

Recitation 2 Worksheet Kinetics

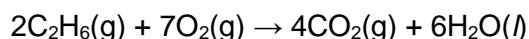
Name:

UGA ID:

Instructions:

- Please enter your first and last name as it appears on the eLC roster (do not use a nickname).
- Your UGA myID is a combination of letters and numbers (example: mine is sre13137). **Do not use your 81x number.**
- If you have a printer, print the worksheet, write your answers on the template showing your work where appropriate, convert it to a PDF and Upload this worksheet to Gradescope by 11:59 p.m. on Tuesday, September 8. You do not need to upload anything to eLC.
- If you do not have a printer, type your answers in the boxes and write your work on separate sheets of paper and convert your work to a PD. Upload the PDF of your work to eLC in the Dropbox. Then upload the worksheet template to Gradescope by 11:59 p.m. on Tuesday, September 8.

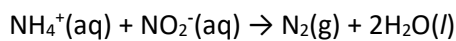
1. The combustion of ethane (C_2H_6) is represented by the equation:



In this reaction:

- A. the rate of consumption of ethane is seven times faster than the rate of consumption of oxygen.
- B. the rate of formation of CO_2 equals the rate of formation of water.
- C. water is formed at a rate equal to two-thirds the rate of formation of CO_2 .
- D. the rate of consumption of oxygen equals the rate of consumption of water.
- E. CO_2 is formed twice as fast as ethane is consumed.

2. Given the following data for this reaction:



The rate law for the reaction is:

EXPT	$[\text{NH}_4^+]$	$[\text{NO}_2^-]$	RATE
1	0.010 M	0.020 M	0.020 M/s
2	0.015 M	0.020 M	0.030 M/s
3	0.010 M	0.010 M	0.005 M/s

3. For a reaction $2A + B \rightarrow 2C$, with the rate equation: $\text{Rate} = k[A]^2[B]$

the order with respect to A is and the order overall is .

4. Given: $A + 3B \rightarrow 2C + D$

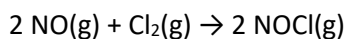
This reaction is first order with respect to reactant A and second order with respect to reactant B. If the concentration of A is doubled and the concentration of B is halved, the rate of the reaction would by a factor of .

5. The reaction has the rate law $\text{Rate} = k[A][B]^2$. Which will cause the rate to increase the most?

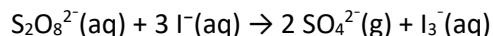
- A. doubling [A]
- B. lowering temperature
- C. tripling [B]
- D. quadrupling [A]
- E. doubling [B]

6. For the reaction: $C_2H_4Br_2 + 3KI \rightarrow C_2H_4 + 2KBr + 2KI_3$, when the rate of disappearance of $C_2H_4Br_2$ is $2.0 \times 10^{-5} \text{ M/s}$, what is the rate of appearance of KBr?

7. Given the following balanced equation, determine the rate of reaction with respect to [NOCl].



8. Determine the rate law and the value of k for the following reaction using the data provided.



$[\text{S}_2\text{O}_8^{2-}]_i$ (M)	$[\text{I}^-]_i$ (M)	Initial Rate
0.30	0.42	4.54
0.44	0.42	6.65
0.44	0.21	3.33

Rate =

Rate Constant:

9. The speed of a chemical reaction

- A. is constant no matter what the temperature is.
- B. is independent of the amount of contact surface of a solid involved.
- C. between gases should in all cases be extremely rapid because the average kinetic energy of the molecules is great.
- D. between ions in aqueous solution is extremely rapid because there are no bonds that need to be broken.
- E. varies inversely with the absolute temperature.

10. The relative initial rates of the reaction $\text{A}_2 + \text{B}_2 \rightarrow \text{products}$ in vessels (a)-(d) are 1:1:4:4. Unshaded spheres represent A_2 molecules, and shaded spheres represent B_2 molecules present at the beginning of the reaction. What is the order of reaction with respect to A_2 ?

