## pH Calculations

Find the pH of the following acidic solutions:

1) A 0.001 M solution of HCl (hydrochloric acid).
2) A 0.09 M solution of HBr (hydrobromic acid).
3) $\mathrm{A} 1.34 \times 10^{-4} \mathrm{M}$ solution of hydrochloric acid.
4) $\mathrm{A} 2.234 \times 10^{-6} \mathrm{M}$ solution of HI (hydroiodic acid).
5) $\quad$ A $7.98 \times 10^{-2} \mathrm{M}$ solution of $\mathrm{HNO}_{3}$ (nitric acid).
6) A solution with a volume of 12 L containing 1 mole of hydrochloric acid.
7) 735 L of solution containing 0.34 moles of nitric acid.
8) 1098 L of a solution containing 8.543 moles of hydrobromic acid.
9) 660 L of a solution containing .0074 moles of hydrochloric acid.
10) 120 mL of a solution containing 0.005 grams of hydrochloric acid.
11) 1.2 L of a solution containing $5.0 \times 10^{-4} \mathrm{grams}$ of hydrobromic acid.
12) 2.3 L of a solution containing 4.5 grams of nitric acid.
13) 792 mL of a solution containing 0.344 grams of hydrochloric acid..
14) 100 mL of a solution containing 1.00 grams of nitric acid.
15) $\quad 8.7 \mathrm{~L}$ of a solution containing 1.1 grams of nitric acid.
16) 1.5 L of a solution containing 5.6 grams of hydroiodic.
17) $\quad$ 10.7 L of a solution containing 0.01 grams of hydrochloric acid.
18) $8,000 \mathrm{~mL}$ of a solution containing 6.7 grams of nitric acid and 4.5 grams of hydrochloric acid.
19) $150,000 \mathrm{~L}$ of a solution containing 45 grams of nitric acid and 998 grams of hydrobromic acid.
20) 50 L of a solution containing 0.09 grams of $\mathrm{HCl}, 0.9$ grams of $\mathrm{HBr}, 9.0$ grams of HI , and 90.0 grams of $\mathrm{HNO}_{3}$.

## pH Calculations - Answer Key

1) A 0.001 M solution of HCl (hydrochloric acid). 3.00
2) $A \quad \mathrm{~A} .09 \mathrm{M}$ solution of HBr (hydrobromic acid). 1.05
3) A $1.34 \times 10^{-4} \mathrm{M}$ solution of hydrochloric acid. 3.87
4) A $2.234 \times 10^{-6} \mathrm{M}$ solution of HI (hydroiodic acid). 5.65
5) $\mathrm{A} 7.98 \times 10^{-2} \mathrm{M}$ solution of $\mathrm{HNO}_{3}$ (nitric acid). 1.10
6) $\quad 12 \mathrm{~L}$ of a solution containing 1 mole of hydrochloric acid. 1.08
7) $\quad 735 \mathrm{~L}$ of a solution containing 0.34 moles of nitric acid. 3.33
8) 1098 L of a solution containing 8.543 moles of hydrobromic acid. $\mathbf{2 . 1 1}$
9) 660 L of a solution containing . 0074 moles of hydrochloric acid. 4.95
10) 120 mL of a solution containing 0.005 grams of hydrochloric acid. 3.64
11) 1.2 L of a solution containing $5.0 \times 10^{-4} \mathrm{grams}$ of hydrobromic acid. 5.28
12) 2.3 L of a solution containing 4.5 grams of nitric acid. 1.51
13) 792 mL of a solution containing 0.344 grams of hydrochloric acid. 1.92
14) 100 mL of a solution containing 1.00 grams of nitric acid. 0.80
15) $\quad 8.7 \mathrm{~L}$ of a solution containing 1.1 grams of nitric acid. 2.70
16) $\quad$ 1.5 L of a solution containing 5.6 grams of hydroiodic acid. 1.53
17) $\quad$ 10.7 L of a solution containing 0.01 grams of hydrochloric acid. 4.59
18) $8,000 \mathrm{~mL}$ of a solution containing 6.7 grams of nitric acid and 4.5 grams of hydrochloric acid. 1.54
19) $150,000 \mathrm{~L}$ of a solution containing 45 grams of nitric acid and 998 grams of hydrobromic acid. 4.06
20) 50 L of a solution containing 0.09 grams of $\mathrm{HCl}, 0.9$ grams of $\mathrm{HBr}, 9.0$ grams of HI , and 90.0 grams of $\mathrm{HNO}_{3}$. 1.52
