FLINN SCIENTIFIC

Name_____

Data Tables

Part 1.

Cylinder	1	2	3	4	5	6	7
$Fe(NO_3)_3$, 0.1 M, mL	5	10	12	15	17	20	24
NaOH, 0.1 M, mL	55	50	48	45	43	40	36
Fe:OH Mole Ratio	1:11	1:5	1:4	1:3	2:5	1:2	2:3
Volume Precipitate (mL)							

Part 2.

Cylinder	1	2	3	4	5	6	7
$CuCl_2$, 0.05 M, mL	10	20	24	30	36	40	50
Na_3PO_4, 0.05 M, mL	50	40	36	30	24	20	10
Cu:PO_4 Mole Ratio	1:5	1:2	2:3	1:1	3:2	2:1	5:1
Volume Precipitate (mL)							

Post-Lab Calculations and Questions

1. On graph paper, plot the milliliters of reactant #1 versus volume of precipitate for each reaction. For the coppe(II)r chloride graph, draw the two best-fit straight lines through the data points and determine their point of intersection.
2. For the iron nitrate graph, draw the best-fit line through the ascending data, and a smooth curve through the descending data. Determine their intersection point. From the point of intersection, determine the stoichiometric mole ratio for each reaction. Write out the correct balanced equation for each reaction.
3. Explain how this method allows you to find the mole ratio of reactants.
4. Why must you keep a constant volume of reactants?
5. Is it necessary that the concentrations of the two solutions be the same?
6. What is meant by the term limiting reagent?
7. Which reactant is the limiting reagent along the upward sloping line of your graph? Which is the limiting reagent along the downward sloping line?
8. Why is it more accurate to use the point of intersection of the two lines to find the mole ratio rather than the ratio associated with the greatest volume of precipitate?