

CHM 112 (Quiz 5)

Name_____

Section_____

Show all work and draw a box around your final answer.

1. Kinetic experiments were performed on the **first order** decomposition reaction



to determine the reaction's temperature dependence. The resulting data are found in the table below

Experiment	Initial [B ₂] mol·L ⁻¹	Temperature °C	Initial Rate (mol B ₂)·L ⁻¹ ·s ⁻¹
1	0.10	100	1.2×10^{-3}
2	0.20	300	6.8×10^{-3}
3	0.15	250	?

(a) determine the value of the rate constant (k) in

- experiment 1
- experiment 2

(b) Using the Arrhenius equation ($k = Ae^{-E_a/RT}$), and it's two-point form, determine the value of

- The activation Energy
- The frequency factor

(c) What is the initial rate in experiment 3?