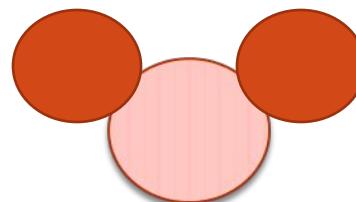
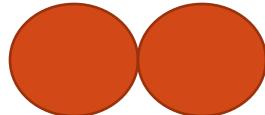
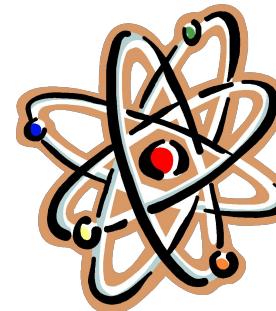


# Classifying Matter: Elements, Compounds, and Mixtures

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# Pure Substances

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



# Elements

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

# Compounds

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

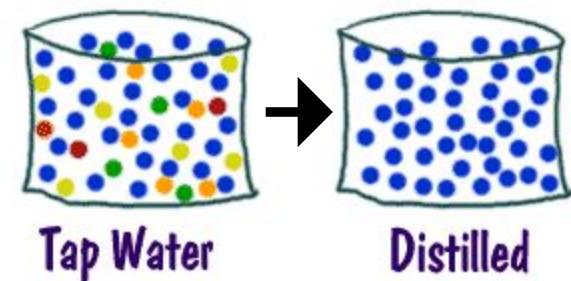


- Made of elements in a specific ratio that is always the same
- Has a chemical formula
- Can only be separated by chemical means, not physically



# 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



# Mixtures vs. Compounds

	Mixture	Compound
<b>Composition</b>	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.
<b>Joined or not</b>	The different substances are not chemically joined together.	The different elements are chemically joined together.
<b>Properties</b>	Each substance in the mixture keeps its own properties.	The compound has properties different from the elements it contains.
<b>Separation</b>	Each substance is easily separated from the mixture.	It can only be separated into its elements using chemical reactions.
<b>Examples</b>	Air, sea water, most rocks.	Water, carbon dioxide, magnesium oxide, sodium chloride.

# 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 different atoms 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?

**Cu**

Copper



# Element, Compound, or Mixture?

## Jelly Beans



# Element, Compound, or **Mixture**?

## Jelly Beans



# Element, Compound, or Mixture?

## Table Sugar



Element, Compound, or Mixture?



Table Sugar



# 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



# NaCl

## Element, Compound, or Mixture?

### Salt



# Element, Compound, or Mixture?

## Neon Gas



# Element, Compound, or Mixture? Neon Gas



# Element, Compound, or Mixture? Salad



# Element, Compound, or **Mixture**?

## Salad



# Element, Compound, or Mixture?

## Pure Water



Element, Compound, or Mixture?

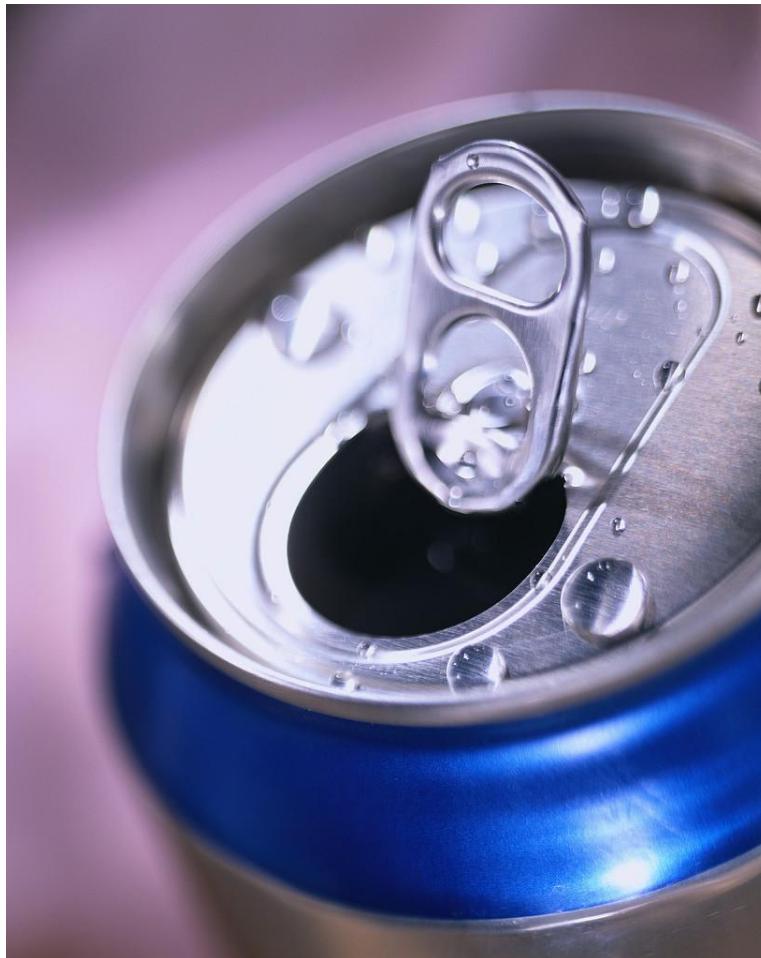
$H_2O$

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?

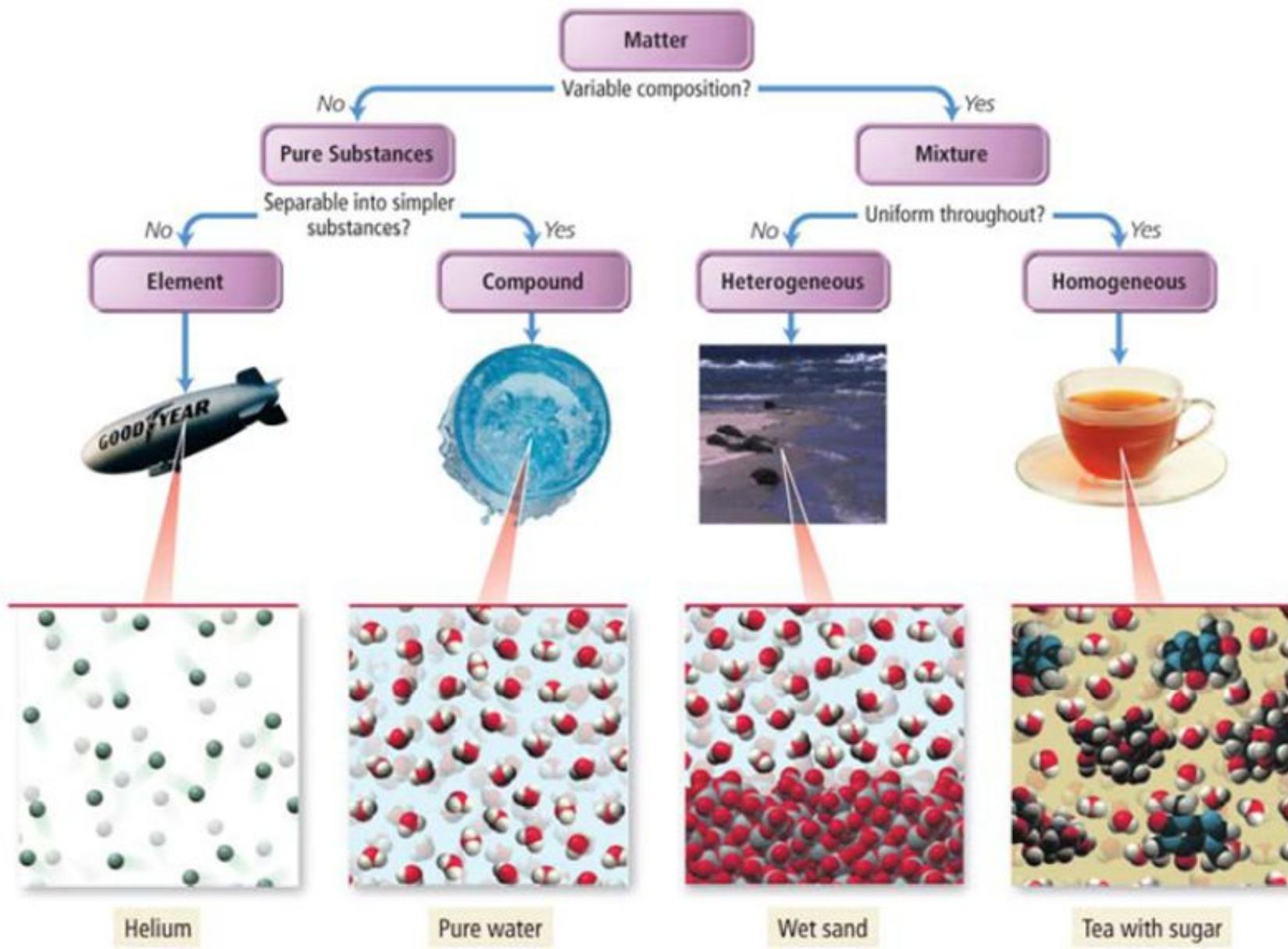
## Sand



# Element, Compound, or **Mixture**?

## Sand





# 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>