

Name: \_\_\_\_\_ Period: \_\_\_\_\_

Ms. Randall

Unit 2: Matter and Naming Workbook

The **bold, underlined** words are **important vocabulary words** that you should be able to define and use properly in explanations. This is a study guide for what you will be tested on throughout the year. The objectives are divided into categories of “**Knowledge**” (what you have to *know*) and “**Application**” (what you have to be able to *do*).

I. MATTER, ENERGY, & CHANGE		
	Knowledge	Application
1.	<ul style="list-style-type: none"> <li>○ <b>Matter</b> is anything that has <b>mass</b> and <b>volume</b> (takes up space).</li> <li>○ Matter cannot be created nor destroyed, only transformed.</li> <li>○ Matter is classified as a <b>pure substance</b> (element or compound) or as a <b>mixture of substances</b>.</li> </ul>	<ul style="list-style-type: none"> <li>○ Identify specific examples of matter as an element, compound, or mixture</li> </ul>
2.	<ul style="list-style-type: none"> <li>○ <b>Energy</b> is not matter (does not have volume)</li> <li>○ Energy can exist in different forms, such as kinetic, potential, thermal (heat), sound, chemical, electrical, and electromagnetic.</li> <li>○ Energy cannot be created or destroyed, only transformed.</li> </ul>	<ul style="list-style-type: none"> <li>○ Distinguish between matter and energy</li> </ul>
3.	<ul style="list-style-type: none"> <li>○ During a <b>physical change</b>, particles of matter are rearranged. Examples of physical changes include freezing, melting, boiling, condensing, dissolving, crystallizing, and crushing into a powder</li> <li>○ During a <b>chemical change</b>, NEW substances are formed with new properties. Examples of chemical changes include combustion (burning), rusting, and neutralizing an acid or base.</li> <li>○ Energy can be absorbed or released during physical and chemical changes.</li> </ul>	<ul style="list-style-type: none"> <li>○ Differentiate between physical and chemical changes in matter</li> <li>○ Identify and give examples of physical changes and chemical changes in matter</li> </ul>
4.	<ul style="list-style-type: none"> <li>○ A <b>pure substance</b> (element or compound) has a uniform composition and constant properties throughout a given sample, and from sample to sample.</li> <li>○ <b>Mixtures</b> are composed of two or more different substances that can be separated by physical means.</li> </ul>	<ul style="list-style-type: none"> <li>○ Draw and interpret <b>particle diagrams</b> for elements, compounds, and mixtures</li> </ul>
5.	<ul style="list-style-type: none"> <li>○ Elements are substances that are composed of atoms that have the same atomic number. Elements <b>cannot</b> be broken down by chemical change.</li> </ul>	
6.	<ul style="list-style-type: none"> <li>○ A compound is a substance composed of two or more different elements that are chemically combined in a fixed proportion.</li> <li>○ A compound can be broken down by chemical means, such as during a <i>chemical reaction</i>.</li> <li>○ Two major categories of compounds are ionic and <b>molecular (covalent) compounds</b>.</li> <li>○ A chemical compound can be represented by a specific chemical formula and assigned a name based on the IUPAC system.</li> </ul>	<ul style="list-style-type: none"> <li>○ Describe differences in ionic and molecular/covalent compounds</li> <li>○ Identify a compound as ionic or molecular/covalent compound given its properties</li> <li>○ Name compounds based on their chemical formulas</li> <li>○ Determine the formula of a compound given its name</li> </ul>

7.	<ul style="list-style-type: none"> <li>○ When different substances (elements or compounds) are mixed together and do NOT chemically react, a mixture is formed.</li> <li>○ The amounts of substances in a mixture can vary. Each substance in a mixture retains its original properties.</li> <li>○ The composition of a mixture can vary. If the substances are uniformly (evenly) distributed throughout the mixture, it is called a <b>homogenous mixture</b>. If the substances are unevenly distributed, it is called a <b>heterogeneous mixture</b>.</li> </ul>	<ul style="list-style-type: none"> <li>○ Interpret particle diagrams as showing homogeneous or heterogeneous mixtures</li> <li>○ Give examples of homogeneous and heterogeneous mixtures</li> </ul>
8.	<ul style="list-style-type: none"> <li>○ Differences in properties such as density, particle size, molecular polarity, boiling point, freezing point, and solubility allow physical separation of the components of the mixture.</li> </ul>	<ul style="list-style-type: none"> <li>○ Describe the processes of filtration, distillation, and chromatography and the types of mixtures they are used to separate</li> </ul>

**Goal setting:** Based upon your learning style results and the information above list at least two techniques you plan to use to study during this unit.

- 1.
- 2.

What grade would you like to achieve on this unit based on your efforts? \_\_\_\_\_%

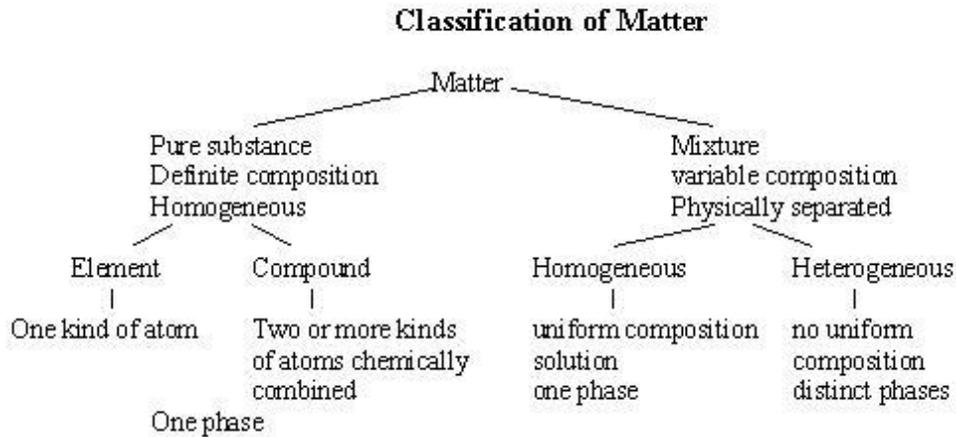
**Directions:** After reading the Chapter diary answer the following questions.

1. What is matter?
2. What is the difference between an element, compound and mixture?
3. How do you do know if a chemical change has taken place?
4. Describe how a mixture of salt and sand can be separated using proper lab techniques.

List 10 facts from the reading

List any questions you may have from your reading:

**Objective:** To compare and contrast representative forms of matter



**Check your understanding:**

A. Choose the letter of the word that applies from the list below for each statement.

***a. matter***

***e. compound***

***b. substance***

***f. heterogeneous mixture***

***c. mixture***

***g. homogeneous mixture***

***d. element***

- \_\_\_ 1) cannot be chemically decomposed
- \_\_\_ 2) components can be combined in any ratio
- \_\_\_ 3) components must be combined in a specific, fixed ratio that can never change
- \_\_\_ 4) has mass and volume
- \_\_\_ 5) chemically combined to produce new substance with totally new properties
- \_\_\_ 6) substances are physically combined, unevenly spread throughout
- \_\_\_ 7) substances are physically combined, evenly spread throughout
- \_\_\_ 8) combining substances where each substance retains its individual properties
- \_\_\_ 9) manganese
- \_\_\_ 10)  $Al_2(SO_4)_3$
- \_\_\_ 11) sand in water
- \_\_\_ 12) physically combined, physically separated
- \_\_\_ 13) since the substances retain their individual properties, they can be separated based on their unique physical properties
- \_\_\_ 14) can't be physically decomposed, but can be chemically decomposed

**Practice Activity:**

Directions: Using your understanding of elements, compounds, and mixtures, correctly classify the samples of matter.

Station #	Description of matter(include name, symbols, formulas if provided)	Classification (element, compound, homogeneous mixture, heterogeneous mixture)

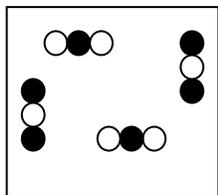
**Lesson 3: Particle diagrams**

**Date:** \_\_\_\_\_

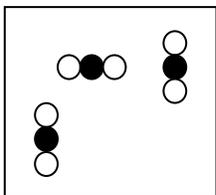
**Objective:** To represent forms of matter using particle diagrams

**Check your understanding**

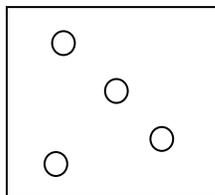
Match each diagram with its correct description. Diagrams will be used once.



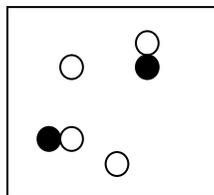
**A**



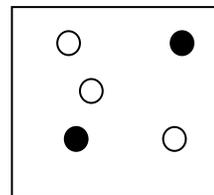
**B**



**C**



**D**

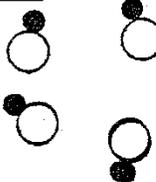
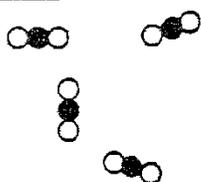
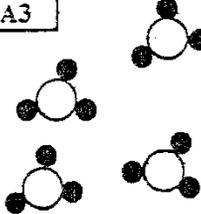
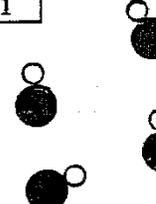
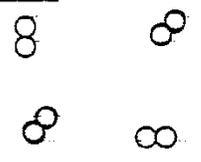
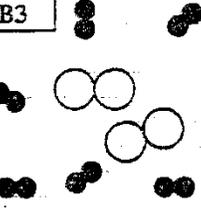
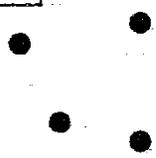
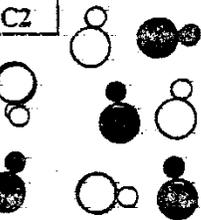
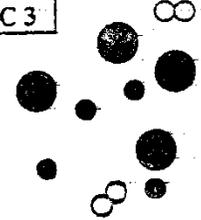
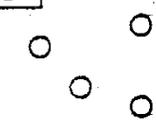
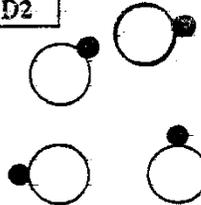
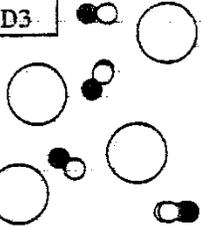


**E**

- \_\_\_1. Pure Element - only one type of atom present.
- \_\_\_2. Mixture of two elements - two types of uncombined atoms present.
- \_\_\_3. Pure compound - only one type of compound present.
- \_\_\_4. Mixture of two compounds - two types of compounds present.
- \_\_\_5. Mixture of a compound and an element.

**Practice:** Categorize the squares below as representing elements, compounds, or mixtures.

Elements	Compounds	Mixtures

<b>A1</b> 	<b>A2</b> 	<b>A3</b> 
<b>B1</b> 	<b>B2</b> 	<b>B3</b> 
<b>C1</b> 	<b>C2</b> 	<b>C3</b> 
<b>D1</b> 	<b>D2</b> 	<b>D3</b> 

**Lesson 4: Methods of Separating a Mixture**

**Date:** \_\_\_\_\_

**Objective:** To compare and contrast methods for separating mixtures based on properties

**Check your Understanding:**

**Compounds** must be separated chemically but **mixtures** can be separated easily using physical methods.

- a. Draw a line to match each method with its name.

Distillation	Separated by differences in particle size
Chromatography	Separates solids suspended in liquids
Evaporation	Separated by differences in boiling point.
Filtration	Separate solute (dissolved solid) from solvent (liquid) by boiling solution

- b. Which of the above processes only work if the mixture is heterogeneous? \_\_\_\_\_

**Practice:**

**True/False Questions**

1. Think carefully about the following statements. Are they true or false?

Circle your answer.

- a. In filtration, the filtrate is always a pure liquid. True/False
- b. Drinking water can only be obtained from seawater by distillation. True/False
- c. The fractional distillation of miscible liquids is only possible if the liquids have different boiling points. True/False
- d. Paper chromatography is a physical method for separating mixtures. True/False
- e. Mixtures have fixed melting and boiling points. True/False

2. Name the techniques which are suitable for separating the following mixture:

	<b>Situation</b>	<b>Separation Technique</b>
a.	To obtain drinking water from muddy water	
b.	To separate petrol from crude oil	
c.	To remove leaves from a swimming pool	
d.	To obtain pure sugar from a solution	
e.	To determine whether the coloring in a fruit juice is a single substance or a mixture of colored substance	

Lesson 5: Properties and Changes of Matter

Date: \_\_\_\_\_

Objective: To compare and contrast physical/chemical properties vs. changes

Check your understanding:

a. Fill in the blank with a vocabulary word to summarize the key ideas:

A \_\_\_\_\_ results in the rearrangement of existing particles in a substance. A \_\_\_\_\_ results in the formation of different substances with changed properties

b. Identify the following as being a **physical or chemical property**.

\_\_\_\_\_ 1. The mass of copper wire is 255 g.

\_\_\_\_\_ 2. The boiling point of ethyl alcohol is 77°C.

\_\_\_\_\_ 3. Baking soda reacts with vinegar to make carbon dioxide gas.

\_\_\_\_\_ 4. The density of mercury is 13.6g/mL.

\_\_\_\_\_ 5. The solubility of sodium chloride in water is 40g/100mL of water.

c. Is a phase change a physical or a chemical change? Explain your answer.

d. Is the process of dissolving a physical or a chemical change? Explain your answer.

**Practice:**

a. Label the following as physical change (P) or chemical change (C):

Melting ice \_\_\_\_ Burning wood \_\_\_\_ Cutting paper \_\_\_\_

Sublimation \_\_\_\_ Rusting nails \_\_\_\_ Reacting with acid \_\_\_\_

Digesting \_\_\_\_ Painting \_\_\_\_ Heating copper \_\_\_\_

b. **Directions:** Complete the chart to the best of your ability.

Situation	Type of Change (P or C)
Cooking an egg	
Digesting your lunch	
Mixing the ingredients for a cake	
Rusting of a nail	
Dew forming on the lawn	
Melting ice off a windshield	
Combustion (burning) of gasoline	
Purifying salt water by evaporation	
$\text{CO}_2 (\text{s}) \rightarrow \text{CO}_2 (\text{g})$	
$\text{H}_2\text{O} (\text{g}) \rightarrow \text{H}_2\text{O} (\text{l})$	
$\text{H}_2\text{O}$ $\text{NaCl} (\text{s}) \rightarrow \text{NaCl} (\text{aq})$	

**Lesson 6: STP and States of Matter**

Date: \_\_\_\_\_

**Objective:** To use Table S to determine state of matter

**Check your understanding**

**Directions:** Use the chart in the unit notes to answer the following questions

	←MP→	←BP→		
Description	If temp is lower than the melting point, it has not melted yet.	If temp is higher than the melting point, it has melted already.	If temp is lower than the boiling point, it has not boiled yet.	If temp is higher than the boiling point, it has boiled already.
Resulting Phase	Solid	Liquid	Liquid	Gas

- 1) Which colorless substance is a liquid at  $-30^{\circ}\text{C}$ ? \_\_\_\_\_
- 2) Which colorless substance is a gas at  $60^{\circ}\text{C}$ ? \_\_\_\_\_
- 3) Which substance is a solid at  $7^{\circ}\text{C}$ ? \_\_\_\_\_
- 4) Which element is a liquid when mercury boils? \_\_\_\_\_

**Practice:** Use Table S to answer the following questions

Draw a particle diagram for a solid, liquid, and a gas using at least 5 particles:



**Solid**



**Liquid**



**Gas**

1. What state of matter, would each of the following substances exist at STP?  
(Note that Table S has MP/BP in Kelvin!)

- a. Hydrogen \_\_\_\_\_
- b. Lithium \_\_\_\_\_
- c. Bromine \_\_\_\_\_

2. At STP, which list of elements contains a solid, a liquid, and a gas?

- (1) Hf, Hg, He
- (2) Cr, Cl<sub>2</sub>, C
- (3) Ba, Br<sub>2</sub>, B
- (4) Se, Sn, Sr

3. a. What is the melting point of potassium? \_\_\_\_\_

b. What is the boiling point of zinc? \_\_\_\_\_

4. A sample of chlorine is at a temperature of 75K. Is the chlorine in the solid, liquid, or gas phase? (Hint! Look at Table S)

5. Determine the state of

a. iodine at 700K \_\_\_\_\_

b. tin at 1500K \_\_\_\_\_

c. bromine at 298K (room temp!) \_\_\_\_\_

Lesson 7: Changes Written as Equations

Date: \_\_\_\_\_

**Objective:** To represent chemical changes with chemical symbols

**Check your understanding:**

1. How many atoms of the element sodium (Na) are there in one  $\text{Na}_2\text{S}$ ?
2. How many atoms of each type of element in the formulas?
  - a. CO \_\_\_\_\_
  - b.  $\text{CO}_2$  \_\_\_\_\_
  - c.  $\text{H}_2\text{SO}_4$  \_\_\_\_\_
  - d.  $\text{Br}_2$  \_\_\_\_\_
3. How many units of KCl are expressed by "4KCl"?
4. How many  $\text{Na}_2\text{S}$  are shown by "3 $\text{Na}_2\text{S}$ "?
5. How many atoms of C, of H and of O are communicated by writing "3  $\text{C}_6\text{H}_{12}\text{O}_6$ "? **C:** \_\_\_\_\_ **H:** \_\_\_\_\_ **O:** \_\_\_\_\_

**Practice:**

1. Which of the following is a sign of a chemical reaction?
  - a. thermal energy from a fire
  - b. ice melting on the ground
  - c. steam from a teapot
  - d. water freezing on a pond
  
2. How can you be sure a chemical reaction is happening?
  - a. a solid dissolves
  - b. a new solid is formed
  - c. water turns to steam
  - d. a mixture is made
  
3. Which of the following describes chlorophyll breaking down into new substances?
  - a. chemical substance
  - b. chemical reaction
  - c. chemical mixture
  - d. chemical solution
  
4. What is true of the new materials formed in a chemical reaction?
  - a. Properties differ from original materials.
  - b. Properties are the same as original materials.
  - c. All substances have original properties.
  - d. No substances have original properties.
  
5. What can be put together to make chemical formulas?
  - a. letters of the alphabet
  - b. chemical sentences
  - c. chemical symbols
  - d. chemical reactions
  
6. What does a chemical formula use to represent a substance?
  - a. chemical sentences
  - b. chemical symbols and numbers
  - c. the chemical alphabet
  - d. chemical reactions and molecules
  
7. What is the number 2 called in the formula H<sub>2</sub>O?
  - a. superscript
  - b. element
  - c. symbol
  - d. subscript

Fill in using the words from the box below:

Product

reactant

chemical equation

8. A shorthand way of describing a chemical reaction using chemical symbols and numbers is called a \_\_\_\_\_.

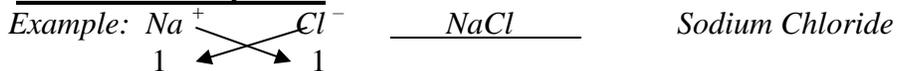
9. A substance or molecule that participates in a chemical reaction is called a \_\_\_\_\_.

10. The substance that forms in a chemical reaction is called a \_\_\_\_\_.

**Objective:** To construct and name binary compounds

**Check your understanding:** Write the formula for the compound formed by the *combination of the ions* given. Use the criss-cross method. Name each compound. Make sure to check if it has multiple charges.

**Name each compound.**



1.       $Ca^{2+}$      $Cl^-$       \_\_\_\_\_
2.       $Al^{3+}$      $O^{2-}$       \_\_\_\_\_
3.       $Fe^{2+}$      $O^{2-}$       \_\_\_\_\_
4.       $Cu^{+1}$     $O^{2-}$       \_\_\_\_\_

**Practice:**

*Given the formula, write the ions present, and then name the ionic compound.*

	Ions	Name
1. MgCl <sub>2</sub>	_____	_____
2. KCl	_____	_____
3. AgF	_____	_____
4. FeO	_____	_____
5. PbI <sub>4</sub>	_____	_____
6. FeN	_____	_____
7. MnF <sub>3</sub>	_____	_____
8. Cr <sub>2</sub> O <sub>3</sub>	_____	_____
9. AlBr <sub>3</sub>	_____	_____
10. Al <sub>2</sub> S <sub>3</sub>	_____	_____
11. Li <sub>2</sub> O	_____	_____
12. AuF <sub>3</sub>	_____	_____

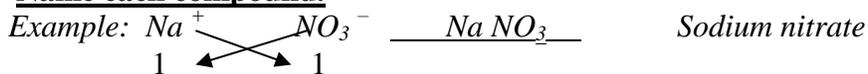
**Lesson 9: Writing and Naming Tertiary compounds**

Date: \_\_\_\_\_

**Objective:** Identify polyatomic ions and use them to name and write chemical formulas.

**Check your understanding:** Write the formula for the compound formed by the *combination of the ions* given. Use the criss-cross method. Name each compound. Make sure to check if it has multiple charges.

**Name each compound.**



**Practice:**

*Given the formula, write the ions present, and then name the ionic compound.*

	Ions	Name
1. $(\text{NH}_4)_2\text{S}$	_____	_____
2. $\text{ZnCO}_3$	_____	_____
3. $\text{K}_2\text{SO}_3$	_____	_____
4. $\text{NaCN}$	_____	_____
5. $\text{Ca}(\text{MnO}_4)_2$	_____	_____
6. $\text{Na}_2\text{SO}_4$	_____	_____
7. $\text{Cu}(\text{NO}_2)_2$	_____	_____
8. $\text{Al}(\text{OH})_3$	_____	_____
9. $\text{Sn}(\text{ClO}_3)_2$	_____	_____
10. $\text{BaSO}_4$	_____	_____

**Unit Study Guide**

**Law, Theories, BIG ideas**

Laws:

Theories:

BIG ideas:

**Equations, Calculations, Reference Tables**

Equation: (When to use & units)

Calculations (When to use)

Reference Table (Hints & tricks)

Helpful tips, sayings, shortcuts

Things I always forget...

**Unit Project: *Box of Matter***

Due Date: \_\_\_\_\_

Choose a type of matter to study. Choose a simple object made of only one or a few materials, such as a toothbrush, pencil, football, soda can, socks, hammer, etc.

You will create a “cube of information” about the object by conducting research. (If you would rather create something besides a cube please ask me first!) The research will need to be done as homework. Your cube can be as simple as 6 pieces of paper taped together or something more creative.

Side 1: A **picture** (drawing, picture, or something printed off, with source cited)

Side 2: At least **three Physical Properties** of the materials in the object. Physical properties are those that describe a substance without changing its chemical composition. Examples of these properties could include: melting point, boiling point, density, shape, color, size, and solubility (ability to dissolve). Think specifically about the **properties that are useful for this particular object**.

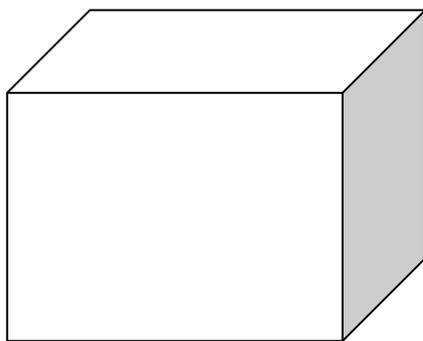
Side 3: At least **two Chemical Properties** of the materials in the object. Chemical properties include flammability (the ability to catch on fire), toxicity (the ability to be poisonous), oxidation (the ability to react with oxygen, which causes apple slices to turn brown and iron to rust), radioactivity (spontaneously emitting energy in the form of particles or waves by the disintegration of their atomic nuclei), and sensitivity to light (which causes newspaper to turn yellow), or being acidic/basic. Think specifically about the **properties that are useful for this particular object**.

Side 4: **Origin of at least one of the materials**. Tell where it comes from or how it can be made.

Side 5: **History of the object**. When was it invented or first used? How has it changed over time?

Side 6: **References** of all sources used in correct format. You must use at least **three agreeing** sources.

**Grading:** 4 points possible per side of cube (2 points for information and 2 points for effort/creativity). Total points = 24. Up to 4 extra credit points possible for projects that go above and beyond expectations!



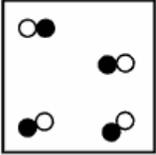
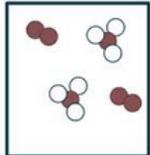
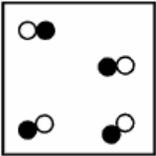
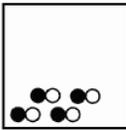
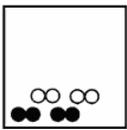
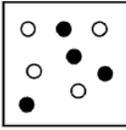
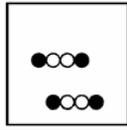
**Unit Review:** If you can do all the things listed below, you are ready for the Unit 2 test.

Place a checkmark next to each item that you can do! If a sample problem is given, complete it as evidence.

<p><b>_____ 1. I can still do everything from Unit 1.</b></p>		
<p><b>_____ 2. I can define the following: atom, element, compound, mixture</b></p>	<p><b><u>Definitions:</u></b> atom  element  compound  mixture</p>	
<p><b>_____ 3. I can draw particle diagrams to represent an atom, an element, a molecule, a compound, a mixture</b></p>	<p>2 Atoms of 1 Element</p>	<p>2 Molecule of 1 Compound</p>
	<p>Mixture of 2 elements</p>	<p>Mixture of 2 compounds</p>
	<p>Mixture of an element and a compound</p>	

<p>_____ 4. I can classify substances as a pure substance (element or compound) or as a mixture.</p>	<p>Put each of the following examples into the correct column.</p> <p>Examples: C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>, NaCl, Fe, salt water, air, CO<sub>2</sub>, H<sub>2</sub>, Ar, soda</p>		
	<p><u>Element</u></p>	<p><u>Compound</u></p>	<p><u>Mixture</u></p>
<p>_____ 5. I can define homogeneous mixture and heterogeneous mixture in terms of particle distribution.</p>	<p><b>Definitions:</b> homogeneous mixture</p> <p>heterogeneous mixture</p>		
<p>_____ 6. I can give an example of homogeneous and heterogeneous mixtures.</p>	<p>Two examples of homogeneous mixtures:</p> <p>a.</p> <p>b.</p> <p>Two examples of heterogeneous mixtures:</p> <p>a.</p> <p>b.</p>		
<p>_____ 7. I can classify a property as physical or chemical.</p>	<p>Write “P” for physical or “C” for chemical on the line provided.</p> <p>_____ copper (II) sulfate is blue.</p> <p>_____ copper reacts with oxygen.</p> <p>_____ copper can be made into wire.</p> <p>_____ copper has a density of 8.96 g/cm<sup>3</sup>.</p> <p>_____ copper melts at 1358K.</p> <p>_____ copper reacts with nitric acid.</p> <p>_____ copper doesn’t dissolve in water.</p>		

<p>_____ <b>8. I can define ion, cation, and anion.</b></p>	<p><b>Definitions:</b> ion</p> <p>cation</p> <p>anion</p>
<p>_____ <b>9. Given the IUPAC name, I can write the chemical formula for binary compounds.</b></p>	<p>Write the chemical formula for the following compounds:</p> <p>sodium bromide _____ lithium selenide _____ iron (III) fluoride _____ vanadium (V) oxide _____</p>
<p>_____ <b>10. Given the chemical formula, I can write the IUPAC name for binary compounds.</b></p>	<p>Write the IUPAC name for the following compounds:</p> <p>CrO _____ MgI<sub>2</sub> _____</p>
<p>_____ <b>11. Given the IUPAC name, I can write the chemical formula for ternary compounds.</b></p>	<p>Write the chemical formula for the following compounds:</p> <p>calcium oxalate _____ nickel (II) thiosulfate _____</p>
<p>_____ <b>12. Given the chemical formula, I can write the IUPAC name for ternary compounds.</b></p>	<p>Write the IUPAC name for the following compounds:</p> <p>Sn(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>2</sub> _____ (NH<sub>4</sub>)<sub>3</sub>PO<sub>4</sub> _____</p>

<p>_____ 13. I can classify a change as physical or chemical.</p>	<p>Write "P" for <b>physical</b> or "C" for <b>chemical</b> on the line provided.</p> <p>_____ copper (II) sulfate dissolves in water.</p> <p>_____ copper reacts with oxygen to form solid copper (I) oxide.</p> <p>_____ solid copper is melted.</p> <p>_____ a chunk of copper is pounded flat.</p> <p>_____ copper and zinc are mixed to form brass.</p> <p>_____ a large piece of copper is chopped in half.</p> <p>_____ copper reacts with bromine to form copper (II) bromide.</p>
<p>_____ 14. In a particle diagram, I can distinguish between a element, compound and mixture</p>	<div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p>_____</p> <p>Label each diagram as an element compound or mixture.</p>
<p>_____ 15. In a particle diagram, I can distinguish between a physical change and a chemical change.</p>	<div style="text-align: center;">  <p><b>Substance A</b></p> </div> <p>Circle the particle diagram that best represents Substance A after a physical change has occurred.</p> <div style="display: grid; grid-template-columns: 1fr 1fr; gap: 10px;">     </div>