

Name: _____

Period: _____

Seat#: _____

Directions: Find the pH of the following acidic solutions. Show your work to receive full credit. Round ALL final answers to two decimal places. Some answers are provided at the end. They are underlined.

- 1) What is the pH of a 0.001 M solution of HCl (hydrochloric acid). 3.00

- 2) What is the pH of a 0.09 M solution of HBr (hydrobromic acid). 1.05

- 3) What is the $[H^+]$ in a solution of HCl that has a pH of 3.87? 1.34×10^{-4}

- 4) What is the $[H^+]$ in a solution of HI that has a pH of 5.65? 2.23×10^{-6}

- 5) What is the pOH of a 7.98×10^{-2} M solution of HNO₃ (nitric acid). 12.9

- 6) What is the pH of a solution containing 1 mole of hydrochloric acid in 12 L of water? 1.08

- 7) What is the pH of a solution containing 0.34 moles of nitric acid in 735 L of water? 3.33

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- 8) What is the $[\text{OH}^-]$ in a solution containing 8.543 moles of hydrobromic acid in 1098 L of water?
- 9) What is the $[\text{OH}^-]$ in a solution containing 0.0074 moles of hydrochloric acid in 660 L of water?
- 10) What is the pH of a solution containing 0.005 grams of hydrochloric acid in 120 mL of water? 2.94
- 11) What is the pOH of a solution containing 5.0×10^{-4} grams of hydrobromic acid in 1.2 liters of water? 8.72
- 12) What is the pOH of a solution containing 4.5 grams of nitric acid in 2.3 liters of water?
- 13) What is the $[\text{H}^+]$ and $[\text{OH}^-]$ of a solution containing 0.344 grams of hydrochloric acid in 792 mL of water?
- 14) What is the $[\text{OH}^-]$ in a solution containing 1.00 grams of nitric acid in 100 mL of water?
- 15) What is the pH and $[\text{OH}^-]$ in a solution containing 1.1 grams of nitric acid in 8.7 liters of water?

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- 16) What is the pH of a solution containing 5.6 grams of hydroiodic acid in 1.5 liters of water? 1.53
- 17) What is the pH of a solution containing 0.01 grams of hydrochloric acid in 10.7 liters of water? 4.59
- 18) What is the pH of a solution containing 6.7 grams of nitric acid and 4.5 grams of hydrochloric acid in 8,000 mL of water? 1.54
- 19) What is the pH of a solution containing 45 grams of nitric acid and 998 grams of hydrobromic acid in 150,000 L of water? 4.06
- 20) What is the pH of a solution containing 0.09 grams of HCl, 0.9 grams of HBr, 9.0 grams of HI, and 90.0 grams of HNO₃ in fifty liters of water? 1.52
- 21) What is the pH and pOH of a 1.2×10^{-3} M HBr solution? pH: 2.9 pOH: 11.1

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22) What is the pH and pOH of a $2.34 \times 10^{-5} M$ NaOH solution? pOH: 4.6 pH: 9.4

23) What is the pH and pOH of a solution made by adding water to 15 grams of hydroiodic acid until the volume of the solution is 2500 mL? pH: 1.3 pOH: 12.4

24) What is the pH and pOH of a solution that was made by adding 400 mL of water to 350 mL of $5.0 \times 10^{-3} M$ NaOH solution? pOH: 2.7 pH: 11.3

25) What is the pH and pOH of a solution with a volume of 5.4 L that contains 15 grams of hydrochloric acid and 25 grams of nitric acid? pH: 0.82 pOH: 13.18

26) A swimming pool has a volume of one million liters. How many grams of HCl would need to be added to that swimming pool to bring the pH down from 7 to 4? (Assume the volume of the HCl is negligible) 3645 grams (100.0 moles)