WARM-UP 9-12-12
WRITE THE QUESTIONS AND THE ANSWERS

1. A substance that cannot be broken down into a simpler form by ordinary chemical means is called a(n)

   A. element
   B. compound
   C. mixture
   D. isotop

2. The smallest unit of an element that has all the basic properties of the element is called a(n)

   A. electron
   B. atom
   C. nucleus
   D. isotope

MYP Unit Question: How can such a small thing impact our environment in such a big way?

Area Of Interaction: Environment

Learner Profile: Inquirers

Essential Question: What are elements, compounds, and mixtures? And how are they different.

S8P1. Students will examine the scientific view of the nature of matter.
B. DESCRIBE THE DIFFERENCE BETWEEN PURE SUBSTANCES (ELEMENTS AND COMPOUNDS) AND MIXTURES.

Learning Target: Today I am investigating elements, compounds, and mixtures. This is important so that I can describe and tell the difference between pure substances and mixtures.

Homework: Study for the test on Friday ☺

AGENDA

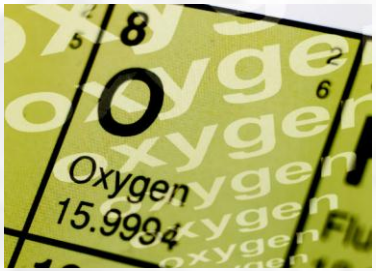
- Opening
  - Video
- Work Session
  - Notes/ graphic organizer
  - Modeling
- Closing
  - Guess ??

STUDY JAMS

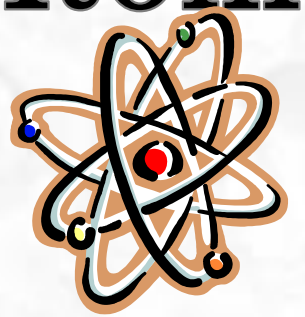
PURE SUBSTANCES

- A sample of matter that has definite chemical and physical properties.

Elements

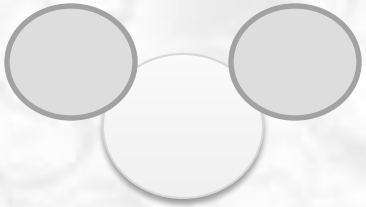


Atoms



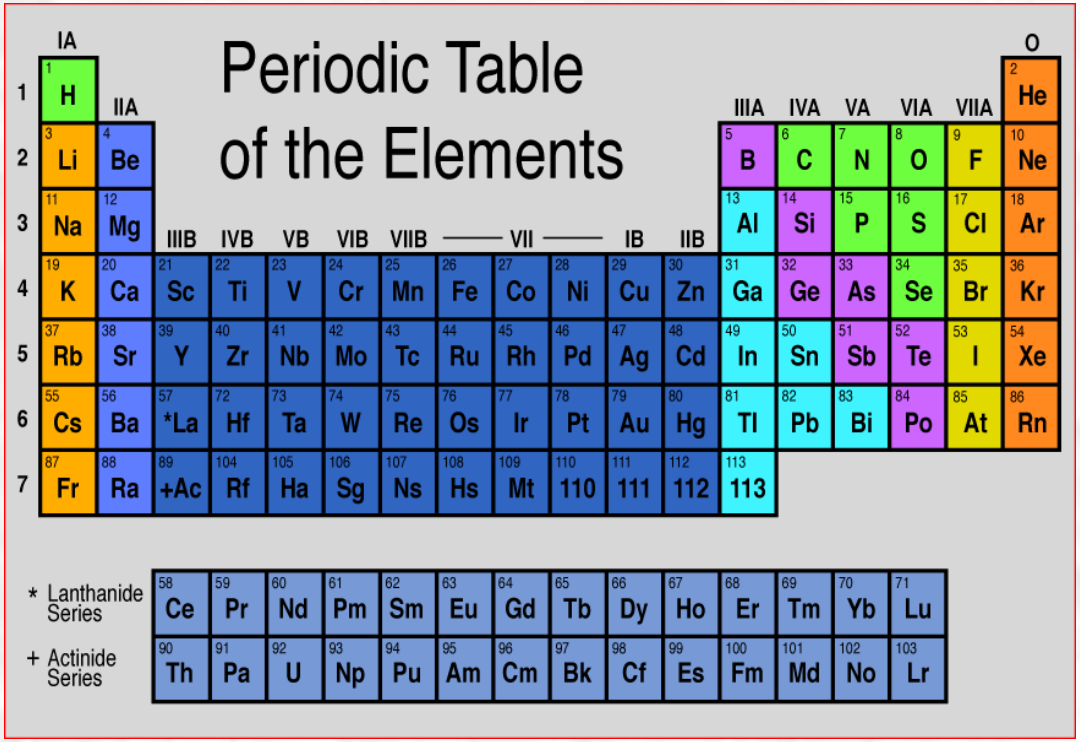
Molecules

Compounds

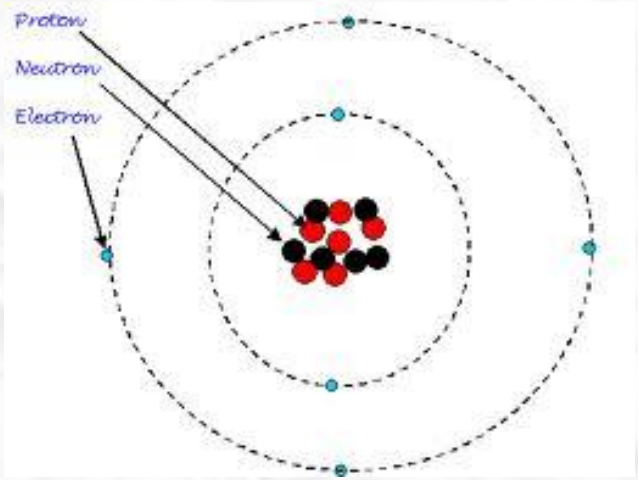


ELEMENTS

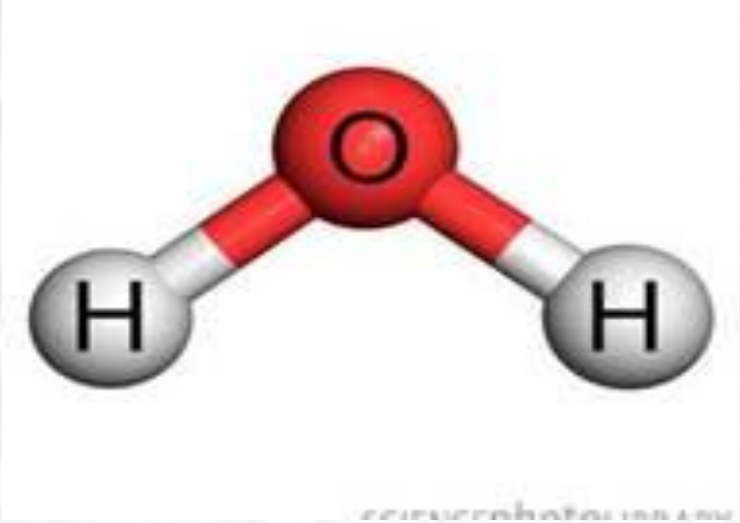
- pure substance that cannot be separated into simpler substance by physical or chemical means.



- Atoms : The smallest unit of an element that maintains its properties



- Molecule- composed of 2 or more elements that are held together by a force (chemical bond).



COMPOUNDS

H_2O

$NaCl$

Pure substance composed of two or more *different elements joined by chemical bonds.*

- Made of elements in a specific ratio that are always the <u>same.</u>

  ... Water is H_2O it will always have 2 hydrogen and one oxygen joined together.

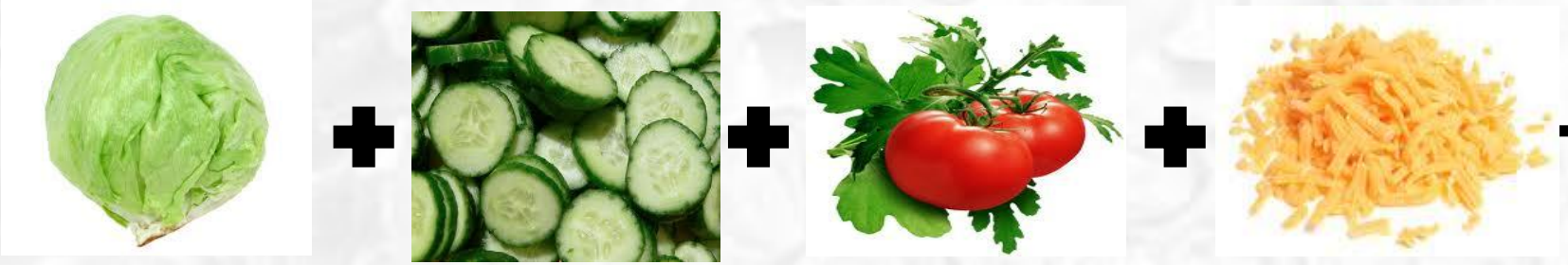
- Can only be separated by chemical means.
- Have their own chemical and physical properties.
- Chemical and physical properties are different than the elements they are made from

CO_2

MIXTURES

A combination of two or more pure substances that are not chemically combined.

- Substances held together by ***physical forces***, ***not chemical.***
- No chemical change takes place
- Each item retains its properties in the mixture
- They can be separated physically



TWO TYPES OF MIXTURES

- Heterogeneous mixtures: Physically distinct parts with different properties. You usually can see the separate parts (chunky)

  ... Ex. Salt and pepper mixed together

- Homogeneous mixtures (solutions):

  ... Ex. Salt water

MIXTURES VS. COMPOUNDS

	Mixture	Compound
Composition	Variable composition – you can vary the amount of each substance in a mixture.	Definite composition – you cannot vary the amount of each element in a compound.
Joined or not	The different substances are not chemically joined together.	The different elements are chemically joined together.
Properties	Each substance in the mixture keeps its own properties.	The compound has properties different from the elements it contains.
Separation	Each substance is easily separated from the mixture.	It can only be separated into its elements using chemical reactions.
Examples	Air, sea water, most rocks.	Water, carbon dioxide, magnesium oxide, sodium chloride.

http://www.bbc.co.uk/schools/ks3bitesize/science/chemistry/elements_com_mix_6.shtml

CLOSING:
CAN YOU IDENTIFY THE FOLLOWING?

You will be shown a series of photos. Tell if each photo represents an item composed of an element, compound, or mixture.

Review:

- An element contains just one type of atom.
- A compound contains two or more <u>different</u> atoms that are chemically joined together.
- A mixture contains two or more different substances that are only physically joined together, not chemically.

  … A mixture can contain both elements and compounds.

ELEMENT, COMPOUND, OR MIXTURE?

Rocks

ELEMENT, COMPOUND, OR MIXTURE?

Rocks

ELEMENT, COMPOUND, OR MIXTURE?

Copper

ELEMENT, COMPOUND, OR MIXTURE?

Copper

Cu

ELEMENT, COMPOUND, OR MIXTURE?

Jelly Beans

ELEMENT, COMPOUND, OR MIXTURE?

Jelly Beans

ELEMENT, COMPOUND, OR MIXTURE?

Table Sugar

ELEMENT, COMPOUND, OR MIXTURE?

Table Sugar

$C_{12}H_{22}O_{11}$

ELEMENT, COMPOUND, OR MIXTURE?

Diamond

ELEMENT, COMPOUND, OR MIXTURE?

C

Diamond

ELEMENT, COMPOUND, OR MIXTURE?

Tea

ELEMENT, COMPOUND, OR MIXTURE?

Tea

ELEMENT, COMPOUND, OR MIXTURE?

Salt

ELEMENT, COMPOUND, OR MIXTURE?

NaCl

Salt

ELEMENT, COMPOUND, OR MIXTURE?

Neon Gas

ELEMENT, COMPOUND, OR MIXTURE?

Ne

Neon Gas

ELEMENT, COMPOUND, OR MIXTURE?

Salad

ELEMENT, COMPOUND, OR MIXTURE?

Salad

ELEMENT, COMPOUND, OR MIXTURE?

Pure Water

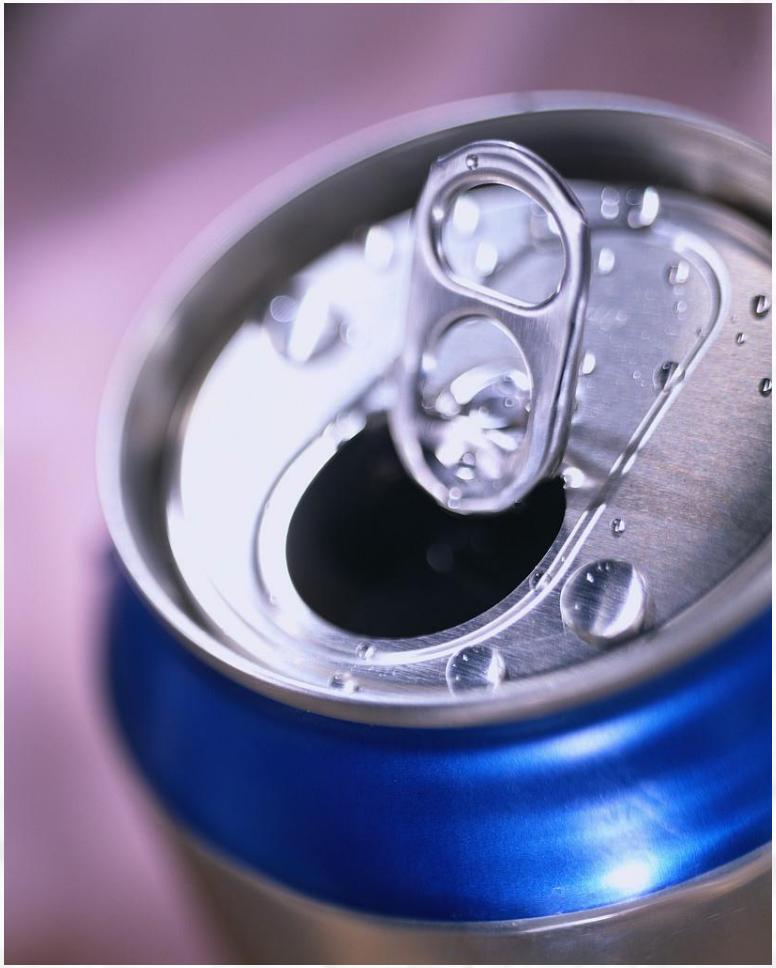
ELEMENT, COMPOUND, OR MIXTURE?

H_2O

Pure Water

ELEMENT, COMPOUND, OR MIXTURE?

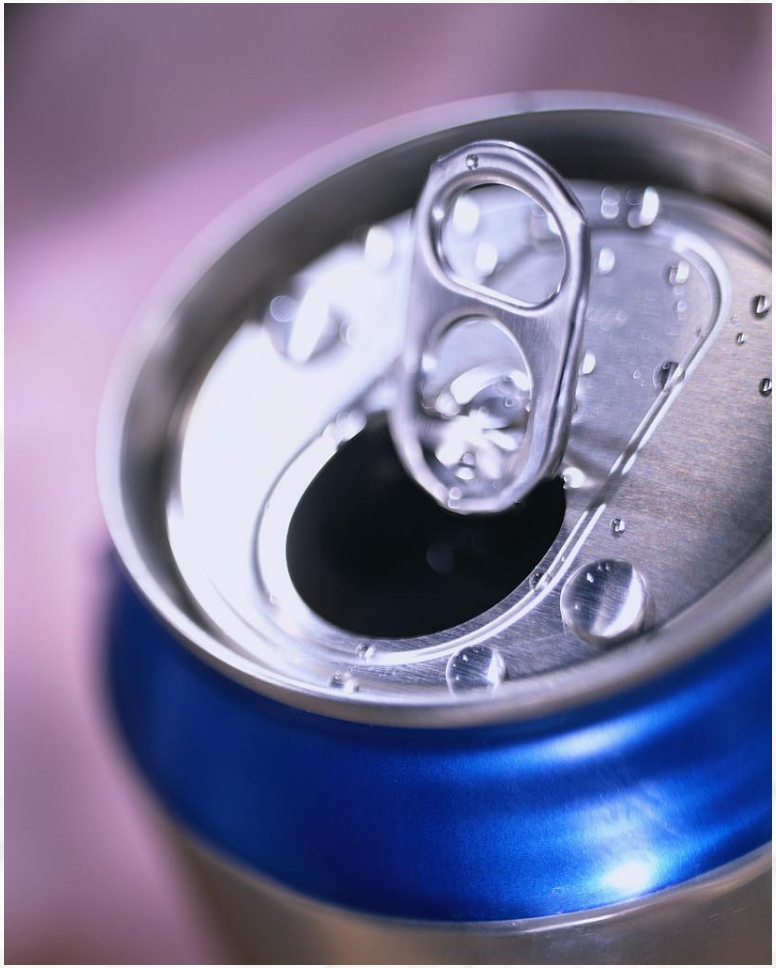
Aluminum



ELEMENT, COMPOUND, OR MIXTURE?

Al

Aluminum



ELEMENT, COMPOUND, OR MIXTURE?

Lemonade

ELEMENT, COMPOUND, OR MIXTURE?

Lemonade

ELEMENT, COMPOUND, OR MIXTURE?

Silver

ELEMENT, COMPOUND, OR MIXTURE?

Ag

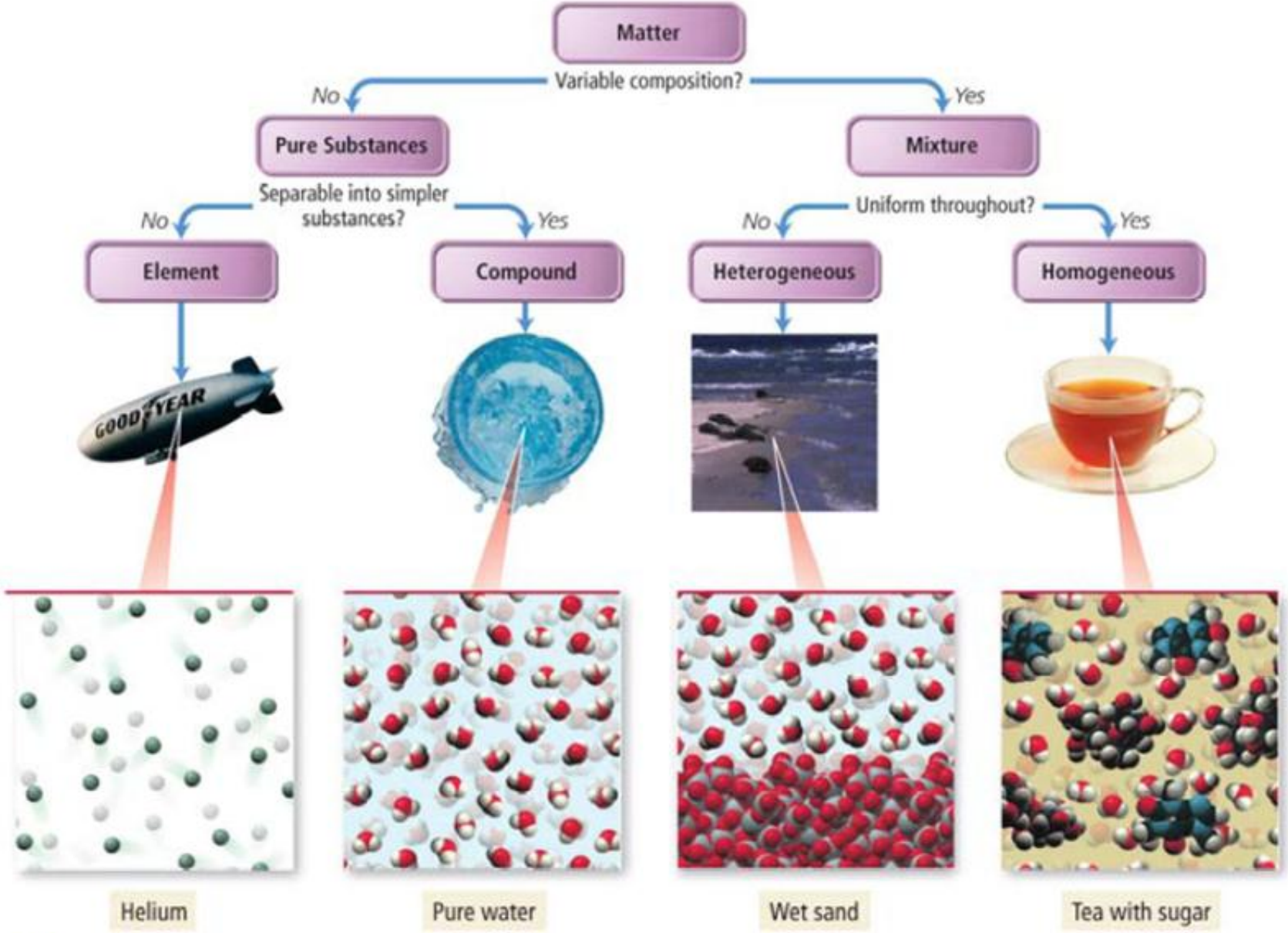
Silver

ELEMENT, COMPOUND, OR MIXTURE?

Sand

ELEMENT, COMPOUND, OR MIXTURE?

Sand



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NOTES

- Detailed notes are located at:

http://www.middleschoolscience.com/elements-compounds-mixtures-notes-isn.pdf

- Flow Chart:

http://www.middleschoolscience.com/matter-flow-chart-isn.pdf