Set A: Relating H+ concentration to pH

Objective: To test your ability to relate concentration of H+ to pH of a solution

Determine the pH of the solutions given the $[H^+]$ or $[H_3O^+]$ concentrations.

Given concentration of solutions	*Determine pH*
1. $[H_3O^+] = 1.0 \times 10^{-1}$ M	pH = 1
2. $[H^+] = 1.0 \times 10^{-4}$ M	pH = 4
3. $[H^+] = 1.0 \times 10^{-11}$ M	pH = 11
5. $[OH^-] = 1.0 \times 10^{-7}$ M	pH = 7
6. $[OH^-] = 1.0 \times 10^{-2}$ M	pH = 12

Determine the ion concentrations.

Given concentration of solutions	*Determine these concentrations*
7. $[H^+] = 1.0 \times 10^{-4}$	$[OH^-] = 1 \times 10^{-10}$
8. $[H_3O^+] = 1.0 \times 10^{-11}$	$[OH^-] = 1 \times 10^{-3}$
9. $[OH^-] = 1.0 \times 10^{-1}$	$[H^+] = 1 \times 10^{-13}$
10. $[OH^-] = 1.0 \times 10^{-7}$	$[H_3O^+] = 1 \times 10^{-7}$

Below, pH of two solutions are given. *You are asked to compare H+ (hydrogen or hydronium ion) concentration of one solution to another. Follow the example comparison given below.*

	Solution A	Solution B	Example comparisons
Ex.	pH 6	pH 7	.Solution A has 10 times more H+ than solution B .Solution B has 1/10th the H+ ions of Solution A .As solution A changes to Solution B, there is 10 fold decrease in H+ concentration
11.	pH 8	pH 10	B = 100 x more H+ than A
12.	pH 13	pH 12	A = 10 x less H_3O^+ than B
13.	pH 5	pH 2	B = 1000 times more H+
14.	pH 7	pH 11	A has 10,000 times more H+ than B