

2. Compare Experiment 1 and 2. By what factor did the initial rate increase?

1.67 67% $\frac{5}{3}$ 17% 2 11%
1.9 5%

To obtain a ratio divide the Initial Rate in Exp 2 by the Initial Rate in Exp 1.

Initial Rate in Exp 2/Initial Rate in Exp 1 = $3.65 \times 10^{-5} \text{ M min}^{-1} / 2.19 \times 10^{-5} \text{ M min}^{-1} = 1.66$

3. Compare the ratio of the $[\text{PtCl}_2(\text{NH}_3)_2]$ in Exp 1 and 2 to the ratio of the Initial rate for Exp 1 and 2. What is the order of the reaction with respect to $[\text{PtCl}_2(\text{NH}_3)_2]$?

(NOTE: If you are not sure what order is say so.)

first order 56%

When going from Exp 1 to Exp 2 the $[\text{PtCl}_2(\text{NH}_3)_2]$ increased by a factor of 1.66. The Initial Rate also increased by this same factor. The general rate law for this system is $\text{rate} = k[\text{PtCl}_2(\text{NH}_3)_2]^n$. So based on these two experiments the exponent n must have a value of 1.

4. What is the rate law for this reaction (assume H_2O does not appear in the rate law equation.) (NOTE: If you are not sure what a rate law is say so.)

$\text{rate} = k[\text{PtCl}_2(\text{NH}_3)_2]^1$ 31%

The general rate law for this system is $\text{rate} = k[\text{PtCl}_2(\text{NH}_3)_2]^n$. There is not enough information to determine if H_2O has any effect, so it is not included

5. Calculate the magnitude and the units for the rate constant. (NOTE: If you are not sure what a rate constant is say so.)

magnitude = 0.00146 28%

units are min^{-1} 33% s^{-1} 11% time^{-1} 5%
 $\text{M}^{-1} \cdot \text{s}^{-1}$ 11%

The rate law is $\text{rate} = k[\text{PtCl}_2(\text{NH}_3)_2]^1$. So we can select any of the experiments, substitute for rate and $[\text{PtCl}_2(\text{NH}_3)_2]^1$ and solve for k. So using Exp #1 the equation becomes,

$$2.19 \times 10^{-5} \text{ M min}^{-1} = k [0.015 \text{ M}]^1$$

$$k = 2.19 \times 10^{-5} \text{ M min}^{-1} / [0.015 \text{ M}]^1 = 1.46 \times 10^{-3} \text{ min}^{-1}$$

6. Is there anything about the questions that you feel you do not understand? List your concerns/questions.

nothing

7. If there is one question you would like to have answered in lecture, what would that question be?

nothing