

## Lab 06 - Metamorphic Rock Identification Key

1. slate, phyllite, schist --> shale protolith  
gneiss --> granite protolith
2. quartzite --> sandstone protolith  
hornfels --> shale protolith  
marbles --> limestone protolith  
skarn --> dirty limestone protolith
3. igneous rocks = crystallization; metamorphic rocks = recrystallization
4. 3 kilometers per 1 kilobar
- 5 & 6. SKIP for now
7. false; under high T and *high P*
8. quartzite (pure quartz like a sandstone); marble (pure calcite like a limestone)
9. mountain ranges
10. raising magma bodies (with lots of heat and volatiles)
11. recrystallization; mineral rotation & alignment; formation of index minerals
12. shale = detrital texture; slate = foliated texture
13. foliated texture have rock cleavage; non-foliated textures do not
14. hardness; marble is made of calcite; quartzite is made of quartz
15. slate has a foliated texture; hornfels has a non-foliated texture

<b>Rock Texture</b>	<b>Rock Composition</b>	<b>Characteristic Features</b>	<b>NAME</b>
Foliated	shale protolith - clays	very fine-grained hardened clays, fine rock cleavage	Slate
Foliated	shale protolith - clays	very fine-grained shiny clays with crenulations	Phyllite
Foliated	shale protolith - micas + quartz	large muscovites and biotites coarse layered cleavage	Schist
Foliated	granite protolith - biotite + quartz + orthoclase + Na plag.	thin red and black bands	Gneiss
Nonfoliated	limestone protolith - calcite	sparkly white calcite rhombs	White marble
Nonfoliated	limestone protolith - calcite	sparkly red, hematite colored calcite rhombs	Pink marble
Nonfoliated	dirty limestone protolith - calcite + clays + sand	hard brown and green patches with a little white calcite	Skarn
Nonfoliated	shale protolith - clays	very dense, brownish, looks like pieces of old pottery	Hornfels