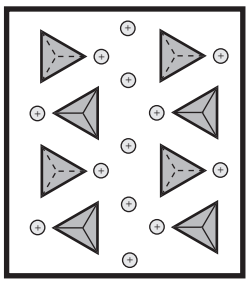
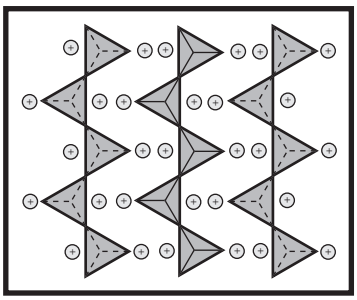
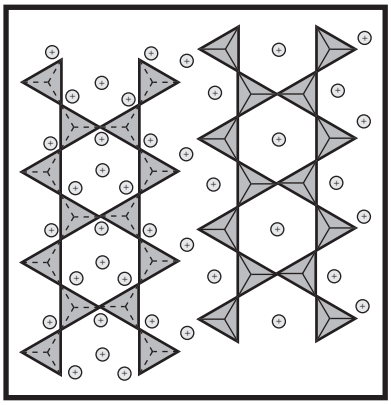
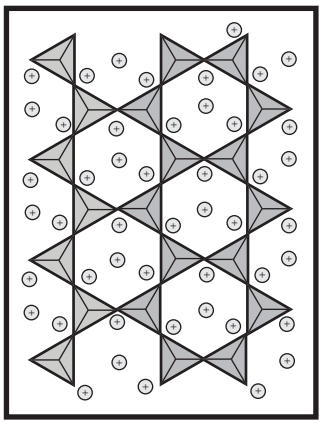
Name: Instructor Key

Geology Handout #1 - Silicate Structures

Structure	Cleavage	Si:O Ratio	Minerals
1. Independent Tetrahedra (*Nesosilicates*) 	None - Fracture. *No particular plane of weakness.*	1:4	Olivine (*Fayalite*) Fe_2SiO_4 Garnet (*Pyrope*) $Mg_3Al_2Si_3O_{12}$ *Lab 2 Minerals: Olivine, Garnet*
2. Single Chains (*Inosilicates*) 	Two, Perpendicular	1:3	Pyroxene (*Enstatite*) $MgSiO_3$ Pyroxene (*Diopside*) $CaMgSi_2O_6$ *Lab 2 Minerals: Augite*
3. Double Chains (*Inosilicates*) 	Two, 60°/120°	1:2.75 *(average of two sites)*	Amphibole (*Tremolite*) $Ca_2Mg_5Si_8O_{22}(OH)_2$ *Lab 2 Minerals: Hornblende*
4. Sheets (*Phyllosilicates*) 	One	1:2.5	Talc $Mg_3Si_4O_{10}\cdot(OH)_2$ Biotite $K(Mg,Fe)_3AlSi_3O_{10}\cdot(OH)_2$ *Lab 2 Minerals: Kaolinite, Talc, Muscovite, Biotite, Chlorite*
5. 3D Frameworks (*Tectosilicates*) *See textbook Figure 3.29.*	None; *Two, perpendicular for feldspars*	1:2	Quartz SiO_2 Plagioclase $CaAl_2Si_2O_8$ *Lab 2 Minerals: Potassium Feldspar, Plagioclase,Quartz*