Lesson 4.6: Metamorphic Rocks

Task	Page(s)	Learning Target
1	2	I can describe how metamorphic rocks are formed and classified.
2	3	I can use observations to describe and classify metamorphic rocks.

Task 1 Learning Target: I can describe how metamorphic rocks are formed and classified.

1. Metamorphic Rock

A. How does metamorphic rock form?

B. What are some characteristics of metamorphic rock?

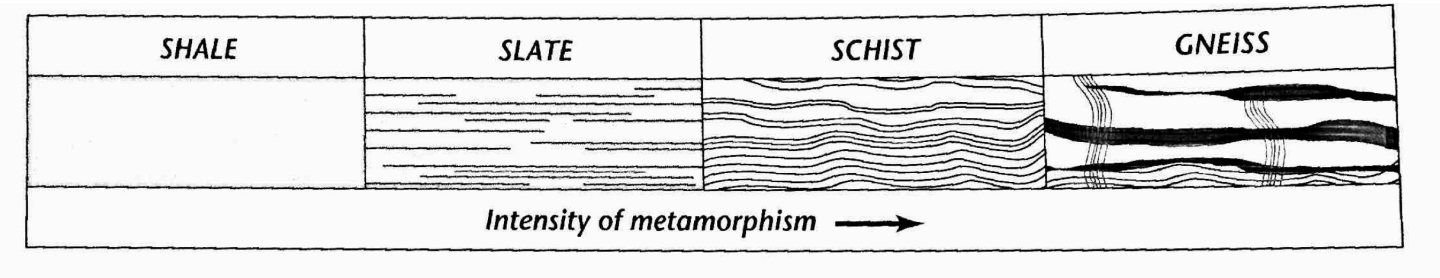
a. Foliated:

b. Non foliated:

C. Read the passage and examine the diagrams below. Then answer the questions that follow.

Every metamorphic rock is a rock that has changed in form. Tremendous pressure and high temperatures can change any rock into metamorphic rock. This process often occurs near plate boundaries. There, pressure builds as one plate collides with another. In addition, hot magma flows upward into rock near these boundaries. Such intense conditions change one kind of rock into another, such as shale, a sedimentary rock, into slate, a metamorphic rock. But what happens if the pressure and temperature continue to increase after shale becomes slate? Look at Figure 1 below. Slate changes into schist, and schist changes into gneiss.

Figure 1



Gneiss and schist are the most common metamorphic rocks. Gneiss is a foliated rock usually composed of quartz and feldspar. Schist is also foliated, but its mineral composition varies. The terms gneiss and schist actually describe certain textures of metamorphic rock. That's why both shale and granite can change into gneiss, and both granite and basalt can change into schist. Figure 2 shows common metamorphic rocks to the right. The rocks on the left are igneous and sedimentary rocks. The arrows represent pressure and temperatures.

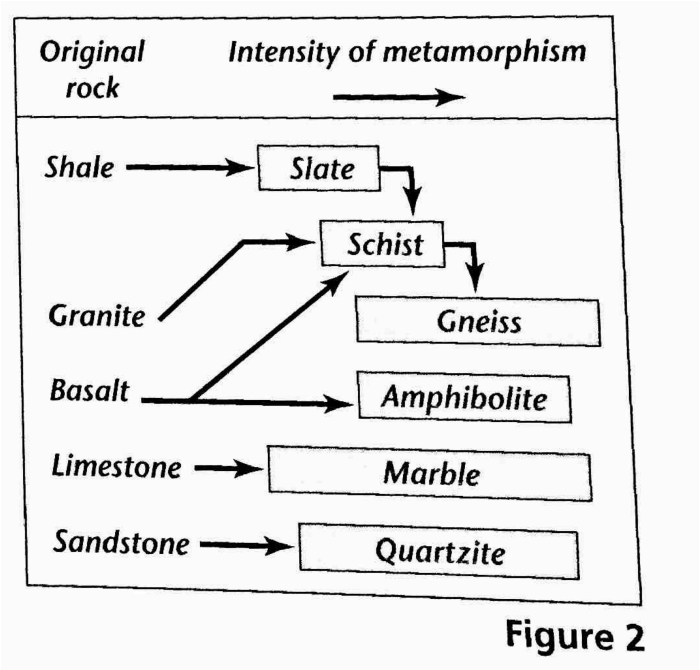


Figure 2

1. What causes shale to change into slate?
2. What are gneiss and schist?
3. What happens to the slate if these conditions increase?
4. How do tremendous pressures and high temperatures affect limestone?
5. How does metamorphism affect basalt?
6. What rocks change into schist?

Task 2 Learning Target: I can use observations to describe and classify metamorphic rocks.

1. Draw a sketch of the metamorphic rocks.

2. How would you classify each sample?

3. Describe the way they formed?

4. Why might they possess different colors?

5. Enrichment: How could you model the making of metamorphic rock with a bar of chocolate?