

Activity 3

Example 2:

If we have the reaction:

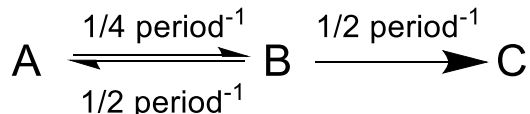


For the first time point, $40/4 = 10$ "Solid" molecules will move to the "Liquid" cup, $0/2 = 0$ "Liquid" molecules will move to the "Solid" cup, $0/2 = 0$ "Liquid" molecules will move to the "Gas" cup and $0/4 = 0$ "Gas" molecules will move to the "Liquid" cup. At time point one you will thus have 30 "Solid" molecules, 10 "Liquid" molecules and 0 "Gas" molecules. At time point two $30/4 = 7$ (always round down) "Solid" molecules will to the "Liquid" cup, $10/2 = 5$ "Liquid" molecules will move to the "Solid" cup, $10/2 = 5$ "Liquid" molecules will move to the "Gas" cup and $0/4 = 0$ "Gas" molecules will move to the "Liquid" cup. At time point two you will have 28 "Solid" molecules, 7 "Liquid" molecules, and 5 "Gas" molecules. The data in your chart should look like this:

Time point	A	B	C
0	40	0	0
1	30	10	0
2	28	7	5
3	24	9	7

Example 3:

In an irreversible reaction, molecules that reach a certain state cannot re-enter the equilibrium. You can model this by removing the molecules that would be going into cup "C" from the system. **If these are candy, you may now eat them when they are placed in cup "C".**



For the first time point, $40/4 = 10$ "A" molecules will move to cup "B", $0/2 = 0$ "B" molecules will move to cup "A", and $0/2 = 0$ "B" molecules will move to cup "C". At time point one you will thus have 30 "A" molecules, 10 "B" molecules and 0 "C" molecules. At time point two $30/4 = 7$ (always round down) "A"

molecules will move to cup “B”, $10/2 = 5$ “B” molecules will move to cup “A”, and $10/2 = 5$ “B” molecules will move to cup “C”. At time point two you will have 28 “A” molecules, 7 “B” molecules, and 5 “C” molecules. The data in your chart should look like this:

Time point	A	B	C
0	40	0	0
1	30	10	0
2	28	7	5
3			
4			

Questions:

Did this system reach equilibrium?

How does the number of molecules in each cup vary from example 2 above?
