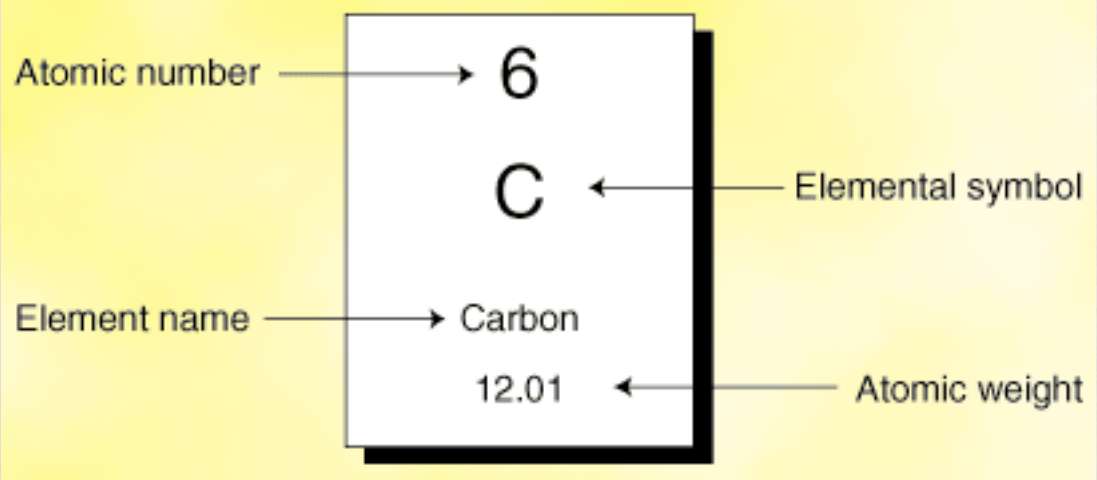
Physical Science Final Review

8th Grade Science

Periodic Table

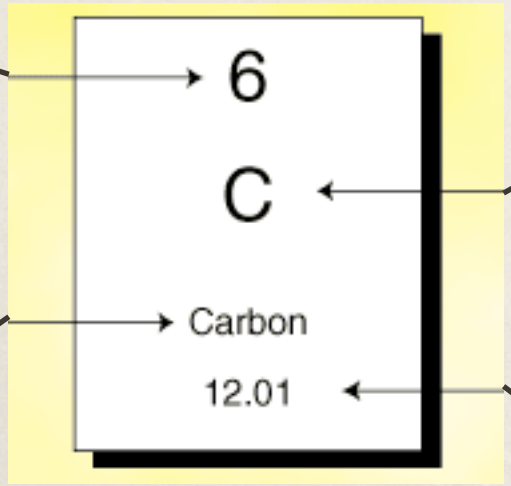
* The Periodic Tables gives us information about the Elements found on our planet.
* Every Element found on the table is displayed as…



How to Read the Periodic Table

Atomic Number =
# of Electrons

Element Symbol
= Element Name
Abbreviated



Element Name

Atomic Mass =
Neutrons AND
Protons

How Do I Know How Many…

Number of **Electrons** =

Atomic Number

Number of **Protons** =

# of Electrons

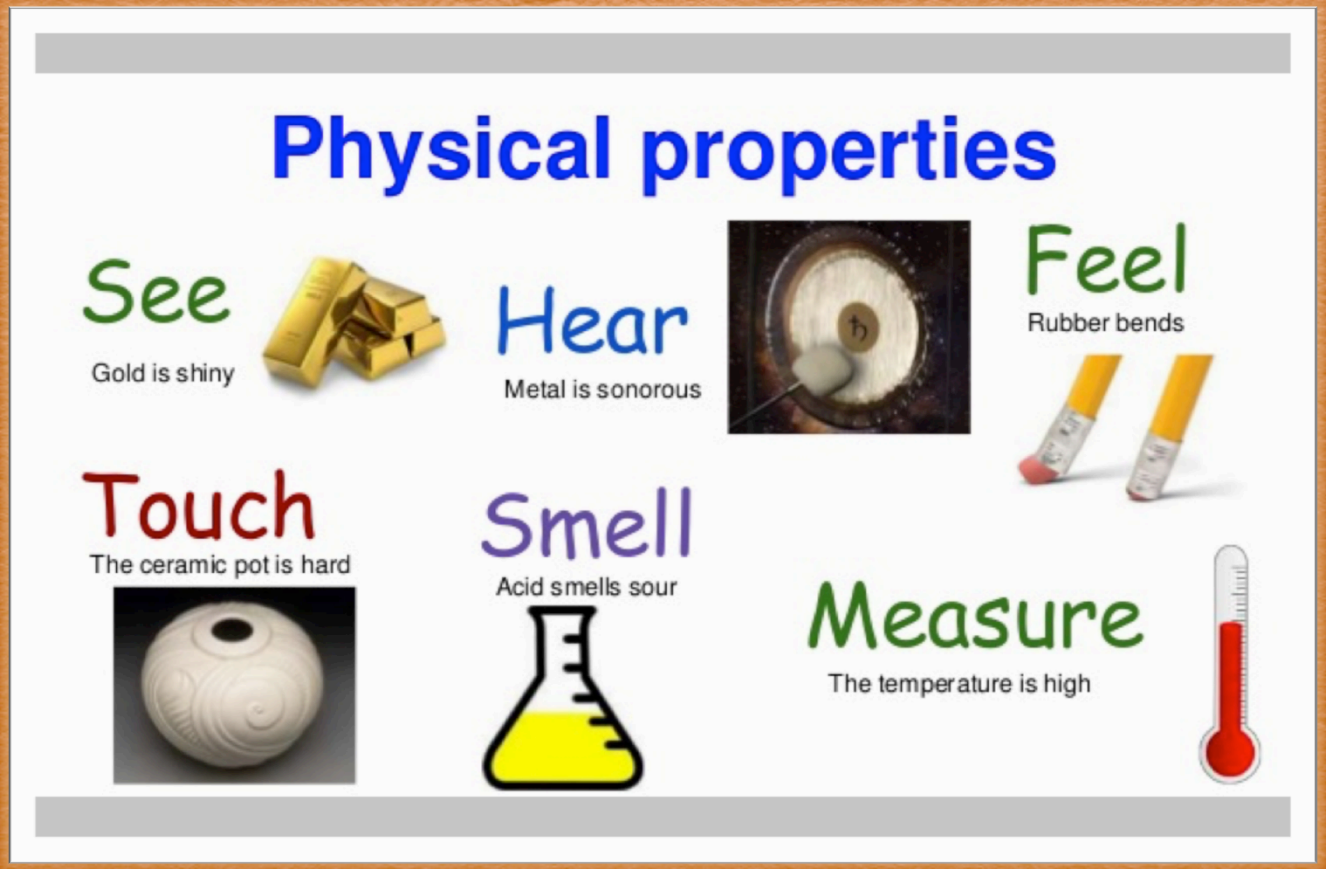
Number of **Neutrons** =

Atomic Mass

\- (Minus)

 # Protons

Neutrons

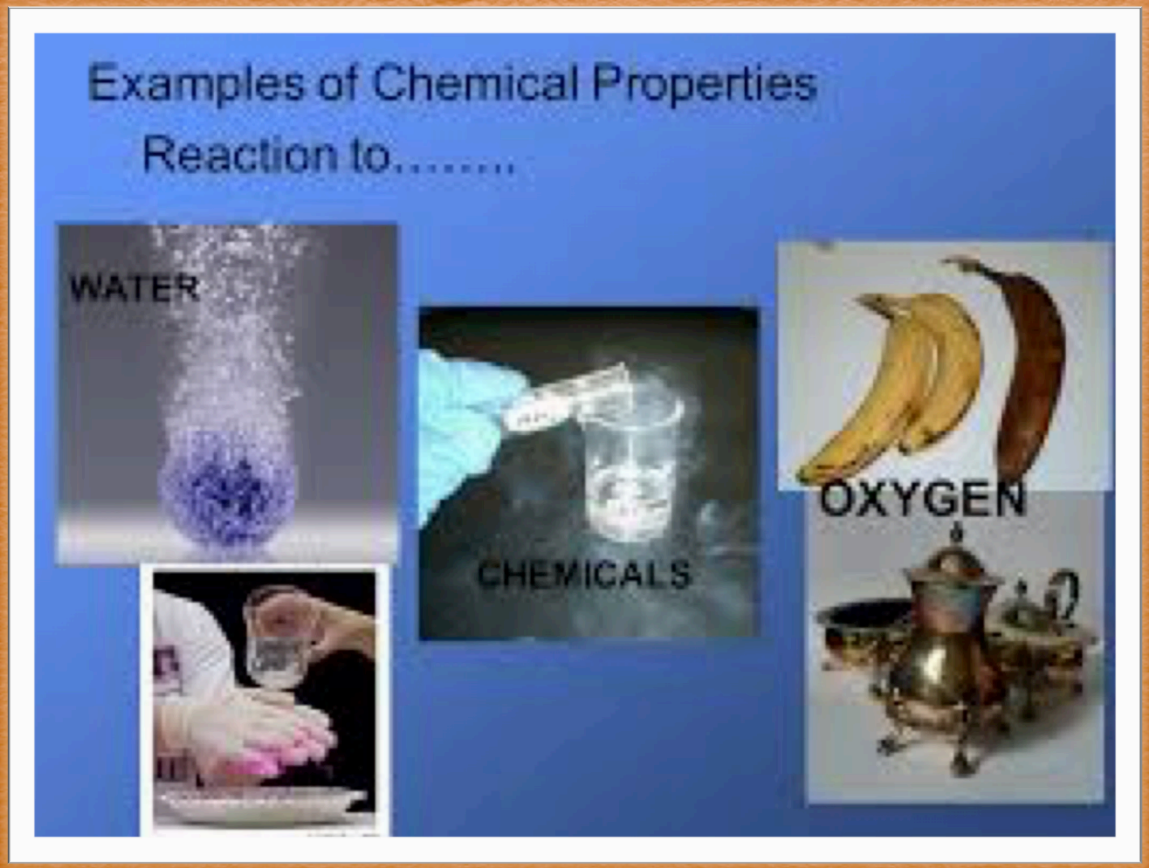


Physical Properties

Properties that <u>DO NOT</u> change the chemical nature of matter.

Examples of Physical Properties:

- Density
- Color
- Mass
- **Length**
- State of Matter
- Shininess
- **Boiling** Point
- **Freezing** Point
- **Viscosity** (How well does it flow?)



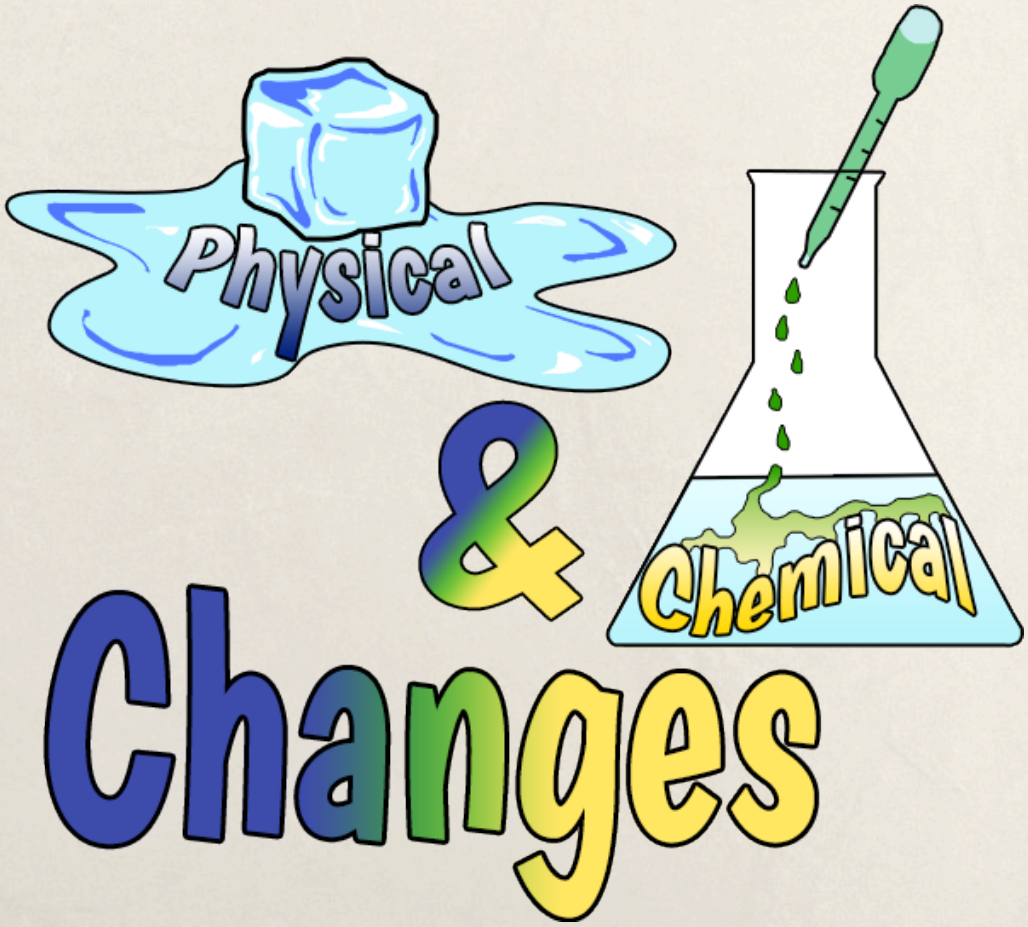
Chemical Properties

Properties that <u>DO</u> change the chemical nature of matter.

Examples of Chemical Properties:

- Flammability
- **pH**
- Reactivity
- **Decay**
- Rusting

Changes



Physical Changes

* Changes an object or substance undergoes that **DO NOT** change its **chemical** nature.

  * **Phase Changes – State of Matter Change**
    * Solid to a Liquid
    * Ice Cube to Liquid Water
  * **Measurement**
    * Cut the Paper, Changing its shape
  * **Mixtures**
    * Mixing Kool-Aid with Water

Chemical Changes

* Changes an object or substance undergoes that CAUSE it to become a **NEW** or **DIFFERENT** substance.

  * **Color Change**
    * **Cabbage Juice with Acid**
  * **Burning**
    * **Burning the Paper**
  * **Reactions that Release Energy**
    * **Flaming Gummy Bear**
  * **Rusting**
    * **Tools**
  * **Tarnishing**
    * **Silver Necklace, teapot, utensils**
  * **Decaying**
    * **Banana**
  * **Digestion**
    * **Chewing, Swallowing and Digesting**

Natural vs Synthetic Materials

Natural Resources

*Natural Resources are things, materials, substances, and components **FOUND** in the **NATURAL** environment.*

Natural Resources exist…

- Naturally in the World
- They are **NOT** the result of **HUMAN** creation or manipulation.

Natural Resources

Can be Living or Non-Living
Example: **Plants**, Animals, Rocks, Minerals, Sun, Soil, Water, etc.

TWO Types:

Renewable

Can be replaced..

- Water
- Animals
- Trees
- Plants

Non-Renewable

Cannot be replaced..

- Coal
- Oil
- Natural Gas

Synthetic Materials

Synthetic materials are MAN-MADE materials and substances.

Synthetic Materials exist…

- Artificially
- They **DO NOT** exist naturally in the environment

Synthetic Materials

Use **natural** resources (plants, animals, metals, minerals, etc.) and made by chemically changing or modifying to create a synthetic material.

THREE Types:

Plant Based:

Used to Make…
- Food
- Clothing
- Medicine

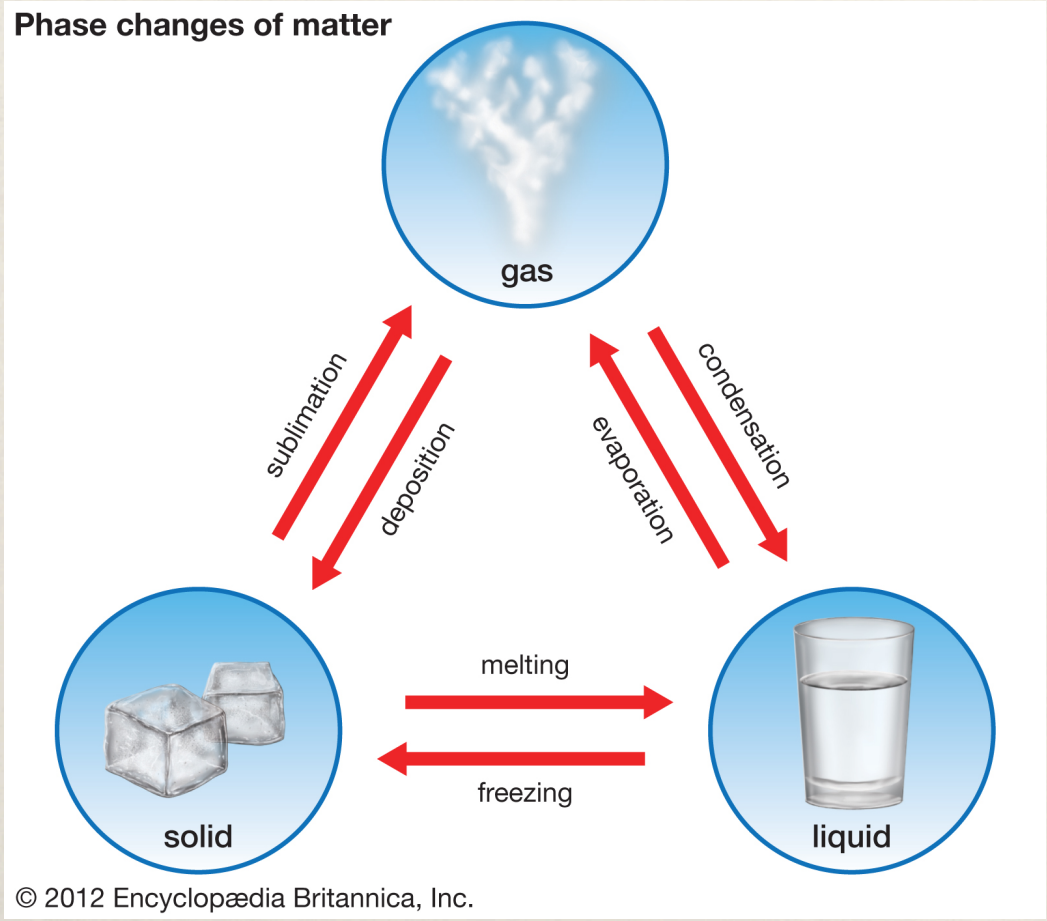
Animal Based:

Used to Make..
- Clothing
- Food
- Gelatin

Petroleum Based:

Used to Make..
- Crude Oil
- Styrofoam
- Nylon

Phase Changes



Phase Changes

* When a substance changes from one state of matter to another we call it Phase Changes.
* During a Phase Change there are TWO important rules…

Phase Change Rules

Rule #1:

During an actual phase change the **TEMPERATURE** does NOT change.

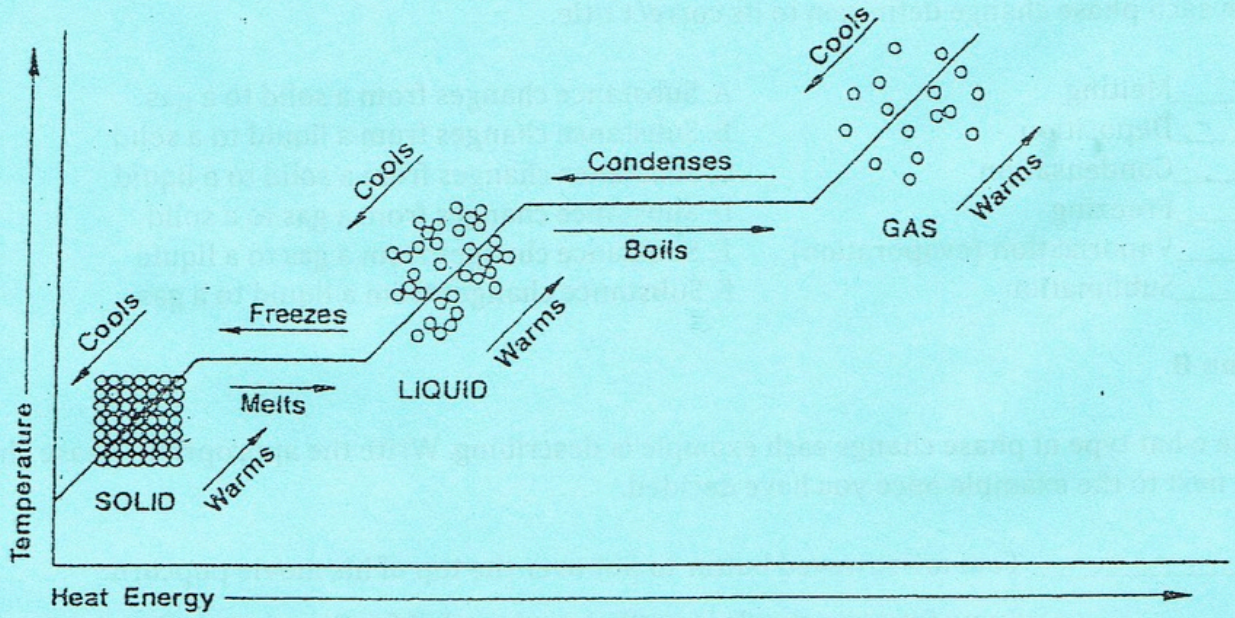
Rule #2:

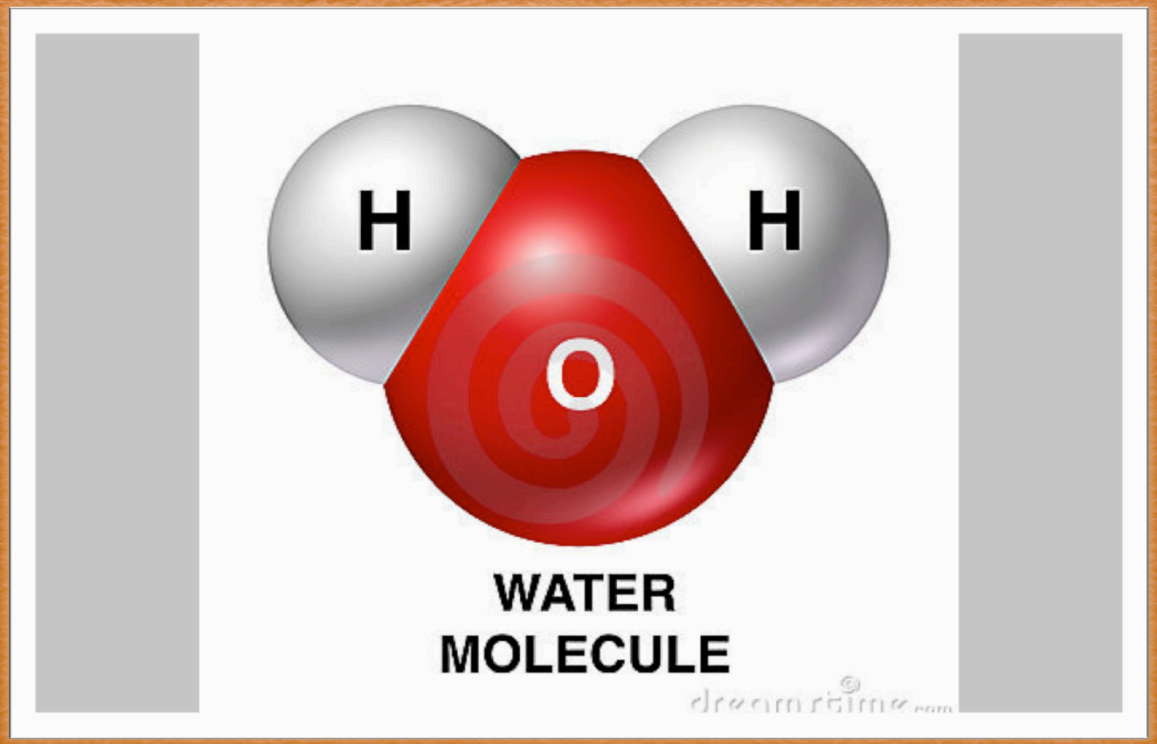
During an actual phase change the **HEAT ENERGY** does change.

Phase Change Diagram

PHASE CHANGES

The accompanying graph shows the relationship between temperature and heat energy during the phase changes of water. Study the graph carefully and answer the questions.





Counting Atoms

Counting Atoms

When counting atoms in a chemical equation we look at…

Subscripts:
Describe the # of atoms in the molecule.

Coefficients:
Describe the # of molecules

H_2O $2H_2O$

Reading a Chemical Formula

$H_2 + 0$  $H_2 0$

Reactants (Yields) Products

Law of Conservation of Mass

*What goes **IN** must come **OUT**.*

- We know when we look at a chemical equation that both sides must balance and match.

What does this mean when we look at an actual chemical reaction??

Law of Conservation of Mass

Mrs. Roundy takes 50 mL of Water and adds 50 mL of Kool-Aid the resulting substance should have how many mL?

100 mL!

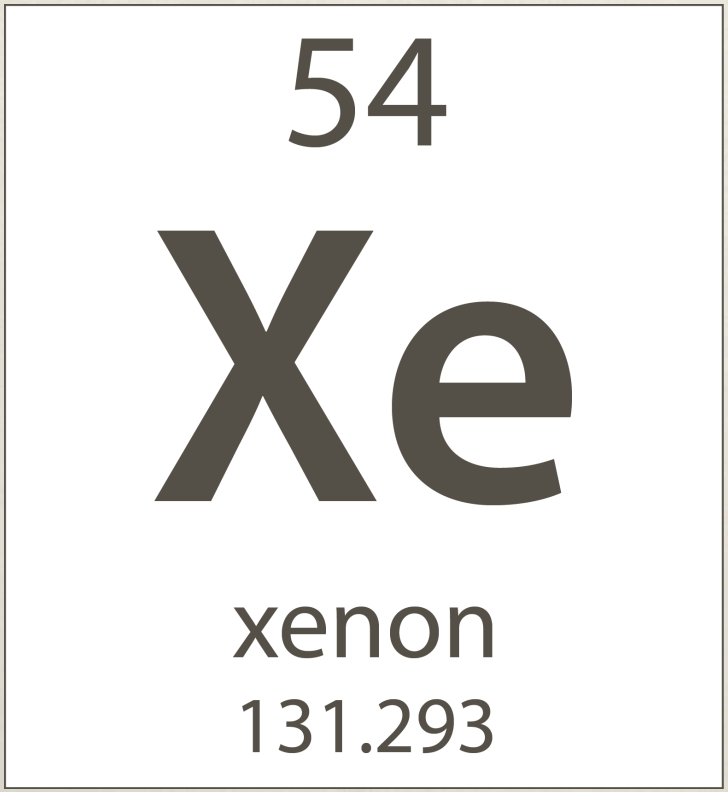
What goes IN must come OUT

Susan adds 50 grams of one substance to 50 grams of another substance. After the reaction, a new substance was created with a mass of 95 grams. Using our understanding of the Law of Conservation of Mass, what might have happened to the other 5 grams?

The other 5 grams could have been lost as a gas!

Practice Final Questions…

Using the diagram below answer the following questions:

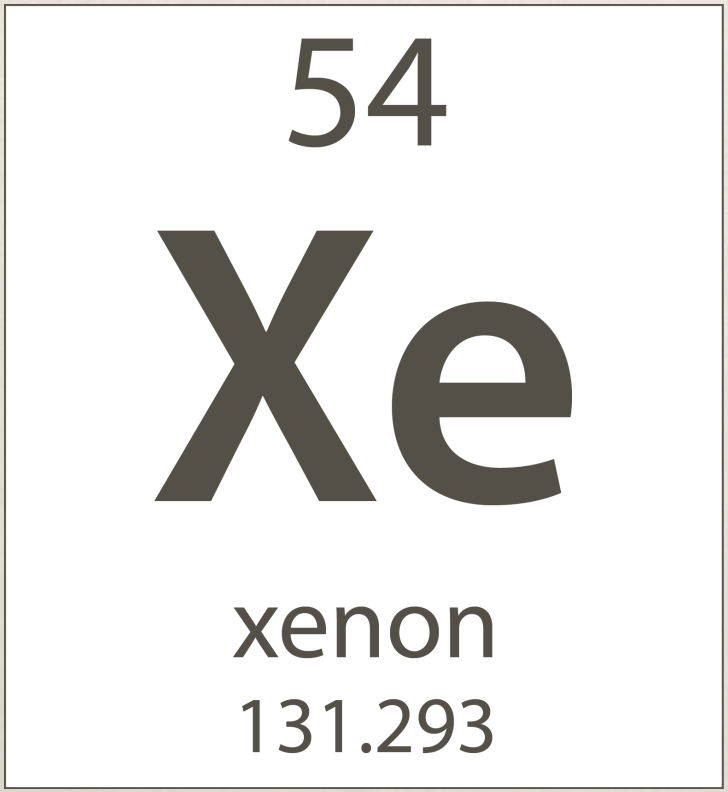


How many Electrons does the following element have?

54

Practice Final Questions…

Using the diagram below answer the following questions:



What is the atomic mass of the following element?

131

Practice Final Questions: Physical or Chemical Changes?

Table Salt Dissolves in Water	Physical
Apple is Cut into Halves	Physical
Marshmallow is Toasted over a Fire	Chemical
Two substances are mixed and a light is produced	Chemical
Ice Melts	Physical

Practice Final Questions: What type of phase change is happening?

Substance changes from a solid to a gas	Sublimation
Substance changes from a liquid to a solid	Freezing
Substance changes from a gas to a liquid	Condensation
Tom microwaved butter to put over the top of his movie popcorn	Melting
Carol is making dinner, she boils water in a pot and it steams.	Evaporation