

Metamorphic Rocks -- Rocks that Change

By Cindy Grigg

¹ Rocks can be put into three main groups. They are grouped by how the rocks formed. Metamorphic (met-uh-MOR-fic) rocks are changed by the heat and pressure inside Earth. "Metamorphic" comes from a Greek word that means "change of form." Metamorphic rocks can be formed from other metamorphic rocks. They can form from sedimentary and igneous rocks, too.

² The temperature deep inside the Earth is much hotter than temperatures near or on the surface. The weight of tons of land and rocks on top presses down on the rocks underneath. This pressure, along with heat, causes the rocks



inside the Earth to go through a physical or chemical change. Movement of Earth's plates causes pressure on rocky material under the surface, resulting in folding. Water can dissolve and redeposit minerals. This can also cause a change in rocks. Minerals react with each other at high heat. Atoms rearrange, and new minerals are created from old ones. Grains in rocks are pressed and made more compact. Rocks morph into other kinds of rocks.

³ Some metamorphic rocks are slate, schist, gneiss, marble, and quartzite. Sandstone is a sedimentary rock. It is made of grains of sand pressed together. Sandstone is fairly soft. It crumbles easily. When sandstone changes into the metamorphic rock quartzite, it becomes one of the hardest rocks.

⁴ The sedimentary rock shale changes into slate. The mineral grains in shale change directions because of the heat and pressure. Slate, a metamorphic rock, can be changed by continued heat and pressure into a rock called schist. Schist is very different from shale. It looks different. Its structure and composition is different. Schist is made up of flaky scales and splits easily.

⁵ The most common type of metamorphic rock is gneiss (say "nice"). Gneiss forms from granite, an igneous rock. Granite has mineral grains of different colors. They look like grains of salt or bigger blobs of color. When granite is pressed and heated inside Earth, the minerals rearrange into layers or bands instead of grains or blobs. Granite might look like it has salt and pepper inside it, but gneiss looks like a layer cake. Squeezing pressure between two of Earth's plates sometimes causes the rocky materials to bend or fold. The layers may curve or swirl.

⁶ Metamorphic rocks are changed in physical or chemical form from older rocks. All three kinds of rocks may change into metamorphic rocks. Heat and pressure inside Earth cause older rocks to change into new ones.

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<p>1. In paragraph 2, what does "morph" mean?</p> <p><input type="radio"/> A A piece of speech</p> <p><input type="radio"/> B Transfer an image by computer</p> <p><input type="radio"/> C Change in appearance or form</p> <p><input type="radio"/> D One kind of animal or plant</p>	<p>2. What causes other kinds of rocks to change into metamorphic rocks?</p> <p><input type="radio"/> A Heat</p> <p><input type="radio"/> B Pressure</p> <p><input type="radio"/> C Water dissolving or re-depositing minerals</p> <p><input type="radio"/> D All of the above</p>
<p>3. Gneiss rocks form from _____.</p> <p><input type="radio"/> A A type of igneous rock</p> <p><input type="radio"/> B A type of metamorphic rock</p> <p><input type="radio"/> C A type of sedimentary rock</p>	<p>4. Quartzite rocks form from _____.</p> <p><input type="radio"/> A A type of igneous rock</p> <p><input type="radio"/> B A type of metamorphic rock</p> <p><input type="radio"/> C A type of sedimentary rock</p>
<p>5. <i>Granite might look like it has salt and pepper inside it, but gneiss looks like a layer cake.</i> How does the author's use of similes in this sentence help the reader?</p> <p><input type="radio"/> A The sentence gives the reader a mental picture of the differences in the two types of rock.</p> <p><input type="radio"/> B The author compares two rocks that have nothing in common.</p> <p><input type="radio"/> C The author's use of similes doesn't help the reader.</p> <p><input type="radio"/> D The sentence compares minerals in two rocks to two foods to make the reader hungry.</p>	<p>6. Schist rocks form from _____.</p> <p><input type="radio"/> A A type of sedimentary rock</p> <p><input type="radio"/> B A type of igneous rock</p> <p><input type="radio"/> C A type of metamorphic rock</p>
<p>7. The word "metamorphic" comes from the _____ language.</p> <p>_____</p> <p>_____</p>	<p>8. Gneiss looks like a layer cake. What two things are being compared in this simile?</p> <p><input type="radio"/> A Layers of minerals in a rock to layers in a cake</p> <p><input type="radio"/> B Layers of rocks in a mountain to a cake</p> <p><input type="radio"/> C None of the above</p>

