Essential Question: How are elements, compounds, and mixtures related?

Matter is anything that has mass and takes up space (volume)

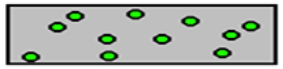
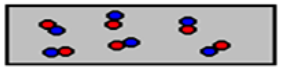
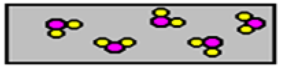
There are different types of Matter: Elements Compounds and Mixtures

Elements, Compounds, and Mixtures

Directions:

- Make copies of the Substance Pictures for groups of 2-3 in each class period
- Cut out the Substance Pictures and place them in baggies or envelopes for groups
- Groups will be asked to take the Substance Pictures and form three groups. A group for Elements, Compounds, and Mixtures.
- Make sure students understand that this is an activating strategy so they may or may not already know all the information. They are to make their best guess as long as they can justify their grouping methods.
- Once finished, have groups share some of their thoughts with other groups about the activity. You may or may not want to go over answers, but you need to discuss as a class some of the differences they noticed in the Substances
- By the end of the lesson on Element, Compounds, and Mixtures, students should be able to do this activity again.

Substance Pictures

1. 
2. 
3. 
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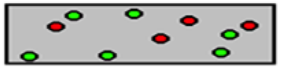
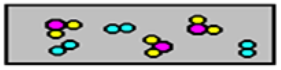
5. 
6. 
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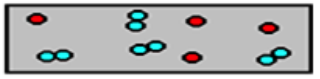
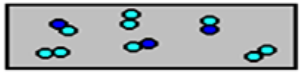
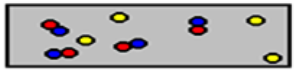
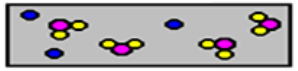
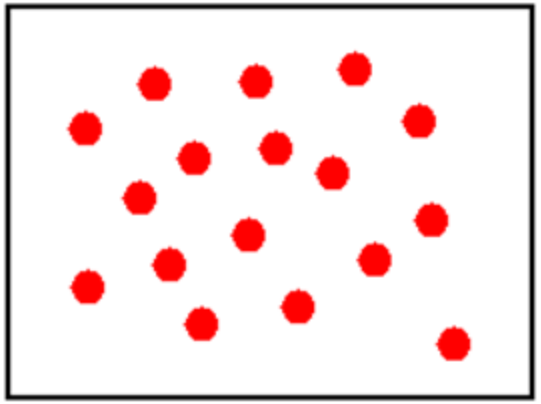
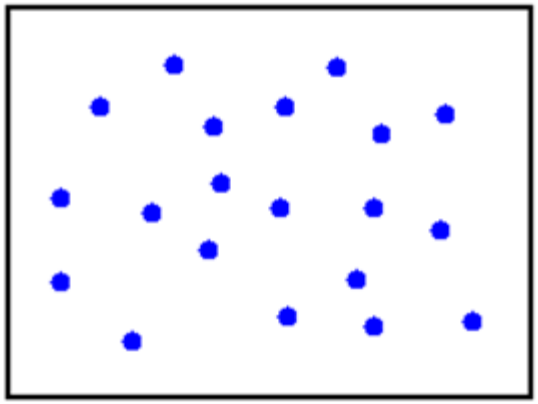
9. 
10. 
11. 
12. 
13. 

Elements

- Made up of one type of atom
- Cannot be broken down by physical and chemical methods
- Examples: Oxygen, Nitrogen, Carbon

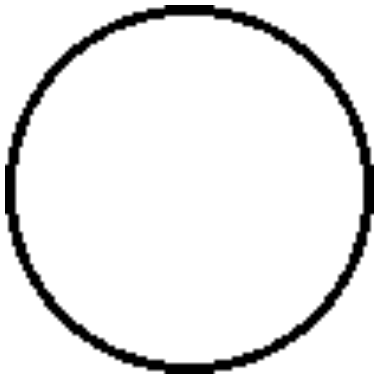


Sample of the Element Lead



Sample of the Element Chlorine

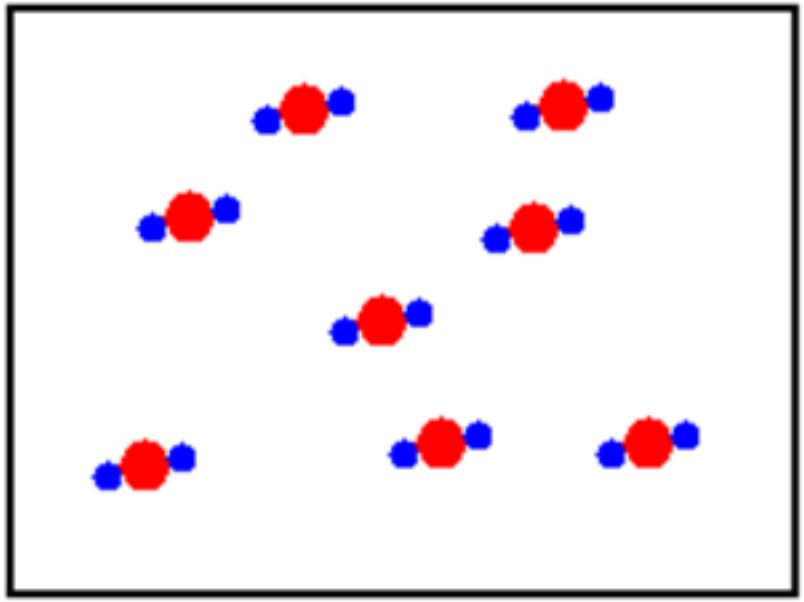
Compounds

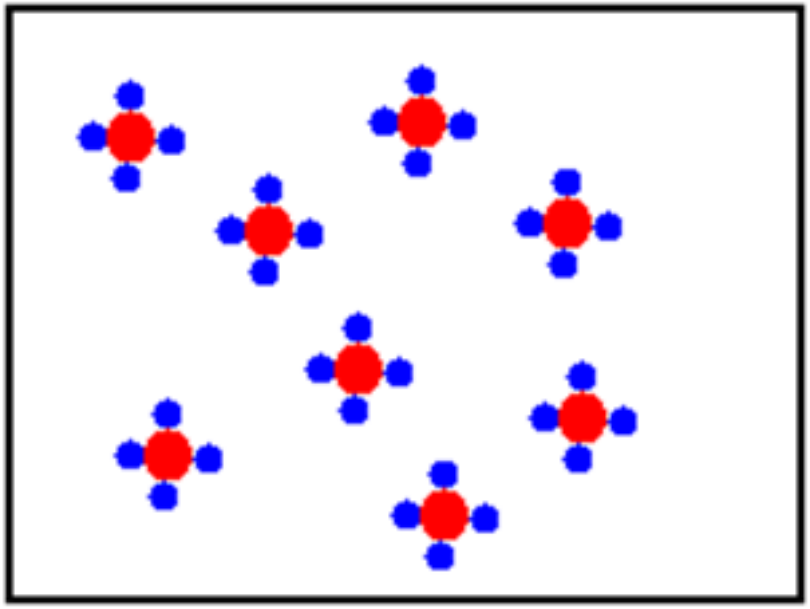


- Form when two or more different elements join (bond) together chemically
- Composition is identical in each sample
- Can be separated only by chemical methods
- Properties of a compound are totally different than the properties of the elements that form them
- Examples: Water, Carbon dioxide, Sugar

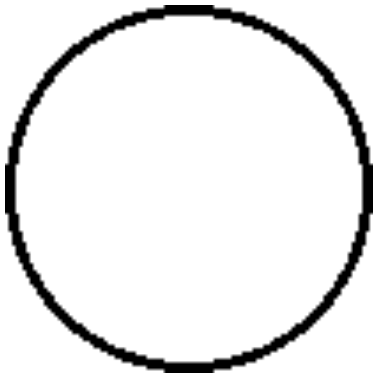
Animated images and notes from http://www.chem.purdue.edu/gchelp/atoms/elements.html

Compounds





Molecule



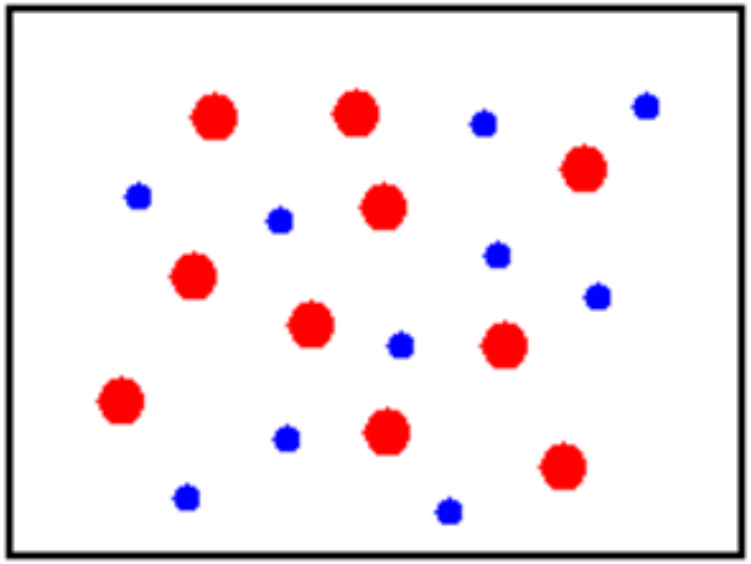
- A ***molecule*** consists of two or more atoms of the same element, or different elements, that are chemically bound together.
- A molecule is the singular unit that makes up compounds
- Examples: Water, Carbon dioxide, Sugar

Animated images and notes from http://www.chem.purdue.edu/gchelp/atoms/elements.html

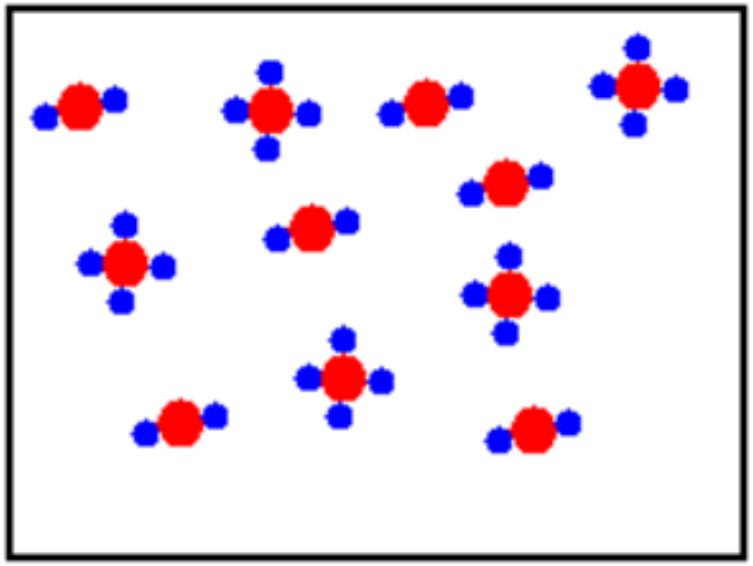
Mixtures

- A Form when elements and/or compounds are combined physically
- Properties of a mixture are related to its components
- Composition varies from sample to sample
- Can be separated by physical methods
- Examples of Mixtures: Tea, Perfume, Air, Salad, Beach sand, oil and vinegar salad dressing, etc.

Mixtures

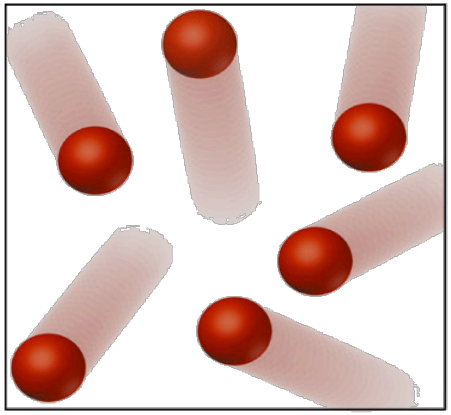


Mixture of Different Elements

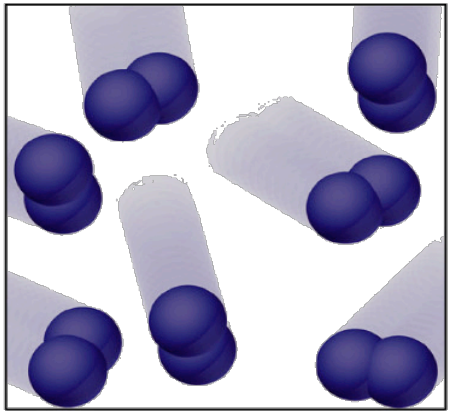


Mixture of Different Compounds

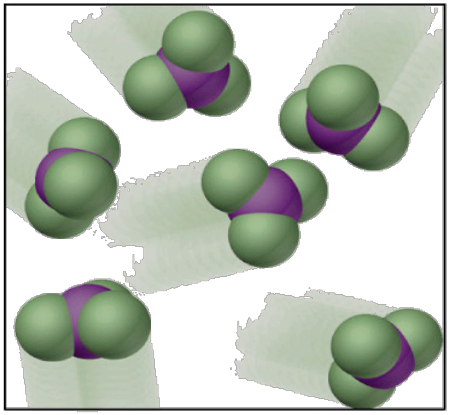
Distinguishing between Elements, Compounds, and Mixtures



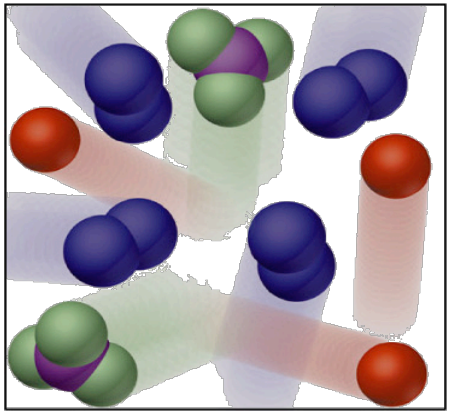
(a) Atoms of an element



(b) Molecules of an element



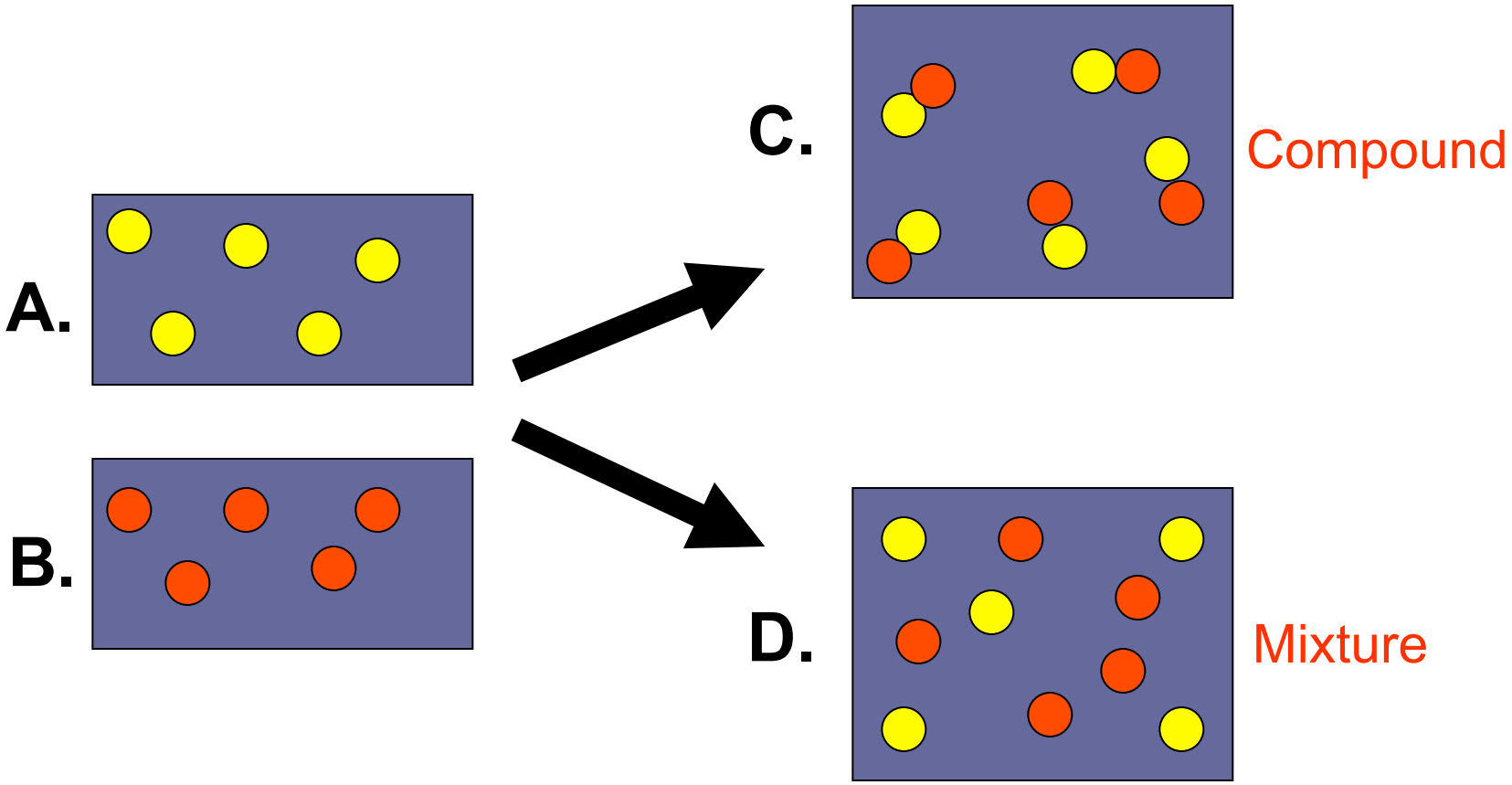
(c) Molecules of a compound



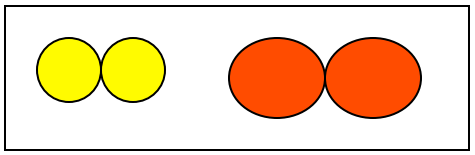
(d) Mixture of elements and a compound

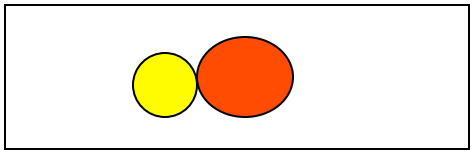
Mixing elements…

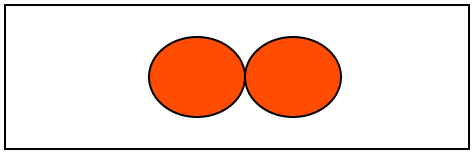
The diagram below shows how two elements can be mixed together…Which is a Compound? A Mixture?

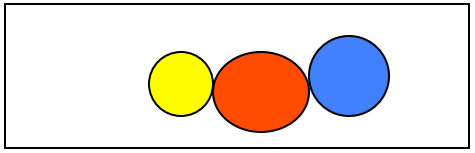


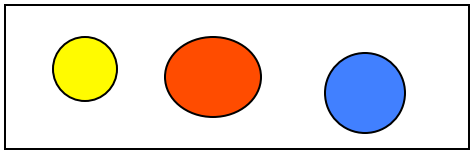
Match the Picture to the Description

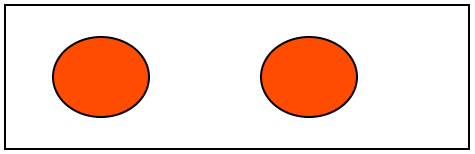












Compound of 2 Elements

Mixture of Molecules

Element Molecule

Compound of 3 Elements

Element/ Atoms

Mixture of Atoms