Some of the samples used in Mineralogy Lab are museum specimens. Please do not destroy or heist them. You can do just about anything you want to the grungy ones, but be nice to the pretty specimens as they are irreplaceable.

MINERALOGY LABORATORY
Metamorphic Rocks and Minerals

Besides some more common minerals, when you look at metamorphic rocks you see some new and special minerals. Here is a partial list:

pelitic metamorphic minerals	**mafic metamorphic minerals**	**carbonate metamorphic minerals**	**ultramafic metamorphic minerals**	**granitic metamorphic rocks**
chlorite	zeolites	calcite	talc	quartz
muscovite	prehnite	dolomite	serpentine	K-feldspar
kyanite	epidote	tremolite	anthophyllite	biotite
andalusite	actinolite	phoogopite		hornblende
biotite	hornblende	grossular (garnet)	(plus the usual	garnet
garnet (almandine)	clinopyroxene	diopside	minerals in u.m.	orthopyroxene
staurolite	orthopyroxene	wollastonite	rocks)	
cordierite				
sillimanite				

1. BOCKS OF ROX

There are four trays each containing mineral varieties found in metamorphic rocks. We have divided them by general rock type – see the list above. Each box contains metamorphic minerals, as well as some more common minerals that are found in the rock type but are not exclusively metamorphic.

Examine all of the mineral samples and record their **physical properties, chemical composition, habit, occurrence, and use** in your lab notebook. Then, answer the following questions.

A) What chemical similarities/differences do the minerals of a group (one box) have? Specifically, write down the chemical formulas of each and discuss commonalities – there are some but may be hard to figure out in some cases.

B). There is one tray of metamorphic **rocks**. For each rock specimen: what minerals does it contain? Name the rock. These are tough to work with - the minerals are small grain size and hard to identify. In some cases you will have to guess/infer the minerals that are present. Sort of follow a circular process – figure out what kind of rock it is, then determine what kind of minerals are likely, then go back and look at the hand specimen, etc. Be sure to read the text book!

2. DEFINITIONS

Write out the definition of each term below.

metamorphic grade-

contact aureoles-

regional metamorphism-

contact metamorphism-

porphyroblasts-

lineation-

pelitic rocks-

4. THIN SECTIONS

Slide W72 Pink Marble

Look at this slide, it is mostly large grains of calcite, you can distinguish them by their high order interference colors which appear pastel to almost pale tan. Describe the rock texture.

Notice the distinct cleavage angles in each calcite grain, What type of cleavage is this (describe it)? This calcite also shows twinning similar to feldspars, How can you tell calcite from feldspars? In the space below draw a picture of what you see, be sure to include a large calcite grain with the cleavage.

This slide also contains Phlogopite, Sphene and rare Diopside, what are the chemical formulas of these minerals? What groups do they belong to? Sphene is an accessory mineral in almost all rocks, look at its composition and theorize on why it's found in so many specimens.

What do phlogopite, sphene and diopside look like in this thin section? List key features that you see.

Slide W79 Mica Schist

This rock shows some very good metamorphic features, the most obvious being the alignment of certain grains, what mineral makes up most of the aligned grains? Describe the rock texture/fabric.

What kind of mica is in this rock?

What is the other mineral, besides mica, found throughout this slide? Hint is has low order interference colors, and no cleavage. Draw a picture of what you see below.

This slide also contains accessory minerals including graphite, apatite, magnetite and pyrite, what are the chemical formulas of each of these minerals.

Is this a high, medium, or low-grade metamorphic rock?