

**Close Reading
of Chapter 6:
Earth's Building
Blocks**





All the varieties of rocks can be organized into three classes.

Rocks and Building Blocks

Just what are rocks, exactly? Rocks are naturally occurring materials made of solid, nonliving substances called **minerals**. Think of minerals as the building blocks of rocks. Some rocks are formed from just one mineral. Most rocks, however, are combinations of two or more minerals. Minerals appear as different-sized pieces, or grains, in rocks. Some rocks have very tiny mineral grains, giving the rocks a smooth, even **texture**. Other rocks have larger mineral grains and a rougher texture.

Imagine hiking up a mountain and picking up rocks along the way. When you reach the top, you'll probably have quite a collection. Your rocks may have different colors and textures. Some may have stripes or layers. Some might be hard and others crumbly. Some have tiny grains whereas others have large grains that glitter when they catch the light. All this variety might seem confusing. Yet geologists organize all rocks into just three classes, or basic types: igneous, sedimentary, and metamorphic.

Follow along as I read page 53 aloud.

What is a metaphor?

The author states that minerals are the building blocks of rocks. What does this metaphor mean?



Help me read page 55.

Durable means “able to last a long time in good condition”. Why would it be important to people in prehistoric cultures that tools be durable?

The Art of Making Stone Tools

Many prehistoric cultures made tools out of rock. Scientists working in East Africa have found obsidian stone tools that are nearly two million years old. Obsidian was especially prized by ancient tool makers. Obsidian breaks into pieces with sharp edges that are good for cutting and piercing.

To make a very sharp cutting tool, ancient tool makers struck a block of obsidian with another, harder rock. This caused a long, thin blade of obsidian to flake off. Although the blade was fragile, it had incredibly sharp edges. In fact, the edges of obsidian blades are much sharper than metal scalpels used by surgeons today.

Making a spear tip or arrowhead was more time consuming. The tool makers started with a relatively flat piece of obsidian. They shaped it by striking off tiny flakes of rock, one after another, from the edges. They gradually shaped it into a sharp, **durable**—and often beautiful—pointed tool.



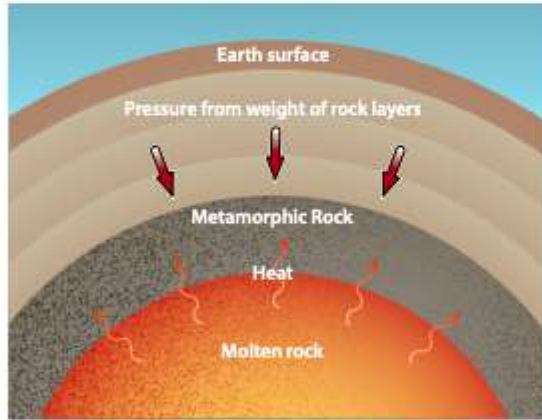
Spear tip



Arrowheads



Metamorphic rocks tend to form deep within Earth's crust. The pressure from countless tons of overlying rock is tremendous. Equally powerful is the heat rising from hot magma in the mantle beneath the crust. Metamorphic rocks often form where tectonic plates are slowly colliding. They can also form as magma travels up through cracks in Earth's crust and heats the rocks around the cracks. If the heat



of the magma completely melts the rock again, then it becomes igneous rock. If the rock is heated just enough to be changed, however, it instead becomes metamorphic rock.

Follow along as I read the last paragraph on page 58 aloud.

What role does heat from magma play in determining the class of rock formed?



Let's read the first 2 paragraphs on page 60.

Permanent fixtures are things that are part of something for a long time without changing. Why might rocks seem like permanent fixtures?

Why are rocks actually NOT permanent fixtures?

Why doesn't the rock cycle have a starting point and ending point?

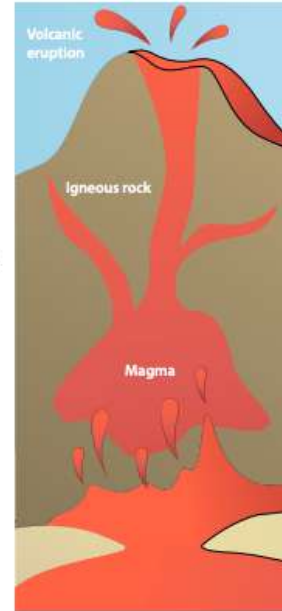
The Rock Cycle

Rocks you see in the world around you might seem like permanent fixtures. Given enough time, however, all rocks change. They are created, destroyed, and recreated in a continuous cycle. Geologists call this ongoing process the **rock cycle**.

The rock cycle has no starting or ending point. You can jump in anywhere to see how it works. Let's begin with magma erupting from a towering volcano. The magma (now lava) cools and hardens into igneous rock. Over the course of thousands of years, sun, wind, rain, and freezing temperatures cause the rock to **weather**, or break down into smaller pieces. The pieces continue to weather, slowly breaking down into sediments. Howling winds, flowing water, and gravity gradually move the sediments down the sides of the volcano and beyond. Movement of sediments from place to place is called **erosion**.



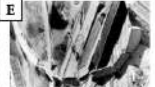





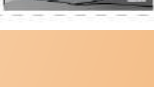
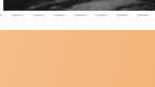


Imagine that the sediments end up in a lake, where they settle to the bottom. Over long periods of time, more layers of sediments are deposited on top of them. Compacting and cementing processes eventually turn the deeply buried sediments into sedimentary rock.

Now imagine that the sedimentary rock is near the edge of a tectonic plate. The plate collides with another plate—very slowly, of course. Tremendous heat and pressure generated by the collision gradually turn the sedimentary rock into metamorphic rock. As the plates continue colliding, their rocky edges crumple. The metamorphic



Time to complete row 5 of the Evidence Collector's Chart.



Chapter #	What is the cause?	Evidence of Changes on Earth			
	Terrible heat in the mantle to magma in a chamber below Earth's crust to move upward through crack in Earth's surface...				
	Rocks are created, destroyed, and recreated in a continuous cycle.				
	Over time, weathering breaks rocks into smaller pieces and erosion moves these pieces to new locations.				



Turn to Activity Page 9.1 (workbook page 87)



9. Heat from _____ below the rock melted it, turning it into igneous rock.

10. As part of _____ someday be

NAME: _____
DATE: _____

9.1
CONTINUED

Write the correct word or phrase to complete each sentence. Each of the words/phrases will be used once.

compacted
obsidian

1. Lava flowed
of _____

2. Tiny flakes of
worked to _____

3. The tiny flak
sediments _____

4. The sediments
time as the _____

5. The sediments

6. _____
millions of _____

7. The heat _____

8. New _____
years.

92 UNIT 5: Activity

Unit Knowledge Language

HOMWORK

The Rock Cycle

NAME: _____
DATE: _____

pour
vent
a lot
cool
the
rain
rock
gran
been
vies
new
solid
from

to th
are i
erent

tests
of a
grad
plate

65

50 UNIT 5: Activity

Changing Form: Metamorphic Rocks

The third major class of rocks is **metamorphic rock**. Metamorphic rocks form when igneous or sedimentary rocks are exposed to extreme heat and pressure. They can even form from other metamorphic rocks. High temperatures and crushing pressures alter the minerals in the rocks. Mineral grains may be flattened or rearranged into layers, veins, or stripes. They may also be changed into completely different minerals!

Remember granite, the igneous rock? When granite is subjected to extreme heat and pressure, it becomes a metamorphic rock called gneiss. When the sedimentary rock limestone is squeezed and heated deep below ground, it becomes a metamorphic rock called marble.

Metamorphic rocks tend to form deep within Earth's crust. The pressures from countless tons of overlying rock is tremendous. Equally powerful is the heat rising from hot magma in the mantle beneath the crust. Metamorphic rocks often form where tectonic plates are slowly colliding. They can also form as magma moves up through cracks in Earth's crust and heats the rocks around the cracks. If the heat

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58

Science Knowledge Language Page 60/300

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Word Work: COMPACT

Text Example:

“Over long periods of time, the weight of overlying layers compacts the sediments in deeper layers, squeezing them closer together.”

Meaning:

to closely pack or press together



My Example:

The garbage truck compacts the trash after the workers place it in the truck.

Can you think of an antonym for the word compact?



1 – compacts



OR

2 – spreads



Practice Commas and Quotation Marks

Let's look at some examples:

The text states Earth's crust is made almost entirely of rocks.

I wonder he said aloud if I will ever get to visit the Grand Canyon.

I have seen she exclaimed evidence of weathering and erosion.



1. *One day Monadalkni spotted the daughter of the Klamath chief, Loha. Monadalkni thought Loha was the most beautiful woman he had ever seen. Immediately he wanted her to be his wife. He came down from the mountaintop and proposed to Loha. He promised her eternal life*

NAME: _____

DATE: _____

9.2

ACTIVITY PAGE

Commas and Quotation Marks

For each item, insert commas and quotation marks in the appropriate places.

Example: He said my favorite board game is checkers.

He said, "My favorite board game is checkers."

2. *She ran to her father and tribal elders together. They she did.*

1. Just then, my dad asked What would you like to eat for dinner?

2. I replied I would like to have grilled chicken.

3. I want spaghetti and meatballs exclaimed my sister.

4. How about my mom asked we make sandwiches?

5. What if we . . . Dad paused and then said order pizza?

6. My sister and I both cried Yes! in response.

Read the following passages from Chapter 5 "Mythic Volcano Spirits." Rewrite the sentences marked in bold so they include dialogue. Make sure at least one sentence is rewritten as a split quotation. Be sure to use correct capitalization and punctuation.

Example: Loha refused.

Loha said, "No."

First, complete the front side by adding commas and quotation marks. You may talk to the people around you if you are having trouble.



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Now, let's take a look at the directions for the back side. We need to rewrite some sentences by creating dialogue.



Root: rupt

I am going to give you 2 word choices with the root rupt. You need to decide which word is being described or demonstrated by my sentence.



6. An _____ of a geyser releases hot water and steam.
(erupt, interrupt, erupt, erupts)

Challenge: Write a complete sentence using two words with the root *rupt*. Be sure to use correct capitalization and punctuation.

NAME: _____

DATE: _____

93 KEYWORD

Root rupt

Write a complete sentence for each of the following words. Be sure to use correct capitalization and punctuation.

1. erupt

2. uninterrupted

3. rupture

Choose the correct word to complete the sentence and write it on the line.

4. The science lesson was _____ when the fire alarm went off and we all had to quickly walk outside.
(erupt, interrupt, interrupt, erupt)

5. They _____ a serious discussion by making jokes and acting silly, causing everyone to lose focus.
(erupt, interrupt, interrupt, erupt)

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Now work with your Speed Dial 4 small group to complete Activity Page 9.3 (workbook page 95)



Complete Activity Page
9.1 for homework!

