Geology 102, Winter 2006 Name:

Assignment 3: Blowing things up (or out, anyway)

Due Tuesday, January 24, 10 a.m.

Note: A composite volcano is also called a stratovolcano.

1. How does the fact that the **mineral** olivine has a composition precisely 14.1% magnesium, 32.4% iron, 16.3% silicon and 37.2% oxygen and the **rock** basalt has a composition between 10 to 50% calcium-rich plagioclase feldspar, 50 to 90% pyroxene, and up to a few percent olivine help make the distinction between a mineral and a rock more clear?

2. Do all minerals melt at the same temperature? No. How does this fact help describe why different kinds of magma are made?

3. Fill in the table regarding plate boundaries and volcanoes:

Plate boundary	Convergent	Divergent	Transform
Type of volcanoes (none, shield, composite or maar?)			
If appropriate, chemical composition of rock found (mafic, felsic or intermediate?)			
Name(s) of volcanic rock(s) associated with boundary			

4. Compared to earthquakes, what is the state of volcanic eruption prediction? What are some of the precursors of a volcanic eruption?

5. Fill in the table regarding volcanic hazards associated with certain volcanoes:

Type of volcano	Major volcanic hazards
Shield	
Composite	
Maar	

6. Suppose the warning is given that Mt. Baker has an 80% chance of erupting in about three months. What are some of the mitigating actions you, as a government, can take?

7. Suppose the warning is given that Mt. Baker has an 80% chance of erupting in about twenty *years*. What are some *different* mitigating actions you, as a government, can take?