Calculating Oxide Wt% from Formulae and Normalizing Analyses
Answers to Problems

1. Consider the mineral orthoclase with formula $KAlSi_3O_8$. What are the weight percents of K_2O, Al_2O_3 and SiO_2 in orthoclase? Show all work, don't just look up the answers.

A	B	C	D	E
oxide	moles oxide	at. wt. oxide	=BxC	wt % oxide
K2O	0.5	94.196	47.09800	16.92
Al2O3	0.5	101.9613	50.98065	18.32
SiO2	3	60.083	180.24900	64.76

2. Suppose you conducted an analysis of an unknown mineral and found it contained the following weight percents:

oxide	wt %
Na_2O	15.33079
Al_2O_3	25.22062
SiO_2	59.44859
TOTAL	100

Normalize this analysis by using atomic weights to change it into a formula. You will have to goof around, but if you guess the number of oxygen correctly, all the other subscripts will come out to be integers. <u>Name the mineral</u>!

A	B	C	D	E	F	G	H	I
					# cats	# ox		to 6 ox
	analysis	ox gfw	Z	ox	=D*B/C	=E*B/C		
Na2O	15.33079	61.97894	2	1	0.49471	0.24735	Na	1.00
Al2O3	25.22062	101.9613	2	3	0.49471	0.74206	Al	1.00
SiO2	59.44859	60.083	1	2	0.98944	1.97888	Si	2.00
				total	1.97886	2.96830	O	6.00

So, formula is $NaAlSi_2O_6$ = jadeite.