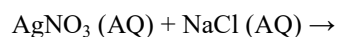
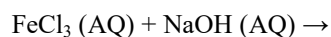
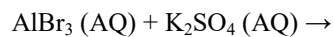
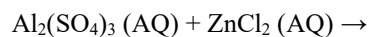
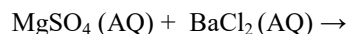


# Reference Table Review Questions

## Regents Chemistry

1. Convert 2 atm in kPa.
2. Convert 303.9 kPa in atm.
3. What is the difference between 1 K and 1°C?
4. What is the “0 K” temperature called?
5. What does STP stand for?
  
6. What are the two units of pressure represented in the table?
7. What are the two units of temperature represented in the table?
8. What is the definition of the Heat of Fusion?
9. What is the definition of the Heat of Vaporization?
10. What is the definition for the Specific Heat Capacity of H<sub>2</sub>O (l)?
  
11. How many grams are in 10 kg?
12. How many meters are in 100 micrometers?
13. Convert 45 pm to cm.
14. Convert 1 kg to pg.
15. What units could be used to calculate the density of a solid?
  
16. What are the units for molarity?
17. What is 1 mole equal to (more than 1 answer)?
18. What is a polyatomic ion?
19. What is the charge of carbonate?
20. Write the products and balance the reaction for the following double replacement reactions including the phase to describe the solubility of the products.



21. What compounds show a decrease in solubility from 0 to 50°C?
22. Which salt is most soluble at 60°C?
23. Which salt is least soluble at 70°C?
24. How many grams of KCl can be dissolved in 500 g of H<sub>2</sub>O at 30°C?
25. At 50°C, how much KNO<sub>3</sub> can be dissolved in 200 g of H<sub>2</sub>O?
  
26. At 30°C, 90 g of NaNO<sub>3</sub> is dissolved in 200 g of H<sub>2</sub>O. Is the solution saturated or unsaturated?
27. A saturated solution of KClO<sub>3</sub> is formed from 50g of water. If the solution is cooled from 90°C to 70°C, how many grams of precipitate are formed?
28. What is the vapor pressure in kPa and atm of propanone at 75°C?
29. Liquids boil when the vapor pressure is equal to the pressure on the system. For instance, water boils at 100°C at 1atm but when the pressure is 2 atm water boils at 118°C. Consider the four liquids boiling at 70°C, what is the pressure on the system for each liquid?
30. What is the formula for Heat of reaction ( $\Delta H$ )?
  
31. What is the sign of  $\Delta H$  when the Heat of reactants is more than the Heat of the products?
32. What is an exothermic reaction?
33. What is the sign of  $\Delta H$  when the Heat of reactants is less than the Heat of the products?
34. What is an endothermic reaction?
35. Is a more active metal easier to oxidize or reduce?
  
36. Is a more active nonmetal easier to oxidize or reduce?
36. Circle the metals that will react to a solution of CrCl<sub>2</sub>    Ag    Al    Cu    Mg    Ni    Zn
37. Write the oxidation and reduction half-reactions (if they occur) for  
A copper penny placed in a silver nitrate solution.

A zinc bar is placed in a solution of NiCl<sub>2</sub>

An aluminum nail is placed in a solution of MgCl<sub>2</sub>

38. Draw a voltaic cell with a copper electrode and a nickel electrode. Include ions in solution. Label the anode and the cathode. Don't forget the salt bridge! Show the direction of current flow. Write equations for the oxidation and reduction half-reactions.
39. Which one of the following pairs represents a spontaneous reaction?  
a. Ni replaces  $\text{Zn}^{2+}$     b. Cu replaces  $\text{Ag}^+$     c. Al replaces  $\text{Mg}^{2+}$
40. What are Arrhenius acids?
41. What is the alternate theory for acids (Brønsted-Lowry Theory)?
42. Given this reaction:  $\text{H}_2\text{SO}_{4(\text{AQ})} + \text{H}_2\text{O}_{(\text{l})} \leftrightarrow \text{HSO}_4^{-1}{}_{(\text{AQ})} + \text{H}_3\text{O}^{+1}{}_{(\text{AQ})}$   
What are the acids in the forward and reverse reaction?
43. What are the possible pH for acidic solutions?
44. What are Arrhenius bases?
45. What is the alternate theory for bases?
46. Given this reaction:  $\text{CH}_3\text{COO}^{-1}{}_{(\text{AQ})} + \text{H}_2\text{O}_{(\text{l})} \leftrightarrow \text{CH}_3\text{COOH}_{(\text{AQ})} + \text{OH}^{-1}{}_{(\text{AQ})}$   
What are the bases in the forward and reverse reaction?
47. What are the possible pH for acidic solutions?
48. Which radioisotope decays the fastest? Which radioisotope decays the slowest?
49. A sample of uranium-238 is stored in a safe place, what is the amount remaining after  $1.341 \times 10^{10}$  years and what kind of decay particle is emitted?
50. A sample of an unknown radioisotope has taken 151 years to have 1/32 of the original sample remaining. What is this radioisotope?

51. Consider a sample of fossilized wood that originally contained 24g of Carbon-14. It now contains 1.5g of Carbon-14. How old is the sample?

52. What is the charge and mass of an alpha particle?

53. What is the difference between a beta particle and a positron?

54. What is the charge and mass of gamma radiation?

55. What is another way to describe a beta particle?

56. Which particle has the most matter?

57. What is the symbol for beta particles?

58. Which particles will be deflected towards the positive electrode in an electrical field?

59. Which particles will be deflected towards the negative electrode in an electrical field?

60. Which particles will not be deflected in an electrical field?

61. Write the name, molecular formula, and draw the structural formula for 2 alkanes, alkenes, and alkynes using the table P.

62. Make up 2 more examples for each class of organic compounds. Write their names, and draw their structural formulas

63. What is the density of an object with a mass of 102.0 g and a volume of 10 cm<sup>3</sup>?
64. An object has a mass of 23 g and a density of 10 g/cm<sup>3</sup> what is its volume?
65. What is the number of moles of water in a sample of 45g?
66. What is the mass of 2 moles of H<sub>2</sub>O<sub>2</sub>?
67. A Student calculates the density of iron at STP to be 8.956 g/cm<sup>3</sup>. What is the Percent Error?
68. What is the percent composition by mass of H in H<sub>2</sub>O<sub>2</sub>?
69. What is the molarity of a solution of KOH if 1000 ml of the solution contains 11.2 grams of KOH?
70. How many moles of KOH are contained in 250 mL of 2.0 M solution of KOH?

71. What is the concentration in parts per million if a 500 g solution of copper (II) sulfate contains 5 mg of copper (II) sulfate?
72. At STP, a sample of hydrogen gas has a volume of 10 L. If the temperature is double and the pressure is double, what is the new volume of the gas sample?
73. At STP, a sample of helium gas has a volume of 5 L. If the temperature is quadruple and the pressure is triple, what is the new volume of the gas sample?
74. How many milliliters of 0.50 M NaOH are required to exactly neutralize 20.0 milliliters of 0.20 M HCl?
75. If 100. milliliters of a 3.0 M solution of HCl is exactly neutralized by 80. milliliters of NaOH, what is the molarity of the NaOH solution?

76. What is the molarity of an  $\text{HNO}_3$  solution if 10.0 milliliters of 0.40 M LiOH is required to exactly neutralize 200 milliliters of the  $\text{HNO}_3$  solution?

77. How many Joules are required to melt 1000 g of water?

78. How many Joules are needed to vaporize 10 g of water?

Convert the following:

79.  $0^\circ\text{C}$  to K

80. 373 K to  $^\circ\text{C}$

81. List the symbols of the 7 metalloids:

82. What is the number of  $e^-$ ,  $p^+$ , and  $n^0$  in a neutral atom of nitrogen?

83. What is the Atomic Number of barium?

84. What is the electron configuration of iodine?

85. What are the Selected Oxidation States of chlorine?

86. Name the 6 Noble Gases?

87. What is the difference between helium and the other Noble Gases?

98. What does the period number indicate in the electron configuration of an atom?

99. What does the group number indicate in the electron configuration of an atom?

100. What is the name of group 17?

101. What is the name of group 18?

102. How many valence electrons are in an atom of cesium?

103. What element has an electron configuration of 2-8-10-2?

104. What do the Selected Oxidation States numbers represent?