Temperature Dependence on Solubility-

Solubility increases with T for endothermic solution because Ksp bigger.

Ksp is dependent on temp.

Solubility decreasing with increasing T for exothermic solution because makes K_{sp} smaller.

2/5/13 $K_{sp} = 1.7 \times 10^{-5}$ for $PbCl_2$

$[Pb^{2+}] = 10^{-2}$ M and 4 $[10^{-2}]$

$10 \times^{-4}$ 1.7×10^{-5}

$Q_{sp} < 1.7\ K_{sp}$ $PbCl_2$

$Q = (10^{-2})(10^{-2})^2$

$1 \times 10^{-6} < 1.7 \times 10^{-5}$

Unit 5 Readiness Quiz

The one bottle that was freezing more than the one bottle which was in 0°C and when both the bottles opened, the one in 0°C was still water, but one -5.4°C was freezed after opening.

2) a. $P_{gas} = KX_{gas}$

The molar concentration of O_2 gas under 2atm O_2 pressure is:

$C_{solute\ gas} = K_P P_{gas}$

$0.234 = (0.117)(2atm)$

c.) $\Delta T = iK_f M$

$(1)(1.86 \frac{°C}{mol})(.$ $.234 \frac{mol}{L_{solvent}}$ → Molarity ↗ $\frac{mol\ of\ solute}{1kg\ of\ solvent}$ Molality ↗

$-.44°C$ C

$\frac{0.234\ mol\ solute}{1kg\ solute}$ | 44 $1000g - 10.296g$

$1mol\ O_2 \cdot 234$ 989.704

$\frac{}{.989704} = .236$

The signs for ΔG, ΔS & ΔH for solution.
got colder so released energy.

ΔG = (-) spontaneous if dissolved
ΔS = (+) b/c more microstates
ΔH = (+)
ΔH_{soln} = $\Delta H_{Lattice}$ + $\Delta H_{solvation}$
↓ always + released when make bonds.

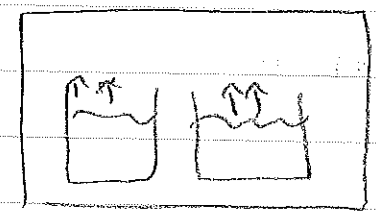
In an ideal solution $\Delta H = 0$
For solutions that form $\Delta H_{solution} > 0$
gas dissolving solid → exothermic
−, +, +.

In the 20 Molar sodium acetate The value of Q is what
$K_{sp} = 20$
$Na(CH_3COO)^{-1}$
20 [20] [20]
×20
400 = E
Q > K.

3) 100mL of pur water. 0.3 Molarity $\frac{\text{Mol solute}}{1000g\ H_2O}$
free energy is lower for solution.
VP for pure water 25 Torr. Rawlt's Law. $\Delta P = X_{solute}\ P^\circ$
$VP_{solution} = X_{solvent} \cdot P^\circ$
( ) (25) $\frac{100g}{18}$ 5.556mol
VP of solution is lower than pure. 2486 $\frac{0.3m}{0.3m + 5.556}$

1mg = 1g.

3)



Both evaporate until VP in container goes up to 25 Torr (VP of pure water). Then vapor will condensene.

IV. $(Pb^{2+})(CO_3)$

0.015 mg Pb^{2+} / L solution.

$$\frac{\text{Mol Solute}}{\text{L solution}}$$

$$\frac{0.015\times10^{-3}\text{g} \mid 1\text{mol } Pb^{2+}}{1\text{L sol}^{n} \mid 207.2\text{g}}$$

$Pb^{2+} = 7.2393\times10^{-8}$

$PbCO_3$ Sodium.

$7.4\times10^{14} = [\quad][.15\text{M}]$

$4.933\times10^{-13} =$

8 P.M. It is lower than tolerance level.