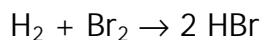


CHEM 36
General Chemistry
Quiz #9

April 26, 2002

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For the reaction:



it has been determined that the reaction is *first order* with respect to H_2 and *second order* with respect to Br_2 .

1. Write the rate law for this reaction.

Based on the info given: $\text{Rate} = k[\text{H}_2][\text{Br}_2]^2$

2. How would doubling the initial concentration of Br_2 affect the initial rate of the reaction? (Be quantitative!)

Since the reaction is 2nd-order with respect to Br_2 , the rate varies with the *square* of the Br_2 concentration. So, doubling the Br_2 concentration will increase the rate by a factor of: $2^2 = 4$.

3. How would the rate change (be quantitative!) if the temperature at which the reaction was performed was increased by 10 °C? Note: no calculation is necessary!

The Arrhenius rule of thumb is that the rate of a reaction will *double* for every 10 °C increase in temperature, so the reaction rate here will double.