

Name _____

LAB: METAMORPHIC ROCKS

I. **Rock SET:** Study each of the metamorphic **rocks** and complete the Metamorphic Rock chart.

- Describe the **TEXTURE** completely:
 - Foliated or Nonfoliated**
 - If foliated, describe the foliation:
 - banded (gneissic)
 - schistose (platy with visible crystals)
 - slaty (platy with microscopic crystals)
- MINERAL COMPOSITION:**

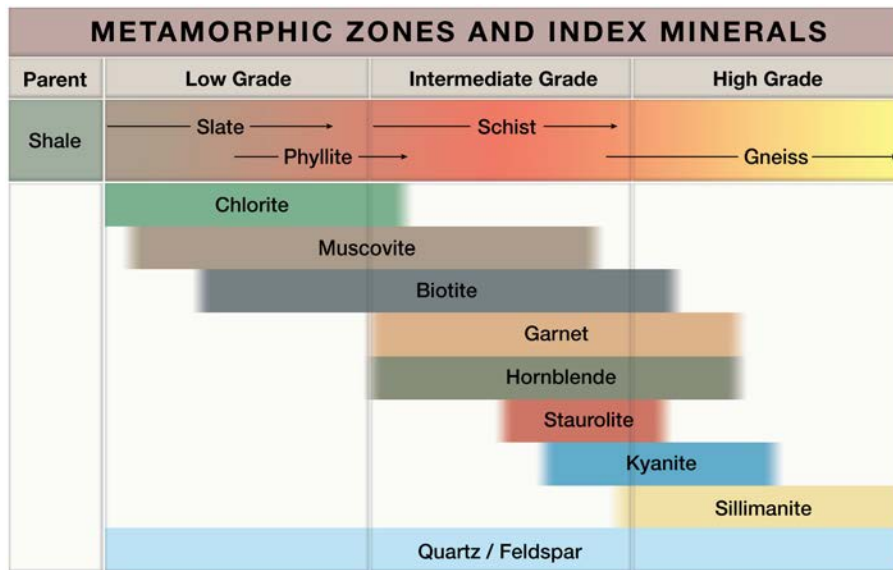
For Nonfoliated rocks, you must determine the mineral composition.
For Foliated rocks, only identify any single large crystals (porphyroblasts)
- Identify** Rocks from the Rock Set using (Figure 7.16, P197, Figure Next Page.
- INTERPRETATION --**

Estimate metamorphic grade, if applicable (Fig. 7.6 Pg. 192, Figure Below)
- Answer the following questions:

a. How are quartzite and marble distinguished from each other?

b. Compare marble with its parent rock, limestone. How has metamorphism changed the texture?

c. Compare slate with its parent rock, shale. How can these be distinguished?



METAMORPHIC ROCK ANALYSIS AND CLASSIFICATION

STEP 1: What are the rock's textural features?		STEP 2: What are the rock's mineralogical composition and/or other distinctive features?	STEP 3: Metamorphic rock name	STEP 4: What was the parent rock?	STEP 5: What is the rock used for?		
FOLIATED	Fine-grained or no visible grains	Flat slaty cleavage is well developed	SLATE ¹	INCREASING METAMORPHIC GRADE ↓	Mudstone or shale	Roofing slate, table tops, floor tile, and blackboards	
		Phyllite texture well developed more than slaty cleavage	PHYLLITE ¹		Mudstone, shale, or slate	Construction stone, decorative stone, sources of gemstones	
	Medium- to coarse-grained	Schistosity: foliation formed by alignment of visible crystals; rock breaks along scaly foliation surfaces; crystalline texture	Mostly blue or violet needle-like crystals (blue amphibole) Mostly visible sparkling crystals of chlorite +/- actinolite (green amphibole) Mostly visible sparkling crystals of muscovite Mostly visible sparkling crystals of biotite		Blueschist Greenschist Muscovite schist Biotite schist	Mudstone, shale, slate, or phyllite	Construction stone, decorative stone, sources of gemstones
		Gneissic banding: minerals segregated into alternating layers gives the rock a banded texture in side view; crystalline texture	Visible crystals of two or more minerals in alternating light and dark foliated layers		GNEISS ¹	Mudstone, shale, slate, phyllite, schist, granite, or diorite	
FOLIATED OR NONFOLIATED	Medium- to coarse-grained crystalline texture	Mostly visible glossy black amphibole (hornblende) in blade-like crystals	AMPHIBOLITE	Basalt, gabbro, or ultramafic igneous rocks	Construction stone		
	Crystalline texture	Green pyroxene + red garnet	ECLOGITE	Basalt, gabbro	Titanium ore		
NONFOLIATED	Fine-grained or no visible grains	Glassy texture; slaty cleavage may barely be visible	ANTHRACITE COAL	Peat, lignite, bituminous coal	Highest grade coal for clean burning fossil fuel		
		Microcrystalline texture	HORNFELS	Any rock type	Decorative stone		
		Microcrystalline texture or no visible grains. May have fibrous asbestos form	SERPENTINITE	Basalt, gabbro, or ultramafic igneous rocks			
	Microcrystalline or no visible grains	Talc; can be scratched with your fingernail; shades of green, gray, brown, white	SOAPSTONE	Basalt, gabbro, or ultramafic igneous rocks	Art carvings, electrical insulators, talcum powder		
	Fine- to coarse-grained	Sandy texture	Quartz sand grains fused together; grains will not rub off like sandstone; usually light colored	QUARTZITE ¹	Sandstone	Construction stone, decorative stone	
		Microcrystalline (resembling a sugar cube) or medium to coarse crystalline texture	Calcite (or dolomite) crystals of nearly equal size and tightly fused together; calcite effervesces in dilute HCl; dolomite effervesces only if powdered	MARBLE ¹	Limestone	Art carvings, construction stone, decorative stone, source of lime for agriculture	
Conglomeratic texture, but breaks across grains		Pebbles may be stretched or cut by rock cleavage	META-CONGLOMERATE	Conglomerate	Construction stone, decorative stone		

¹Modify rock name by adding names of minerals in order of increasing abundance. For example, garnet muscovite schist is a muscovite schist with a small amount of garnet.

Metamorphic Rock Chart – UNKNOWNNS

#	Texture Type of foliation	Mineral Composition	Rock Name	Parent Rock	Uses	Grade
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						