Report Sheet for Expt. 6 Solubility Product of CaSO$_4$

Name of Student #1_____   Name of Student #2_____

DATA:

Molarity of EDTA:_____

Trial	1	2	3	4
Vol of EDTA (initial)				
Vol of EDTA (final)				
Total Volume EDTA				

DATA ANALYSIS: (attach carbon copy of calculations to this sheet)

1. *Experimental K$_{sp}$ from molarities at room temperature*: For your data at <u>your room temperature</u> (which should be close to 25 °C) use the experimentally determined molarities of Ca^{2+} and SO_4^{2-} to calculate K$_{sp}$.

Trial	1	2	3	4
$[Ca^{2+}]$				
$[SO_4^{2-}]$				
K$_{sp}$				

2. *Experimental K$_{sp}$ from activities at room temperature*: Convert your molarities to activities as described in this handout and recalculate K$_{sp}$ using the activities.

Trial	1	2	3	4
Activity Ca^{2+}				
Activity SO_4^{2-}				
K$_{sp}$				

3. *Literature value of ΔG^o and K$_{sp}$ at room temperature:* Use the appropriate enthalpies and entropies in Appendix B of your text to calculate ΔG^o at room temperature. Use this ΔG^o to calculate K$_{sp}$ at this temperature. This will be your calculated "*literature*" value for ΔG^o and K$_{sp}$ for the dissociation of calcium sulfate in water at room temperature. Next look up the "true" literature value for the K$_{sp}$ of calcium sulfate in the latest CRC Handbook of Physics and Chemistry or use the internet.

	From Molarity	From activity	Literature/calculated	True literature
Average K$_{sp}$ values				

4. *Comparison of methods:* Compare your experimental K$_{sp}$ values that you determined using molarities and activities to the literature values. Determine if it is better to calculate K$_{sp}$ with activities or uncorrected molarities. The method that gives you values closest to the literature values should be the best method. In your report discuss any differences and their sources and comment on the validity of the Debye-Huckel limiting law. Calculate the percent error between your experimental K$_{sp}$ and the literature value of the K$_{sp}$ at your temperature. Use your "better" Ksp value to calculate ΔG^o for the dissociation of calcium sulfate, compare to the literature value and report the percent error.