

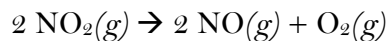
Name: _____

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The Arrhenius Equation Practice

Directions: Complete the following problems and show all of your work! Put a box around your final answers to each problem.

- 1) Consider the decomposition of NO_2 :



At 650 K, the rate constant is 1.66 s^{-1} .

At 700 K, the rate constant is 7.39 s^{-1} .

Calculate the activation energy.

- 2) A reaction rate doubles when the temperature increases from 25°C to 40°C . Calculate the activation energy.
- 3) The activation energy for the isomerization of cyclopropane to propene is 274 kJ/mol . By what factor does the rate of reaction increase as the temperature rises from 500°C to 550°C ?

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- 4) A reaction is found to have a rate constant of 4.88 s^{-1} at 278 K and an activation energy of 60.2 kJ/mol . What is the value of the rate constant at 306 K ?

- 5) Given the information in the table to the right, what is the activation energy for this reaction in kJ/mol ?

T (K)	k (s⁻¹)
442	2.53×10^{-11}
456	1.25×10^{-10}

- 6) A reaction is found to have an activation energy of 19.2 kJ/mol at 511 K . What is the value of the rate constant? Assume that $A = 10^{12}$.