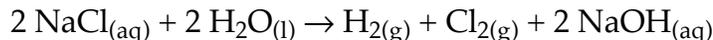
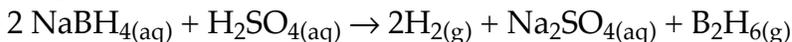


## SOLUTIONS

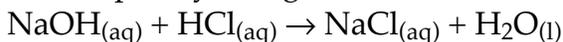
1. For each of the following solutions, tell how many grams of solute would be necessary for its preparation. (a) 0.10 L of 0.10 M  $\text{AgNO}_3$ ; (b) 5.0 mL of 0.05 M  $\text{NaCN}$ ; (c) 0.10 L of 0.10 M  $\text{BaCl}_2$
2. What is the molar concentration of the solute in each of the following solutions?(a) 0.50 L containing 5.6 g of  $\text{NaClO}_4$ ; (b) 100 mL containing 1.5 g of  $\text{KNO}_3$ ; (c) 125 mL containing 0.75 g of  $\text{C}_4\text{H}_8\text{O}$
3. You are given a flask containing 0.50 M  $\text{CuSO}_4$ , and you need  $1.00 \times 10^2$  mL of 0.15 M  $\text{CuSO}_4$ . How many mL of the 0.50 M solution must you use to prepare the required solution?
4. If you dilute 50.0 mL of 0.300 M  $\text{HCl}$  with water to a total volume of 300 mL, what is the  $\text{HCl}$  concentration in the diluted solution?
5. An aqueous solution of  $\text{NaCl}$  reacts as follows when an electrical current is passed through it. If you begin with 1.0 liter of 0.15 M  $\text{NaCl}$ , how many grams of chlorine will be formed?



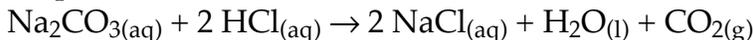
6. How many milliliters of 0.875 M sulfuric acid should be used to prepare 4.14 g of  $\text{B}_2\text{H}_6$ ?



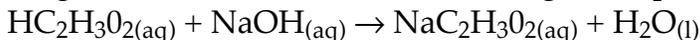
7. How many milliliters of 0.250 M  $\text{HCl}$  would be required to neutralize completely 2.50 g of  $\text{NaOH}$ ?



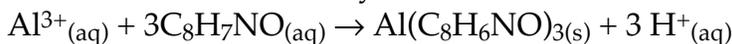
8. Sodium carbonate is a good compound to use to standardize acid solutions. If 42.43 mL of  $\text{HCl}$  are used to titrate 0.251 g of  $\text{Na}_2\text{CO}_3$  to the equivalence point, what is the molar concentration of the acid?



9. If apple cider is allowed to spoil, the result is apple cider vinegar, the distinctive ingredient of which is acetic acid. The acid reacts with sodium hydroxide according to the equation below. If 25.67 mL of 0.674 M  $\text{NaOH}$  are required to react completely with a 50.0 mL sample of vinegar, how many grams of acetic acid are in the vinegar sample?



- 10 We can analyze for the amount of  $\text{Al}^{3+}$  in a mixture by adding hydroxyquinoline,  $\text{C}_8\text{H}_7\text{NO}$  to precipitate an insoluble compound of aluminum. If you isolate 0.264 g of  $\text{Al}(\text{C}_8\text{H}_6\text{NO})_3$  from 100.0 mL of an aluminum containing solution, how many grams of  $\text{Al}$  were in the solution? What was the molarity of the  $\text{Al}^{3+}$  ion?



- |   |  |                          |             |
|---|--|--------------------------|-------------|
| 1. (a) 1.7 g<br>(b) 0.01 g<br>(c) 2.1 g | 2. (a) 0.092M<br>(b) 0.148 M<br>(c) 0.083M | 3. 30 mL                 | 4. 0.0500 M |
| 5. 5.3 g                                | 6. 171 mL                                  | 7. $2.50 \times 10^2$ mL | 8. 0.112 M  |
| 9. 1.04g                                | 10. 0.0155g,<br>$5.75 \times 10^{-3}$ M    |                          |             |