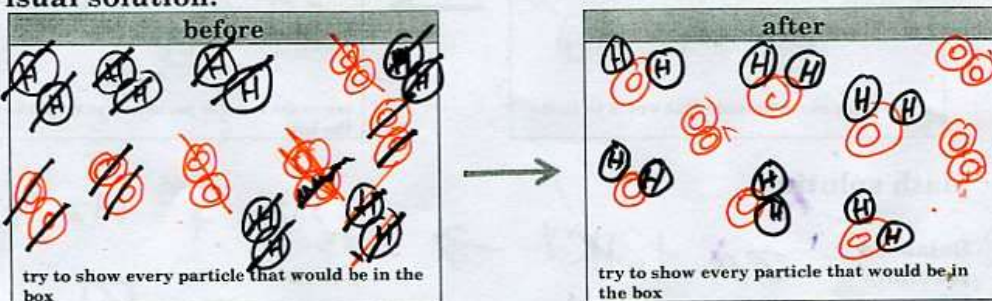


## Chemistry – class notes

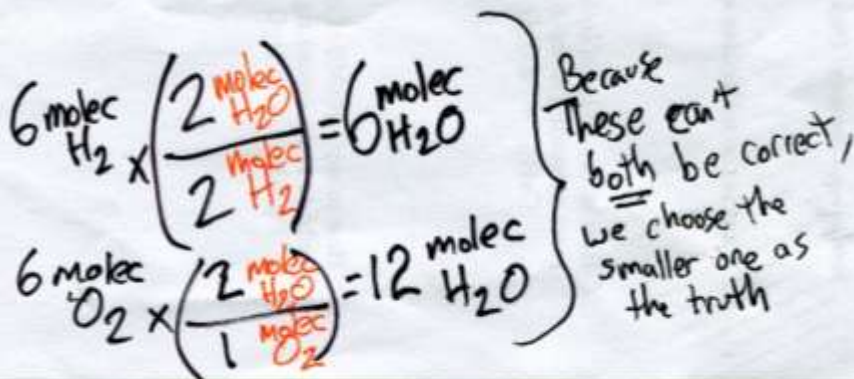
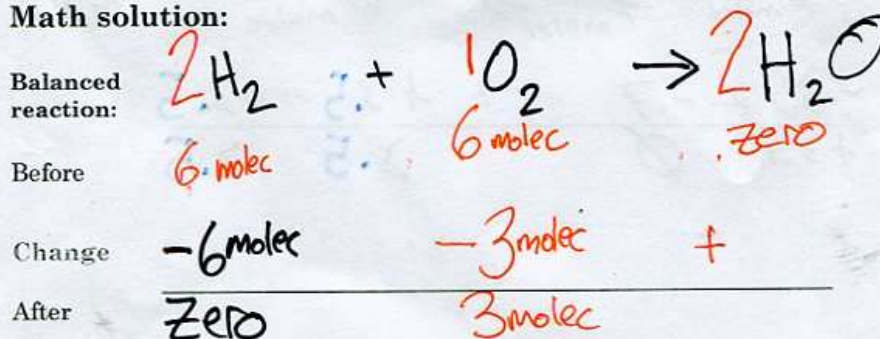
Purpose: How do we predict what happens when the amounts of reactants are not perfectly matched?

**Example 1:** Calculate the number of moles of water that should be produced when 6 molecules of hydrogen react with 6 molecules oxygen gas.

Visual solution:



Math solution:

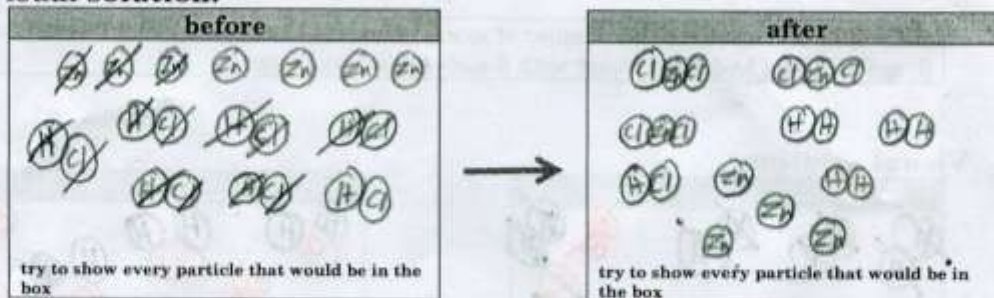


**Notes:**

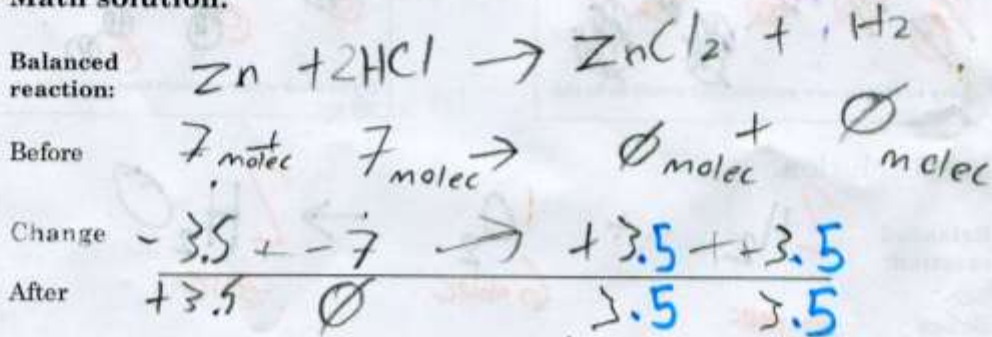
- ① The substance leftover is called the **EXCESS REACTANT** (example: Oxygen)
- ② The substance that you run out of is the **LIMITING REACTANT** (example: HYDROGEN)
- ③ strategy: Use both reactants to calculate product. The smaller product is what really happens

**Example 2:** If seven molecules of zinc react with seven molecules of hydrochloric acid (HCl) to produce zinc chloride and hydrogen gas.

**Visual solution:**



**Math solution:**



**Notes:**

7 molec Zn  $\left( \frac{1 \text{ molec ZnCl}_2}{1 \text{ molec Zn}} \right) = 7 \text{ molec ZnCl}_2$

7 molec HCl  $\left( \frac{1 \text{ molec ZnCl}_2}{2 \text{ molec HCl}} \right) = 3.5 \text{ molec ZnCl}_2$  Truth