

## Question #78751, Chemistry / General Chemistry

For a first order reaction, it takes 37 min for a reactant to decrease to 50% of its initial value.

What is the rate constant for the reaction?

**Solution:**

$$\tau_{1/2} = \frac{\ln 2}{k} = \frac{0.693}{k}$$

$$k = \frac{0.693}{\tau_{1/2}} = \frac{0.693}{37 \cdot 60} \approx 3.1 \cdot 10^{-4} \text{ [c}^{-1}\text{]}$$

**Answer:**  $3.1 \cdot 10^{-4} \text{ c}^{-1}$

**Source:** <https://opentextbc.ca/chemistry/chapter/12-4-integrated-rate-laws/>

Answer provided by AssignmentExpert.com