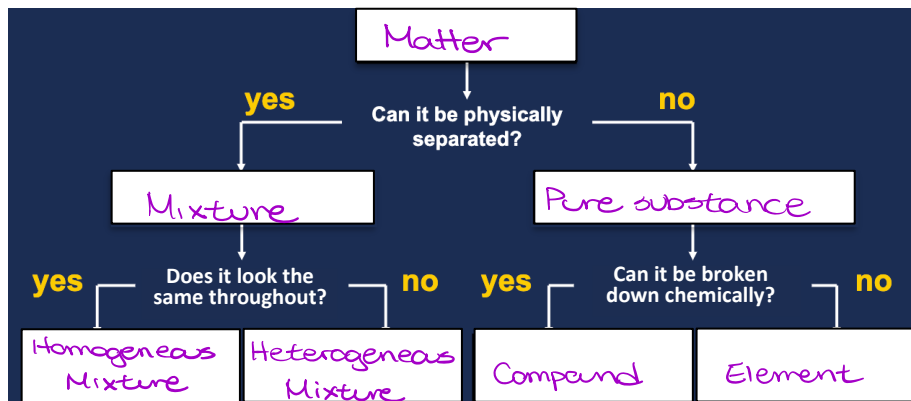


1. Classifying Matter
2. Elements of the Periodic Table

If everything that has mass and takes up space counts as matter, then matter is almost everything! What are the categories that we separate matter into to better understand the world around us?

How do we classify matter?



What is a pure substance?

A pure substance:

- Made of only 1 type of particle (atom or molecule)
- cannot be separated (broken down) using physical methods
- Elements and compounds, for example: hydrogen and water (H₂O)

What is an element?

An element:

- Made up of only 1 kind of atom
- Cannot be broken down into a simpler type of matter
- Found on the Periodic Table of the Elements
- Examples: gold, iron, uranium, zinc, oxygen

What is a compound?

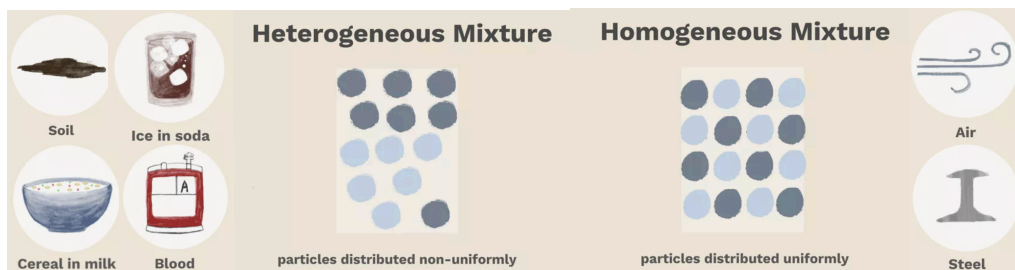
A compound:

- Made up of 2 or more different elements bound (attached) together
- Can be broken down into atoms (elements) by chemical methods
- Examples: table salt (NaCl), carbon dioxide (CO₂), sugar (C₆H₁₂O₆)

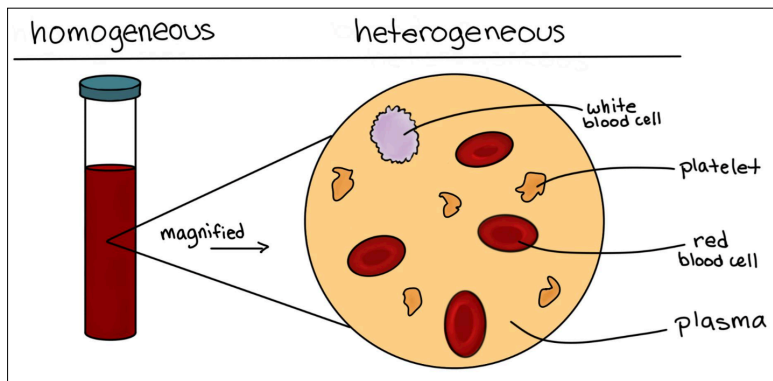
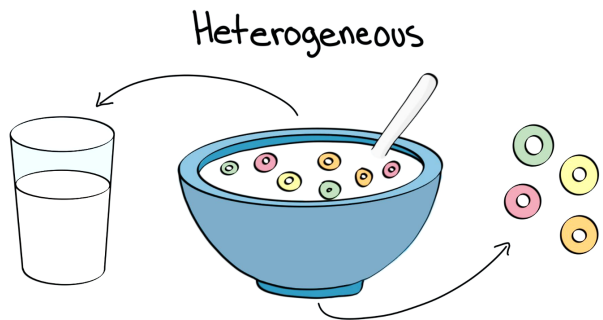
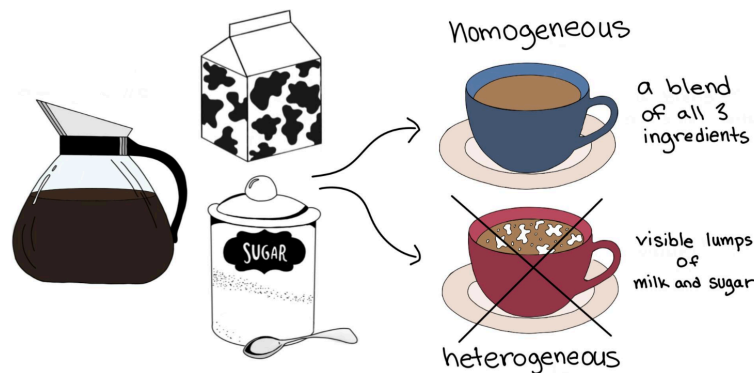
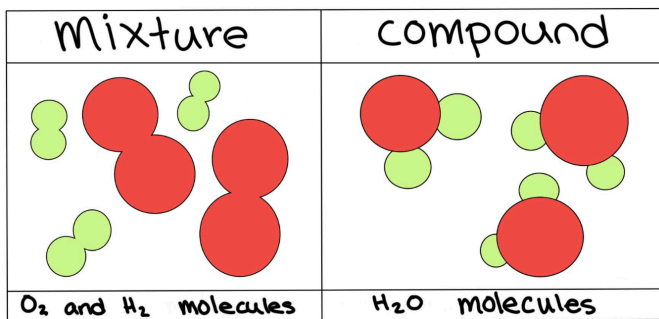
What is a mixture?

A mixture:

- Consists of 2 or more substances physically combined
- Can be separated by physical methods
- Can be classified as heterogeneous or homogeneous:
 - Homogeneous = the same throughout, e.g. air, steel, coffee, salt water
 - Heterogeneous = different throughout, e.g. cereal in milk, oil and water



Heterogeneous vs Homogeneous Mixtures (images by Gabi Slizewska)



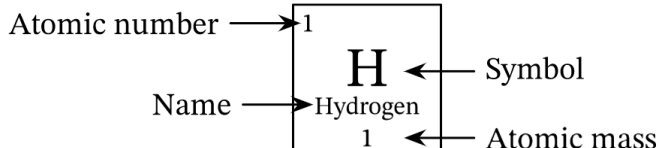
Practice: Classify the following as an element (E), a compound (C), or a mixture (M):

C	Water (H ₂ O)	E	Oxygen (O)
E	Silver (Ag)	C	CO ₂ (carbon dioxide)
E	Made up of only one type of atom	M	Has different properties throughout (heterogeneous)
M	Ketchup (homogeneous)	E	Magnesium (Mg)
M	Can be homogeneous or heterogeneous	C	A pure substance made up of two or more ^{different} atoms
M	Lemonade (homogeneous)	M	Salad (heterogeneous)

Brainstorm: Can you name 4 different elements off the top of your head?

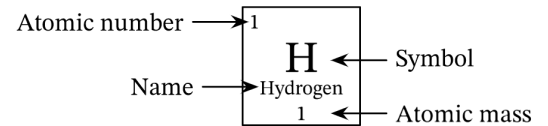
How do we organize information about the elements?

- We use the Periodic Table of the Elements
- Each element has a different name and symbol
- Each element has a different number of protons, neutrons, and electrons, which are the particles that make up atoms, called subatomic particles



Periodic Table Scavenger Hunt!

To answer the questions below, draw the **atomic number**, **element symbol** and **element name** in the boxes provided.



1. Find 3 elements named after countries.

2. Find an element named after a continent.

3. Find 3 elements named after planets.

4. Find 5 elements whose symbols **do not** match their names (for an example, find Tungsten)

5. Write the name of an element that **starts** with the following letters:

A		F		L		R	
B		G		M		S	
C		H		N		T	
D		I		O		U	
E		K		P		V	