Calculating K – Reading Guide

*section 13.4 in OpenStax*

**Calculating K**

In an ICE chart, what does each of the letters represent?

I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Watch the video tutorial on*** [***Calculating K***](http://www.screencast.com/t/wn3DOtubn5)

Consider the balanced reaction below. Suppose you started with 1.00 atm each of H2 and I2 and 0 atm of HI. Fill in the ICE table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | H2 (g) + I2 (g) | | ⮀ | 2 HI (g) |
| I |  |  |  |  |
| C |  |  |  |  |
| E |  |  |  |  |

You then measure an *equilibrium pressure* of 0.25 atm for I2. Use your ICE table above to calculate the equilibrium concentrations of H2 and HI.

*(ans. H2 = 0.25 atm, HI = 1.5 atm)*

**Calculating Equilibrium Concentrations**

Suppose you were not given the equilibrium pressure in the previous problem.

When given only the value of K and the initial concentrations, one must often solve for equilibrium concentrations using the quadratic equation or by assuming “x” is small (5% rule).

Follow through Example 13.9, then explain **when** you would use each approach and describe any **formulas** involved.

1. Quadratic equation
2. 5% rule

**End of Chapter 13 Practice Problems**

#61a–c, 65, 75

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.”