

Key Honors Acid and Bases pH

Complete the following:

What is pH, with example?

What is pOH, with example?

What is K_w and how is it used?

Calculate the H_3O^+ concentration $[H_3O^+]$ in each of the following solutions, and indicate whether the solution is acidic, basic, or neutral.

1) $[OH^-] = 3.99 \times 10^{-5} M$ $\overset{[H_3O^+]}{2.51 \times 10^{-10} M}$ B

2) $[OH^-] = 2.91 \times 10^{-9} M$ $3.44 \times 10^{-6} M$ A

3) $[OH^-] = 7.23 \times 10^{-2} M$ $1.38 \times 10^{-13} M$ B

4) $[OH^-] = 9.11 \times 10^{-7} M$ $1.10 \times 10^{-8} M$ B or A

Calculate the OH^- concentration $[OH^-]$ in each of the following solutions, and indicate whether the solution is acidic, basic, or neutral.

1) $[H_3O^+] = 1.00 \times 10^{-7} M$ $\overset{[OH^-]}{1.00 \times 10^{-7} M}$ N

2) $[H_3O^+] = 7.00 \times 10^{-7} M$ $1.43 \times 10^{-8} M$ A

3) $[H_3O^+] = 7.00 \times 10^{-1} M$ $1.43 \times 10^{-14} M$ A

Calculate the pH corresponding to each of the hydronium ion concentrations given below. Tell whether each solution is acidic, basic, or neutral.

- | | pH | |
|--|---------------|----------|
| 1) $[\text{H}_3\text{O}^+] = .00100 \text{ M}$ | <u>3.000</u> | <u>A</u> |
| 2) $[\text{H}_3\text{O}^+] = 2.19 \times 10^{-4} \text{ M}$ | <u>3.660</u> | <u>A</u> |
| 3) $[\text{H}_3\text{O}^+] = 9.18 \times 10^{-11} \text{ M}$ | <u>10.037</u> | <u>B</u> |
| 4) $[\text{H}_3\text{O}^+] = 4.71 \times 10^{-7} \text{ M}$ | <u>6.327</u> | <u>A</u> |

Calculate the pH corresponding to each of the hydroxide ion concentrations given below. Tell whether each solution is acidic, basic, or neutral.

- | | | |
|---|---------------|----------|
| 1) $[\text{OH}^-] = 1.00 \times 10^{-7} \text{ M}$ | <u>7.000</u> | <u>N</u> |
| 2) $[\text{OH}^-] = 4.59 \times 10^{-13} \text{ M}$ | <u>1.662</u> | <u>A</u> |
| 3) $[\text{OH}^-] = 1.04 \times 10^{-4} \text{ M}$ | <u>10.017</u> | <u>B</u> |
| 4) $[\text{OH}^-] = 7.00 \times 10^{-1} \text{ M}$ | <u>13.845</u> | <u>B</u> |

Calculate the pH corresponding to each of the pOH values given below. indicate whether each solution is acidic, basic, or neutral.

- | | | |
|--|--------------|----------|
| 1) pOH = 4.32 | <u>9.68</u> | <u>B</u> |
| 2) pOH = 8.90 | <u>5.10</u> | <u>A</u> |
| 3) pOH = 1.81 | <u>12.19</u> | <u>B</u> |
| 4) pOH = 30.1 ^{13.1} | <u>.9</u> | <u>A</u> |

Calculate the hydronium ion concentration, in M, for the following pH values.

- | | | |
|--------------|--|---------------|
| 1) pH = 1.04 | <u>$9.1 \times 10^{-2} \text{ M}$</u> | <u> </u> |
| 2) pH = 13.1 | $8 \times 10^{-14} \text{ M}$
<u>$8 \times 10^{-14} \text{ M}$</u> | <u> </u> |