Bowen's Reaction Series Worksheet

CRYSTALLIZATION

This chart represents the order in which different minerals crystallize from a cooling magma or lava to form igneous rocks. Both mineral names and the rocks they form are shown. Use the chart to answer the questions.

Crystallization	iron-magnesium silicate minerals	Feldspar minerals	Rock names
First to crystallize Last to crystallize	Olivine	Plagioclase (calcium feldspar)	Gabbro, basalt
	Amphibole Biotite	Plagioclase (sodium feldspar)	Diorite, andesite
	Orthoclase (potassium feldspar) Quartz		Granite, rhyolite

- 1. Which minerals are the first to crystallize from cooling magma?
- 2. What kind of rocks is formed by these minerals?
- 3. Which mineral crystallizes at the lowest temperature?
- 4. Which feldspar mineral is found in granite?
- 5. What minerals form the rocks diorite and andesite?
- 6. Which mineral crystallizes from magma first pyroxene or orthoclase?
- 7. Which kind of magma is hotter, Basaltic or Rhyolitic?
- 8. Minerals higher in silica content crystallize from magma at lower temperatures. Which magma is higher in silica content, *Basaltic or Rhyolitic*?
- 9. Magma low in silica content flows more easily. Which kind of lava flows faster, Basaltic or Rhyolitic?