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**Include file name:** Chemistry\_Worksheet\_0031

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1.) The half-life of a first-order reaction is 6.646 minutes. How many minutes will have elapsed after 55 half-lives?

2.) What is the activation energy for a reaction (*in kJ/mol*) if the rate constant increases by a factor of 7.536 when the temperature is raised 30.537 K degrees from an initial temperature of 351.795K? Use  $R = 8.314 \text{ J/mol}\cdot\text{K}$  in your calculation (but watch units!).

Error tolerance:  $\pm 0.5\%$

3.) Consider the reaction  $A + B \rightleftharpoons \text{Products}$ . If the reaction is order 1 in A with the concentration of A being 0.606M and order 1 in B with the concentration of B being 1.97M, what is the rate in M/s if  $k = 7.22$ ?

4.) Consider the reaction  $A + B \rightleftharpoons \text{Products}$ . If the reaction is order 0 in A with the concentration of A being 1.146M and order 1 in B with the concentration of B being 1.602, what is the rate constant if the rate = 65.64 M/s under these conditions? Note that you do not have to give the units!

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