

ICE Tables

ICE tables

- To do equilibrium problems set up an ICE table.
- Write the balanced equation. Underneath it label three rows.
- Initial Concentrations (pressure)
- Change
- Equilibrium concentration (pressure)

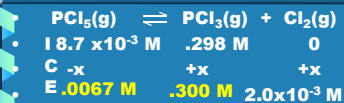
Gas Problem

At a certain temperature a 1.00 L flask initially contained 0.298 mol PCl_5 , 8.70×10^{-3} mol PCl_3 , and no Cl_2 . After the system had reached equilibrium, 2.00×10^{-3} mol $\text{Cl}_2(\text{g})$ was found in the flask. Gaseous PCl_5 decomposes according to the following reaction



- Calculate the equilibrium concentrations of all species and the value of K.

Answer



- It must have shifted to the right because chlorine increased.
- x must = 2.0×10^{-3}

K

- $K = .3 (.002) / .0067$
- = .0896

Concentration Problem

- Carbon monoxide reacts with steam to produce carbon dioxide and hydrogen. At 700 K the equilibrium constant is 5.10. Calculate the equilibrium concentrations of all species if 1.000 mol of each component is mixed in a 1.000-L flask.

Concentration Problem

- Assume that the reaction for the formation of gaseous hydrogen fluoride from hydrogen and fluorine has an equilibrium constant of 1.15×10^2 at a certain temperature. In a particular experiment, 3.000 mol of each component was added to a 1.500-L flask. Calculate the equilibrium concentrations of all species.

Quadratic Equation

- To solve some problems you need to use the quadratic equation
- or solver function on a calculator
- For a $x^2 + bx + c = 0$
- $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Solver Function, Quadratic program

- Graphing calculators (required for this course) come with a solver function to solve equations.
- You can also have a quadratic equation program.
- All of this is legal for the AP or any of my tests.
- *except on multiple choice.

