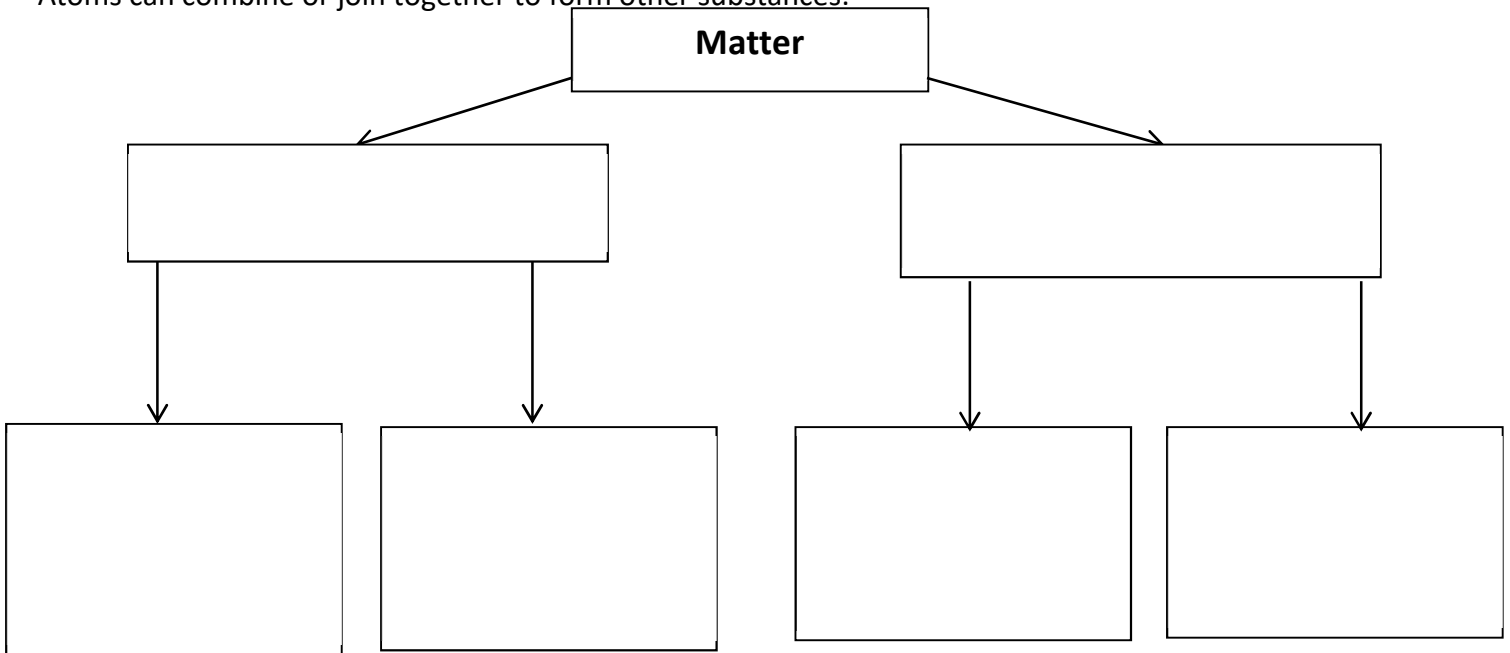


Chemistry is the study of the properties and interactions of matter

• **Matter**= _____

• **Atom**= _____

Atoms can combine or join together to form other substances:



Pure Substances= a substance that _____ be _____
_____. They can be separated by a chemical process ONLY

There are 2 types of pure substances: elements and compounds.

• **Element**= a substance that is made up of _____

Elements _____ be broken down into _____

All the elements that we know of are organized in the _____

1 1.0079 H HYDROGEN	2 4.0026 He HELIUM				
3 6.941 Li LITHIUM	4 9.0122 Be BERYLLIUM				
11 22.990 Na SODIUM	12 24.305 Mg MAGNESIUM				
13 10.811 B BORON	14 12.011 C CARBON	15 14.007 N NITROGEN	16 15.999 O OXYGEN	17 18.998 F FLUORINE	18 20.180 Ne NEON
13 26.982 Al ALUMINIUM	14 28.086 Si SILICON	15 30.974 P PHOSPHORUS	16 32.065 S SULPHUR	17 35.453 Cl CHLORINE	18 39.948 Ar ARGON

****All element symbols**









• **Diatomic Elements**= _____

(H₂, N₂, O₂, F₂, Cl₂, Br₂, I₂... "7-UP")

• **Compound**= a substance that is made up of _____. Therefore, a compound is made up of _____ in a specific ratio.

Compounds can be _____ into the elements that make it up.

Practice: Element or Compound?

Object	What types of atoms are found in this object?	Element or Compound?
Penny (Cu) 	 Copper atoms	Element
Water (H ₂ O) 	 Hydrogen and oxygen atoms	Compound
Pencil Lead (C) 		
Table salt (NaCl) 		
Vinegar (C ₂ H ₄ O ₂) 		
Lithium battery (Li) 		

Mixtures=a combination of _____ that can be _____

Mixtures can be made up of elements, compounds, or both.



Mixture

Can be physically separated into its individual parts without changing what they are





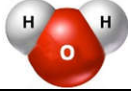
Mixtures can be classified as either homogeneous or heterogeneous

- homogeneous mixture**=a mixture in which the particles are _____
 the individual substances making up the mixture _____
 (Ex: sugar dissolved in water; atmospheric air);
***most common type is a _____!**
- heterogeneous mixture**=a mixture in which the particles are _____
 the individual substances making up the mixture _____
 (Ex: chocolate chip cookie, sand in water)

Practice: Pure Substance or Mixture?

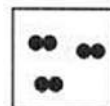
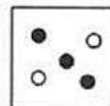
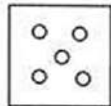
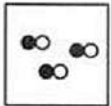
-If it is a pure substance, indicate whether it is an element or compound

-If it is a mixture, indicate whether it is a homogeneous or heterogeneous mixture

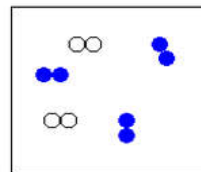
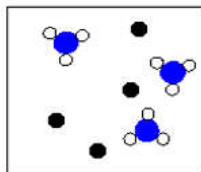
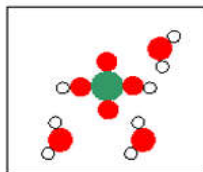
M&M's 	
sugar (C ₁₂ H ₂₂ O ₁₁)	
Lemonade (sugar + water + lemon) 	
Iron nails (Fe) 	
Air (nitrogen + oxygen + other gases)	
Limestone (CaCO ₃) 	
Magnesium (Mg)	
Pure Water (H ₂ O) 	
Tap Water	

Classification of Matter: Particle Diagrams Practice Questions

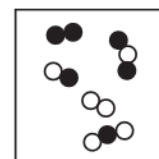
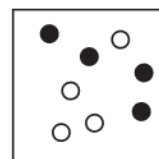
1. Label each particle diagram as a pure substance or mixture. If pure substance, identify it as an element or compound



2. Which of the following particle diagrams represents a mixture of one compound and one element?



3. Which particle model represents only one compound composed of elements X and Z?



Classifying Matter Mini-lab

Chemistry

Name _____

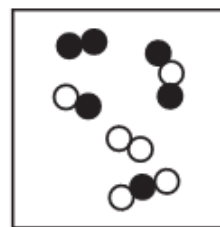
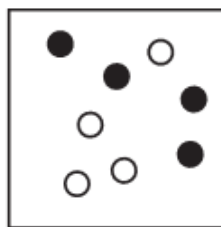
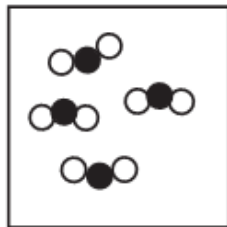
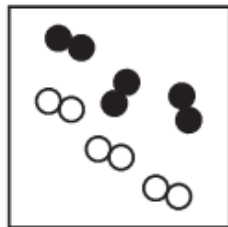
Block _____

Your group will be given 6 vials. Determine whether the substance in each vial is an element, a compound, homogenous mixture, or heterogeneous mixture and justify your answer.

Test #	Test tube contents	Classification	Observations & Justification
1	Piece of Aluminum Metal		
2	Copper Sulfate Crystals		
3	Copper Chloride Solution		
4	Ethanol		
5	Sulfur Powder		
6	Copper Chloride Solution + Mineral Oil		

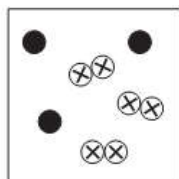
Classification of Matter: Particle Diagrams Practice Questions

1. Label each particle diagram as an element, compound, or mixture.

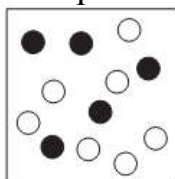


2. Base your answers to the following two questions on the diagram below:

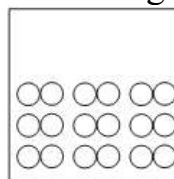
Key	
⊗	atom of x
●	atom of y
○	atom of z



Sample 1



Sample 2



Sample 3

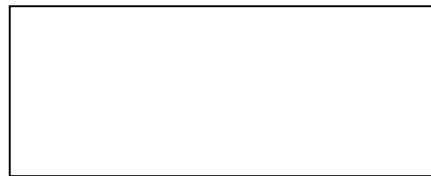
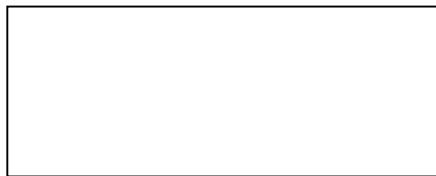
a. Which sample represents a pure substance?

b. Explain why ⊗⊗ does *not* represent a compound

3. Use the representation for atoms of element X and element Z given below

Atom of element X = ○
Atom of element Z = ●

a. Draw one element and one compound, one in each box, using the given representations for atoms of element X and element Z



b. Draw a mixture of the element and compound you drew above

