

LO: Students will be able to determine if a compound is soluble in water and how to read solubility curves.

DOL: Students will correctly determine if a compound is soluble or insoluble in water at least 4/5 times.

Mar 29-7:34 AM

Indicating states of matter for compounds in chemical formulas:

(s) = solid

(cr) = crystalline, essentially another version of solid

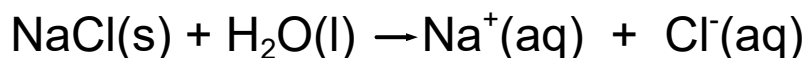
(g) = gas

(l) = liquid

(aq) = aqueous, this mean dissolved in water

## Compounds in Aqueous Solutions

When ionic compounds dissolve in water, it is called *dissociation (already in your notes)*



Mar 29-7:40 AM

Are all ionic compounds soluble in water??

### 7 General solubility guidelines

1. All salts of Group IA, and ammonium are soluble.
2. All salts of nitrates, chlorates and acetates are soluble.
3. All salts of halides are soluble except those of silver(I), copper(I), lead(II), and mercury(I).
4. All salts of sulfate are soluble except for barium sulfate, lead(II) sulfate, and strontium sulfate.
5. All salts of carbonate, phosphate and sulfite are insoluble, except for those of group IA and ammonium.
6. All oxides and hydroxides are insoluble except for those of group IA, calcium, strontium and barium.
7. All salts of sulfides and insoluble except for those of Group IA and IIA elements and of ammonium.

Mar 29-7:56 AM

## Determining precipitates

When a double replacement occurs, determine if one of the products is insoluble.

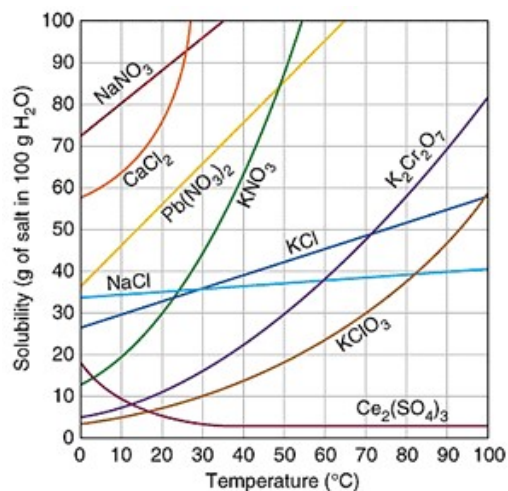
-write a balanced equation for ammonium sulfide and cadmium nitrate and determine the phase for each product (both reactants are aq)

Mar 29-8:04 AM

**Solubility Curves:** a graphic way to determine if a solution is saturated or unsaturated at a specific temperature.

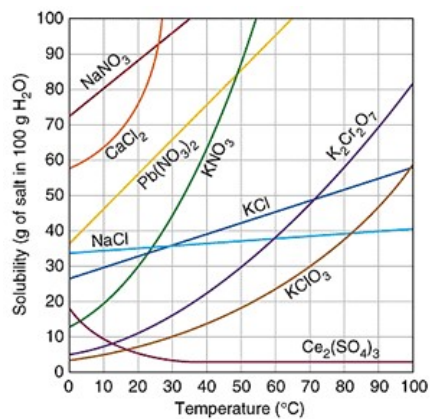
Usually, the x-axis (read left and right) is the temperature and the y-axis (read up and down) is the amount that can be dissolved.

Let's analyze these solubility curves found below.



Based on the chart, determine what temperature you would need to obtain in order to dissolve the indicated amount of solute.

- 1) 50 g of Pb(NO<sub>3</sub>)<sub>2</sub>
- 2) 90 g of CaCl<sub>2</sub>
- 3) 80 g of KNO<sub>3</sub>



Based on the chart, determine if the solution is saturated or unsaturated.

- 1) 70 g of  $\text{Pb}(\text{NO}_3)_2$  at  $40^\circ$
- 2) 90 g of  $\text{KCl}$  at  $60^\circ$
- 3) 40 g of  $\text{NaCl}$  at  $90^\circ$

