Calculating pH of Acid Solutions – Reading Guide

*section 14.3 in OpenStax*

**Strong Acids**

List and memorize the six **strong acids** shown in Figure 14.6.

Calculate the pH of an 0.22 *M* solution of HBr. *Remember*: Strong acid solutions completely dissociate so the [acid] = [H3O+]!

*(ans. pH=0.66)*

**Weak Acids**

What is the difference between a strong acid and a weak acid?

Write the Ka equation for HNO2

Write the Ka equation for HC2H3O2

For weak acids, an ICE table must be used to determine the equilibrium concentration of H3O+. Follow Example 14.14 to see how this is done. Create an ICE table for a 1.55 *M* solution of HF.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | HF (*aq*) + H2O (*l*) | | ⮀ | H3O+ (*aq*) + F–(*aq*) | |
| I |  | -- |  |  |  |
| C |  | -- |  |  |  |
| E |  | -- |  |  |  |

Use this ICE chart to calculate the [H3O+] and the pH of this solution. The Ka for HF is 3.5 x 10-4.

*Note: You may use the “x is small approximation”, but you should check your assumption.*

*(ans. [H3O+] = 0.0233 M and pH = 1.63)*

**Percent ionization** =

Calculate the percent ionization for the 1.55 *M* solution of HF from the problem above.

*(ans. 1.50%)*

**End of Chapter 14 Practice Problems**

#19a, 57b, 59, 69a

For detailed solutions to these problems, go to the [OpenStax website](https://openstaxcollege.org/textbooks/chemistry/resources) and download the “Student Answer and Solution Guide.”