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

	$\mathrm{NH_4^{1+}}$	K ¹⁺	Ca ²⁺	Sr ²⁺	${ m Mg}^{2+}$	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 r	ule?
Question 7: In general, are compounds containing the sulfate ani	on 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 Ag¹⁺ with Cl⁻ and Pb²⁺ 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.