pH Calculation Worksheet

1. Complete the following table.

pH	$[H^+]$	$[OH^-]$	pOH
3.5			
	5.8×10^{-7}		
		4.2×10^{-2}	
			8.2
	4.2×10^{-5}		
			2.4
10.1			
		7.2×10^{-3}	

2. Calculate the values of both pH and pOH of the following solutions.

	pH	pOH
0.020 M HCl		
0.0050 M NaOH		
A blood sample 7.2×10^{-8} M of H^+		
0.00035 M KOH		

3. . What is the $[H_3O^+]$ in 200.0 mL of 0.0010 M KOH ?

4. Tomato juice has a pH of 4.20. Calculate the $[H_3O^+]$ and $[OH^-]$ in tomato juice.

pH Calculation Worksheet

1. Complete the following table.

pH	$[H^+]$	$[OH^-]$	pOH
3.5	3.2×10^{-4}	3.2×10^{-11}	10.5
3.2	5.8×10^{-7}	1.7×10^{-11}	10.5
12.6	2.4×10^{-13}	4.2×10^{-2}	1.4
5.8	1.6×10^{-6}	6.3×10^{-9}	8.2
4.4	4.2×10^{-5}	2.5×10^{-12}	9.6
11.6	2.5×10^{-12}	4×10^{-3}	2.4
10.1	7.9×10^{-12}	1.3×10^{-4}	3.9
11.9	1.3×10^{-12}	7.2×10^{-3}	2.1

2. Calculate the values of both pH and pOH of the following solutions.

	pH	pOH
0.020 M HCl	$-\log(0.02) = 1.7$	$14 - 1.7 = 12.3$
0.0050 M NaOH	$14 - 2.3 = 11.7$	$-\log(0.005) = 2.3$
A blood sample 7.2×10^{-8} M of H^+	$-\log(7.2 \times 10^{-2}) = 7.14$	$14 - 7.14 = 6.86$
0.00035 M KOH	$14 - 3.46 = 10.54$	$-\log(0.00035) = 3.46$

3. . What is the $[H_3O^+]$ in 200.0 mL of 0.0010 M KOH ?

$[OH^-] = 0.0010$ M

$[H_3O^+] = 1 \times 10^{-14} / 0.0010 = 1.0 \times 10^{-11}$ M

4. Tomato juice has a pH of 4.20. Calculate the $[H_3O^+]$ and $[OH^-]$ in tomato juice.

$[H_3O^+] = 10^{-pH} = 10^{-4.2} = 6.3 \times 10^{-5}$ M

$[OH^-] = 1 \times 10^{-14} / (6.3 \times 10^{-5}) = 1.6 \times 10^{-10}$ M