

A reaction was found to be second order with respect to the concentration of carbon monoxide. If the concentration of carbon monoxide is doubled, with everything else kept the same, the rate of reaction will be

- (1) remain unchanged
- (2) tripled
- (3) increased by a factor of 4
- (4) doubled.

Solution:

$$\text{Given } r_1 = dx/dt = k[\text{CO}]^2$$

$$r_2 = k[2\text{CO}]^2 = 4k[\text{CO}]^2$$

According to the rate law expression doubling the concentration of CO increases the rate by a factor of 4.