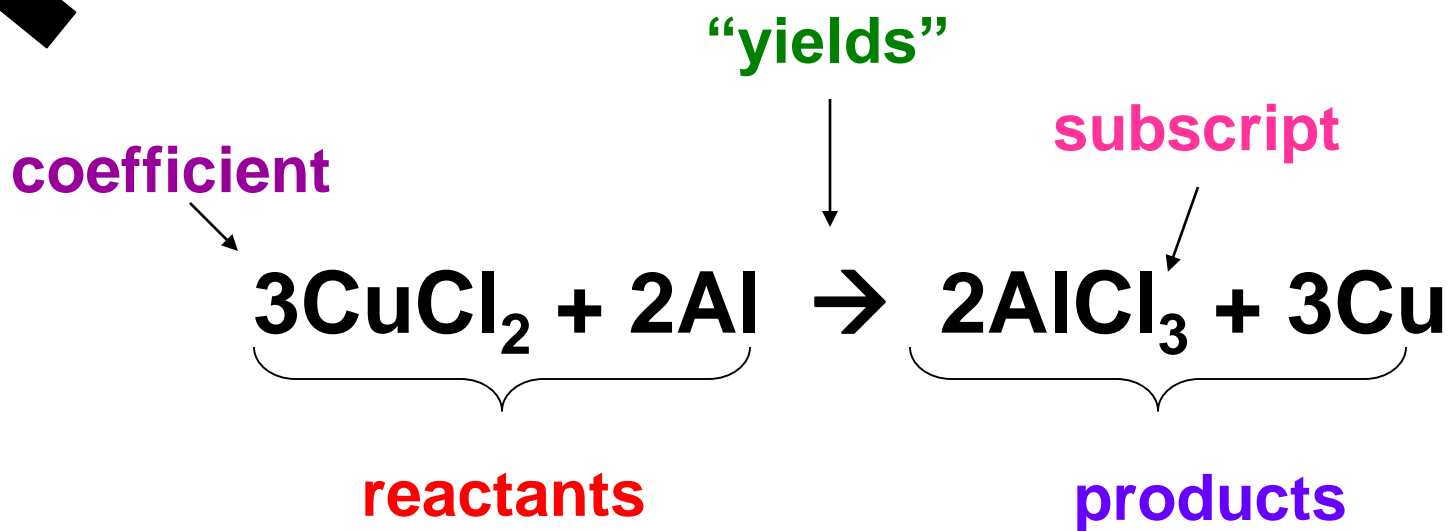


The Law of Conservation of Mass

- ▶ In any chemical reaction, the final mass of the products ALWAYS equals the original mass of the reactants.
- ▶ In other words – in a chemical reaction, mass cannot be added or gained.
- ▶ The atoms on one side of the equation MUST balance with the atoms on the other side of the equation!

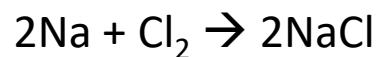
The Anatomy of ²



a Chemical Reaction

If I start with...

- Let's say I have the following equation:



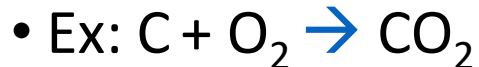
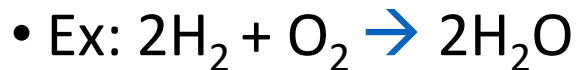
I start with 8 grams of Sodium and end up with 22g of sodium chloride, how much chlorine reacted with sodium?

Counting Atoms

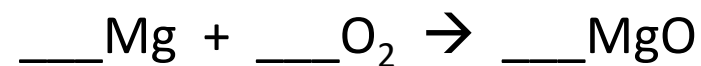


1. Synthesis reactions

- Occur when two substances combine and form 1 new compound



Balancing Reactions #1

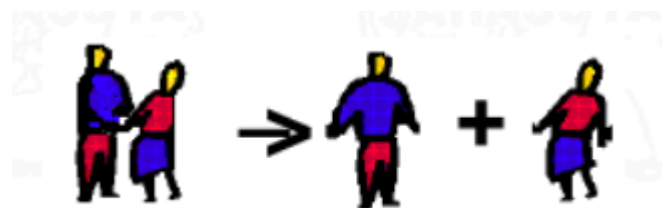
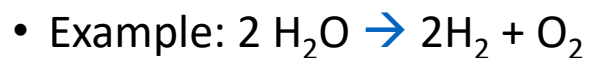


2. Decomposition Rxns

- Compound breaks up into elements *or* into smaller, simpler compounds



- 1 Reactant \rightarrow Product + Product**

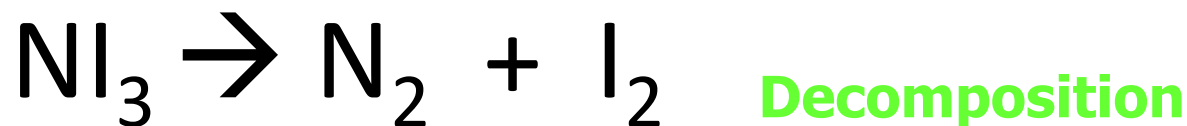
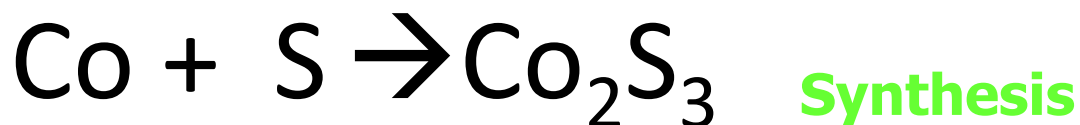
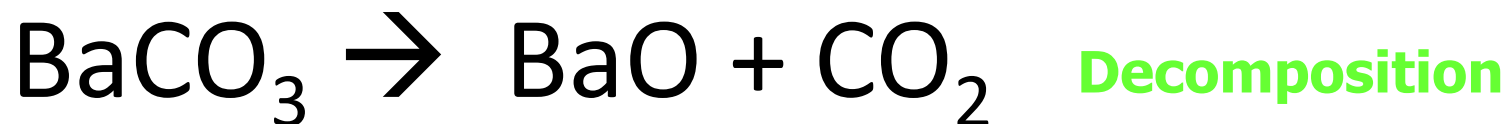
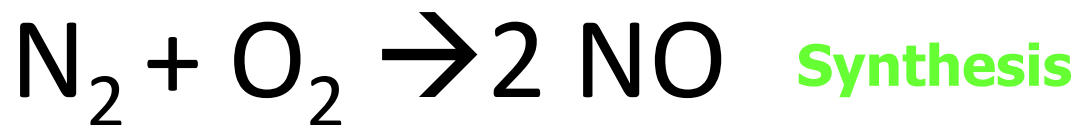


Balancing Reactions #2



BELL RINGER 3.5.20

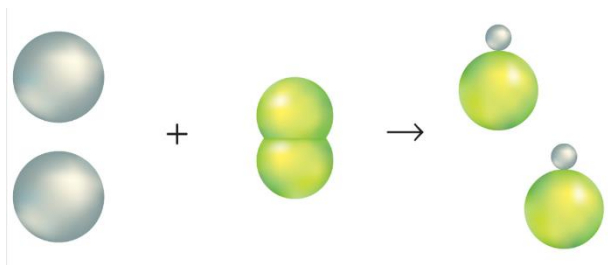
Identify the type of reaction for each of the following synthesis or decomposition reactions



TURN YOUR LAB ANALYSIS INTO THE BOX BEFORE YOU ANSWER THE QUESTIONS. IF IT IS NOT IN THERE WHEN I TAKE THEM OUT IT WILL BE COUNTED AS LATE.

- Classify the following reactions as synthesis or decomposition

1.

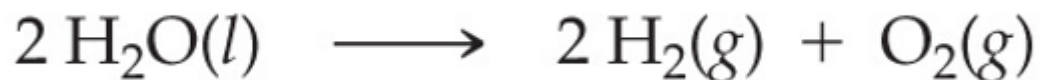


Bell Ringer 3.11.19

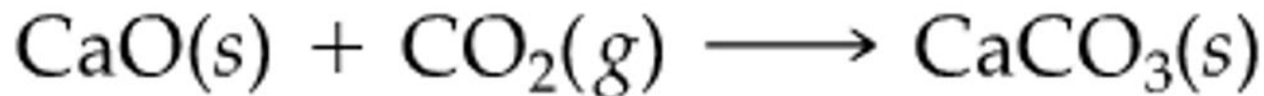
2.



3.

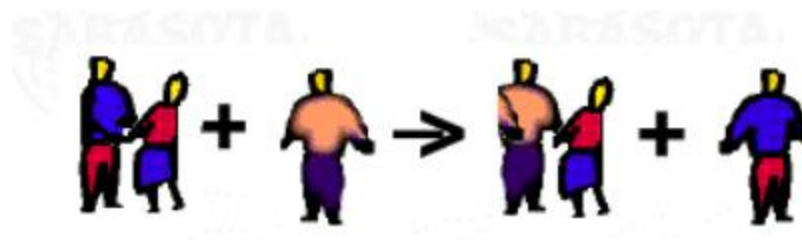


4.



3. Single Replacement Reactions

- Occur when one element replaces another in a compound.

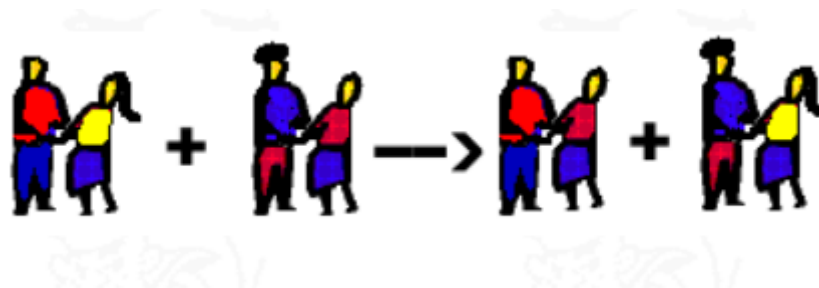


Balancing Reactions #2



Double Replacement Rxns

- **Occurs when** two elements swap places with one another
- * $\text{AB} + \text{CD} \rightarrow \text{AD} + \text{CB}$
- Ex: $\text{Pb}(\text{NO}_3)_2 + \text{K}_2\text{CrO}_4 \rightarrow \text{PbCrO}_4 + 2\text{KNO}_3$



Translate the reaction and then balance.

calcium chloride + aluminum sulfide \rightarrow aluminum chloride + calcium sulfide

Practice

Identify the type of reaction.

- $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \rightarrow \text{PbI}_2 + 2\text{KNO}_3$
- $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
- $\text{Fe} + \text{Cu}(\text{NO}_3)_2 \rightarrow \text{Fe}(\text{NO}_3)_2 + \text{Cu}$
- $\text{FeS} + \text{HCl} \rightarrow \text{FeCl}_2 + \text{H}_2\text{S}$

Creating a hypothesis

- With your group, you are going to create a hypothesis and plan your experiment with the given materials.

Bell ringer 3.6.20

Practice: Identify the reaction type as either single replacement or double replacement. Balance each equation.



Lab

- You will receive an amount of baking soda and 20 ml of vinegar
- You must get **procedure & data table (what data will you collect?)** signed off by me before you can begin
- All labs must be cleaned up 3 minutes before the bell. Record all data in your data table.
- Use your lab partners' brains. You can all do this.

HW-read and complete article summary

Lab Prep for Tomorrow

- We are going to prove this law in class tomorrow
- But first...we need to practice using the triple beam balance

Balance Setup

- Move all three sliders so that they read 'zero'.
- Make sure that there is nothing on the pan and that it is clean.
- Check to see if the balance reads zero.

Parts of a Balance



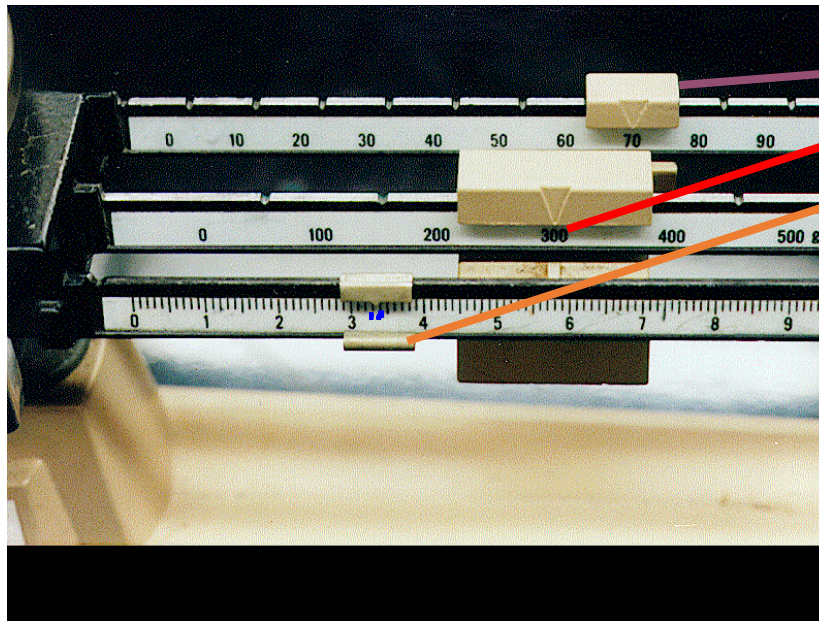
Moving Sliders

- Move the sliders, beginning with the largest. When moving a slider causes the balance to tip, move the slider back to the previous position.
- Move the medium slider until it tips the balance. Place it in the previous position.
- Move the final (smallest unit) slider until the balance reads zero.

Reading Sliders

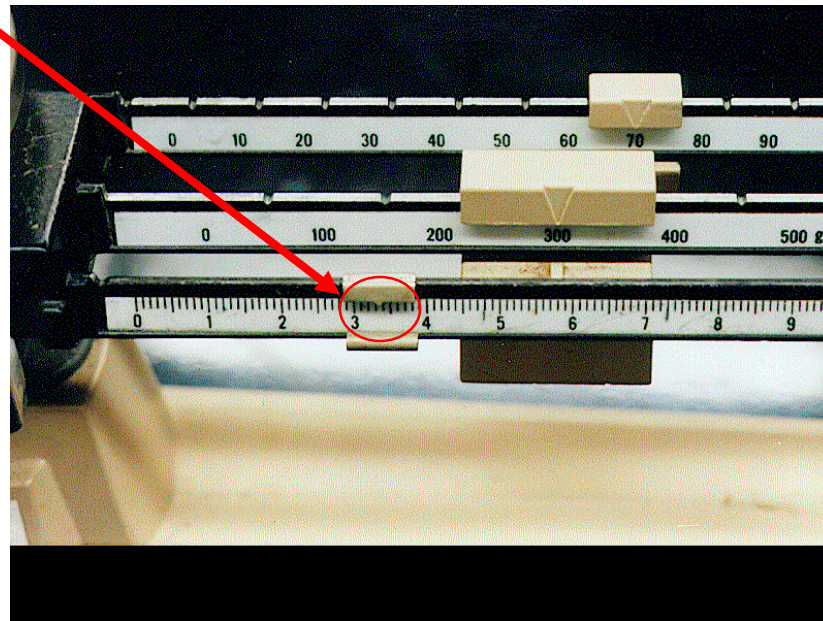
- Read each of the sliders and add their weights together.

The sliders indicate the mass is:
373 g



Reading Sliders

- **When you read the last slider, notice that the smaller lines represent tenths.**



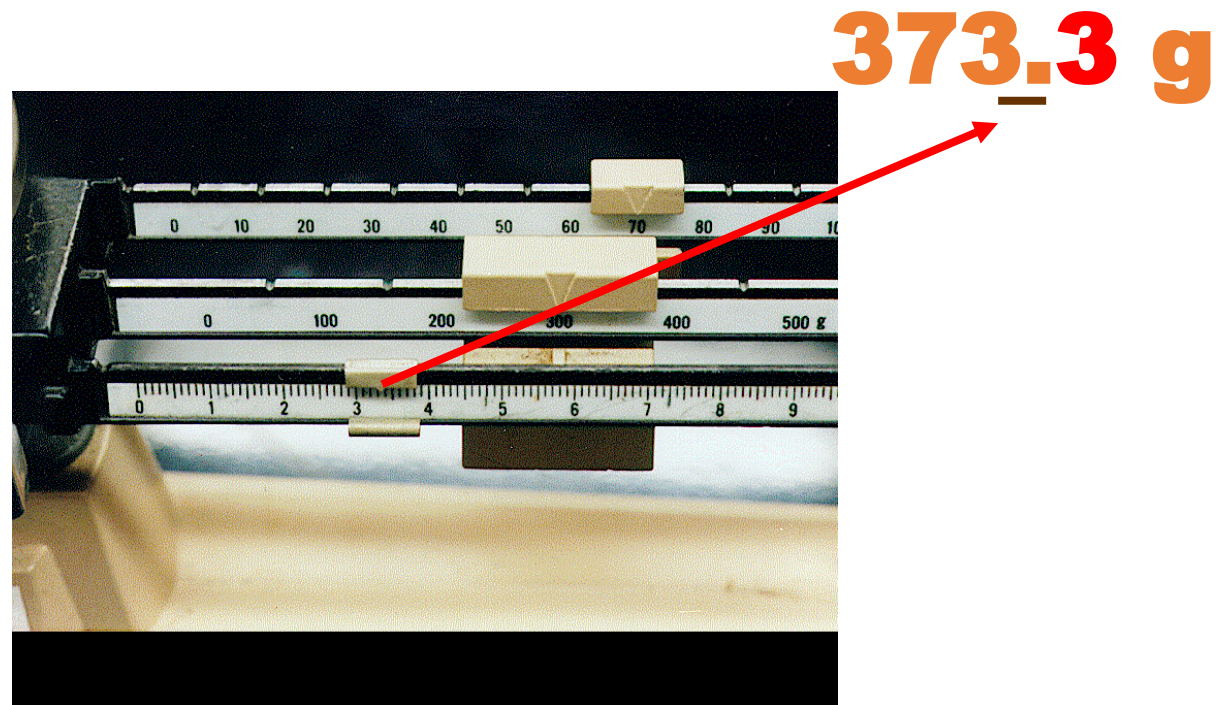
**Bac
k**

**Nex
t**



Reading Sliders

- This measurement is past the third line following the 3 on small slider. This indicates a mass of:



Practice

- Try answering the 3 examples at the bottom of your notes

How can we test the law of conservation of mass?

- Let's look at some chemical reactions...

Bell Ringer 3.8.19

- Explain the Law of Conservation of Mass.

Turn in your Chemical Reactions Article HW