Lesson 174: Exploring Equilibrium Lab
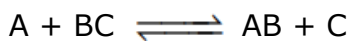
Look at the screen and observe everything you can find out about the reaction pictured:

A + BC $\rightleftharpoons$ AB + C

1. What type of reaction is it? Is it endo or exothermic?

2. Predict what will happen when 50 A's are added to the box and 50 BC's are added.

3. In the box labeled "current amounts," enter 50 for A and 50 for BC.

    a. Was your prediction correct? Describe and explain any differences.

    b. Describe the nature of dynamic equilibrium when small numbers of particles (such as 50, as compared to 6.02 x 10^{23}) are present.

4. Predict what will happen when the temperature is raised so it is NOT above the activation energy max but IS above the energy level of the products.

5. Raise the temperature as described. Did your prediction come true? Describe and explain any differences.

6. Predict what will happen when the temperature is raised so it is above the activation energy max.

7. Raise the temperature as described. Again, was your prediction correct? Describe and explain any differences.

8. What did you notice about the rate at which reactants/products fluctuated between the three different temperatures? If you didn't notice anything, hit "reset all" and test it again.

9. Did temperature affect equilibrium position? Did it affect it in the way you expected? Explain.

10. Did temperature affect reaction rate? Did it affect it in the way you expected? Explain.

11. Write the equilibrium expression for this reaction. Because of the way the numbers fluctuate, it would be hard to calculate the equilibrium constant, but how would you do it if the numbers ever settled down?