The entropy change will be very small considering there was no state change and the number of molecules are the same.

\[ \Delta S = \Delta H^0 - T \Delta S^0 \]

\( \Delta S \) will be negative because \( \Delta H^0 \) is a large negative number and \( T \Delta S \) will be a relatively small value so it will not change \( \Delta S \) greatly (according to the equation above).

\[ k = \frac{[NO_2]}{[NO]^2} \]

for the data NO2 is second order because it doubles as concentration doubles, the other reactants a first order because the remain constant.

Step III, fits best because it has NO as second order (2 coefficient) and NO as first order.