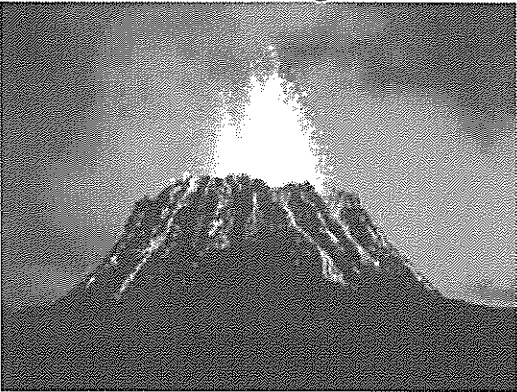
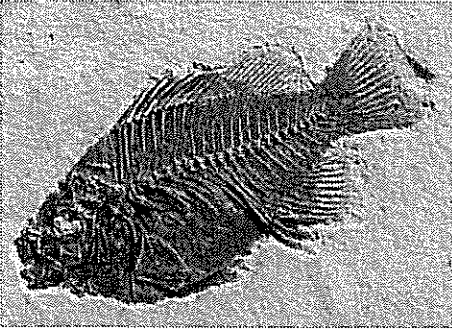
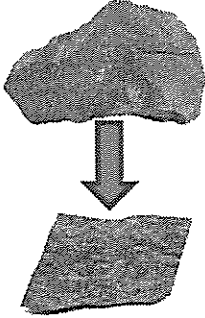


# Chapter 7: Rocks & Soil

## Types of Rocks

Igneous	Sedimentary	Metamorphic
<p>-forms from a very hot mixture of melted minerals and gases</p> <p>-the mixture can cool above or below the ground</p>  <p>Igneous rocks can come from volcanoes.</p>	<p>-forms from sediments, such as tiny rocks, sand, &amp; shells-one layer at time</p>  <p>Fossils of plants &amp; animals may be found in sedimentary rocks.</p>	<p>-rock that has changed by heat &amp; pressure</p> <p>-igneous &amp; sedimentary rocks can change into metamorphic rocks</p> <p>Shale (Igneous)</p>  <p>Slate (Metamorphic)</p>

The Chapter 7 test is scheduled for \_\_\_\_\_.

Review study guide on packet page 1, packet pages 9, 10, 11, 12, and book pages 214-215 to prepare for the test.

Name \_\_\_\_\_ Section \_\_\_\_\_

Name \_\_\_\_\_ Test Date: \_\_\_\_\_

## Chapter 7 – Study Guide

These items can be found in your child's binder in the science section or in their science book. All items have been discussed at length in class. Please refer to the cover of the packet to view which packet pages to study.

### Words to Know:

- igneous rock
- sedimentary rock
- decay
- metamorphic rock
- mineral
- soil
- nutrient
- loam

\*Here is a link to help your child to study the vocabulary words for Chapter 7.

<http://quizlet.com/1022441/scott-foresman-science-grade-3-chapter-7-flash-cards/>

### Ideas to Know:

- Rocks and minerals are natural materials made from nonliving matter.
- Rocks are made of one or more minerals.
- You can tell rocks apart by looking at their physical properties.
- Some physical properties of rocks include: color, what minerals they are made of, and texture.
- Rocks are classified based on how they are formed.
- Igneous rock forms when molten Earth materials cool and harden.
- Sedimentary rock forms when small pieces of rocky matter or sediment are pressed or cemented together. Fossils are usually found in this type of rock.
- Metamorphic rock forms when great heat and pressure inside the Earth change existing rock.
- Minerals are the most common solid material found on Earth.
- You can identify a mineral by its color, streak, hardness, luster, taste, smell, touch, or appearance.
- Since a mineral can be found in many different colors (example: quartz), the two best ways to identify a mineral are by hardness and by the streak mark or powder left on a rough surface.
- Luster is a property that refers to how a mineral reflects light.
- It is almost impossible to go through a day without using minerals.
- The mineral halite is crushed and ground up and used to flavor and preserve food.
- The mineral iron is used to make steel for tools and for machines.
- The mineral fluorite is used to make toothpaste.
- The mineral gold is often used to make jewelry.
- The mineral calcium helps form strong bones and teeth.
- The hardest mineral is a diamond. It can only be scratched by another diamond.
- Loam soil with its minerals, humus, air, and water is a very good mixture for growing most plants. It holds onto water loosely enough for plant roots to soak it up.

**Lab Activity**  
zone

Can you classify rocks by hardness?

Materials



calcite



gypsum



quartz



talc



penny

**What to Do**

- 1 Try to scratch each mineral with your fingernail.
- 2 **Observe** each mineral carefully to see if you scratched it. Record which minerals you scratched.
- 3 Try to scratch each mineral with a penny. Record which minerals you scratched.

- 4 Line up the minerals in order of hardness. Put the softest mineral first.



**Explain Your Results**

1. Were there any minerals that you could not scratch with either your fingernail or a penny? If so, which ones?
2. **Classify** List the minerals by hardness. Put the softest mineral first.

**Process Skills**

Before you classify, think about what you observed.

## Can you classify rocks by hardness?

Record your observation of each rock after scratching it with your fingernail and penny. Write "yes" if you scratched the rock and "no" if you did not scratch the rock.

Rock	Scratch with fingernail?	Scratch with penny?
Calcite		
Gypsum		
Quartz		
Talc		

### Explain Your Results

- Were there any minerals that you could not scratch with either your fingernail or a penny? If so, which ones?

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- Classify:** List the minerals by hardness. Put the softest mineral first.

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Name \_\_\_\_\_



**Explore:** What can you learn from rock layers?

**Explain Your Results**

**1.** Which layer did you add first? \_\_\_\_\_

Which layer in your **model** is the oldest? \_\_\_\_\_

How do you know?

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**2. Infer:** Where would you expect to find an older fossil—in an upper layer of rock or in a lower layer? Explain.

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Name \_\_\_\_\_

Use with Chapter 7, pp. 210-211

## **Investigate:** How much water can soil hold?

**6** Record the data you collect in the chart below.

<b>Type of Soil</b>	<b>Amount of Soil (mL)</b>	<b>Amount of Water Added (mL)</b>	<b>Amount of Water Collected in 10 Minutes (mL)</b>
<b>Sandy soil</b>			
<b>Clay soil</b>			
<b>Loam soil</b>			

### **Explain Your Results**

**1.** Describe the color, texture, and other properties of each soil sample you **observed**. What do you think each is made of?

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Name \_\_\_\_\_



Use with Chapter 7, pp. 210–211

**2.** Based on your **measurements**, which soil held the most water?

\_\_\_\_\_

Which held the least? \_\_\_\_\_

How do you know? \_\_\_\_\_

\_\_\_\_\_

### Go Further

In which soil would desert plants grow best? Make a plan to answer this or another question you may have.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

<b>Self-Assessment Checklist</b>	
I followed instructions to complete this activity.	_____
I recorded data in the chart.	_____
I described the properties of each type of soil and reported what each might be made of.	_____
I <b>communicated</b> which soil held the most water.	_____
I <b>communicated</b> which soil held the least amount of water.	_____



**Notes for Home:** Your child explored the properties of different types of soil and the amount of water each would hold.

**Home Activity:** With your child, plant flowers in loam soil and in clay soil to observe in which type of soil the plant will grow best.

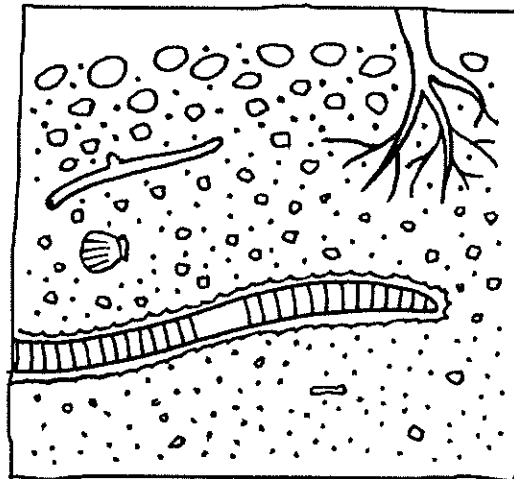
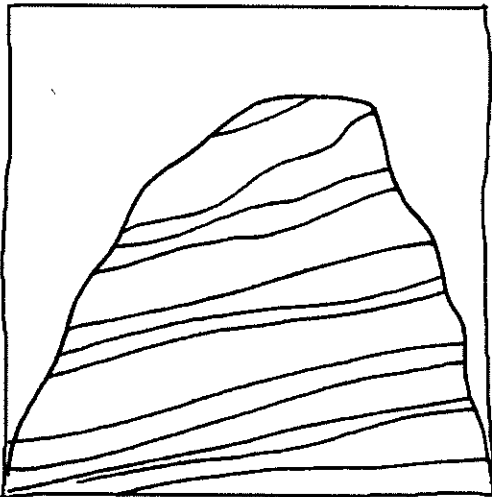


## Compare and Contrast

Read the magazine article and look at the pictures. How are rocks and soil alike and different?

### Rocks and Soil

The solid surface of Earth is covered with rocks and soil. Rocks are made of one or more minerals. Minerals are natural nonliving materials. Rocks may be large or small, but they are solid and hard to break. When rocks break down, soil can start to form. Soil is a loose mix of tiny bits of rock and material from dead plants and animals. Water will soak up into soil, but it runs off of rock.



### Apply It!

Use the graphic organizer on the next page to compare rocks with soil.



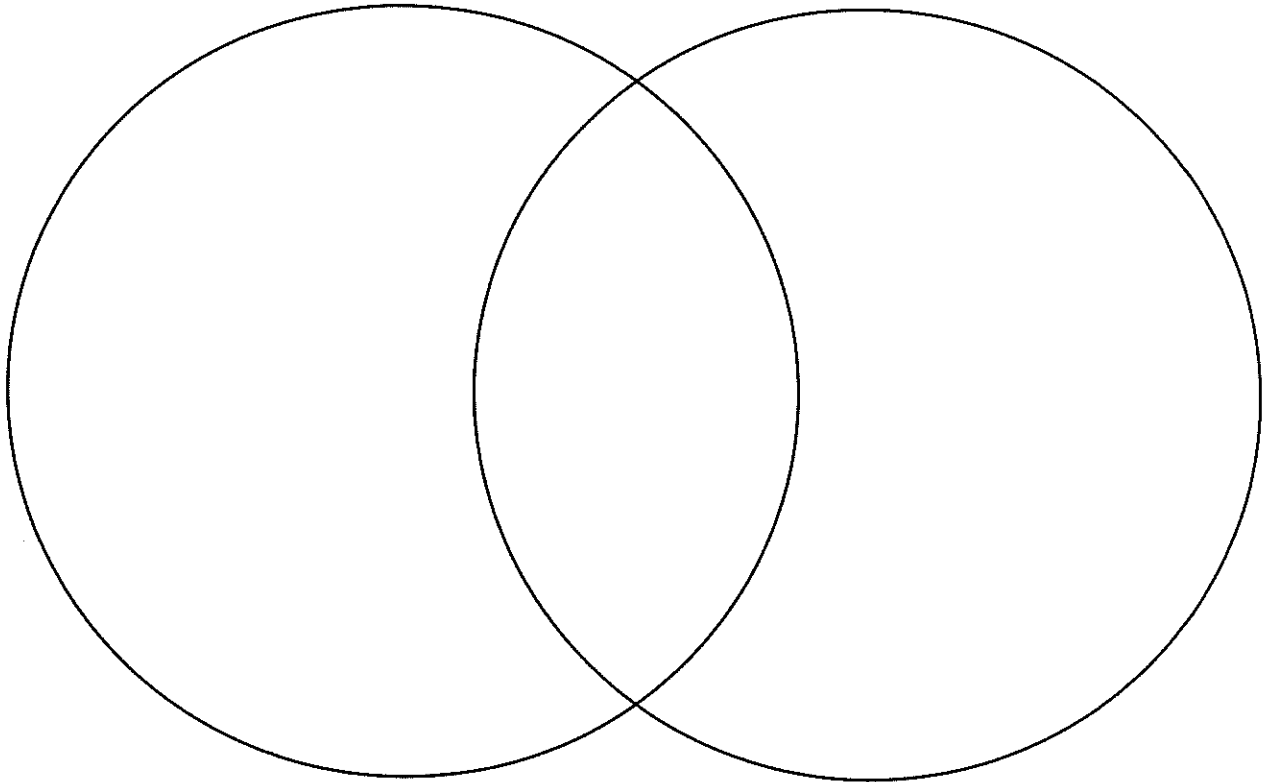
Name \_\_\_\_\_

Use with Chapter 7.

**Rocks**  
Different

Alike

**Soil**  
Different



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**Notes for Home:** Your child learned about the skill of comparing and contrasting.  
**Home Activity:** With your child make your own Venn diagram comparing and contrasting two familiar things, such as two pets or two favorite foods.



Name \_\_\_\_\_

Use with Chapter 7.

Read the clues. Choose a word to answer each riddle.

rock	metamorphic rock	igneous rock
mineral	sedimentary rock	decay
soil	nutrient	loam

1. Granite is an example. It forms deep underground. It needs heat to form. What is it? \_\_\_\_\_
2. When they die, plants and animals do this. It means to break down into bits. What is it? \_\_\_\_\_
3. It covers most of the land on Earth. It is made up of bits of rock and dead plant and animal matter. It is a home to earthworms. What is it? \_\_\_\_\_
4. It is a natural material. It has never been living. Every rock contains at least one. What is it? \_\_\_\_\_
5. Heat and pressure made it what it is today. Its name means "changes form." Slate is an example. What is it? \_\_\_\_\_
6. It is a kind of soil. Plants grow well in it. It holds lots of water. It is a mixture. What is it? \_\_\_\_\_
7. It forms in layers. It might contain fossils. It can tell a "story" about how life has changed over time. What is it? \_\_\_\_\_
8. A mountain is mostly this. It is solid and nonliving. It contains one or more minerals. It can be placed in one of three main groups. What is it? \_\_\_\_\_
9. It is a material that plants take from soil. It helps plants grow. It might come from a mineral or decaying plants and animals. What is it? \_\_\_\_\_



**Notes for Home:** Your child learned the vocabulary terms for Chapter 7.

**Home Activity:** Have your child cut out magazine pictures or draw pictures that illustrate the vocabulary words. Make up sentences together that use the words.

### Reviewing Terms: Matching

Match each description with the correct word or phrase. Write the letter on the line next to each description.

- |  |                     |
|--|---------------------|
| _____ 1. any solid, nonliving material made of one or more mineral     | a. sedimentary rock |
| _____ 2. a natural material that forms from nonliving matter           | b. igneous rock     |
| _____ 3. a rock that forms from a mixture of melted material and gases | c. rock             |
| _____ 4. a rock made of layers that are cemented together              | d. mineral          |
| _____ 5. a rock that has been changed by heat and pressure             | e. metamorphic rock |

### Reviewing Concepts: True or False

Write T (True) or F (False) on the line before each statement.

- \_\_\_\_\_ 6. All rocks have the same texture and grain size.
- \_\_\_\_\_ 7. Fossils are most often found in metamorphic rock.
- \_\_\_\_\_ 8. Igneous rock can come from volcanoes.

### Applying Concepts: Compare and Contrast

Use complete sentences to answer question 9. (2 points)

9. Name one way in which sedimentary, igneous, and metamorphic rocks are similar and one way in which they are different.

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## Reviewing Concepts: Sentence Completion

Complete the sentence with the correct word or phrase.

- \_\_\_\_\_ 1. When a mineral is rubbed on a rough surface, it leaves a \_\_\_\_\_. (streak, luster)
- \_\_\_\_\_ 2. Pearly, silky, greasy, and dull are ways to describe a mineral's \_\_\_\_\_. (luster, hardness)
- \_\_\_\_\_ 3. \_\_\_\_\_ is the hardest mineral. (Talc, Diamond)
- \_\_\_\_\_ 4. Minerals are found in \_\_\_\_\_ of the things people use every day. (many, few)
- \_\_\_\_\_ 5. \_\_\_\_\_ is a mineral that helps bones form. (Copper, Calcium)
- \_\_\_\_\_ 6. The mineral fluorite is found in \_\_\_\_\_. (steel, toothpaste)
- \_\_\_\_\_ 7. The mineral halite is known as \_\_\_\_\_. (lead, table salt)
- \_\_\_\_\_ 8. Almost \_\_\_\_\_ foods contain minerals. (all, no)

## Writing

Use complete sentences to answer question 9. (2 points)

9. Name two minerals and tell how each one is used by the human body.

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## Reviewing Terms: Matching

Match each description with the correct word. Write the letter on the line next to each description.

- |   |             |
|---|-------------|
| _____ 1. a thin layer of loose material that covers Earth's land        | a. loam     |
| _____ 2. the process of breaking down the remains of plants and animals | b. nutrient |
| _____ 3. a kind of material released by decay                           | c. soil     |
| _____ 4. a soil with a mixture of sand, silt, clay, and humus           | d. decay    |

## Reviewing Concepts: True or False

Write T (True) or F (False) on the line before each statement.

- \_\_\_\_\_ 5. It takes about ten years for nature to rebuild lost topsoil.
- \_\_\_\_\_ 6. Topsoil is the bottom layer of soil.
- \_\_\_\_\_ 7. Clay has the smallest soil particle size.
- \_\_\_\_\_ 8. Loam is soil that is good for growing plants.

## Applying Concepts: Calculating

9. In a certain area the topsoil is 1.5 meters deep, the subsoil is 3.0 meters deep, and the bedrock is 6.0 meters deep. How many meters deep are all three soil layers together? Show your work. (2 points)

## Minerals in Foods

Look at the table. A group of students looked at labels on food products at home. They recorded the number of foods they found that contain each mineral on the label.

Mineral	Calcium	Iron	Sodium	Potassium	Copper
Number of foods that have this mineral	32	24	51	12	8

Use the table to answer the questions.

1. Which mineral was found in the most foods?

\_\_\_\_\_

2. Which mineral was found in the fewest foods?

\_\_\_\_\_

3. The students looked at a total of 60 foods. How many foods in their sample were sodium free?

\_\_\_\_\_

4. Which mineral was found in twice as many foods as potassium was found?

\_\_\_\_\_



**Notes for Home:** Your child learned to read a table to compare data.

**Home Activity:** Help your child make a table showing how much calcium is in different dairy products. Compare which gives the most and least calcium per serving.

## Vocabulary Puzzle

Circle the five words about soil in the puzzle.

ROCK	SOIL	DECAY
NUTRIENT	LOAM	

S O A T D E C A Y P  
 O O N R O E B M E T  
 I O N U T R I E N T  
 L E T A L O A M U S  
 S O I C A C S I G N  
 D E C O K K S O I M



## A Story About Rocks

Use the letter code to spell the words in the story below.

### LETTER CODE

1 = A	2 = C	3 = D	4 = E
5 = F	6 = G	7 = H	8 = I
9 = K	10 = L	11 = M	12 = N
13 = O	14 = P	15 = R	16 = S
17 = T	18 = U	19 = Y	

Edwin has a piece of

- \_\_\_\_\_ in  
 11 4 17 1 11 13 15 14 7 8 2 15 13 2 9
  - Sonya has a **2**. \_\_\_\_\_ in  
 5 13 16 16 8 10
  - \_\_\_\_\_ in  
 16 4 3 8 11 4 12 17 1 15 19 15 13 2 9
- Edwin and Sonya share a **4**. \_\_\_\_\_  
 11 1 6 12 4
- \_\_\_\_\_. It comes from a **5**. \_\_\_\_\_  
 17 11 8 12 4 15 1 10
- found in **6**. \_\_\_\_\_  
 8 6 12 4 13 18 16 15 13 2 9