Section 18.1 *continued*

In your textbook, read about determining equilibrium constants.

A chemist did two experiments to determine the equilibrium constant for the reaction of sulfur dioxide with oxygen to form sulfur trioxide. Use the table showing the results of the experiments to answer the following questions.

$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$ at 873 K			
Experiment 1		**Experiment 2**	
Initial concentrations	Equilibrium concentrations	Initial concentrations	Equilibrium concentration
$[SO_2] = 2.00M$	$[SO_2] = 1.50M$	$[SO_2] = 0.500M$	$[SO_2] = 0.590M$
$[O_2] = 1.50M$	$[O_2] = 1.26M$	$[O_2] = 0M$	$[O_2] = 0.0450M$
$[SO_3] = 3.00M$	$[SO_3] = 3.50M$	$[SO_3] = 0.350M$	$[SO_3] = 0.260M$

13. Write the equation to calculate the equilibrium constant for the reaction.

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14. Is this reaction an example of a homogeneous or heterogeneous equilibrium?

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15. Calculate the equilibrium constant from the data obtained in experiment 1.

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16. What is the equilibrium constant for the reaction in experiment 2?

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17. Was it necessary to calculate both equilibrium constants? Why or why not?

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18. What does this experiment show about the initial concentrations of products and reactants in a reversible reaction?

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