



Teacher's Notes: Metamorphic Rock

Learning Objectives:

- The students will be able to explain how metamorphic rock is formed.
- The students will be able to list different types of metamorphic rock.
- The students will be able to identify marble and slate.
- The students will be able to identify what marble and slate are used for.

Activities

1. Technology – Use the technology printable to find images related to the book. Students can copy and paste the images into a Word document and type words or sentences about each image or they can create a PowerPoint.
2. Create metamorphic rock using clay or a snickers bar.
<https://nielsonschool.blogspot.com/2013/10/metamorphic-rock-activities.html>
3. Edible metamorphic rock activity. Use a slow cooker to demonstrate how metamorphic rocks are formed. <https://rainydaymum.co.uk/edible-metamorphic-rock-activity/>
4. Metamorphic Candy. This activity demonstrates on how metamorphic rocks are formed using broken graham crackers, mini marshmallows, M&Ms. Put the ingredients in a cupcake holder. Place the cupcake holder in the microwave and microwave until soft (not melted). Place a piece of paper over the cupcake holder, and have the students smash the ingredients down with their hands.
5. Look for rocks outside that have stripes. Collect them and bring them home to look at.

General Tips: The goal is to build background knowledge while leading an engaging discussion on any and all information that can be talked about on a given page. The items that you choose to bring up or focus on can be modified for the students you are working with. For example, if you have a student who can point to something in the picture, answer yes/no questions be sure to incorporate a lot more of that as you go through the book. On the same token, be sure to ask a lot of comprehension questions and critical thinking questions at the level appropriate for students. There is something for everyone.

Page 1: Earth has a lot of rocks on it! There are three different types of rocks on Earth. Each one is made different. Today we are going to talk about metamorphic rock and how it is made.

Pointing: rocks, count the circles

Short Answer: How many types of rocks are there?

Yes/No: Are there five different types of rocks? Are there three different types of rocks? Are all rocks made the same way?

Sharing opinion/experiences: Where do you see rocks? What do people do with rocks?

Peer to Peer Interaction: After you read Page 1, ask students, “What type of rock are we studying today?” The answer is the main idea card “metamorphic.” Students will find the main idea card and read it to their partner. Teacher will prompt them to talk about rocks and the number 3.

Page 2: Metamorphic rock is one type of rock on Earth. Metamorphic rock starts as one type of rock and then changes into metamorphic rock. Other rocks turn into metamorphic rocks. We will find out how that happens in this book. Igneous rock can turn into metamorphic rock. Sedimentary rock can turn into metamorphic rock.

Pointing Questions: white rock, black rock, brown rock, metamorphic, igneous, sedimentary

Short Answer: what is metamorphic rock made of?

Yes/No: Is metamorphic rock a type of rock? Can igneous rock change into metamorphic rock? Can sedimentary rock change into metamorphic rock?

Sharing opinion/experiences: How do you think those rocks turn into metamorphic rock?

Peer to Peer Interaction: After you read Page 2, ask students, “What is metamorphic rock made of?” The answer is the main idea card “other rocks.” Students will find the main idea card and read it to their partner. Teacher will prompt them to answer some of the questions above.

Page 3: Talking Points: Metamorphic rock is made deep in the ground. It’s very, very deep. Deeper than a big hole that someone digs.

Pointing Questions: hold, trees, dirt

Short Answer: Where is metamorphic rock made?

Yes/No: Is metamorphic rock made on the beach? Is metamorphic rock made deep in the ground?

Peer to Peer Interaction: After you read Page 3, ask students, “Where is metamorphic rock made?” The answer is the main idea card “deep.” Students will find the main idea card and read it to their partner. Teacher will prompt them talk about.

Page 4: When the rocks are very deep in the ground, there is a lot of dirt and rocks on top of it. That starts to squeeze it really hard. The heavy weight squeezes the rock.

Pointing Questions: rock, dirt, squeeze icon, heavy weight icon, point to the rocks being squeezed. Point to the heavy weight on top of the rocks.

Short Answer: What does the icon for weight mean? What does the icon for squeeze mean? Why do the rocks get squeezed?

Yes/No: Do rocks get squeezed that are buried deep in the ground?

Sharing opinion/experiences: What is something we can squeeze (find something to squeeze and talk about how the object gets squished, just like the rocks.

Peer to Peer Interaction: After you read Page 4, ask students, “What is on top of the rocks?” The answer is the main idea card “weight.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask some of the questions above.

Page 5: Heavy dirt is on top of the rocks. The hot magma is under the rocks. The rocks are in the middle of the dirt and magma. The rocks get pushed and squished by the heavy dirt. The rocks get very hot and cook from the magma. Have students view the following video of the metamorphic rock song.
<https://www.youtube.com/watch?v=rOkJswFK3ZU>

Pointing Questions: dirt, rock, magma

Short Answer: What happens to the rock in the middle of the dirt and magma?

Yes/No: Is the rock in the middle of the dirt and magma? Does the rock get pushed from the dirt? Does the rock get cooked from the hot magma?

Sharing opinion/experiences: why do things get hot?

Peer to Peer Interaction: After you read Page 5, ask students, “What happens to the rock?” The answer is the main idea card “hot.” Students will find the main idea card and read it to their partner. Teacher will prompt them to talk about

Page 6: The weight and the heat change the rock. The weight and the heat turn the rock into metamorphic rock. Say the word “metamorphic.” Do you hear the sound “morph”? Morph means change. Metamorphic rock is rock that started as one type of rock and then changed. The weight from the dirt and the heat from the magma change the rock. Look at the picture in the book. The rock had heavy weight on top of it, then it got hot because it was pushed next to the hot magma. That is how you make metamorphic rock

Pointing Questions: icons for weight, squeeze, and hot

Short Answer: What happens to the rock when there is weight from the dirt and heat from the magma? How is metamorphic rock made?

Yes/No: Does the weight and heat make the rock stay the same? Does the weight and the heat change the rock? Does the weight and the heat change the rock into metamorphic rock?

Sharing opinion/experiences: what made the rocks change?

Peer to Peer Interaction: After you read Page 6, ask students, “What does the weight and heat do to the rock?” The answer is the main idea card “change.” Students will find the main idea card and read it to their partner. Teacher will prompt students to ask some of the questions above.

Page 7: Some metamorphic rock has beautiful stripes. Stripes are lines that go across something. Look around the room. Can you find anything that has stripes?

Pointing Questions: rock, stripes, black stripes, brown stripes

Short Answer: What do some metamorphic rock have on them?

Yes/No: Do some metamorphic rock have stripes across them?

Sharing opinion/experiences: Stripes are lines across something. Some metamorphic rocks have stripes. Some animals have stripes. Some people wear clothes with stripes. Can you think of a striped animal? Do you have any striped clothes? What color are the stripes?

Peer to Peer Interaction: What do some metamorphic rock have on them?" The answer is the main idea card "stripes." Students will find the main idea card and read it to their partner. Teacher will prompt them to talk about stripes and what things have stripes on them.

Page 8: One type of metamorphic rock is marble. Marble is a beautiful rock. Marble is usually white. Some people have marble countertops in their kitchens or in their bathrooms. Some people have marble floors. Have students view the following video of a marble quarry. Pause periodically to discuss and to have student point to the marble. <https://www.youtube.com/watch?v=pgRXju0Ggp4>

Pointing Questions: marble, marble countertop, sink, mirror

Short Answer: What is one type of metamorphic rock? What type of rock is marble? What can marble be used for?

Yes/No: Is marble a type of metamorphic rock? Can marble be used on counters? Can marble be used on floors?

Sharing opinion/experiences: What color are your kitchen counters? What color are your bathroom counters?

Peer to Peer Interaction: After you read Page 7, ask students, "What is one type of metamorphic rock?" The answer is the main idea card "marble." Students will find the main idea card and read it to their partner. Teacher will prompt them to talk about what marble can be used for.

Page 9: One type of metamorphic rock is slate. Slate is a black or gray color. Schools used to have chalkboards made of slate. Today people have floors made of slate. A lot of roofs on houses and buildings are made of slate. Have students view the following video of a slate quarry. Pause periodically to discuss and to have students point to the slate.

<https://www.youtube.com/watch?v=G05wFgTpEag>

Point: slate, house, roof, kitchen, kitchen floor, table, chairs, doors

WH Questions: What is one type of metamorphic rock? What type of rock is slate? What is metamorphic rock used for? What color is slate?

Yes/No: Is slate a type of metamorphic rock? Is slate used to make couches? Is slate used for flooring? Is slate used for roofs?

Sharing opinion/experiences: Slate is black. Some people have slate floors. What color are the floors in your house? Would you think slate floors would look good or bad?

Peer to Peer Interaction: After you read Page 8, ask students, “What is one type of metamorphic rock?” The answer is the main idea card “slate.” Students will find the main idea card and read it to their partner. Teacher will prompt them to talk about what color slate is and what slate is used for.