Review:

What is a substance?

-Something with uniform and definite composition. It has only one type of particle.

-substances are either……

1. Element: The simplest form of matter that has a unique set of properties.

2. Compound: Substance that contains two or more elements chemically combined in a **fixed** proportion.

In other words, chemical formulas can be used to describe composition of substances.

Compounds can be broken down into simpler substances by chemical means, but elements cannot.

Properties of Compounds

The properties of compounds are usually quite different from those of their component elements.

Example: Sodium metal and chlorine gas

Physical Change: Does not change chemical composition. Changes in phase (i.e. solid to liquid), shape, or size are physical. Dissolving a substance in water is also physical (you can get the substance back unchanged).

Examples: Ripping a piece of paper, boiling water, making a salt water solution, etc.

Chemical change: a change that produces matter with a different composition than the original matter.

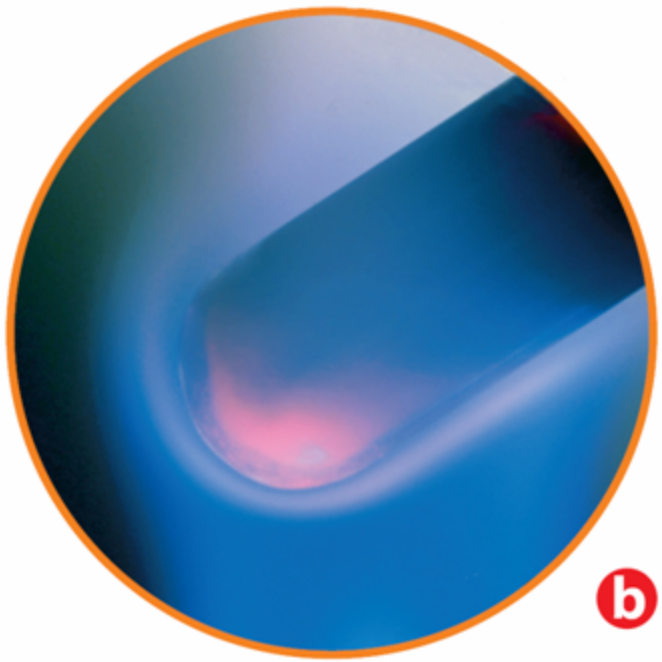
Ex. Heating table sugar

Chemical property: the ability of a substance to undergo a specific chemical change

- can be used to identify a substance
- can be observed only when a substance undergoes a **chemical change**.

During a chemical change, the composition of matter always changes.

Recall that during a physical change, the composition of matter never changes.



Chemical change: also called a **chemical reaction.**

One or more substances change into one or more new substances during a **chemical reaction.**

Reactant: a substance present at the start of the reaction

Product: a substance produced in the reaction.

Possible clues to chemical change include:

a transfer of energy (heat and/or light)

a change in color

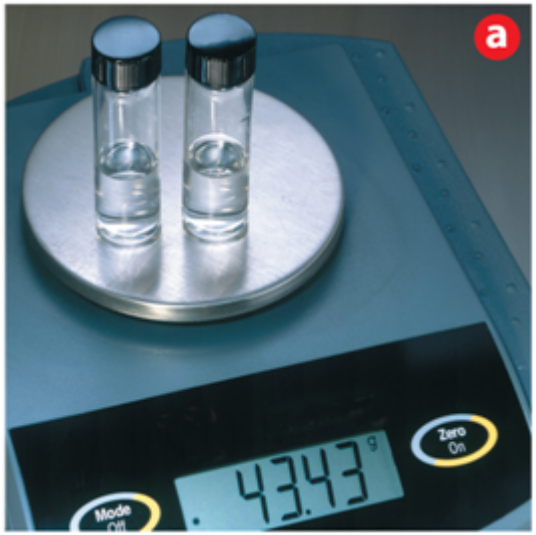
the production of a gas

the formation of a precipitate.

Precipitate: Solid that forms and settles out of a liquid mixture.

The Big Law: Conservation of Mass

During any chemical reaction, the mass of the products is always equal to the mass of the reactants.



If you react 10 g of hydrogen with oxygen gas and get 89 grams of water, how much oxygen did you use?