

3/28/13

QUIZ

The rate constant for mystery reaction is  $4.5 \times 10^{-3} \text{ M s}^{-1}$   
By what order does this reaction proceed?

0 order.

$$\text{rate } \left(\frac{\text{M}}{\text{s}}\right) = k[A]^x[B]^y$$

$\downarrow$   $\frac{\text{M}}{\text{s}}$  same as rate.

- The value of  $k$  could be determined:

- by determining the slope of line from a plot of  $\ln([N_2O]_t)$  versus  $t$ . The value of  $k$  is opposite from slope.

$$\text{rate} = k[A][B]$$



$$[A] = .01 \rightarrow 0$$

$$[B] = 5 \rightarrow 4.99$$

$$\text{rate} = \underbrace{5k}_{\text{constant}} [A]$$

$$\text{mM} \\ 10^{-6}$$

$$\text{mM} \\ 10^{-3}$$



$$\text{rate} = k[\text{H}_2\text{O}][\text{CO}]$$

$$[\text{CO}]_0 = 0.01 \text{ M}$$

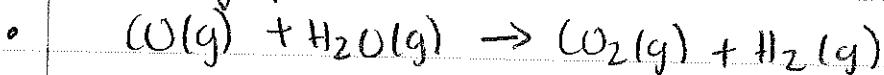
$$[\text{H}_2\text{O}]_0 = 0.01 \text{ M}$$

• For pseudo you have diff. concentrations, but same rate.

Why is plot of  $\ln[\text{CO}]$  not straight line?

because both  $[\text{CO}]$  &  $[\text{H}_2\text{O}]$  are changing.

You only have straight line when only 1 of reactants changing.



$$\text{rate} = k[\text{H}_2\text{O}][\text{CO}]$$

$$[\text{CO}]_0 = 0.01\text{M}$$

$$[\text{H}_2\text{O}]_0 = 2.00\text{M}$$

What is the plot of  $\ln[\text{CO}]$  now a steep straight line?

-  $[\text{H}_2\text{O}]$  is nearly straight line

- For initial concentration of

$$[\text{CO}]_0 = 0.01\text{M}$$

$$[\text{H}_2\text{O}]_0 = 2.00\text{M}$$

What is concentration of  $\text{H}_2\text{O}$  at very long times gone to completion?

$[1.99]$  didn't change very much.

-  $\text{rate} = k'[\text{CO}]$

$$\downarrow k[\text{H}_2\text{O}]$$