

Answer on question #70359, Chemistry / Inorganic Chemistry

The reaction: $2A \rightarrow C$ is first order. If the initial concentration of A is 1.0M and the rate constant is $7.7 \times 10^{-3} \text{ s}^{-1}$, What is the final concentration of A after 3.0 minutes?

- A. 0.25
- B. 0.72
- C. 0.98

Solution:

For the reaction of first order:

$$C_A = C_0 \cdot e^{-k \cdot t}$$

$$C_0 = 1M, \quad k = 7.7 \cdot 10^{-3} \text{ s}^{-1}, \quad t = 3m = 180 \text{ s}.$$

$$C_A = 1 \cdot e^{-7.7 \cdot 10^{-3} \cdot 180} = 0.25 \text{ M}.$$

Answer: A. 0.25.

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