Solutions Worksheet #5

1. What would be the percent concentration of each of the following solutions?
    a. 54.0 g of $AgNO_3$ g is dissolved in 128 g of water.
    b. 4.22 g of K_2CO_3 is dissolved in 426 mL of water.
    c. 0.762 g of ZnF_2 is dissolved in 1.30 liters of water.

2. What weight of solute is needed to produce each of the indicated solutions?
    a. 500.0 g of a 6.40% NaCl solution.
    b. 136 g of a 14.2% $LiNO_3$ solution.
    c. 42.2 g of a 7.60% $AgNO_3$ solution.

3. How many grams of water should be used in each of the problems in "2" above.

4. How many grams of the following solutes would you need to prepare the indicated volume and concentration of the solutions given?
    a. 340. mL of a 1.82 M aluminum nitrate solution.
    b. 25.0 mL of a 4.26 M potassium cyanide solution.
    c. 370. mL of a 0.00674 M ammonium sulfate solution.

5. What should the final volume(mL) of each solution be so that the amount of solute dissolved will produce the indicated concentration.
    a. 2.86 g of copper(I) carbonate to produce a 0.640 M solution.
    b. 12.62 g of calcium hydrogen carbonate to produce a 1.28 M solution.
    c. 54.26 g of sodium oxide to produce a 0.430 M solution.

6. What will be the final concentration of a solution prepared by dissolving the indicated solute in enough water to produce the indicated volume of solution?
    a. 15.4 g of strontium acetate filled up to 340. mL.
    b. 176.2 g of Iron(III) sulfite filled up to 1.42 liters.
    c. 3.22 g of copper(I) chlorate filled up to 40.0 liters.

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7. What will be the final concentration of the solution indicated that will result from the following dilutions?

a. 14.0 mL of a 4.20 M Na_2CO_3 solution is diluted to 86.0 mL.

b. 450. mL of a 1.22 M HCl solution is diluted to 1.26 liters.

8. To what volume should the indicated solution be diluted to produce a solution of the desired concentration?

a. 12.0 mL of a 0.64 M KCl solution to produce a 0.19 M solution.

b. 84.2 mL of a 4.60 M $KMnO_4$ solution to produce a 1.42 M solution.

9. What volume of the indicated solution is needed to produce the volume and concentration of a diluted solution as indicated?

a. 2.73 M NaOH solution to prepare 142 mL of a 0.540 M solution.

b. 0.0076 M SnF_2 solution to prepare 25.0 mL of a 0.00027 M solution.

1 lb. = 454 g 1 qt. = 946 mL 4 quarts = 1 gallon density of water = 1g/mL

Solutions

1.
a. 29.7%
b. 0.981%
c. 0.0586%

2.
a. 32.0 g NaCl
b. 19.3 g $LiNO_3$
c. 3.21 g $AgNO_3$

3.
a. 468 g H_2O
b. 117 g H_2O

4.
a. 132 g $Al(NO_3)_3$
b. 6.93 g KCN
c. 39.0 g H_2O
c. 0.329 g $(NH_4)_2SO_4$

5.
a. 23.9 mL
b. 60.8 mL
c. 2,040 mL

6.
a. 0.220 M
b. 0.353 M
c. 5.48×10^{-4} M