Chemistry 11

## Solutions Unit Review

Name:
Date:
Block:

1. What mass of $\mathrm{H}_{3} \mathrm{PO}_{4}$ is contained in 83.5 mL of a 6.15 M solution?
2. If 9.0 mL of $4.00 \mathrm{M} \mathrm{HNO}_{3}$ solution is diluted to a volume of 600.0 mL , what will be the molarity of the diluted solution?
3. What initial volume of 6.0 M hydrochloric acid is required to make 2.00 L of 0.500 M hydrochloric acid solution?
4. How much water must be added to a 35.0 mL sample of 10.0 M HCl to give a resulting concentration of 0.350 M ?
5. Write the balanced ionization equation for the following solutes in water:
a. $\mathrm{Na}_{2} \mathrm{CO}_{3}$
b. $\mathrm{MgSO}_{4}$
c. Barium nitrate
6. 250.0 mL of 0.60 M HCl is added to 300.0 mL of 1.0 M HBr . What is the final concentration of each ion in solution?
7. Write a formula equation, complete ionic equation and net ionic equation for the following reactions:
a. Magnesium sulphide and zinc chloride
b. Sodium carbonate and barium sulphide
c. $\mathrm{H}_{2} \mathrm{SO}_{3(\mathrm{aq})}$ and $\mathrm{CaCl}_{2(\mathrm{aq})}$
8. A solution contains the following ions. Using a flow chart, show what compounds could be added and in what order to separate these ions.
a. $\mathrm{Cu}^{2+}, \mathrm{Ba}^{2+}$ and $\mathrm{Ag}^{+}$.
b. $\mathrm{Cl}, \mathrm{SO}_{4}{ }^{2-}, \mathrm{S}^{2-}$
9. A titration was performed that required 14.7 mL of 0.102 M NaOH to titrate 25.00 mL of a hydrochloric acid, HCl , solution. Determine the concentration of the hydrochloric acid.
10. If 46.2 mL of 2.50 M NaOH is required to neutralize 1.54 M of a phosphoric acid, $\mathrm{H}_{3} \mathrm{PO}_{4}$, solution, what volume of phosphoric acid was needed to reach the equivalence point?
11. If 8.6 mL of $0.0994 \mathrm{M} \mathrm{HNO}_{3}$ is required to neutralize 25.00 mL of a strontium hydroxide solution, what is the molarity of the strontium hydroxide?
