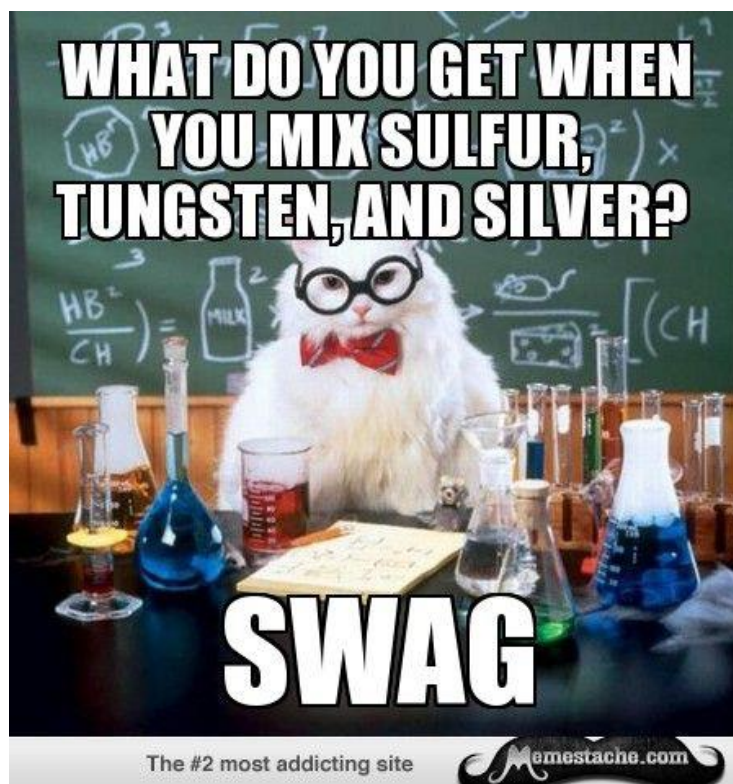


Regents Chemistry: Mr. Palermo

Practice Packet:

Unit 2: Matter



Vocabulary: _____

Lesson 1: _____

Lesson 2: _____

Lesson 3: _____

Lesson 4: _____

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 Change: _____

Chromatography: _____

Compound: _____

Diatomic element: _____

Distillation: _____

Element: _____

Filtration: _____

Gas: _____

Heterogeneous Mixture: _____

Homogeneous Mixture: _____

Liquid: _____

Matter: _____

Mixture: _____

Physical Change: _____

Solid: _____

Solution: _____

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

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

pure substance – element

mixture – homogeneous

pure substance – compound

mixture – heterogeneous

i.) **HCl (aq)**

ii.) **C₁₁H₂₂O₁₁ (s)**

iii.) **KBr (s)**

iv.) **soil**

v.) **Cl₂ (g)**

vi.) **CH₂(OH)₂ (aq)**

vii.) **Na (s)**

viii.) **Hg (l)**

8. Explain how you would determine if a substance is an:

element:

compound:

homogeneous mixture:

heterogeneous mixture:

Base your answer to questions 9-11 on the model below.



9. How would you classify this (element/compound/mixture?)

Practice Packet: UNIT 2 MATTER

10. Could you separate this substance, and if so how (physically or chemically)? Explain.
11. Draw the resulting structure(s) after separation.

REGENTS PRACTICE

- Matter that is composed of two or more different elements chemically combined in a fixed proportion is classified as
 - a compound
 - a mixture
 - an element
 - a solution
- A compound differs from an element in that a compound
 - is homogeneous
 - has a definite composition
 - has a definite melting point
 - can be decomposed by a chemical reaction
- A compound differs from a mixture in that a compound always has a
 - homogeneous composition
 - maximum of two elements
 - minimum of three elements
 - heterogeneous composition
- A heterogeneous material may be
 - an element
 - a compound
 - a pure substance
 - a mixture
- Which statement is an identifying characteristic of a mixture?
 - a mixture can consist of a single element
 - a mixture can be separated by physical means
 - a mixture must have a definite composition by weight
 - a mixture must be homogeneous
- Which must be a mixture of substances?
 - solid
 - gas
 - liquid
 - solution

Practice Packet: UNIT 2 MATTER

7. Which substance can be decomposed by chemical means?
- i.) ammonia (NH_3) ii.) oxygen (O)
iii.) phosphorus (P) iv.) silicon (Si)
8. Which substance cannot be broken down by a chemical reaction?
- i.) ammonia (NH_3) ii.) argon (Ar) iii.) methane (CH_3) iv.) water (H_2O)
9. Two substances, A and Z, are to be identified. Substance A cannot 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.
10. 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
-

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

Masses and Volumes of Four Samples

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

Which two samples could consist of the same substance?

_____ and _____

ASSESS YOURSELF ON THIS LESSON:

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

Lesson 2: Separating a Mixture

Objective:

- *Determine how to separate a mixture*
- *Develop a procedure to separate a mixture*

Research question: What is the mass of each component in the mixture?

You have been given a mixture of salt and sand. Using what you have learned about mixtures, develop a procedure that you will use to physically separate them. List your procedures below and have them checked before conducting the lab activity.

Procedures:

Data Collection: *Construct a data table that you will use to collect your data.*

Practice Packet: UNIT 2 MATTER

Discussion:

1. What methods did you use to separate your mixture?
2. What types of mixtures can be separated by filtration?
3. What types of mixtures can be separated by evaporation/boiling?

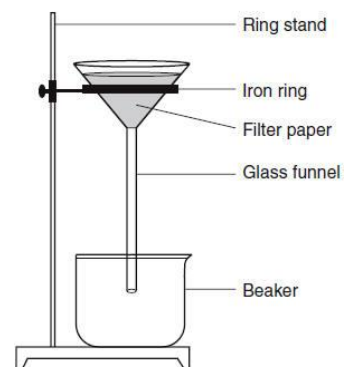
REGENTS PRACTICE

1. Using the information in the table, describe one property of the sand that would enable students to separate the sand from other components in the mixture?

Mass of the Components in Each Mixture

Component	Mixture A (g)	Mixture B (g)
NH ₄ Cl	40.	10.
sand	1	31
H ₂ O	100.	100.

2. Describe the separation technique that could be used to separate two colorless liquids with varying boiling points.
3. Which mixture can be separated by using the equipment show?
 - a. NaCl_(aq) and SiO_{2(s)}
 - b. NaCl_(aq) and C₆H₁₂O_{6(aq)}
 - c. CO_{2(aq)} and NaCl_(aq)
 - d. CO_{2(aq)} and C₆H₁₂O_{6(aq)}



ASSESS YOURSELF ON THIS LESSON:

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Practice Packet: UNIT 2 MATTER

Lesson 3: Particle Diagrams

Objective:

- Differentiate between different types of particle diagrams
- Construct particle diagrams for pure substances and mixtures

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

A= Element

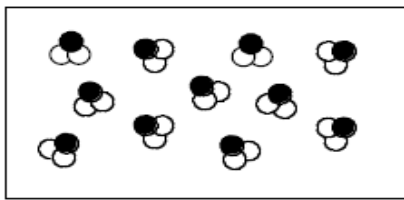
D= Mixture of compounds

B= Compound

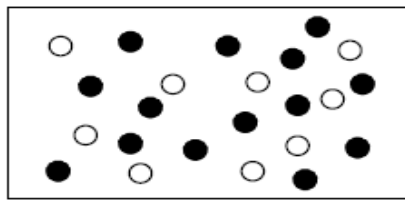
E= Mixture of elements and compounds

C= Mixture of elements

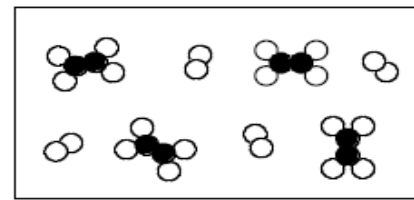
Each circle represents an atom and each different color represents a different kind of atom. If two atoms are touching then they are bonded together. *Then give an example for each (ex. #1 H₂O)*



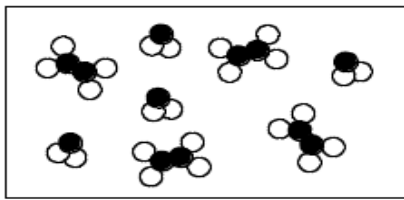
1) _____



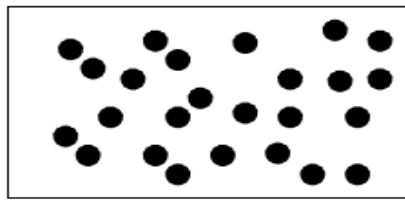
2) _____



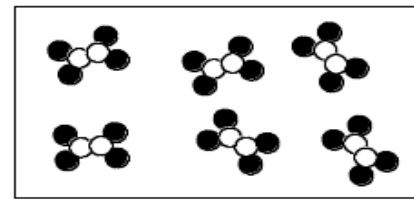
3) _____



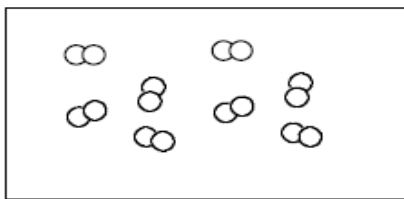
4) _____



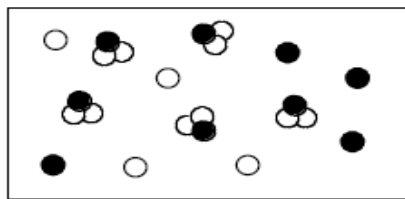
5) _____



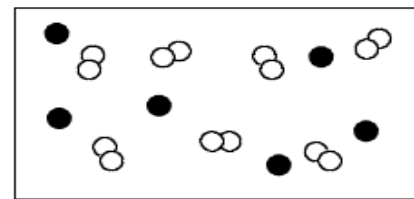
6) _____



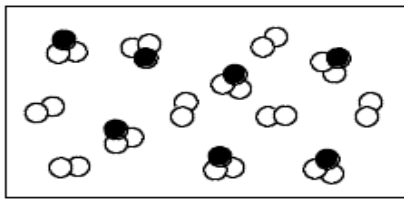
7) _____



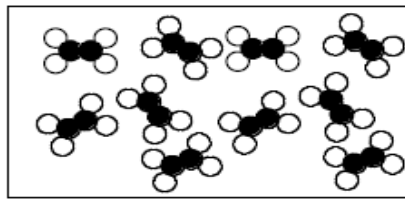
8) _____



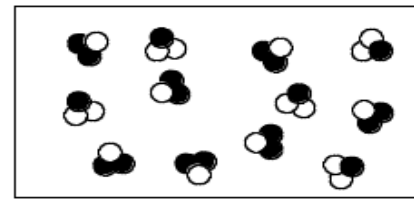
9) _____



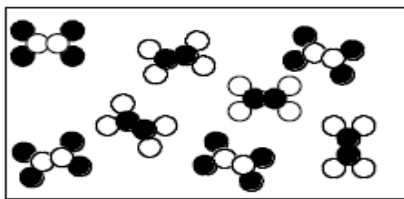
10) _____



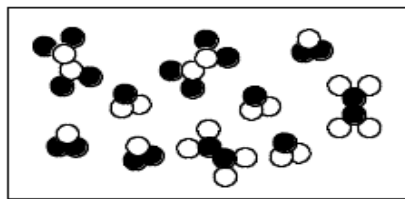
11) _____



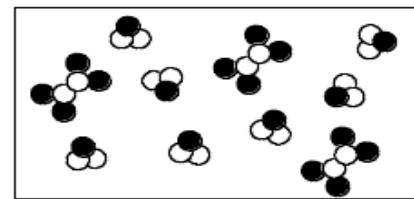
12) _____



13) _____



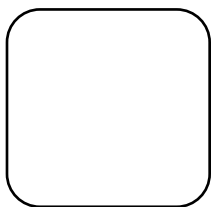
14) _____



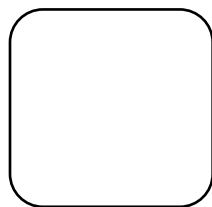
15) _____

Drawing Particle Arrangements

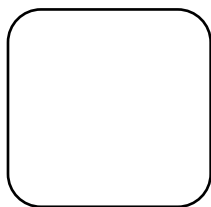
16.) Draw a particle diagram for each of the following below. *Then give an example for each.*



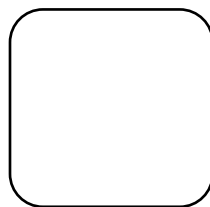
pure diatomic element



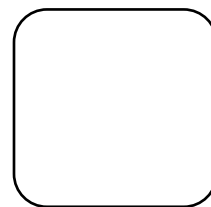
pure diatomic compound



mixture of two elements



mixture of an element & a compound



mixture of two diatomic elements & a compound

REGENTS PRACTICE

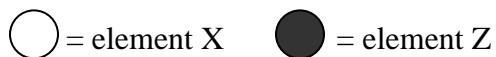
1. Use the following key for the question below:



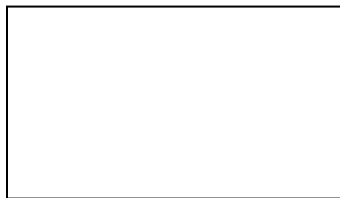
Draw 4 molecules of compound X_2Z in the box on the right



2. Use the following key for the next two questions.



Draw 8 atoms of element X



Draw a Homogeneous mixture of element Z with element X (10 atoms of each element).



ASSESS YOURSELF ON THIS LESSON:

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Practice Packet: UNIT 2 MATTER

LESSON 4: PROPERTIES AND CHANGES OF MATTER

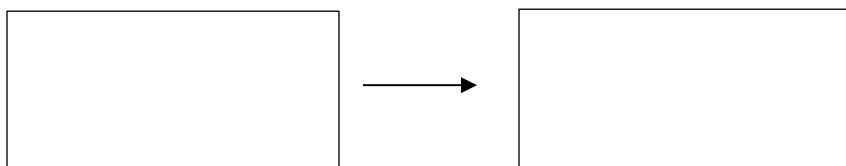
Objective:

- Differentiate between physical and chemical changes
- Determine the phase of a substance @ STP using table S
- Construct particle diagrams for solids, liquids and gases

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

1) Situation	Type of Change (P or C)	Explanation: (choose A or B for each below) A.) (Physical: Still the same substance) B.) (chemical: A new substance formed)
2) Water freezing		
3) Decomposing of a dead organism		
4) Rusting (corroding) of a nail		
5) Melting ice off a windshield		
6) Combustion (burning) of gasoline		
7) $\text{H}_2\text{O (g)} \rightarrow \text{H}_2\text{O (l)}$		
8) $\text{NaCl (s)} \xrightarrow{\text{H}_2\text{O}} \text{NaCl (aq)}$		

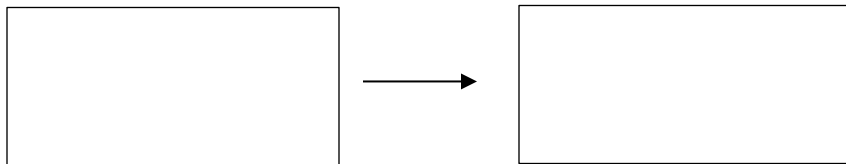
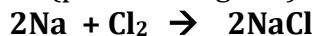
9. Draw a model (particle diagram) for the following change:



Is this a physical or chemical change?

Practice Packet: UNIT 2 MATTER

10. Draw a model (particle diagram) for the following change:



Is this a physical or chemical change?

11. Where can you find STP conditions in your Reference Table? Table _____

12. Standard temperature = _____ °C or _____ K

13. Standard pressure = _____ kPa or _____ atm

14. Using table S in your reference table, what phase of matter would the following be at STP?

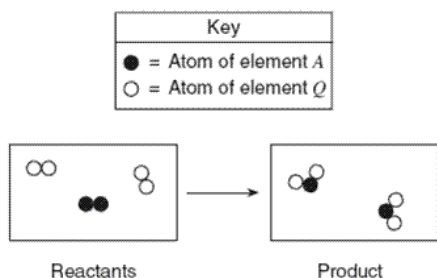
Gallium (Ga)

Lithium (Li)

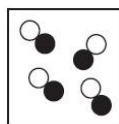
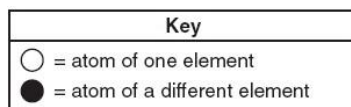
Hydrogen (H)

REGENTS PRACTICE

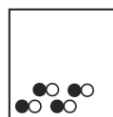
13. The diagram below represents the starting materials (reactants) and ending materials (products) after a change has taken place. Was the change physical or chemical? Explain.



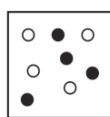
14. Given the particle diagram representing four molecules of a substance:



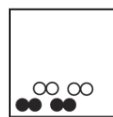
Which particle diagram best represents this same substance after a physical change has taken place?



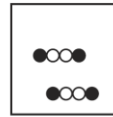
(1)



(2)



(3)



(4)

ASSESS YOURSELF ON THIS LESSON:

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