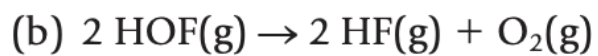
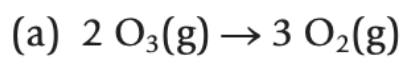
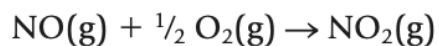


1. Give the relative rates of disappearance of reactants and formation of products for each of the following reactions.



13. The data in the table are for the reaction of NO and O₂ at 660 K.



Reactant Concentration (mol/L)		Rate of Disappearance of NO (mol/L · s)
[NO]	[O ₂]	
0.010	0.010	2.5×10^{-5}
0.020	0.010	1.0×10^{-4}
0.010	0.020	5.0×10^{-5}

- (a) Determine the order of the reaction for each reactant.
- (b) Write the rate equation for the reaction.
- (c) Calculate the rate constant.
- (d) Calculate the rate (in mol/L · s) at the instant when [NO] = 0.015 mol/L and [O₂] = 0.0050 mol/L.
- (e) At the instant when NO is reacting at the rate 1.0×10^{-4} mol/L · s, what is the rate at which O₂ is reacting and NO₂ is forming?

15. Data for the reaction $\text{NO(g)} + \frac{1}{2} \text{O}_2\text{(g)} \rightarrow \text{NO}_2\text{(g)}$ are given (for a particular temperature) in the table.

Experiment	Concentration (mol/L)		Initial Rate (mol NO/L · h)
	[NO]	[O ₂]	
1	3.6×10^{-4}	5.2×10^{-3}	3.4×10^{-8}
2	3.6×10^{-4}	1.04×10^{-2}	6.8×10^{-8}
3	1.8×10^{-4}	1.04×10^{-2}	1.7×10^{-8}
4	1.8×10^{-4}	5.2×10^{-3}	?

- (a) What is the rate law for this reaction?
- (b) What is the rate constant for the reaction?
- (c) What is the initial rate of the reaction in experiment 4?