

# Section 3.4 Metamorphic Rocks

**Outlining** This outline is a continuation of the outline from Section 3.3. Complete it as you read. Include points about how each of these rocks forms, some of the characteristics of each rock type, and some examples of each.. (8pts)

III. Metamorphic Rocks
A. Foliated Rocks
1. How it forms : _____
2. characteristics: _____
3. example: _____
4. example: _____
B. Nonfoliated Rocks
1. How it forms : _____
2. characteristics: _____
3. example: _____
4. example: _____


1. Is the following sentence true or false? Metamorphism means “a change in form.” \_\_\_\_\_

## Formation of Metamorphic Rocks

Match each description to its term. The terms will be used more than once.

Description	Term
_____ 2. takes place when magma intrudes rock	a. contact metamorphism
_____ 3. produces high-grade metamorphism	b. regional metamorphism
_____ 4. produces low-grade metamorphism	
_____ 5. changes in rock are minor	
_____ 6. results in large-scale deformation	
_____ 7. forms marble	
_____ 8. occurs during mountain building	

## Agents of Metamorphism

- 9.  The agents of metamorphism are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ solutions.
- 10. Is the following sentence true or false? During metamorphism, rocks are usually subjected to one agent at a time. \_\_\_\_\_
- 11. What is confining pressure? \_\_\_\_\_
- 12. What is directed pressure? \_\_\_\_\_








13. What type of pressure causes folding in rock? \_\_\_\_\_

Agents of Metamorphism	
Cause	Effect
14. Heat	
15. Pressure	
16. Reactions in solution	

### Classification of Metamorphic Rocks

17. Circle the letter(s) of each sentence that is true about foliated metamorphic rocks. (1pt all or nothing)
- a. It is rock with a layered or banded appearance.
  - b. Pressure can form it.
  - c. Gneiss and marble are examples of it.
  - d. Schist is an example of it.
18. Circle the letter(s) of each sentence that is true about nonfoliated metamorphic rocks. (1pt all or nothing)
- a. It is a metamorphic rock that does not have a banded texture.
  - b. Most of it contains several different types of minerals.
  - c. Marble is an example of it.
  - d. Quartzite and anthracite are examples of it.

**Table 3 Classification of Major Metamorphic Rocks**

	Foliated Metamorphic Rocks			Nonfoliated Metamorphic Rocks		
	Parent Rock	Texture	Rock Name	Parent Rock	Texture	Rock Name
Increasing metamorphism ↓	Siltstone or Shale		Slate	Limestone		Marble
	Slate		Phyllite	Sandstone		Quartzite
	Phyllite		Schist	Coal		Anthracite
	Schist or Granite		Gneiss			

19. What is the parent rock of slate? \_\_\_\_\_
20. What rock can sandstone metamorphose into? \_\_\_\_\_
21. Schist has what type of texture? \_\_\_\_\_
22. Marble was once \_\_\_\_\_
23. Which rock took more heat and/or pressure to form, slate or gneiss? \_\_\_\_\_