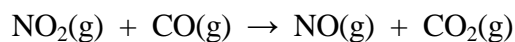


**Marks**  
**5**

- The major pollutants NO(g), CO(g), NO<sub>2</sub>(g) and CO<sub>2</sub>(g), which are emitted by cars, can react according to the following equation.



The following rate data were collected at 225 °C.

Experiment	[NO <sub>2</sub> ] <sub>0</sub> (M)	[CO] <sub>0</sub> (M)	Initial rate (d[NO <sub>2</sub> ]/dt, M s <sup>-1</sup> )
1	0.263	0.826	1.44 × 10 <sup>-5</sup>
2	0.263	0.413	1.44 × 10 <sup>-5</sup>
3	0.526	0.413	5.76 × 10 <sup>-5</sup>

Determine the rate law for the reaction.

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Calculate the value of the rate constant at 225 °C.

	Answer:
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Calculate the rate of appearance of CO<sub>2</sub> when [NO<sub>2</sub>] = [CO] = 0.500 M.

Answer:

Suggest a possible mechanism for the reaction based on the form of the rate law.  
Explain your answer.

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