The gas phase reaction

2 NO(g) + Br2(g) 2 NOBr(g)

is second order in NO and first order in Br2. In a volume of 1.50 liters, 0.200 mol of NO and 0.0800 mol of Br2 were brought together, and the initial rate was found to be 5.67 x 10-4 mol. l-1 .s-1.

a. Calculate the rate constant (including units) for this reaction. Use molar concentrations (not partial pressures) in the rate equation.

b. What will be the rate when one half of the Br2 has reacted?

