


Name: \_\_\_\_\_ Block: \_\_\_\_\_ Date: \_\_\_\_\_

### SOL Review Sheet

Record your answers in the blanks provided and attach work on a separate sheet (with problems numbered).

- The first transition metal with the lowest atomic number is in period 3.
- Elements in the same period have same # of energy levels. Elements in the same group have same # of val. e<sup>-</sup>
- One mole of P<sub>5</sub> would have a mass of 154.85 grams.
- As the temperature increases the solubility of a gas in a liquid decreases.
- Name the following:  
NaBr sodium bromide                      NH<sub>4</sub>Cl ammonium chloride  
Ca(NO<sub>3</sub>)<sub>2</sub> calcium nitrate                      K<sub>2</sub>SO<sub>4</sub> potassium sulfate  
HClO<sub>3</sub> (aq) chloric acid                      FeCl<sub>3</sub> iron (III) chloride
- 2 mole of AlCl<sub>3</sub> = 133.33 grams
- Alkali metals will react with another (metal, halogen, noble gas)? Circle one
- What causes compounds to have a high heat of vaporization? (size of molecules, mass of molecules or the strength of intermolecular forces between the molecules)
- Nitrogen collected over water at 20°C has a pressure of 765 mmHg, if the total pressure is 771 mmHg, what is the partial pressure of the water vapor? 6 mmHg                       $\frac{-765}{6}$
- What is the full electron configuration for phosphorous? 1s<sup>2</sup>2s<sup>2</sup>2p<sup>6</sup>3s<sup>2</sup>3p<sup>3</sup>
- What is the Lewis Dot Diagram for sulfur? 
- How many calories of heat energy are required to heat 95.0 g of water from 0.0°C to 40.0°C? 1600 + 589.92 cal
- How many significant figures are in the number 0.002560? 4
- How do you recognize a double replacement reaction? 2 compounds exchange metals
- How do you find a precipitate? it is the product that is NOT soluble in H<sub>2</sub>O
- What is the total pressure of a gas made up of 3.0 kPa N<sub>2</sub> and 4.0 kPa O<sub>2</sub>? 7.0 kPa
- If the Lewis Dot Diagram of a molecule is :N≡N: what is the shape? linear
- For question #18 what is the type of bond present? triple bond, non-polar covalent
- When a gas condenses is heat being released or absorbed? released
- [OH<sup>-</sup>] = 1.0 x 10<sup>-8</sup> What is the pH? 6
- What does "like dissolves like" mean? polar dissolves polar, nonpolar dissolves nonpolar
- Would a nonpolar molecule dissolve in water or an organic solvent? organic solvent
- Name three naturally occurring polymers: Nucleic Acid, Protein, Carbohydrates, Lipids
- NH<sub>4</sub>OH: how many elements? 3 how many atoms? 7 how many ions? 2
- Bohr's atomic theory added: energy levels Rutherford's atomic theory added: nucleus
- Using R=8.31 L kPa/mol K solve for moles given: 150.0 kPa, 50.0°C, and 50.0 L 2.79 mol
- What is the percentage of iron in Fe<sub>2</sub>O<sub>3</sub>? 69.94% Fe                      159.7
- Nuclides: Boron-10 19.78% abundance and Boron-11 80.22% abundance. Determine the average atomic mass. 10.80 ave. atomic mass

29. What are the two products of a neutralization reaction? water and salt
30. If a balloon is placed in ice water what will happen to its volume? decrease
31. If Ca bonds with Cl what type of bond forms? CaCl<sub>2</sub>
32. What type of bond exists in a diatomic molecule? nonpolar covalent
33. Explain equilibrium: amt of solute coming out of soln = amt going into soln
34. Isotopes vary in the number of: neutrons ions vary in the number of: electrons
35. If you need 150.0 ml of a 4.00 M HCl, how much 12.0 M HCl would be needed? 50.0 ml
36. Colligative properties depend on? number of particles created (i) when substance dissolves
37. Which would have the strongest intermolecular attractions? KCl, CaCl<sub>2</sub>, NH<sub>3</sub> or HI (circle one)
38. If 15.5 g of a hydrate is heated and then has a mass of 10.0 g what was its percent water? 35.5% water
39. What element has the largest radius? Fr the smallest radius? He
40. What element has the highest ionization energy? He the lowest ionization energy? Fr
41. What element has the highest electronegativity? F the lowest electronegativity? Fr
42. What happens to atomic radius as you go down a group on the periodic table? it increases Why? increasing # of energy levels
43. Most reactive metal? Fr Most reactive non-metal? F What group of elements are unreactive? noble gases
44. The majority of the elements on the periodic table are: solid liquid gas / metal semimetal non-metal (circle 2)
45. What is a catalyst? substance that reduces the required activation energy How does its use affect the need for activation energy? Increase, decrease or does not change the amount needed. (Circle your answer)
46. If your reaction had a yield of 45.0g and the theoretical yield was 60.0 g, determine the percent yield and the percent error. 75.0 % yield 25.0 % error
47. Manganese can have multiple charges, what is the charge of Mn in the compound MnCl<sub>4</sub>? 4+
48. What is the molar mass of NO<sub>2</sub>? 46.01 Determine the density of NO<sub>2</sub> (g) at STP. 2.059/L
49. Ca<sup>2+</sup> How many protons? 20 Electrons? 18 Neutrons? 20 Atomic number? 20
50. For question number 51 what caused the calcium atom to become a 2+ ion? lost 2e<sup>-</sup>
51. If 450.0 ml of a gas at 23°C is heated to 32°C, what is the new volume? 457.5 → 460 ml
52. If 250.0 ml of a gas at 100.9 kPa is pressurized to 102.6 kPa, what would the new volume be? 245.9 ml
53. How many moles are in 400.0 g of CaCO<sub>3</sub>? 3.999 mol
54. 2 H<sub>2</sub> (g) + O<sub>2</sub> (g) → 2 H<sub>2</sub>O (g) If 37.4 g of oxygen gas react, how many liters of water vapor are produced? 52.4 L
55. 425 kg = 0.425 g 2.35 cm = 0.0235 m 0.299 L = 2.99 × 10<sup>-7</sup> μL
56. If 2 elements combined with element X in the same ratio, they must both have the same # of valence e<sup>-</sup>
57. How many atoms of sulfur are in 46.5 g of sulfur? 8.73 × 10<sup>23</sup> atoms
58. How many moles of CuSO<sub>4</sub> are in 0.350 L of a 1.60 M solution? 0.560 mol
59. Balance the following equation: 2 P<sub>2</sub>O<sub>5</sub> → 4 P + 5 O<sub>2</sub> (g)
60. If the frequency of light increases, the wavelength of the light decrease and the energy increases.
61. Ethane, an organic compound, has the formula C<sub>2</sub>H<sub>6</sub> and is saturated or unsaturated?