Introduction to Acids and Bases – Reading Guide

*section 14.1 in OpenStax*

**Arrhenius Definition: Brønsted-Lowry Definition:**

Acid: Acid:

Base: Base:

In the following reaction, identify the Brønsted-Lowry acid, the Brønsted-Lowry base, the conjugate acid and the conjugate base.

 H2SO4 (*aq*) + OH– (*aq*) → H2O (*l*) + HSO4– (*aq*)

Characterize the following chemicals as a Brønsted-Lowry acid, base, or both. HCl is done for you.

HCl

H3O+

CO32–

Base

Acid

HCO3–

H2SO4

PO43–

NaOH

What is an **amphoteric** substance? Which of the chemicals above is amphoteric?

List the conjugate acids for each of the following: *(show charges)*

H2O \_\_\_\_\_\_\_\_\_\_\_\_\_ HPO4-2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Br- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List the conjugate bases for each of the following:

H2O \_\_\_\_\_\_\_\_\_\_\_\_\_ HPO4-2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ CH3NH3+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Autoionization of Water**

Complete the chemical equation below to show how two water molecules react. Label the conjugate acid and the conjugate base.



Kw = [ ] × [ ] = 1.0 x 10-14 at 25 °C *(memorize!)*

Note that in ALL aqueous solutions, both H3O+ and OH– are present.

**End of Chapter 14 Practice Problems**

#3a–c, 5a–c, 9, 13, 17

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.”