

Name: _____

Honors Chemistry: ☐ yellow ☐ blue ☐ red

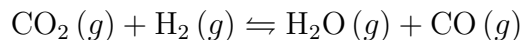
Kinetics & Equilibrium Review Problems

The following initial rate data were collected for the reaction:



$[\text{CeCl}_4]$ $(\frac{\text{mol}}{\ell})$	$[\text{FeCl}_2]$ $(\frac{\text{mol}}{\ell})$	reaction rate $(\frac{\text{mol}}{\ell \cdot \text{s}})$
3.00×10^{-6}	8.00×10^{-6}	2.42×10^{-7}
1.80×10^{-5}	8.00×10^{-6}	1.45×10^{-6}
3.00×10^{-6}	2.40×10^{-5}	7.26×10^{-7}

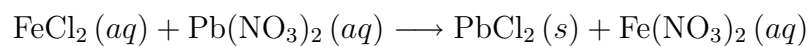
1. What is the rate law for the above experiment?
2. What is the value of the rate constant, k , for the above rate law (in the correct units)?
3. A reaction vessel at equilibrium at a temperature of 2000 K contains 0.20 M H_2 , 0.30 M CO_2 , 0.55 M H_2O , and 0.55 M CO . The chemical reaction is:



- (a) Write the equilibrium expression and calculate the value of the equilibrium constant.

- (b) A leak develops at the top of the reaction vessel and some of the H_2 gas escapes. How does this affect the concentration of CO_2 in the vessel?

4. Given the chemical reaction:



- (a) Write the net ionic equation for this reaction.
- (b) Write the equilibrium expression for this reaction.
- (c) Write the expression for the solubility product constant, K_{sp} , for PbCl_2 .
- (d) The value of K_{sp} for PbCl_2 is 1.6×10^{-5} . Calculate the concentration of Pb^{2+} ions in a saturated solution of PbCl_2 .