Solubility Rules Worksheet

As you work through the steps in the lab procedures, record your experimental values and the results on this worksheet.

Table A: Investigating Trends in Solubility

	NH_4^{1+}	K^{1+}	Ca^{2+}	Sr^{2+}	Mg^{2+}	Al^{3+}	Fe^{3+}	Zn^{2+}
Cl^{1-}								
ClO_4^{1-}								
OH^{1-}								
CO_3^{2-}								
SO_4^{2-}								
PO_4^{3-}								

Additional Observations:

Question 1: In general, are compounds containing ammonium ions or ions from Group 1 on the Periodic Table soluble or insoluble?

Question 2: What exceptions did you find to the Group 1 rule?

Question 3: Are compounds containing an ion with either a $+1$ or a -1 charge soluble or insoluble?

Question 4: What exceptions did you find to the charge rule?

Question 5: In general, are compounds containing the carbonate anion soluble or insoluble?

Question 6: What exceptions did you find to the carbonate ion rule?

Question 7: In general, are compounds containing the sulfate anion soluble or insoluble?

Question 8: What exceptions did you find to the sulfate ion rule?

Question 9: In general, are compounds containing the phosphate anion soluble or insoluble?

Question 10: What exceptions did you find to the phosphate ion rule?

Question 11: Considering the general rules you found for Group 1 ions and phosphate ion, which rule takes precedence?

Question 12: State a general rule that relates the solubility of an ionic compound with the charges on the ions of which it is composed.

Question 13: In your Data Table A, write the chemical formula for any compound that precipitated. Pay attention to charges on the ions; the number of positive charges in the formula should equal the number of negative charges.

Question 14: Write balanced net ionic equations for reactions that produced a precipitate containing magnesium ion, (Mg^{2+}).

Table B: Investigating Some Exceptions to the Solubility Rules

	Ag^{1+}	Pb^{2+}
Cl^{1-}		

Additional Observations:

Question 15: What exceptions did you observe by mixing Ag^{1+} with Cl^{-} and Pb^{2+} with Cl^{-}?

Question 16: In your Data Table B, write the chemical formula for any compound that precipitated. Pay attention to charges on the ions; the number of positive charges in the formula should equal the number of negative charges.

Question 17: Write balanced net ionic equations for reactions that produced a precipitate in Data Table B.