2___ . The second layer of the earth is called the ___3___ . There are three basic kinds of rock. ___4___ rock is formed from melted earth material called magma. ___5___ rock is formed from tiny pieces of material such as sand. ___6___ rock is changed by heat or pressure. Rocks are broken down into smaller pieces by a process called ___7___ . Rocks are reduced in size until they become tiny particles known as ___8___ . One example of this is ___9___ , which is made of decayed animal and plant material. Another example is ___10___ , which holds water well and is often used to make pottery.

1. A. cells
B. electrons
C. minerals
D. gemstones
2. A. crust
B. mantle
C. corona
D. magma
3. A. loam
B. ionosphere
C. mantle
D. crust
4. A. Sedimentary
B. Organic
C. Igneous
D. Sebaceous
5. A. Metamorphic
B. Igneous
C. Sedimentary
D. Particle
6. A. Organic
B. Metamorphic
C. Heterogeneous
D. Volcanic
7. A. weathering
B. hydrogenation
C. polarization
D. sedation
8. A. gems
B. soil
C. gases
D. solutes
9. A. clay
B. sand
C. loam
D. granite
10. A. loam
B. clay
C. lava
D. charcoal

TERM LINK

Write the letter of each term next to the group of words which best describes it.

- A. rock
- B. minerals
- C. properties
- D. sedimentary
- E. stalactite
- F. metamorphic
- G. erosion
- H. igneous
- I. magma
- J. stalagmite

- ___ rock formed from magma or lava
- ___ mineral formation that hangs from the ceilings of caves
- ___ rock formed from tiny particles such as mud, sand and clay
- ___ rock formed by changes in heat and pressure
- ___ mineral formation that builds on the floors of caves
- ___ solid matter found in nature, such as silver, quartz and sulfur
- ___ color, shape and feel of a rock
- ___ process by which wind and water slowly break down rock into soil
- ___ hard part of the earth's crust; made of one or more minerals
- ___ hot liquid that forms inside the earth

TRUE OR FALSE

Place a T next to statements that are true and an F next to statements that are false.

1. ___ Scientists have identified over 3000 different kinds of minerals.
2. ___ The inner and outer cores of the earth are extremely hot and mostly made of iron.
3. ___ Mountains are part of the earth's crust, while the ocean floor is part of the mantle.
4. ___ The three types of rock are igneous, magma and sedimentary.
5. ___ Dead plants that are covered with sediment can become fossils.
6. ___ Marble is a metamorphic rock that starts out as limestone.
7. ___ Plants can break rocks apart if their roots become too large.
8. ___ Weathering occurs when minerals are added to rocks, making the rocks larger.
9. ___ Igneous rocks can never change into a different kind of rock.
10. ___ When magma flows to the surface of the earth, it is called loam.

MINERAL BLANKS

Each sentence contains a bold word that makes it untrue. Replace each bold word with a word from the list below that makes the sentence true.

sand
cycle
pressure
Loam

water
Igneous
fossil
alive

1. **Sedimentary** rock is formed when lava flows to the earth's surface and hardens.

2. Since coal is a sedimentary rock made from plants that lived a long time ago, it is known as a **compressed** fuel.

3. Metamorphic rocks are formed when igneous or sedimentary rocks are changed by heat and **wind**.

4. The Grand Canyon is an example of how **fire** can wear away rock.

5. **Clay** is a type of soil that is rich in nutrients from decayed plants and animals.

6. Soil made of loose grains of quartz is called **magma**.

7. The changing of rock from one type to another is known as the rock **mantle**.

8. Minerals are inorganic, which means that they are not **solid**.

MINERALS PUZZLE

Use the clues on the right to fill in the blanks on the left.

M _____ Diamonds, gold, silver and lead are all examples of _____ .

I _____ Rocks formed from lava or magma are known as _____ rocks.

N _____ People can change rock quickly with machines, but changes occur more slowly in _____ .

E _____ The mantle is the second layer of the _____ .

R _____ Most of the earth's crust is made up of different types of _____ .

A _____ Loam is rich in decayed plant and _____ matter.

L _____ When magma flows to the surface of the earth, it is called _____ .

S _____ Sedimentary rock is formed from compressed layers of mud and _____ .

WORD SEARCH

The following words can be found in the maze below. The letters may be arranged horizontally, vertically, diagonally or backward.

rock
mineral
loam
sedimentary
sand
metamorphic
erosion
igneous
clay
magma

M	A	E	R	O	S	I	O	N	J	R	N
A	M	O	C	D	B	H	P	J	C	E	S
G	P	T	L	Q	V	X	E	V	H	R	X
M	E	T	A	M	O	R	P	H	I	C	U
A	T	S	Y	B	H	S	C	P	K	Z	R
B	C	A	Q	T	P	M	O	R	Y	N	I
G	X	M	I	N	E	R	A	L	E	L	G
S	K	H	Q	D	C	P	B	O	V	U	N
S	E	D	I	M	E	N	T	A	R	Y	E
V	A	G	M	O	W	L	V	M	Z	T	O
T	O	N	U	G	B	Q	Z	R	S	N	U
A	L	W	D	W	Y	K	C	O	R	U	S

TEST

Circle the phrase which best answers each question.

1. Minerals don't need air, food or water because they are:
 - atomic.
 - sedimentary.
 - inorganic.
 - soil.

2. As water drips down into caves, minerals build up and form:
 - stalagmites.
 - diamonds.
 - coal.
 - magma.

3. The shape, color and feel of a rock are known as the rock's:
 - elements.
 - compounds.
 - soil type.
 - properties.

4. The top layer of the earth is called the:
 - mantle.
 - crust.
 - outer core.
 - magma.

5. Both the inner and outer cores are extremely hot and made mostly of:
 - iron.
 - sedimentary rock.
 - oxygen.
 - nitrogen.

TEST (CONTINUED)

6. One example of metamorphic rock is limestone being changed to:
- lava.
 - sand.
 - clay.
 - marble.
7. Rocks can be changed in shape, size and texture by:
- animals.
 - humans.
 - wind and water.
 - all of the above.
8. One example of moving water breaking down rock is:
- Stonehenge.
 - the pyramids in Egypt.
 - Mt. Rushmore.
 - the Grand Canyon.
9. The process by which wind and water wear away at rock is called:
- erosion.
 - solubility.
 - polishing.
 - particle decay.
10. Since clay sticks together very well, it is often used for:
- growing plants.
 - paving roads.
 - making pottery.
 - none of the above.

ADDITIONAL AIMS MULTIMEDIA PROGRAMS

You and your students might also enjoy these other AIMS Multimedia programs:

Real World Science Series

Real World Science: Habitats

Real World Science: Dinosaurs and Fossils

Real World Science: Seeds and Plants

Real World Science: Simple Machines

Real World Science: The Solar System

Real World Science: Trash and the Environment

Real World Science: Weather and Climate

ANSWER KEY for page 18

VOCABULARY

The following terms are from *Real World Science: Rocks & Minerals*. Fill in the number of each term next to its closest definition.

- | | |
|----------------|----------------|
| 1. rock | 6. metamorphic |
| 2. minerals | 7. erosion |
| 3. loam | 8. igneous |
| 4. sedimentary | 9. clay |
| 5. sand | 10. magma |

- 7 process by which wind and water slowly break down rock into soil
- 5 type of soil made of large loose grains of the mineral quartz
- 3 type of soil that is rich in decayed plant and animal matter
- 4 rock formed from tiny particles such as mud, sand and clay
- 6 rock formed by changes in heat and pressure
- 10 hot liquid that forms inside the earth
- 2 solid forms of matter found in nature, such as silver, quartz and sulfur
- 8 rock formed from magma or lava
- 9 type of soil that holds water very well and is used for pottery
- 1 hard part of the earth's crust; made of one or more minerals

ANSWER KEY for page 19

CHECKING COMPREHENSION

Read the following sentences and circle the letter of the word that best fills each blank.

All rocks are made of one or more ___1___ , which are the basic building blocks of the earth. Different kinds of rock are found in each layer of the earth, starting with the top layer or ___2___ . The second layer of the earth is called the ___3___ . There are three basic kinds of rock. ___4___ rock is formed from melted earth material called magma. ___5___ rock is formed from tiny pieces of material such as sand. ___6___ rock is changed by heat or pressure. Rocks are broken down into smaller pieces by a process called ___7___ . Rocks are reduced in size until they become tiny particles known as ___8___ . One example of this is ___9___ , which is made of decayed animal and plant material. Another example is ___10___ , which holds water well and is often used to make pottery.

1. A. cells
B. electrons
 C. minerals
D. gemstones

2. A. crust
B. mantle
C. corona
D. magma

3. A. loam
B. ionosphere
 C. mantle
D. crust

4. A. Sedimentary
B. Organic
 C. Igneous
D. Sebaceous

5. A. Metamorphic
B. Igneous
 C. Sedimentary
D. Particle

6. A. Organic
 B. Metamorphic
C. Heterogeneous
D. Volcanic

7. A. weathering
B. hydrogenation
C. polarization
D. sedation

8. A. gems
 B. soil
C. gases
D. solutes

9. A. clay
B. sand
 C. loam
D. granite

10. A. loam
 B. clay
C. lava
D. charcoal

ANSWER KEY for page 20

TERM LINK

Write the letter of each term next to the group of words which best describes it.

- A. rock
- B. minerals
- C. properties
- D. sedimentary
- E. stalactite
- F. metamorphic
- G. erosion
- H. igneous
- I. magma
- J. stalagmite

- H rock formed from magma or lava
- E mineral formation that hangs from the ceilings of caves
- D rock formed from tiny particles such as mud, sand and clay
- F rock formed by changes in heat and pressure
- J mineral formation that builds on the floors of caves
- B solid matter found in nature, such as silver, quartz and sulfur
- C color, shape and feel of a rock
- G process by which wind and water slowly break down rock into soil
- A hard part of the earth's crust; made of one or more minerals
- I hot liquid that forms inside the earth

ANSWER KEY for page 21

TRUE OR FALSE

Place a T next to statements that are true and an F next to statements that are false.

1. **T** Scientists have identified over 3000 different kinds of minerals.
2. **T** The inner and outer cores of the earth are extremely hot and mostly made of iron.
3. **F** Mountains are part of the earth's crust, while the ocean floor is part of the mantle.
4. **F** The three types of rock are igneous, magma and sedimentary.
5. **T** Dead plants that are covered with sediment can become fossils.
6. **T** Marble is a metamorphic rock that starts out as limestone.
7. **T** Plants can break rocks apart if their roots become too large.
8. **F** Weathering occurs when minerals are added to rocks, making the rocks larger.
9. **F** Igneous rocks can never change into a different kind of rock.
10. **F** When magma flows to the surface of the earth, it is called loam.

ANSWER KEY for page 22

MINERAL BLANKS

Each sentence contains a bold word that makes it untrue. Replace each bold word with a word from the list below that makes the sentence true.

sand
cycle
pressure
Loam

water
Igneous
fossil
alive

1. **Sedimentary** rock is formed when lava flows to the earth's surface and hardens.

 Igneous

2. Since coal is a sedimentary rock made from plants that lived a long time ago, it is known as a **compressed** fuel.

 fossil

3. Metamorphic rocks are formed when igneous or sedimentary rocks are changed by heat and **wind**.

 pressure

4. The Grand Canyon is an example of how **fire** can wear away rock.

 water

5. **Clay** is a type of soil that is rich in nutrients from decayed plants and animals.

 Loam

6. Soil made of loose grains of quartz is called **magma**.

 sand

7. The changing of rock from one type to another is known as the rock **mantle**.

 cycle

8. Minerals are inorganic, which means that they are not **solid**.

 alive

ANSWER KEY for page 23

MINERALS PUZZLE

Use the clues on the right to fill in the blanks on the left.

M inerals _____ Diamonds, gold, silver and lead are all examples of _____ .

I gneous _____ Rocks formed from lava or magma are known as _____ rocks.

N ature _____ People can change rock quickly with machines, but changes occur more slowly in _____ .

E arth _____ The mantle is the second layer of the _____ .

R ock _____ Most of the earth's crust is made up of different types of _____ .

A nimal _____ Loam is rich in decayed plant and _____ matter.

L ava _____ When magma flows to the surface of the earth, it is called _____ .

S and _____ Sedimentary rock is formed from compressed layers of mud and _____ .

ANSWER KEY for page 24

WORD SEARCH

The following words can be found in the maze below. The letters may be arranged horizontally, vertically, diagonally or backward.

- rock
- mineral
- loam
- sedimentary
- sand
- metamorphic
- erosion
- igneous
- clay
- magma

M	A	E	R	O	S	I	O	N	J	R	N
A	M	O	C	D	B	H	P	J	C	E	S
G	P	T	L	Q	V	X	E	V	H	R	X
M	E	T	A	M	O	R	P	H	I	C	U
A	T	S	Y	B	H	S	C	P	K	Z	R
B	C	A	Q	T	P	M	O	R	Y	N	I
G	X	M	I	N	E	R	A	L	E	L	G
S	K	H	Q	D	C	P	B	O	V	U	N
S	E	D	I	M	E	N	T	A	R	Y	E
V	A	G	M	O	W	L	V	M	Z	T	O
T	O	N	U	G	B	Q	Z	R	S	N	U
A	L	W	D	W	Y	K	C	O	R	U	S

ANSWER KEY for page 25

TEST

Circle the phrase which best answers each question.

1. Minerals don't need air, food or water because they are:

- atomic.
- sedimentary.
- inorganic.
- soil.

2. As water drips down into caves, minerals build up and form:

- stalagmites.
- diamonds.
- coal.
- magma.

3. The shape, color and feel of a rock are known as the rock's:

- elements.
- compounds.
- soil type.
- properties.

4. The top layer of the earth is called the:

- mantle.
- crust.
- outer core.
- magma.

5. Both the inner and outer cores are extremely hot and made mostly of:

- iron.
- sedimentary rock.
- oxygen.
- nitrogen.

ANSWER KEY for page 26

TEST (CONTINUED)

6. One example of metamorphic rock is limestone being changed to:

- lava.
- sand.
- clay.

• marble.

7. Rocks can be changed in shape, size and texture by:

- animals.
- humans.
- wind and water.

• all of the above.

8. One example of moving water breaking down rock is:

- Stonehenge.
- the pyramids in Egypt.
- Mt. Rushmore.

• the Grand Canyon.

9. The process by which wind and water wear away at rock is called:

• erosion.

• solubility.

• polishing.

• particle decay.

10. Since clay sticks together very well, it is often used for:

• growing plants.

• paving roads.

• making pottery.

• none of the above.