



# How Rocks Form

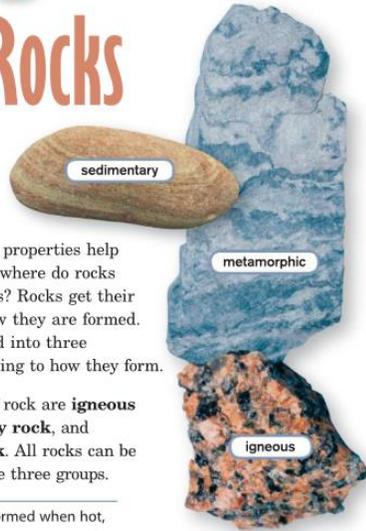
You have seen how properties help identify rocks. But where do rocks get these properties? Rocks get their properties from how they are formed. Rocks are classified into three main groups according to how they form.

The three groups of rock are **igneous rock**, **sedimentary rock**, and **metamorphic rock**. All rocks can be put into one of these three groups.

**igneous rock** – rock formed when hot, melted rock cools

**sedimentary rock** – rock formed when tiny pieces of rock and other particles get squeezed together

**metamorphic rock** – rock formed when extreme heat and pressure change one type of rock into another



**KEY IDEA** Rocks are classified according to how they form.

Igneous rock forms when melted rock, or **magma**, begins to cool. Hot **magma** rises from within Earth. As it makes its way toward the surface, it cools and hardens. Igneous rock can form underground in this way.

Sometimes **magma** reaches the surface of Earth through a volcano. The melted rock that comes out of a volcano is called **lava**. As **lava** cools and hardens, igneous rock is formed above ground.

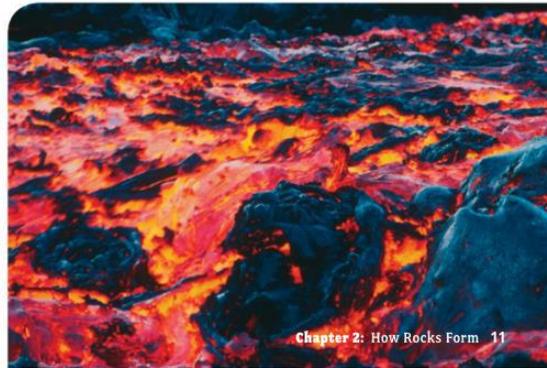
**magma** – hot, melted rock under Earth's surface

**lava** – hot, melted rock that reaches Earth's surface

▼ When lava cools, igneous rock is formed.

### Explore Language

**Igneous** is from a Latin word, *ignis*, which means "fire".



## Sediments Pile Up

Sedimentary rock forms in a different way. Over thousands and thousands of years, little bits of rock are broken down and carried away. These little bits of rock and other sediments begin to pile up in layers. Over a long period of time, the weight of the top layers puts pressure on the bottom layers. The bottom layers begin to stick together and then harden into sedimentary rock.

Chalk is a sedimentary rock formed from tiny parts of living things that once lived in the oceans. Over millions of years, the tiny parts piled up on the ocean floor and formed chalk.

**sediments** – tiny pieces of rock and other particles that are carried from one place to another

▼ The chalk cliffs in Dover, England are sedimentary rock.

▼ Fossils, or signs of life in the past, are often found in sedimentary rock.

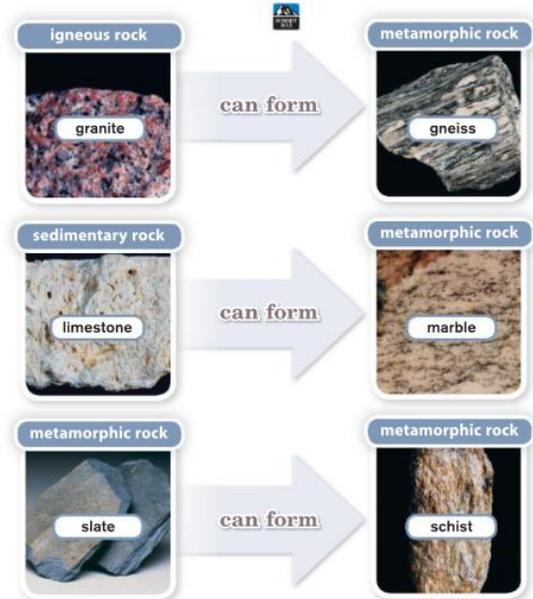


**SHARE IDEAS** Tell why you think sedimentary rock usually holds the best fossils.



## Heat and Pressure

Sometimes extreme heat and pressure can change rocks. Chemical processes within Earth can also cause change. When one type of rock changes into another type of rock, metamorphic rock forms. Metamorphic rock can form from igneous, sedimentary, or even other metamorphic rocks.



## The Rock Cycle

One of the most interesting things about rocks is that they are constantly changing. On the surface of Earth, rocks are constantly breaking down and being moved through **weathering** and **erosion**. Deep within Earth, rocks are constantly melting and going through other changes caused by heat, pressure, and chemical processes.

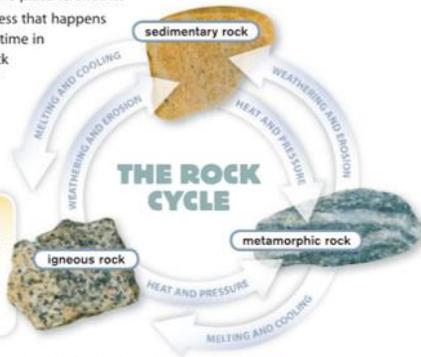
This never-ending cycle of change is called the **rock cycle**. Although it happens over a very long period of time, the rock cycle means that rocks never stay the same.

**weathering** – how rocks break down and change

**erosion** – the movement of rocks and other particles from one place to another

**rock cycle** – the process that happens over a long period of time in which one type of rock changes into another type of rock

**KEY IDEA** Rocks constantly change from one type to another in the rock cycle.



## YOUR TURN

### SUMMARIZE

Think about how igneous, sedimentary, and metamorphic rocks form. Summarize each process by finishing the sentences below.

1. Igneous rock forms when -- Select --

2. Sedimentary rock forms when -- Select --

3. Metamorphic rock forms when -- Select --

-- Select --

hot melted rock cools

tiny pieces get squeezed together

extreme heat and pressure



### MAKE CONNECTIONS

Igneous rock that is formed from a volcano is pretty easy to find. Why do you think this is so?

### STRATEGY FOCUS

#### Synthesize

Reread the ideas on page 14 and look at the rocks. Add what you already know about rocks. Make one statement that includes most of the information.

# Earth's Changing Surface: Rocks and Minerals

## Chapter 2: How Rocks Form

**ORANGE LEVEL**  
 Student Book,  
 pages 10-14

### USE KEY WORDS

Look at the Key Words on page 23 of your book.  
 Answer these questions about the Key Words in Chapter 2.

#### KEY WORDS

igneous rock  
 lava  
 magma  
 metamorphic rock  
 rock cycle  
 sedimentary rock  
 weathering

1. Hot, melted rock found deep within the Earth is called \_\_\_\_\_.

2. Explain the **rock cycle** and how the three different types of rock form.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. **Magma** that reaches the Earth's surface is called \_\_\_\_\_.

4. **Sedimentary rock** is formed when \_\_\_\_\_ pile up in layers and are squeezed together.

5. Rock breaks down in a process called \_\_\_\_\_.

### ORGANIZE IDEAS

As you read Chapter 2, complete the chart.

Type of Rock	Change	New Rock Formed
igneous	a. weathering and erosion b. heat and pressure	a. b.
sedimentary	a. melting and cooling b.	a. b.
metamorphic	a. b.	a. b.

### STRATEGY FOCUS: SYNTHESIZE

Look at the diagram on page 14. Add what you already know about cycles.  
 Make a statement that includes most of the information.