

1

A certain first-order reaction has a half life of 20.0 minutes. The time (in minutes) required for this reaction to be 87.5% complete is:

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- A) 60 B) 65 C) 70 D) 75

2

It takes 42.6 minutes for the concentration of a reactant in a first order reaction to drop from 0.45 mol L^{-1} to 0.32 mol L^{-1} at 25°C . How long will it take (in minutes) for the concentration of the reactant to drop from 0.65 mol L^{-1} to 0.46 mol L^{-1} at 25°C ?

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- A) 65.4 B) 52.4 C) 43.2 D) 40.6

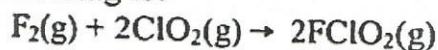
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The rate constants for a first-order reaction (k) is $5 \times 10^{-2} \text{ s}^{-1}$ at 760 K and (k) is $6 \times 10^{-3} \text{ s}^{-1}$ at 700 K. The activation energy " E_a " (in kJ/mol) for this reaction is:

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- A) 145.8 B) 156.3 C) 175.7 D) 182.4

F_2 gas reacts with ClO_2 gas according to:



use the following data to determine the value of the reaction rate constant.

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Experiment	$[\text{F}_2]_0 \text{ M}$	$[\text{ClO}_2]_0 \text{ M}$	Initial rate (/M.s)
1	0.1	0.01	1.2×10^{-3}
2	0.1	0.04	4.8×10^{-3}
3	0.2	0.01	2.4×10^{-3}

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- A) 1.2/M.s B) 2.4/M.s C) 4.8/M.s D) 0.24/M.s

5

A first order reaction $\text{A} \rightarrow \text{B}$ is 25% completed in 45 min. Calculate (in min) the half life of the reaction.

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- A) 86.8 B) 99.3 C) 101.5 D) 108.4

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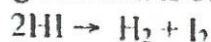
At 25°C the rate constant for the first-order decomposition of a pesticide solution is $6.4 \times 10^{-3} \text{ min}^{-1}$. If the starting concentration of pesticide is 0.80 M, what concentration will remain after 40 min?

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- A) 0.62 M B) 0.56 M C) 0.52 M D) 0.48 M

7

The activation energy for the following reaction is 60190 J/mol:



by what factor will the rate constant increase when the temperature is raised from 10°C to 29°C .

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- A) 7 B) 6 C) 5 D) 4

8

Which statement of the following is true?

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- A) The activation energy of a chemical reaction increases as the temperature decreases.
 B) The activation energy of a chemical reaction increases as the temperature increases.
 C) The activation energy of a chemical reaction doesn't depend on the temperature.
 D) The activation energy of a chemical reaction increases in the presence of the catalyst.