Name _____
Section _____
Date _____

Data and Observations:

A. Effect of temperature on solubility.

Total volume of water added to the tube containing NaCl _____ mL.

Total volume of water added to the tube containing KNO_3 _____ mL.

Observations regarding the relative amounts of the solids in the two tubes after cooling:

B. Supersaturation.

Observation when a tiny crystal of sodium thiosulfate was added to the supersaturated solution:

Was a temperature change noted when the tube was touched after solid crystallized?_____

Indicate whether the crystallization of the sodium thiosulfate was an endothermic or an exothermic process._____

C. Solubility Product

1. Molarity of $Pb(NO_3)_2$ solution 0.100 M.

2. Molarity of KI solution 0.0200 M.

3. Initial reading of buret containing KI solution _____ mL.

4. Final reading of buret containing KI solution _____ mL.

5. Temperature of reaction mixture _____ °C.

D. Calculations:

1. Volume of KI solution required to reach the end-point is obtained by subtracting the initial buret reading from the final buret reading.

Volume of KI = _____ mL = _____ L.

2. Moles of iodide present is obtained by multiplying the molarity of the potassium iodide solution by the liters of KI solution required to reach the end-point.

a _____ mol / liter KI * b _____ liter KI =

Moles of iodide ion = _____ c

3. The total volume of solution mixture is obtained by adding the volume (liters) of KI solution required to reach the end-point to the 0.0250 liters of $Pb(NO_3)_2$ solution titrated.

Total volume of solution = _____ L.

4. The final concentration of iodide ion in moles per liter is obtained by dividing the moles of iodide ion present at the end-point by the total liters of solution.

a _____ mol I^- ÷ b _____ liter

= Molar concentration of iodide ion = c _____ . mol I^- / liter

(5) The number of moles of lead ion is obtained by multiplying the molar concentration of the $Pb(NO_3)_2$ solution by the liters of the solution taken for titration.

(a) ____ mol $Pb(NO_3)_2$ / liter * (b) ____ liter $Pb(NO_3)_2$ = Moles of lead ion = (c) _____. mol Pb^{+2}

(6) The final concentration of lead ion in mole per liter is obtained by dividing the moles of lead ion present at the end-point by the total liters of solution.

(a)[____ mol Pb^{+2}] ÷ ____ liter Pb^{+2} solution = Molar concentration of lead ion = (c) _____. mol / liter

(7) The K_{sp} for PbI_2 is given by:

$K_{sp} = [Pb^{+2}][I^-]^2 =$ _____.

ksp = [5(c)] * [4(c)]

Prelab quiz

(1) In Part A, Comparing NaCl + KNO_3, which salt had a bigger difference in solubility in hot vs. room temperature H_2O? _____

Results and Conclusions:

(2) In Part B was the $Na_2S_2O_3$ a [(saturated) or (unsaturated) or (super saturated)] solution (choose one parenthesis)

(3) In Part C we did a precipitation titration. To get $[Pb^{+2}]$ why did we add the volume of KI added to the volume of the $Pb(NO_3)_2$? Explain.