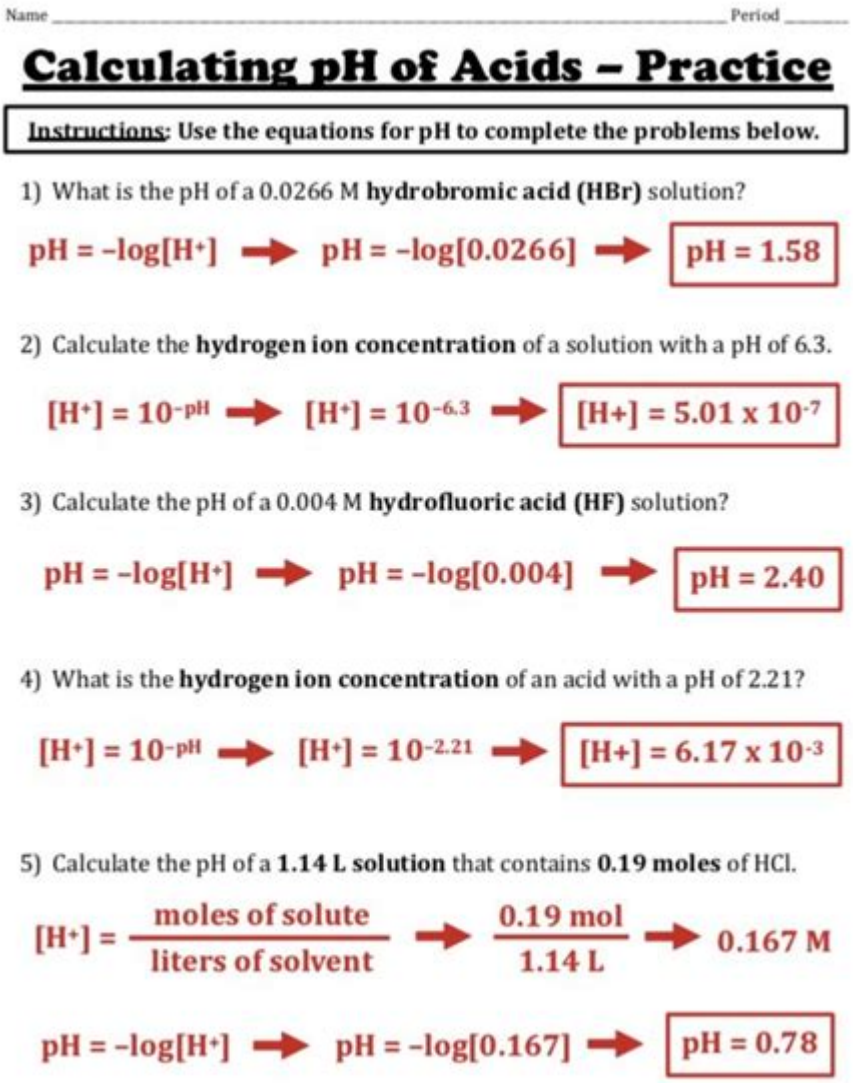
Calculating Ph And Poh Worksheet



Name _____ Period _____

Calculating pH of Acids – Practice

Instructions: Use the equations for pH to complete the problems below.

1) What is the pH of a 0.0266 M **hydrobromic acid (HBr)** solution?

$pH = -\log[H^+] \rightarrow pH = -\log[0.0266] \rightarrow \boxed{pH = 1.58}$

2) Calculate the **hydrogen ion concentration** of a solution with a pH of 6.3.

$[H^+] = 10^{-pH} \rightarrow [H^+] = 10^{-6.3} \rightarrow \boxed{[H+] = 5.01 \times 10^{-7}}$

3) Calculate the pH of a 0.004 M **hydrofluoric acid (HF)** solution?

$pH = -\log[H^+] \rightarrow pH = -\log[0.004] \rightarrow \boxed{pH = 2.40}$

4) What is the **hydrogen ion concentration** of an acid with a pH of 2.21?

$[H^+] = 10^{-pH} \rightarrow [H^+] = 10^{-2.21} \rightarrow \boxed{[H+] = 6.17 \times 10^{-3}}$

5) Calculate the pH of a **1.14 L solution** that contains **0.19 moles** of HCl.

$[H^+] = \frac{\text{moles of solute}}{\text{liters of solvent}} \rightarrow \frac{0.19\ \text{mol}}{1.14\ \text{L}} \rightarrow 0.167\ \text{M}$

$pH = -\log[H^+] \rightarrow pH = -\log[0.167] \rightarrow \boxed{pH = 0.78}$

Calculating pH and pOH worksheet is an essential tool for chemistry students and professionals alike. Understanding how to calculate pH and pOH is critical for various applications, from laboratory experiments to industrial processes. This guide will provide a comprehensive overview of pH and pOH, how they are calculated, and the importance of a worksheet in mastering these concepts.

Understanding pH and pOH

What is pH?

pH is a measure of the acidity or basicity of a solution. It is defined as the negative logarithm (base 10) of the hydrogen ion concentration $[H^+]$ in a solution:

$$
\text{pH} = -\log[H^+]
$$

The scale ranges from 0 to 14, where:
- A pH of 7 is considered neutral (pure water).
- A pH less than 7 indicates an acidic solution.
- A pH greater than 7 indicates a basic (or alkaline) solution.

What is pOH?

pOH is a measure of the hydroxide ion concentration $[OH^-]$ in a solution and is calculated similarly to pH:

$$
\text{pOH} = -\log[OH^-]
$$

The relationship between pH and pOH is expressed through the equation:

$$
\text{pH} + \text{pOH} = 14
$$

This means that if you know the pH of a solution, you can easily find its pOH and vice versa.

Importance of pH and pOH