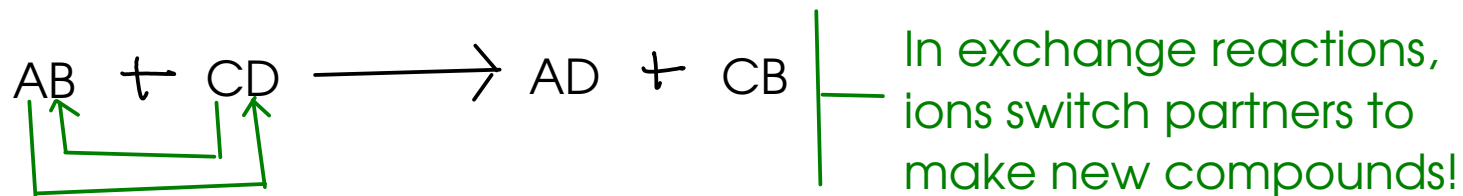


DOUBLE REPLACEMENT (EXCHANGE) REACTIONS

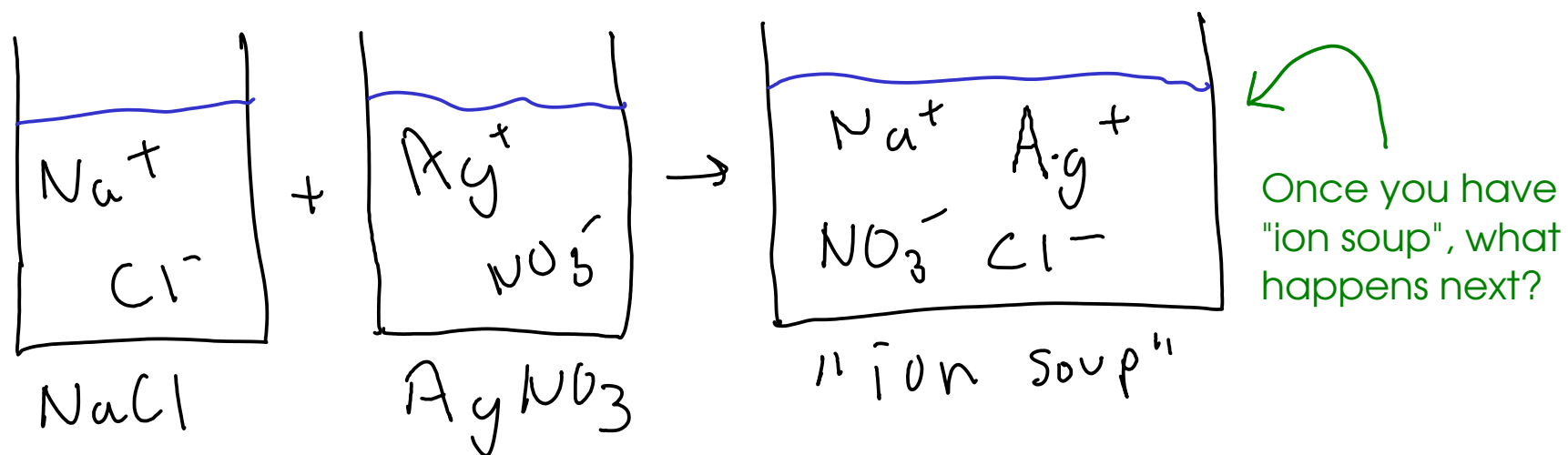
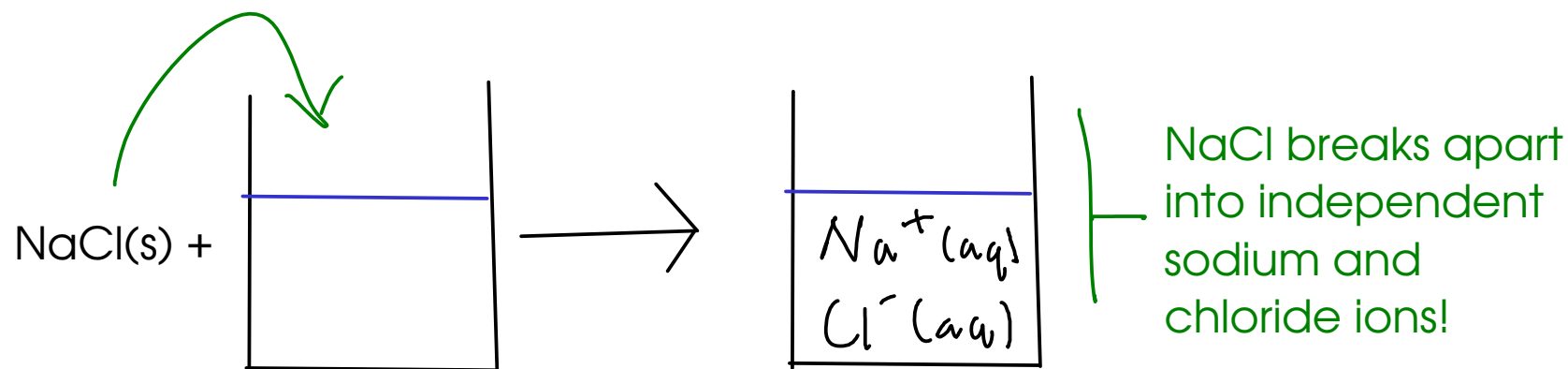


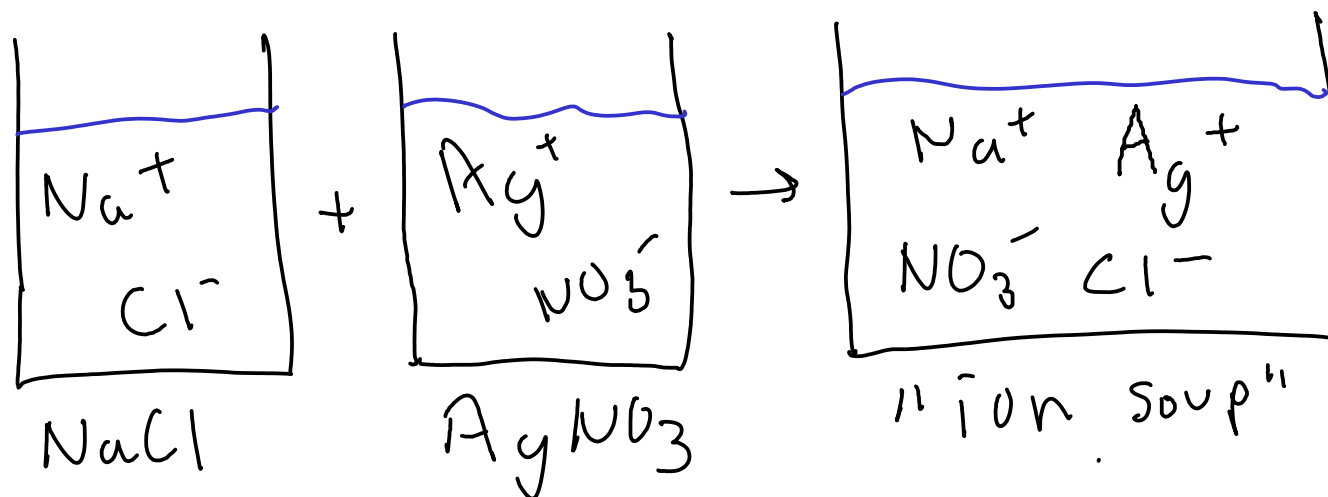
... but HOW do they switch partners?

- ① Exchange reactions almost always take place in AQUEOUS SOLUTION
- ② In aqueous solution, IONIC THEORY applies!

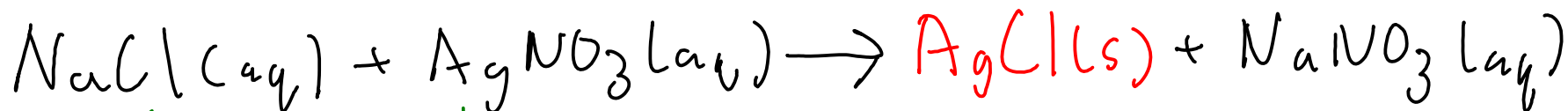
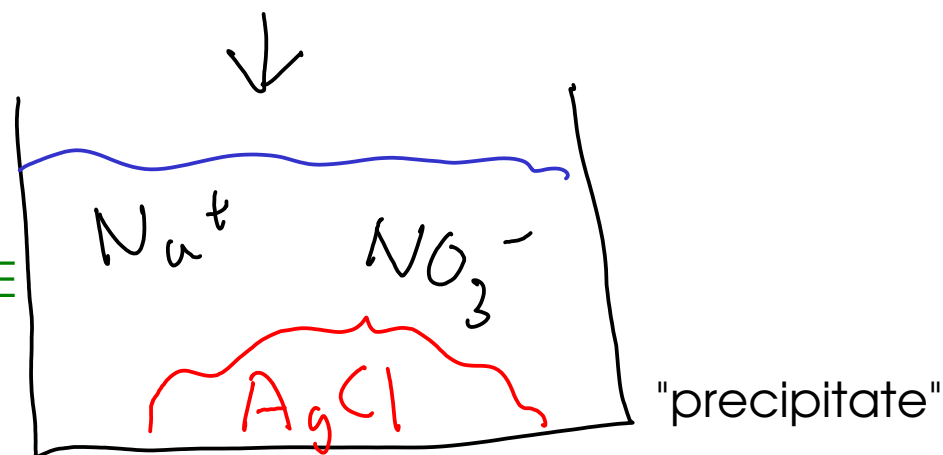
IONIC THEORY OF SOLUTIONS

- Briefly, ionic theory states that certain substances (like soluble ionic compounds) break apart into their component ions when dissolved in water!





When silver and chloride ions meet, they form an INSOLUBLE compound, silver(I) chloride. This falls out of the solution



Formation of AgCl drives this reaction!

For an exchange reaction to proceed, there must be something (a new product) DRIVING the reaction.

3 kinds of exchange chemistry:

- ① Reactions that form PRECIPITATES (insoluble ionic compounds)
- ② Reaction that form STABLE MOLECULES like water
- if water forms, reaction is called "neutralization"
- ③ Reactions that form UNSTABLE MOLECULES that break down into other small molecules, often gases.



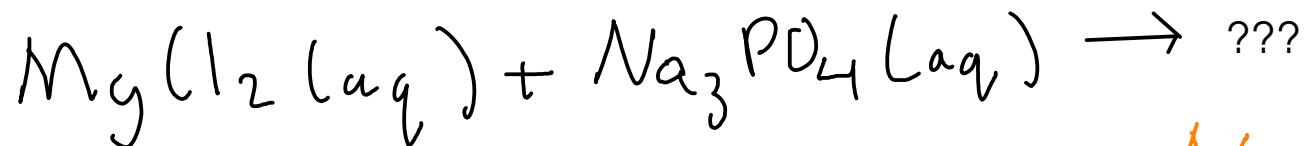
If any of these three possibilities form from the "ion soup", a reaction will occur.

If not, NO reaction occurs.

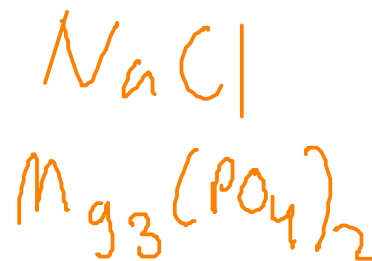
PRECIPITATION

- Form an insoluble ionic compound

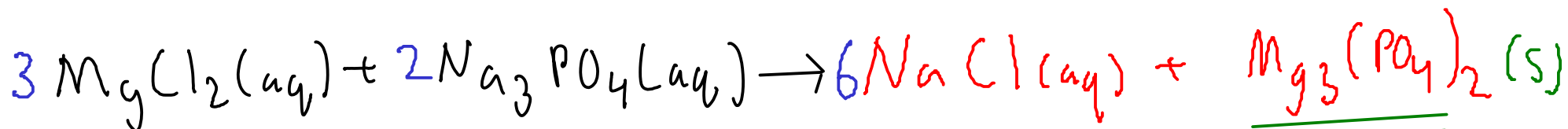
Experiment 11 in your laboratory involves EXCHANGE REACTIONS!



Ions:



Remember, IONS exchange partners. That means that you need to write out the IONS, including their charges, and pair them up. The formulas of the products are controlled by the CHARGES of the IONS in the new compounds!



See table 7.1 on p 172 ... formation of SOLID MAGNESIUM PHOSPHATE drives this reaction

- Does a solid (insoluble) ionic compound form? Check DATA (p 172 in book)

* When writing exchange reactions, figure out the formulas of the products FIRST, and THEN balance the equation.