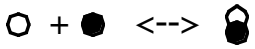
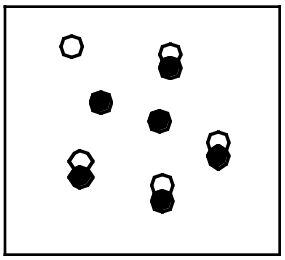
The Extent of a Chemical Reaction

1. The following diagram represents a reaction chamber where the chemical reaction,



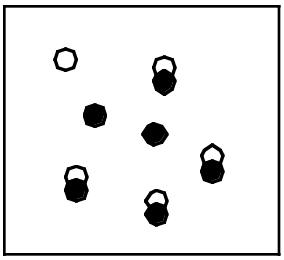
is at equilibrium.



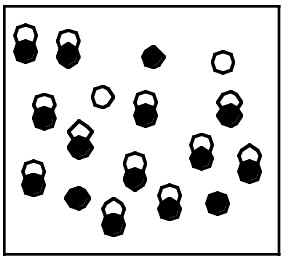
If nine units of

are added to the reaction chamber, which of the following best represents the system when it reestablishes equilibrium?

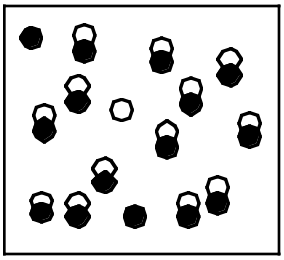
A.



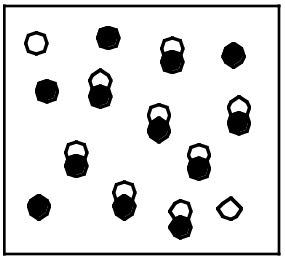
B.



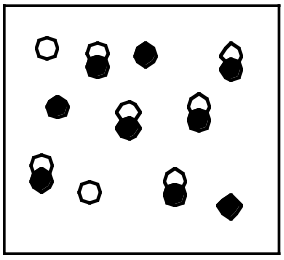
C.



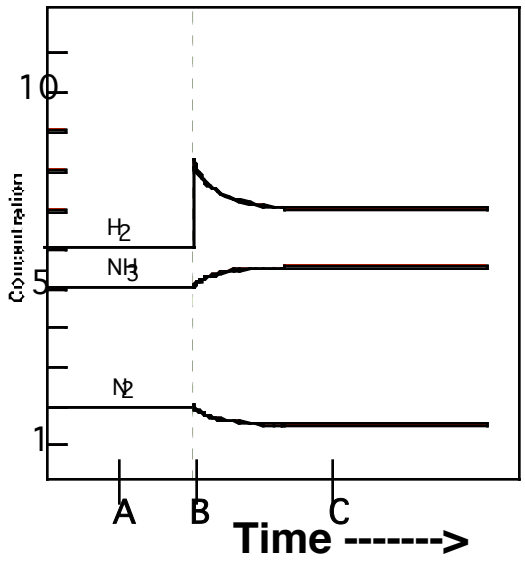
D.



E.



2. The following diagram represents a chemical reaction. At time B a change takes place



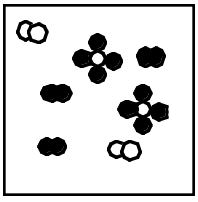
Calculate the value of the equilibrium constant for the reaction illustrated by the diagram. Assume that N_2 is a reactant.

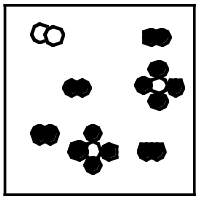
A. 0.048
B. 0.058
C. 17.2
D. 0.42
E. 0.23

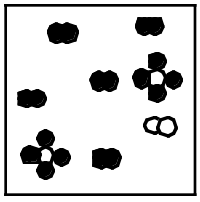
3. Consider the following hypothetical reaction:

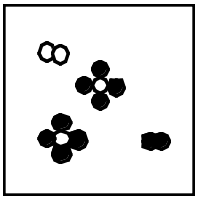
$$A_2 + 4B_2 <=> 2AB_4$$

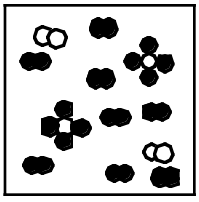
Initially 3 molecules of A_2 and 7 molecules of B_2 are placed in a reaction vessel. After a period of time 2 molecules of AB_4 are found in the vessel. Which of the following diagrams represents this final state?

A. 

B. 

C. 

D. 

E. 

4. For the reaction

$$A(aq) + 2\,B(aq) \Longleftrightarrow 3\,D(aq) + F(aq)$$

we prepare a mixture to initially contain 2.00 M A and 1.50 M B. After equilibrium is reached, the concentration of A is found to be 1.50 M. What is the numerical value of the equilibrium constant, Kc, for this reaction?

A. 2.00
B. 2.25
C. 4.50
D. 1.50
E. 0.50

Answer Key for Test “Extent”, 2/19/09

No. in Q-Bank		No. on Test	Correct Answer
1	1	1	B
1	4	2	B
1	5	3	A
2	2	4	C