

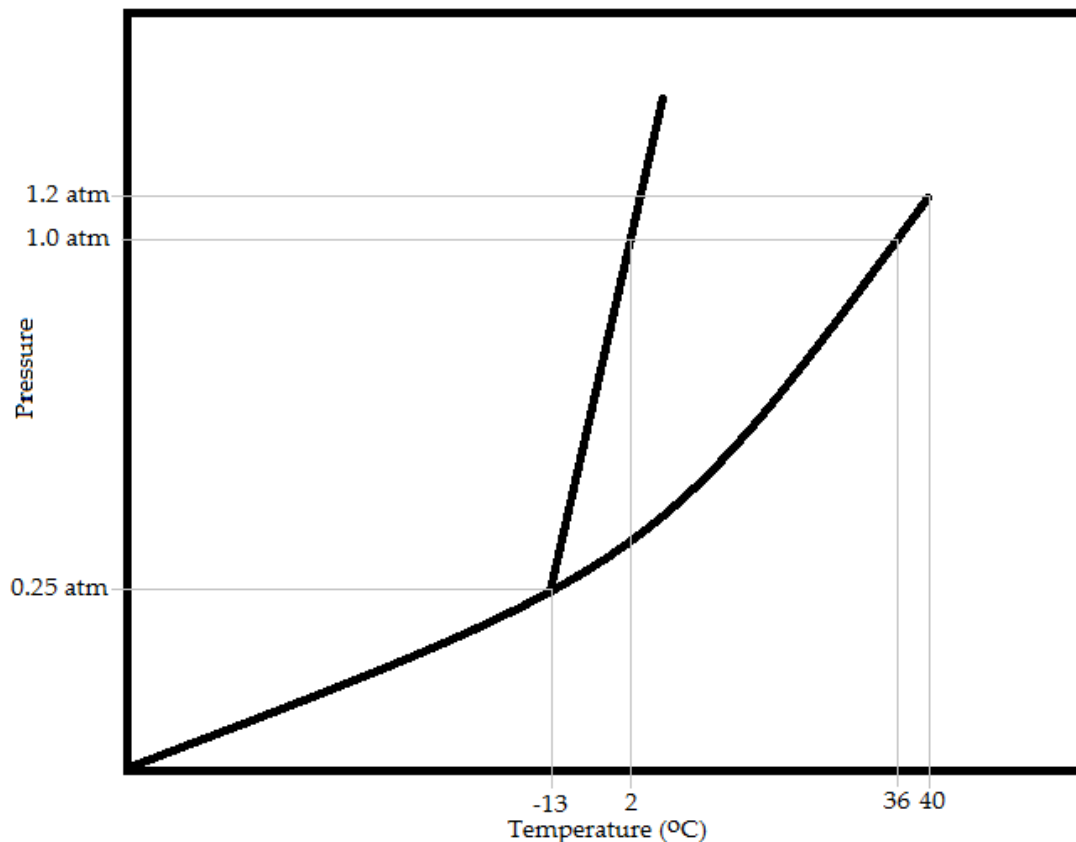
**Tuesday, May 7, 2019**

-Go over Units 11 & 12 Review wksht. (Answers given below.)

-Units 11 & 12 Quiz

**Units 11 & 12 Review**

Part 1 – Phase Diagrams – Use the phase diagram below to answer the following questions.



1. What are the temperature and pressure at the triple point?

-13°C & 0.25 atm

2. What is the critical temperature?

40°C

3. What is the normal melting point? Normal boiling point?

2°C & 36°C

4. At 1.0 atm, does this substance undergo sublimation?

no

5. Identify the state(s) of matter present at the following conditions:

(A) 41°C and 1.5 atm gas

(B) 36°C and 0.25 atm gas

(C) 2°C and 1.0 atm solid, liquid

(D) 11°C and 1.0 atm liquid

(E) -50°C and 1.05 atm solid

(F) 36°C and 1.0 atm liquid, gas

Part 2 – Heat Calculations – Show your work on a separate sheet of paper. No SF rounding needed in this section!

6. How many Joules of heat are required to boil a 29.3 gram sample of water at 100°C? 66218 J

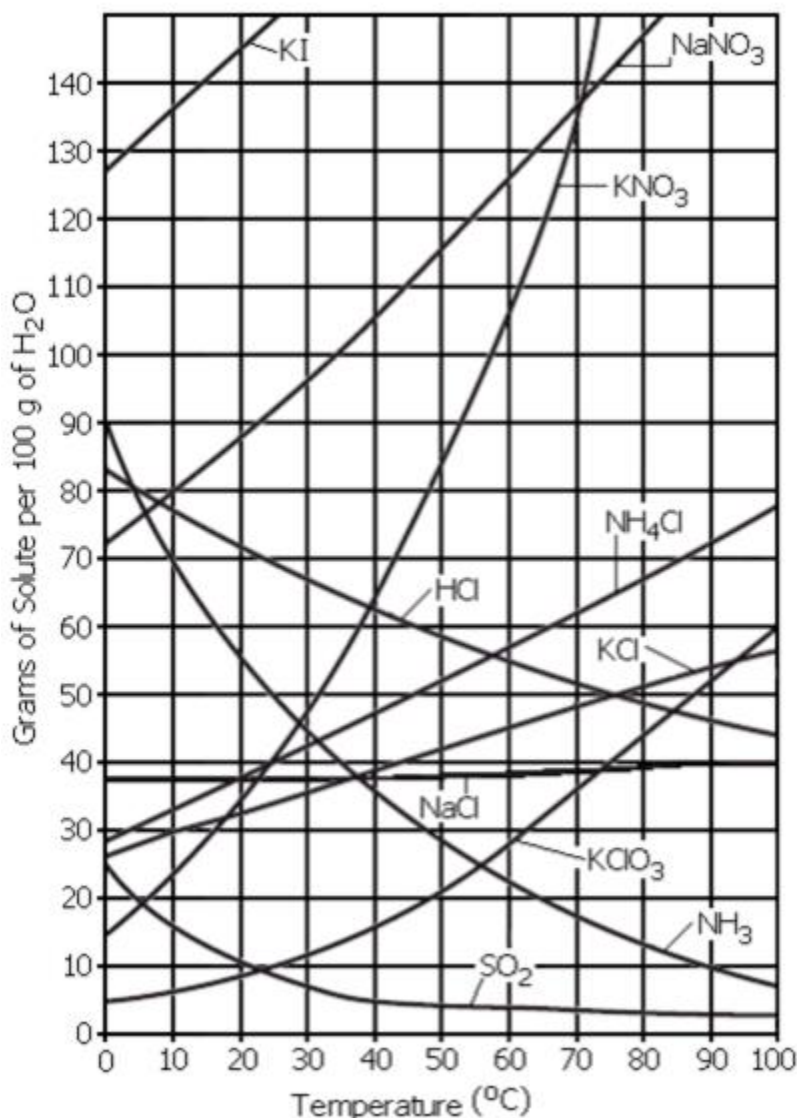
7. How many Joules are required to heat a 29.3 gram sample of steam from 100°C to 117.3°C?  
1023.9178 J

8. How many Joules of heat are required to heat a 15.75 gram sample of water from 95.0°C to steam at 117.3°C?  
329.175 J + 35595 J + 550.3995 J = 37169.3173 J

9. What is the mass of a sample of water that requires 1035 J of heat to change its temperature from 35.6°C to 83.5°C? **5.169262119 g**

10. By how many degrees Celsius would 32.8 grams of ice change if 1920 Joules of heat were added to it? **28.55443189°C**

Part 3 – Solubility Curves – Use the graph to answer the questions.



11. At what temperature does 135 grams of KI dissolved in 100 grams of water form a saturated solution? **10°C**

12. How many grams of KNO<sub>3</sub> will dissolve in 400 grams of water at 60°C? **420 g**

13. If 10 grams of KClO<sub>3</sub> are dissolved in 100 grams of water at 30°C, is the solution saturated, **unsaturated**, or supersaturated?

14. How many grams of solid precipitate will form if a saturated KCl solution is cooled from 80°C to 20°C?

**51 - 32 = 19 g**

15. A solution contains 35 g of NaNO<sub>3</sub> dissolved in 100 grams of water at 10°C. How many *more* grams of NaNO<sub>3</sub> would need to be added to make a saturated solution?

**80 - 35 = 45 g**

16. How many grams of NH<sub>3</sub> would be able to be dissolved in 300 grams of water at 90°C?

**30 g**

Part 4 – Concentration of Solutions – Solve the following problems on a separate sheet of paper. Be sure to round your answers to the correct # of SFs!

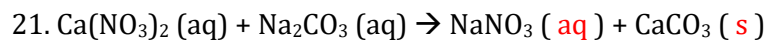
17. How many grams of Fe(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>3</sub> are needed to dissolve to make 350. mL of a 2.50 M solution? **204 g**

18. What is the molarity of a solution made by dissolving 49.3 grams of Ba(NO<sub>3</sub>)<sub>2</sub> in enough water to make 950. mL of solution? **0.199 M**

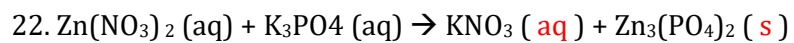
19. What is the molarity of a solution made by diluting 17.3 mL of 12 M hydrochloric acid to 550. mL? **0.38 M**

20. What volume of 18.0 M H<sub>2</sub>SO<sub>4</sub> is needed to be diluted in order to make 550. mL of a 3.75 M solution? **115 mL**

Part 5 – Net Ionic Equations – Determine the solubility of each product. Write the net ionic equation. Determine the spectator ions in the reaction.



Spectator ions:  $\text{Na}^{+1}, \text{NO}_3^{-1}$



Spectator ions:  $\text{K}^{+1}, \text{NO}_3^{-1}$