Bingo Chip Equilibrium

- Take two different color transparent bingo chips (I use blue and yellow).
  - 10 of one color (yellow)
  - 6 of the other (blue)
- The balanced reaction is:

  $$B + Y \leftrightarrows BY$$

- Put these on the overhead, the BY will look green.

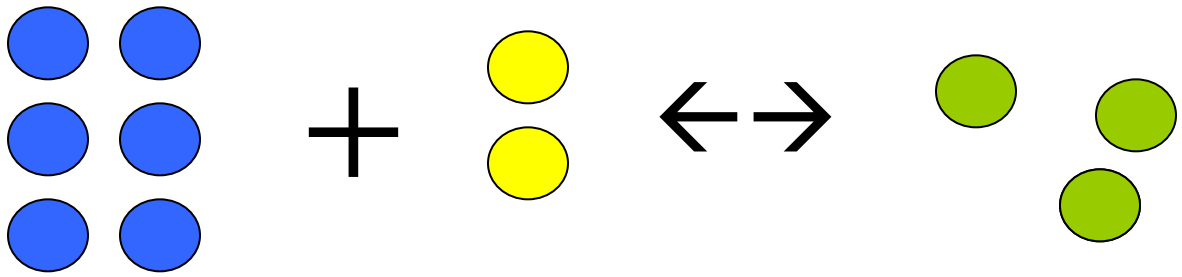
  $$K = \frac{[BY]}{[B]\,[Y]}$$

- Then discuss that equilibrium is reached then B = 6, Y = 2, and BY = 3
- Show that a BY will break up to form a B and a Y at the same rate that the B and Y form a BY. Go back and forth a bit, but always end up with the same amounts.
- Each time, $K = \frac{(3)}{(6)(2)} = \frac{1}{4}$
- Le Chatelier: Stress the system by adding 5 yellows.

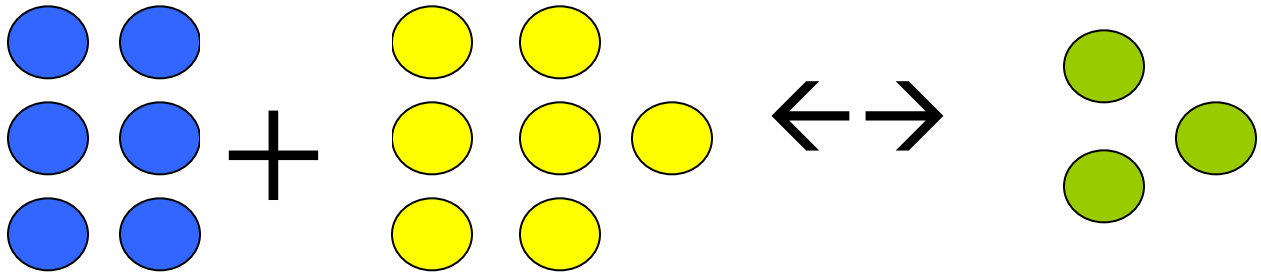
  now, $\frac{[P]}{[R]} = \frac{(3)}{(6)(5)}$ does not equal K
- Make 2 more BYs with 2 Bs and 2 Ys to reach equilibrium again
- Now you have 4B, 5Y, and 5BY

  $$\frac{[BY]}{[B][Y]} = \frac{(5)}{(4)(5)} = \frac{1}{4}$$

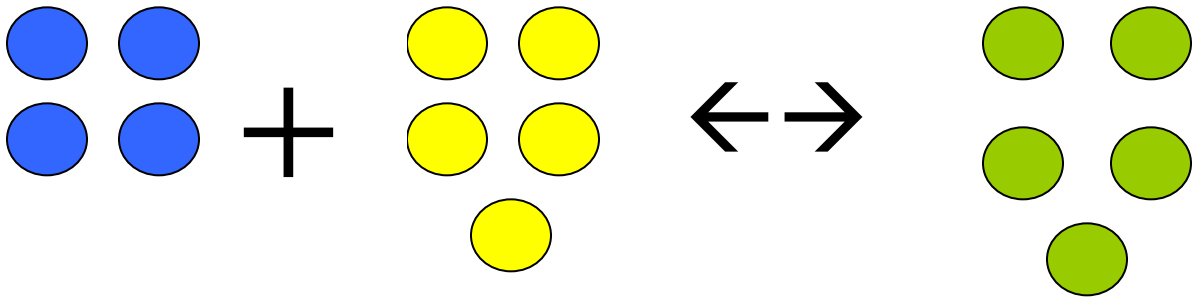
  and we are back at equilibrium! But, the solution is more yellow than it used to be because we don't have the same amounts of each substance.



At Equilibrium



Now stress the equilibrium by adding 5 more Y



The equilibrium is reestablished.