**Concentration Worksheet**

**Equations:**

**% V/V % W/W % W/V**

**ppm c = mass mole**

**ccvc=cdvd**

1. The maximum acceptable concentration of fluoride ions in municipal water supplies is 1.50 ppm. What is the maximum mass of fluoride ions you would get from a 0.250 L glass of water?
2. Determine the molar concentration of these solutions:
3. 4.67 moles of Li2SO3 dissolved to make 2.04 L of solution
4. 0.629 moles of Al2O3 to make 1.500 L of solution
5. 4.783 g of Na2CO3 to make 10.00 L of solution
6. Seawater contains roughly 28.0 g of NaCl per litre. What is the molar concentration of sodium chloride in sea water?
7. Seawater also contains magnesium chloride MgCl2, at a concentration of 0.055 mol/L. What volume of seawater contains 4.1 mol of magnesium chloride?
8. What mass (in g) of sulfuric acid, H2SO4, would be needed to make 750.0 mL of 2.00 mol/L solution?
9. What volume of 7.6 mol/L hydrochloric acid, HCl, must be poured into a flask to obtain 0.050 mol of hydrochloric acid? Give your answer in litres and millilitres.
10. A stock solution of 1.00 M NaCl is available. How many milliliters are needed to make 100.0 mL of 0.750M?
11. Concentrated H2SO4 is 18.0 M. What volume is needed to make 2.00 L of a 1.00 M solution?
12. Concentrated HCl is 12.0 M. What volume is needed to make 2.00 L of a 1.00 M solution?
13. Calculate the final concentration if 2.00 L of 3.00 M NaCl and 4.00 L of 1.50 M NaCl are mixed. Assume there is no volume contraction upon mixing.

**Answers:**

1. 0.375 mg 2. a) 2.29 mol/L b) 0.419 mol / L c) 0.004513 mol/L 3. 0.479 mol/L 4. 75 L   
   5. 147 g 6. 0.0066 L or 6.6 mL 7. 75.0 mL 8. 0.111 L 9. 0.167 L 10. 2.00 mol/L