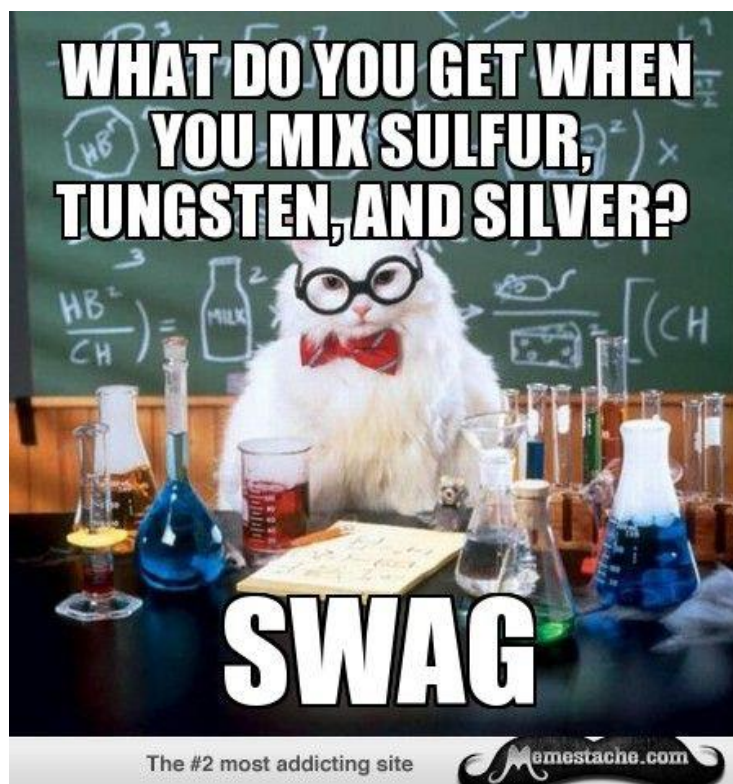


Regents Chemistry:

Practice Packet:

Unit 2: Matter



Lesson 1: Types of Matter

Objective:

- Differentiate between compounds, mixtures and elements
- Determine if a mixture is homogeneous or heterogeneous
- Identify the number of atoms in a substance based upon the chemical formula

Classify each of the following with the combination of terms listed below.

pure substance – element

pure substance – compound

mixture – homogeneous

mixture – heterogeneous

- | | | | |
|------------------------|---|------------|-----------|
| 1. HCl (aq) | 2. sugar (C ₁₁ H ₂₂ O ₁₁) | 3. KBr (s) | 4. soil |
| 5. Cl ₂ (g) | 6. CH ₂ (OH) ₂ (aq) | 7. Na (s) | 8. Hg (l) |
-
- | | |
|---|--|
| 9. Matter that is composed of two or more different elements chemically combined in a fixed proportion is classified as
(1) a compound (2) an element
(3) a mixture (4) a solution | 12. A heterogeneous material may be
(1) an element
(2) a compound
(3) a pure substance
(4) a mixture |
| 10. A compound differs from an element in that a compound
(1) is homogeneous
(2) has a definite composition
(3) has a definite melting point
(4) can be decomposed by a chemical reaction | 13. Which statement is an identifying characteristic of a mixture?
(1) a mixture can consist of a single element
(2) a mixture can be separated by physical means
(3) a mixture must have a definite composition by weight
(4) a mixture must be homogeneous |
| 11. A compound differs from a mixture in that a compound always has a
(1) homogeneous composition
(2) maximum of two elements
(3) minimum of three elements
(4) heterogeneous composition | 14. Which must be a mixture of substances?
(1) solid (2) liquid
(3) gas (4) solution |

Practice Packet: UNIT 2 MATTER

15. Which substance can be decomposed by chemical means?
(1) aluminum (2) octane (3) silicon (4) xenon
16. Which substance can be decomposed by chemical means?
(1) ammonia (2) oxygen
(3) phosphorus (4) silicon
17. Which substance can not be broken down by a chemical reaction?
(1) ammonia (2) argon (3) methane (4) water
18. Two substances, A and Z, are to be identified. Substance A can not be broken down by a chemical change. Substance Z can be broken down by a chemical change. What can be concluded about these substances?
(1) Both substances are elements.
(2) Both substances are compounds.
(3) Substance A is an element and substance Z is a compound.
(4) Substance A is a compound and substance Z is an element.

ASSESS YOURSELF ON THIS LESSON: _____/18

If you missed more than 3, do the Additional Practice.

ADDITIONAL PRACTICE LESSON 1:

1. Which terms are used to identify pure substances?
(1) an element and a mixture
(2) an element and a compound
(3) a solution and a mixture
(4) a solution and a compound
2. Two different samples decompose when heated. Only one of the samples is soluble in water. Based on this information, these two samples are
(1) both the same element
(2) two different elements
(3) both the same compound
(4) two different compounds

Practice Packet: UNIT 2 MATTER

3. Tetrachloromethane, CCl_4 , is classified as a
- (1) compound because the atoms of the elements are combined in a fixed proportion
 - (2) compound because the atoms of the elements are combined in a proportion that varies
 - (3) mixture because the atoms of the elements are combined in a fixed proportion
 - (4) mixture because the atoms of the elements are combined in a proportion that varies
-

4. The table below shows the mass and volume data for four samples of substances at the same temperature and pressure.

Which two samples could consist of the same substance?

Masses and Volumes of Four Samples

Sample	Mass (g)	Volume (mL)
A	30.	60.
B	40.	50.
C	45	90.
D	90.	120.

_____ and _____

ASSESS YOURSELF ON THIS ADDITIONAL PRACTICE: _____/4

If you missed more than 1 you should see me for extra help and/or re-watch the lesson video assignment

Lesson 2: Particle Diagrams

Objective:

- *Construct and use particle diagrams to differentiate among elements, compounds, and mixtures.*
- *Construct and use particle diagrams to differentiate among solids, liquids, and gases.*

Classify each of the pictures below by placing the correct label in the blanks below:

A= Element

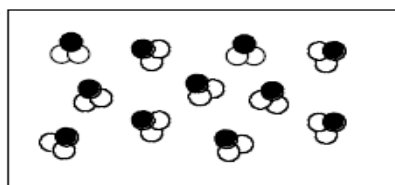
D= Mixture of compounds

B= Compound

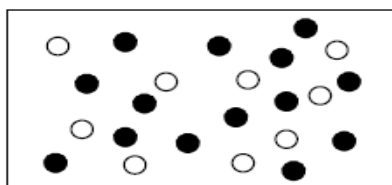
E= Mixture of elements and compounds

C= Mixture of elements

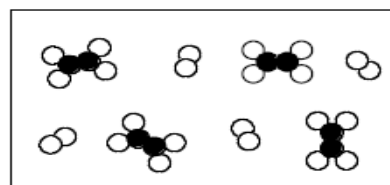
Each circle represents an atom and each different color represents a different kind of atom. If two atoms are touching then they are bonded together.



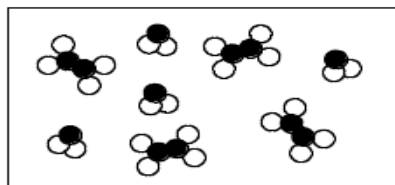
1) _____



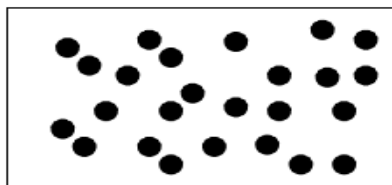
2) _____



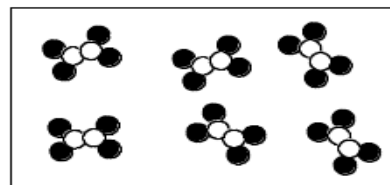
3) _____



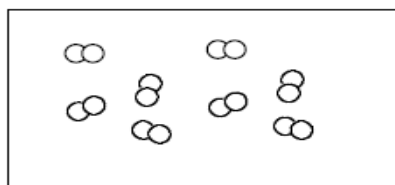
4) _____



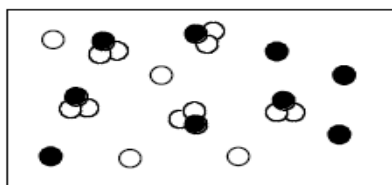
5) _____



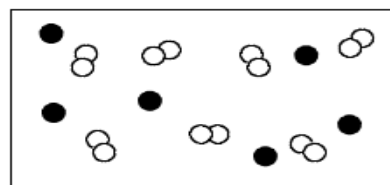
6) _____



7) _____

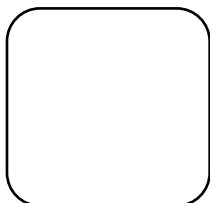


8) _____

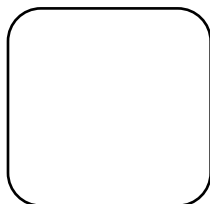


9) _____

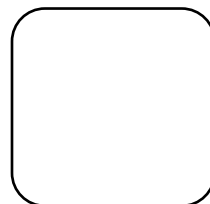
10. Draw a particle diagram for each of the following below. Include at least 4 particles of each type.



pure diatomic
element



mixture of
two elements



mixture of
an element &
compound

Practice Packet: UNIT 2 MATTER

11. In terms of composition/type of atoms, what is the difference between a diatomic element and a compound.

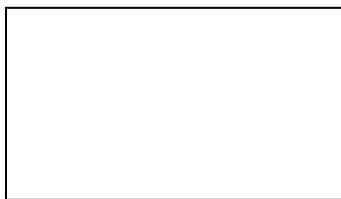
12. Use the following key for the question below:



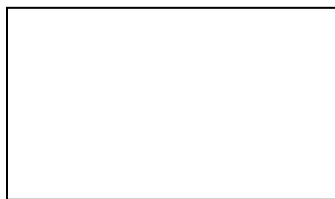
Draw 4 molecules of compound X_2Z in the box on the right



13. Draw a particle diagram representing a solid and one representing a gas (include at least 5 particles in each diagram):



SOLID



GAS

14. Which of the following *are not* characteristics of a liquid:

- definite shape
- definite volume
- constant motion
- fills a container it is put in
- particles vibrate in place

ASSESS YOURSELF ON THIS LESSON: _____/17

If you missed more than 3, do the Additional Practice.

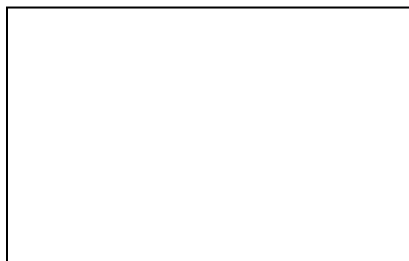
Practice Packet: UNIT 2 MATTER

ADDITIONAL PRACTICE LESSON 2

Use the following key for the next two questions.

○ = element X ● = element Z

Draw 8 atoms of element X



Draw a Homogeneous mixture of element Z with element X (6 atoms of each element).



List the characteristics of solids, liquids, and gas:

SOLID

- _____
- _____
- _____
- _____

LIQUID

- _____
- _____
- _____
- _____
- _____

GAS

- _____
- _____
- _____
- _____
- _____

ASSESS YOURSELF ON THIS ADDITIONAL PRACTICE: _____/16

If you missed any question you should see me for extra help and/or re-watch the lesson video assignment

LESSON 3: PROPERTIES AND CHANGES OF MATTER

Objective:

- *Define and give examples of physical and chemical properties.*
- *Differentiate between physical and chemical changes.*

1. How does a physical property differ from a chemical property?

For each of the following, identify as a chemical or physical property:

2. Reacts with oxygen
3. Dissolves in water
4. Melts at 452K
5. Forms compounds with Chlorine.
6. Has a mass of 350. G
7. Has high luster

Directions: Complete the following chart.

Description of Change	Type of Change (Physical or Chemical)	Explanation: Still the same substance or new substance formed.
1) Water freezing		
2) Decomposing of a dead organism		
3) Mixing the ingredients for a cake		
4) Rusting (corroding) of a nail		

Practice Packet: UNIT 2 MATTER

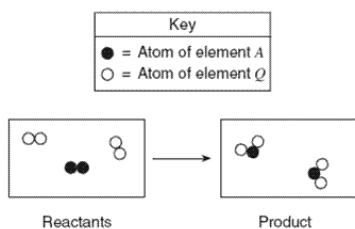
5) Combustion (burning) of gasoline		
6) $\text{CO}_2(\text{s}) \rightarrow \text{CO}_2(\text{g})$		
7) $2\text{H}_2\text{O}(\text{g}) \rightarrow 2\text{H}_2(\text{g}) + \text{O}_2(\text{g})$		
8) $\text{NaCl}(\text{s}) \xrightarrow{\text{H}_2\text{O}} \text{NaCl}(\text{aq})$		

ASSESS YOURSELF ON THIS LESSON: _____/15

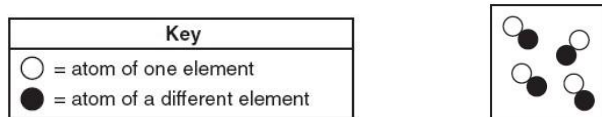
If you missed more than 3, do the Additional Practice. If not, go on to the next hw video!!!

ADDITIONAL PRACTICE LESSON 3:

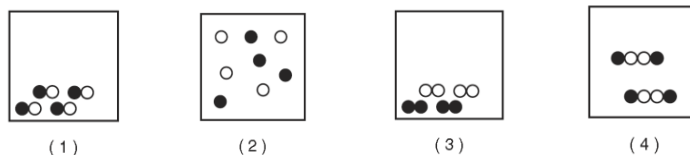
- The diagram below represents the starting materials (reactants) and ending materials (products) after a change has taken place. Was the change physical or chemical? Explain.



- Given the particle diagram representing four molecules of a substance:



Which particle diagram best represents this same substance after a physical change has taken place?



ASSESS YOURSELF ON THIS ADDITIONAL PRACTICE: _____/2

If you missed any question you should see me for extra help and/or re-watch the lesson video assignment

Lesson 4: Separating a Mixture

Objective:

- Determine how to separate different types of mixtures
- Describe the processes and uses of filtration, distillation, and chromatography in the separation of a mixture.

Substances in mixtures retain their own physical properties which can be used to physically separate the components. Complete the chart below...

Mixture	Separate by...	Physical Property
<i>Example:</i> Coffee	<i>Boiling off the water, collecting it, leaving the coffee bean extract and sugar</i>	<i>Boiling point</i>
Iron Chips & Soil		
Sugar & Water		
Salt & Sand		
Water & Rubbing Alcohol		

For each separation technique below, identify the physical property that is used and briefly describe the process:

Filtration: _____

Distillation: _____

Chromatography: _____

ASSESS YOURSELF ON THIS LESSON: _____/11

If you missed more than 3, do the Additional Practice. If not, go on to the next hw video!!!

Practice Packet: UNIT 2 MATTER

VOCABULARY

For each word, provide a short but specific definition from YOUR OWN BRAIN! No boring textbook definitions. Write something to help you remember the word. Explain the word as if you were explaining it to an elementary school student. Give an example if you can. Don't use the words given in your definition!

Aqueous: _____

Chemical Property: _____

Chromatography: _____

Compound: _____

Diatomic element: _____

Distillation: _____

Element: _____

Filtration: _____

Gas: _____

Heterogeneous Mixture: _____

Homogeneous Mixture: _____

Liquid: _____

Matter: _____

Mixture: _____

Physical Property: _____

Solid: _____

Solution: _____

Temperature: _____