NOTEBOOK GUIDELINES

Use ballpoint INK pen, cross out errors with one line.

Record directly into notebook, do not prepare ahead or recopy, NO SCRAP PAPER. Procedure in left column.

Use past tense, no 1st person

NO "cleaning", "taring or using weigh boat", type of balance not necessary

NO computer commands. Give name or type of equipment and what is being measured. Observation and Data in right column

Line things up, empty spaces okay!

All numbers should have proper significant figures and units when appropriate. May use a table that spans both columns to neatly present all data.

SAMPLE notebook – Procedure page(s)						
Experiment: Thermodynamics	Date: 04/12/2013					
Name: Jill Jordan	Partner: Robert Nelson					
Míxed 2.00 mL 1.00×10-4 M	[xylenol Orange]=[Al(NO3)3]					
Xylenol Orange with 2.00 mL	$= 5.00 \times 10^{-5} M$					
1.00×10-4 M Al (NO3)3	yellow color					
Placed mixture in boiling						
water bath for 5 minutes	changed to red color					
Placed a Vernier temperature probe in the water bath	T = 81.2°					
Measured absorbance at 550 nm	Abs = 1.004					
at 10°C intervals as the mixture	[red complex, $AlQ^{-}] = 1.004$					
cooled using a spectrometer	2.51×10 ⁴					

⊤ (°C)	Abs	[Alq-]
81.2	1.004	4.00 × 10 ⁻⁵
71.0	0.827	3.29 × 10 ⁻⁵
60.8	0.629	2.51 × 10 ⁻⁵
51.1	0.466	1.86 × 10 ⁻⁵

SAMPLE calculation page

CALCULATIONS

Mixture at 81.2 °C

Equilibrium constant

Al	з+	+	Q^{4-}		\rightarrow	ALQ	
5.00×	(10-3	55	.00X:	10-5		0	
4.00×	10-5	⁵ -4	.00×1	L0 ⁻⁵		4.00	0×10 ⁻⁵
1.00×	(10 ⁻⁸	5 1	.00×:	10 ⁻⁵		4.00	0X10 ⁻⁵

 $K_{eq} = 4.00 \times 10^{-5} / (1.00 \times 10^{-5})^2 = 4.00 \times 10^{5}$

 $\Delta G = -RTlnK_{eq}$

 $= -(8.314 \times 10^{-3} \text{ K})/\text{mol}^{\cdot}\text{K})(354.4\text{K})\ln(4.00 \times 10^{5}) = -38.0 \text{ K})$

⊤ (℃)	Keq	T (K)	∆q (KJ)
81.2	4.00 × 10 ⁵	354.2	-38.0
71.0	1.16 X 105	344	-33.3
60.8	4.08 × 10 ⁵	333.8	-29.5
51.1	1.90 × 10 ⁵	324.1	-26.5

Plotted ΔG as a function of T

The reaction is favored by an increase in disorder and is spontaneous at higher temperatures.