

Name _____ Date _____ Block _____



You will have approximately 5 minutes at each station to record your answers. You may use your notebook as a reference. **WORK EFFICIENTLY & STAY FOCUSED!**
 'YOU GOT THIS!'

Station 1: Atoms and Elements

1. What are the 3 subatomic particles of an atom?

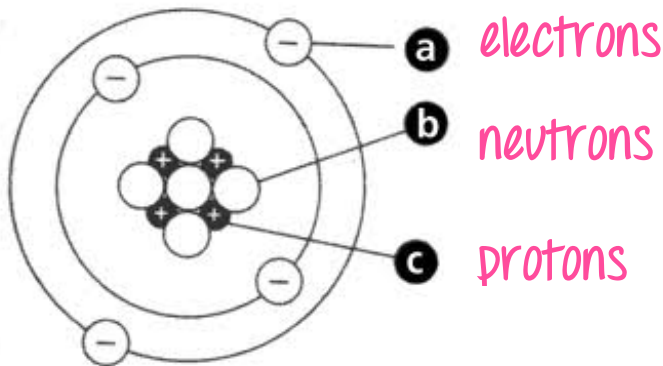
Particle Name	Protons	Neutrons	Electrons
Particle Charge	Positive (+)	Neutral (0) no charge	Negative (-)

2. Complete the paragraph below with the following words:

molecules protons electrons neutrons same patterns

The three subatomic particles that make up atoms are protons, neutrons and electrons. All of the same atoms make up elements. Atoms can be arranged as well defined molecules or repeating crystal patterns.

3. Label a, b and c, of the atomic structure below with the proper terms (hint: look @ #1)



4. Which statement best describes the structure of an atom?

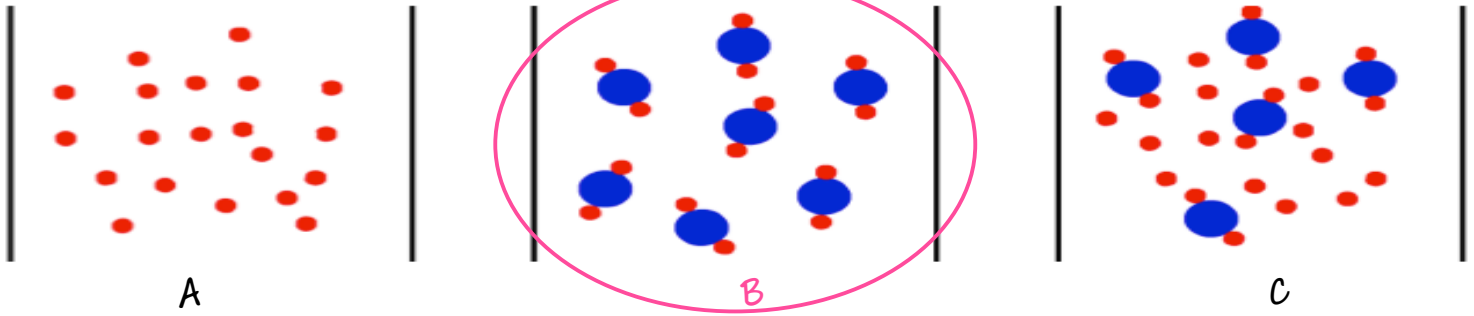
- A. protons and electrons grouped together in a random pattern
- B. protons and electrons grouped together in an alternating pattern
- C. a core of protons and neutrons surrounded by electrons**
- D. a core of electrons and neutrons surrounded protons

5. Which of the following best describes the nucleus of a carbon (C) atom?

- A. a collection of electrons and neutrons
- B. a collection of protons and neutrons**
- C. a group of neutrons only
- D. a group of protons only

Station 2: Compounds and Mixtures

1. True or False: A compound is made up of two or more chemical elements chemically combine. TRUE
2. Which of the following images correctly illustrates a compound (circle your response)?

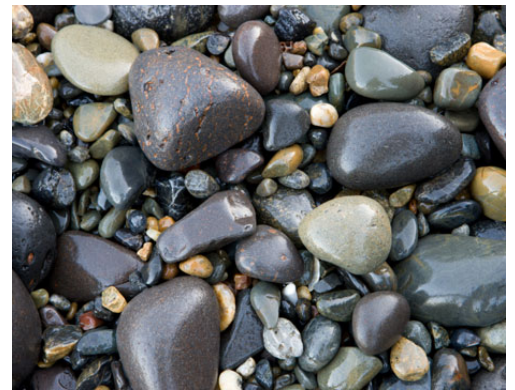


3. Use the following words to complete the sentences:

heterogeneous chemically homogeneous mixtures

When 2 or more elements combine physically, they form chemically mixtures. There are two types of mixtures: heterogeneous and homogeneous mixtures.

4. The image to the right can be classified as what type of mixture? Heterogeneous

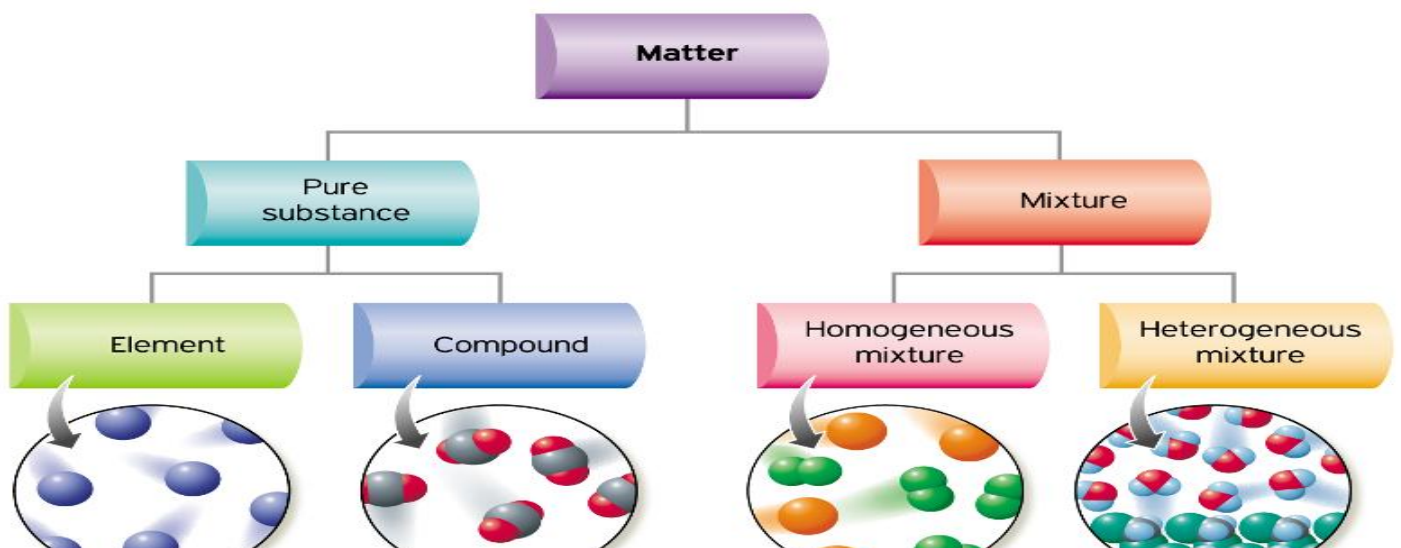


5. Explain why a substance like kool-aid or sweet tea is considered a homogeneous mixture.

Kool-aid and sweet tea are homogeneous mixtures because two or more different substance combine and form a mixture that is uniform throughout. This means that you cannot see individual parts (like in a heterogeneous mixture). Also, homogeneous mixtures are very difficult to separate.

6. Complete the chart below with the following terms

Element	Mixture	Compound	Homogeneous mixture	Matter
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Station 4: Physical Properties + Physical Changes

1. What is a physical change? *Modifying the appearance of an object without changing the chemical substance.*
2. **True** or **False**: Physical changes may be reversible
3. **True** or **False**: A new substance (chemical makeup/matter) is created during a physical change.
4. Describe the process of a solid ice cube changing into water and then into water vapor. What physical changes take place? Explain. *A solid ice cube **MELTS** by adding heat, the result is water. Continually adding heat leads to **BOILING**. When water reaches the boiling point it turns to water vapor. Physical changes (melting and boiling).*
5. What are 5 physical properties that can be observed about matter?
 1. color
 4. luster
 7. density
 2. shape
 5. Polarity
 8. Malleability (metal being pounded into thin sheets)
 3. size
 6. solubility

6. Sort the following

Polarity	Density	solubility	Shape	Size	Length	Luster
Volume	Temperature	Crush	Melt	Freeze	Boil	Texture
Melting point		boiling point		conductivity		

PHYSICAL PROPERTIES			PHYSICAL CHANGES			
Polarity	temperature	size	Crush	melt	freeze	boil
Density	Volume	length				
solubility	Conductivity	luster				
Shape	texture					

7. What is the difference between a physical change and a physical property?
A physical property can be observed without modifying the appearance of the object. A physical change modifies the appearance but NOT the chemical/atomic structure of the object.

Station 5: Chemical Properties + Chemical Changes

1. What is the definition of a chemical property? Any characteristic of a substance that can be observed only when the identity of the substance is changed.

2. List 4 examples of chemical properties

1. reactivity with other chemicals

2. Toxicity

3. Flammability

4. Oxidation states

3. What can be absorbed or produced as the result of a chemical reaction? heat

4. What are 4 ways to chemically change a substance

1. rusting

2. burning

3. exploding

4. rotting

5. baking

6. cooking

5. What is the difference between a chemical property and a chemical change?

A chemical property cannot be observed without changing the substance. A chemical change is an action that takes place to make a new substance. Chemical changes are generally irreversible.

Classify the following as chemical changes or chemical properties

	Chemical Change	Chemical Property
A bicycle rusting	*	
Flammability of a blanket		*
Toxicity of sodium		*
Burning of wood	*	
Sodium reacting with chlorine	*	
Reactivity with other elements		*

Station 6: Synthesizing Properties & Changes

1. How is a chemical change different from a physical change?

A chemical change creates a new substance and is generally irreversible. A physical change does NOT create a new substance and matter can possibly return to its original state.

2. Classify the following as physical changes or chemical changes (put a check or a star).

Change Type	Physical	Chemical
Rusting		*
Boiling	*	
Freezing	*	
Burning		*

3. Classify the following:

EXAMPLE	PHYSICAL PROPERTY	PHYSICAL CHANGE	CHEMICAL PROPERTY	CHEMICAL CHANGE
Water is heated and changed into steam.		*		
Flammability			*	
Density	*			
Wood burns resulting in a pile of ash.				*
Melting point	*			

4. Create ONE visual example for each of the following boxes (reference your foldable!)

Physical Property	Physical Change
Chemical Property	Chemical Change

Station 7: Law of Conservation of Mass

THE LAW OF CONSERVATION OF MASS

According to the Law of Conservation of Mass, "matter cannot be created nor destroyed, only transferred from state to state". That said, the mass of the reactants will equal the mass of the products.

1. Using the information above, which statement is true?

- a. The mass of reactants is greater than mass of products
- b. The mass of reactants is less than mass of products
- c. The mass of reactants is sometimes greater and sometimes lesser than products.
- d. The mass of reactants is equal to mass of products.

2. Which of the following "typically" has more mass in a chemical reaction? The least mass in a chemical reaction? (write your answers below)

solids	liquids	gases
more mass		less mass

3. In a closed container, a student combined baking soda and vinegar. The mass at the beginning of the experiment was 15g of baking soda and 50mL of vinegar. What should the mass at the end of the experiment be?

- a. 15 g/mL
- b. 50 g/mL
- c. 35 g/mL
- d. 65 g/mL

4. An experiment took place in an open test tube. At the beginning of the experiment mass of the reactants was 95 g/mL. At the end of the experiment the mass was 75 g/mL. What is a possible explanation for this?

- a. Measurements were not recorded correctly
- b. A gas was produced
- c. A solid was produced
- d. A liquid was produced.

5. If Jose began an experiment about the Law of Conservation of Mass, which type of container would be best to use if he wanted accurate measurements for reactants before an experiment and products after an experiment?

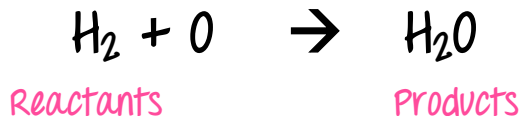
a. a closed container

b. an open container

Station 8: Balancing Chemical Equations

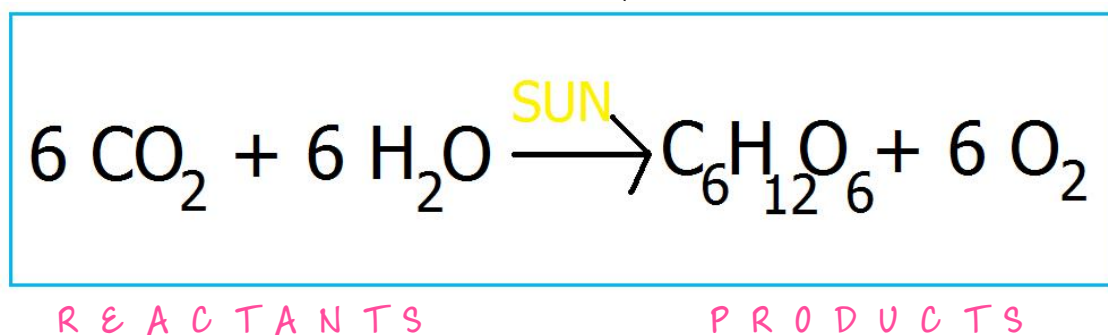
Balancing chemical equations is tricky. You need to make sure you have the same number of elements on both sides of the equation (remember...Law of Conservation of Mass). Let's start with the basics.

1. Look at this chemical equation. Label the *REACTANTS* and *PRODUCTS* (hint: flashcards!)



NOTE: the arrow means "yields" (aka forms, creates, makes).

2. Try this one (label ALL the reactants and ALL the products).



3. Now, when checking to see if an equation is balanced, there must be the same "number" for each letter on BOTH SIDES. If there is a big number in front of a letter, you'll multiply that by the little number behind a letter.

Check to see if the equation above is balanced.

Reactants Side

of C 6

of O 18

of H 12

Products Side

of C 6

of O 18

of H 12

*don't worry if you don't understand this just yet - we'll practice MUCH more next week!

LASTCALL

Can you accurately define + give examples of these words? If so, YOU'RE SET FOR CFA #1

Physical property	Physical change	Density	Solubility
Polarity	Atom	Element	Proton
Compound	Neutron	Group (family)	Mixture
Electron	Non-reactive	Non-metal	Periods
Reactive	Metal	Metalloid	Solids
Liquids	Gas	Atomic mass	Atomic Number