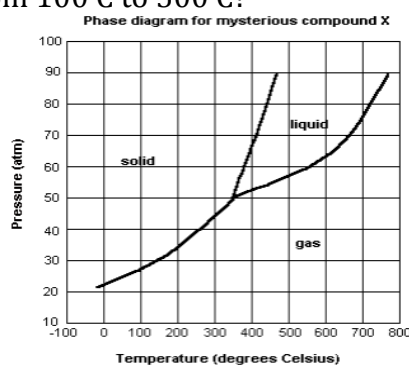


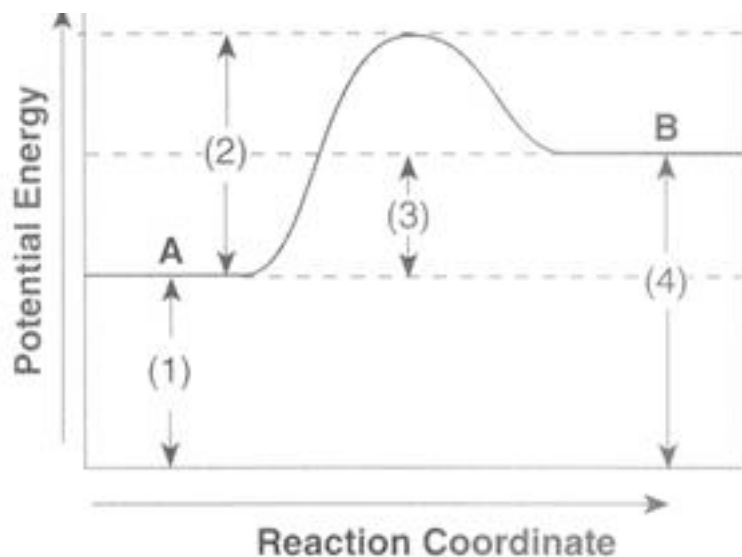
## A Few Final Review Questions

1. How many significant figures are in .0020020 meters?
2. What is the product of density and volume?
3. What is the formula for percent error?
4. Do a google search for "volumetric flask."
5. What conditions of temperature and pressure make molecules get close together?
6. Review a phase diagram.... When the pressure is 40 atm, what change occurs when the temp. changes from 100 C to 500 C?



7. What is the mass of  $1.204 \times 10^{24}$  molecules of water?
8. How many moles are in 400 grams of calcium carbonate?
9. How many grams are in 5 moles of potassium oxide?
10. When naming compounds, when should you use Roman Numerals?
11. 2 liters of gas at 27 C and 200 mm Hg would change its volume to ? liters at 127 C and 400 mm Hg?
12. What is the volume of 32 grams of methane at 2 atm. pressure and 27 C?
13. Which diffuses faster---oxygen or ammonia?
14. The empirical formula of glucose is  $\text{CH}_2\text{O}$ . It has a molecular weight of 180. What is the molecular formula?
15. How many joules of heat are absorbed when 100 grams of water move from 10 to 20 C?
16. When 3 moles of sodium are mixed with 3 moles of oxygen to make sodium oxide, what limits the reaction?
17. How does the addition of a catalyst affect activation energy?

18. What is the sign of  $\Delta H$  for the forward reaction?. For the reverse reaction? Which arrow represents  $\Delta H$ ?



19. What is the percentage of oxygen in water?

20. Equilibrium constants are constant unless what changes?

21. Raising the temperature on an endothermic reaction will cause the equilibrium to shift in what direction?

22. Where are the most active non-metals on the periodic table? The most active metals?

23. How does atomic radius vary with increasing atomic number within a family? Electronegativity? Ionization energy?

24. How many electrons are in the d sublevel of iron?

25. Which of the following has both ionic and covalent bonding? Copper(II) sulfate, water, or sodium chloride?

26. What is the geometry of carbon disulfide?

27. Which of the following is most soluble in water? Ammonia or carbon tetrachloride?

28. In what sublevel block is the last electron in lead?

29. How many bonds do you expect to find on a carbon atom in an organic compound?

30. What are the ingredients used to make a buffer solution?

31. What can be done to increase the solubility of gas in water and keep your soda from going flat?

32. What is the  $K_a$  of a weak acid HA when a .2 M solution has a hydronium ion concentration of .00005?

33. What is the oxidation number of sulfur in a sulfate ion?

34. What is the pH of a .0001 M solution of NaOH?
35. A student who weighs 100 lbs steps on 5 different scales that record her weight as 80.0, 80.2, 79.3, 80.4 and 79.9 lbs. Are the scales accurate, precise, or both?
36. True or False.....when diluting, add acid to water.
37. Boiling occurs when the molecules push on each other (vapor pressure) as hard as the \_\_\_\_\_ pushes on the surface of the liquid.
38. What is the definition of temperature?
39. How many grams of iron are in 50 grams of FeO?
40. How many oxygen atoms are in 1 mole of copper(II) sulfate pentahydrate?
41. The total pressure of a mixture of gases is equal to the \_\_\_\_\_.
42. How many moles of ions are in 4 moles of calcium chloride?
42. A 5 gram sample of a compound of sulfur and fluorine contains 1.1 g of sulfur. What is the empirical formula of the compound?
43. For a chemical reaction, what is the equation for  $\Delta H$ ?
44. Are solids and liquids included in the equilibrium constant expression?
45. In an equilibrium reaction of gases, when pressure is decreased which way will the equilibrium shift?
46. How many unpaired electrons are in a normal atom of P?
47. Allotrope is a word meaning different forms of the same element. i.e. diamond and graphite are allotropes of carbon. Is an alkene an allotrope of carbon?
48. Do "hydrogen bonds" exist within, or between molecules?
49. Half life is the amount of time required for half of a radioactive substance to decay. If the half life of a substance is 20 minutes, how much of a 100 gram sample will remain after one hour?
50. Which of the following is an acid?  
CH<sub>3</sub>OH      CH<sub>3</sub>O      CH<sub>3</sub>COOH
51. What chloride salts are insoluble?
53. How many moles are in .15 liters of .285 M ammonia?
54. **Molality** (not molarity) is defined as moles of solute per kg of solvent. What is the molality of a solution containing 20 grams of NaOH in 500 grams of water?

55. Insoluble compounds actually dissolve slightly in water. When they do, the equilibrium expression is based on the PRODUCTS only. If the concentration of X in some insoluble salt ZX is .00025 M, what is the  $K_{sp}$ ?

56. Is the hydronium ion concentration high or low when the pH is 1?

57. When something is oxidized, does its charge go up or does it go down?