Name:	 	 	
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Equilibrium Potential Worksheet

Instructions: Work through the **Equilibrium Potential** lab in section and answer the following questions. All plots must be hand drawn. Use the back side of this sheet for drawing if you need more room. Feel free to ask TA/IAs for assistance. The lab worksheets will be graded for completion and correctness.

1. Draw a plot comparing the equilibrium potential for potassium (E_K) vs. extracellular concentration of potassium ([Ko]). Then plot the E_K vs. log([K_o]). What is the slope of line in the second plot and what does it correspond to? **Hint:** E_K and log([K_o]) are two terms of an equation relevant to this lab.

2. Draw plot comparing the equilibrium potential for sodium (ENa) and the extracellular concentration of sodium ([Nao]). How does this plot compare to the previous problem's first plot?

- 3. List the resting membrane potential values with the following conductance ratios with default ion concentrations:
 - a. 1:1 (gNa:gK)
 - b. 20:1 (gNa:gK)
 - c. 1:30 (gNa:gK)
 - d. 1:50 (g:Na:gK)
- 4. Using a conductance ratio of 1:50 (gNa:gK), change the concentration of extracellular sodium to 75mM. How does this affect the resting membrane potential and why?

5. Extra Credit What equation relates to questions 1 and 2? What equation relates to questions 3 and 4? Briefly describe what each of these equations is used to calculate, and under what conditions can they be used.