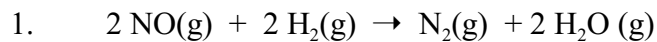
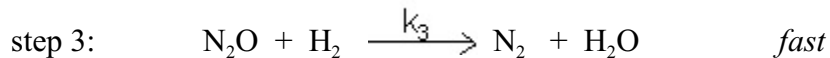
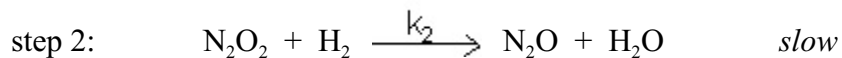
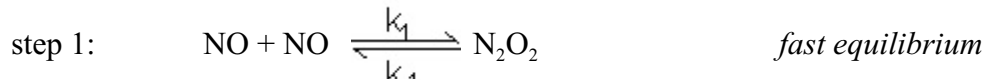


Worksheet 6



experimental rate law = $k [\text{NO}]^2 [\text{H}_2]$

The following mechanism has been proposed for the gas-phase reaction of NO and H₂.



a) What is the molecularity of each step? b) List any intermediates. c) Does the overall reaction agree with the experimental reaction? d) Show that the predicted rate law equals (or does not equal) the experimental rate law.

2. Write balanced nuclear equations for the following transformations: a) neodymium-141 undergoes electron capture, b) gold-201 decays to a mercury isotope, c) strontium-83 decays by positron emission, d) ${}_{26}^{56}\text{Fe}(\alpha, \beta) {}_{29}^{60}\text{Cu}$

3. Cobalt-60 has a half-life of 5.26 years. The cobalt-60 in a radiotherapy unit must be replaced when its radioactivity falls to 75% of the original sample. If the original sample was purchased in August 2008, when will it be necessary to replace the cobalt-60?