pH Practice Worksheet

Name:_____ Period: _____

1) What is the pH of a solution that contains 25.0 grams of hydrochloric acid (HCl) dissolved in 1.50 solution?
2) What is the pH of a solution that contains 1.32 grams of nitric acid (HNO_3) dissolved in 750. mL solution?
3) What is the pH of a solution that contains 1.2 moles of nitric acid (HNO_3) and 1.7 moles of hydrochloric acid (HCl) dissolved in 1000. liters of solution?
4) If a solution has a $[H^+]$ concentration of 4.5×10^{-7} M, is this an acidic or basic solution? Explain.
5) An acidic solution has a pH of 4.00. If I dilute 10.0 mL of this solution to a final volume of 1000. mL, what is the pH of the resulting solution?

For Problems 6 – 9 calculate the pH

6) A 4.50×10^{-3} M HBr solution.
7) A 3.67×10^{-5} M KOH solution.
8) A solution made by diluting 25 mL of 6.0 M HCl until the final volume of the solution is 1.75 L.
9) 5.00 L of an aqueous solution that contains 1.00 grams of HBr and 1.00 grams of HNO_3.
10) What are the pOHs for the solutions in problems 6 through 9?
11) What is the pH of a 0.800 M aqueous solution of $Ba(OH)_2$

pH Practice Worksheet

Name:_____ Period: _____

1) What is the pH of a solution that contains 25.0 grams of hydrochloric acid (HCl) dissolved in 1.50 solution?
2) What is the pH of a solution that contains 1.32 grams of nitric acid (HNO_3) dissolved in 750. mL solution?
3) What is the pH of a solution that contains 1.2 moles of nitric acid (HNO_3) and 1.7 moles of hydrochloric acid (HCl) dissolved in 1000. liters of solution?
4) If a solution has a $[H^+]$ concentration of 4.5×10^{-7} M, is this an acidic or basic solution? Explain.
5) An acidic solution has a pH of 4.00. If I dilute 10.0 mL of this solution to a final volume of 1000. mL, what is the pH of the resulting solution?

For Problems 6 – 9 calculate the pH

6) A 4.50×10^{-3} M HBr solution.
7) A 3.67×10^{-5} M KOH solution.
8) A solution made by diluting 25 mL of 6.0 M HCl until the final volume of the solution is 1.75 L.
9) 5.00 L of an aqueous solution that contains 1.00 grams of HBr and 1.00 grams of HNO_3.
10) What are the pOHs for the solutions in problems 6 through 9?
11) What is the pH of a 0.800 M aqueous solution of $Ba(OH)_2$

1. $pH = -\log\left(\frac{25.0gx\frac{1mole}{36.46g}}{1.50L}\right) = 0.340$

2. $pH = -\log\left(\frac{1.32gx\frac{1mole}{63.01g}}{.750L}\right) = 1.554$

3. $\text{pH} = -\log\left(\frac{1.2 \text{ moles } HNO_3 + 1.7 \text{ moles HCL}}{1000\text{L}}\right) = 2.54$

4. $\text{pH} = -\log 4.50\text{x}10^{-7} = 6.347$ acid

5. $\text{pH} = -\log\left(\frac{1.0 \text{ x } 10^{-4}\text{M x } 10.0\text{ml}}{1000.\text{ ml}}\right) = 6.00$

6. $\text{pH} = -\log 4.50\text{x}10^{-3} = 2.347$

7. $pH = 14 - \left(-\log\left[OH^-\right]\right) = 14 - (-\log\left[3.67x10^{-5}\,M\right]) = 9.565$

8. $\text{pH} = -\log\left(\frac{6.0 \text{ M x } 25\text{mLx}\frac{1\text{L}}{1000\text{mL}}}{1.75 \text{ L}}\right) = 1.067$

9. $\text{pH} = -\log\left(\frac{\frac{1.00\text{g HBr}}{80.91\text{g/mole}} + \frac{1.00\text{g } HNO_3}{63.01 \text{ g/mole}}}{5.00\text{L}}\right) = 2.248$

10. pOH = 11.653 pOH = 4.435
    pOH= 12.93 pOH= 11.752

11. $\text{pH} = -\log\left(\frac{10^{-14}}{[\text{OH}^-]}\right) = -\log\left(\frac{10^{-14}}{2 \text{ x } 0.800\text{M})}\right) = 14.204$

Remember you get two OH^- ions for each $Ba(OH)_2$.