**PREVIEW / REVIEW for Chemistry Unit** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chemical Reactions:** *Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.*

**Key Vocabulary to know:**

\*Chemical Property \*Chemical Change \*Physical Property \*Physical change \*Reactant \* Product \*Density \* Volume \*Mass \*Solubility \*Melting point \* Boiling Point \*Freezing point

\*Atoms \*Molecules \*Compounds \*Electrons \*Chemical Bonds \*Conservation of mass \* Element

\*Chemical Symbol \*Coefficient \*Subscript \*Flammability \*Heterogeneous \*Homogeneous

\*Chemical equation \*Chemical formula \*Model \*Diagram \*Magnetic \*Corrosive

**Part 1:**

**Fill in the blank:**

1. Placing acid on a substance would be a good way to test the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ properties of a substance.
2. You are taking a trip and you want to make sure your suitcase will fit in the trunk of your car, to do this you need to determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of your suitcase.
3. Density is best described as the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per unit of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The formula to solve for density is D = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. You found a sea shell on the beach, you noted that it has a mass of 250g and a volume of 10mL; what is the density of the shell?\_\_\_\_\_\_\_\_g/mL
5. Mass measures how much \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is in an object.
6. Which is denser; water, which has a density of 1g/mL or a plastic cube that has a density of 9g/ml? \_\_\_\_\_\_\_\_\_\_\_\_\_ Based on that information would the cube sink or float in the water? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Flammability is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ property while something rusting is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. If a substance is hazardous that means it could be corrosive, combustible, flammable or cause harm to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. If a substance is reactive with acid, what could you expect to happen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. Mixing sand and gravel is an example of a \_\_\_\_\_\_\_\_\_\_\_\_ change that would create a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mixture.
11. Frying an egg is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ change because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. Water evaporating and ice melting are examples of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changes because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. New substances are always an indicator of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ change.

**Models, explanations and charts:**

1. . Create a t-chart of classifying properties as either physical or chemical and Give examples

of each type of property.

1. Create a Venn diagram to compare and contrast physical changes in matter.
2. When materials burn it is a complex interaction of changes in matter. Are materials burning chemical or physical changes? Make a claim, provide evidence to support your claim and explain WHY your evidence proves your claim.

**Part 2:**

**Conservation of Matter:** *Develop and use a model to describe how the total number*

*of atoms does not change in a chemical reaction and thus mass is conserved.*

**I can:**

* Differentiate between an atom and a compound and explain how atoms combine to form molecules.
* Develop a model to demonstrate how the total number of atoms does not change in a chem. rxn.

**Fill in the blank**

1. Coefficients in a chemical formula or equation \_\_\_\_\_\_\_\_\_\_\_\_\_ anything that is behind them, they also tell you how many \_\_\_\_\_\_\_\_\_\_ of molecules, atoms or compounds you have.
2. Subscripts in a chemical formula or equation \_\_\_\_\_\_\_\_\_\_ be changed, they tell you how many atoms are \_\_\_\_\_\_\_\_\_\_ together
3. Chemical bonds are made by the \_\_\_\_\_\_\_\_\_\_\_ of electrons between atoms
4. Reactants are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Products are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. In a chemical equation, what does the arrow represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. WHY is mass always conserved during a chemical reaction (it is not because the law says so… think critically!) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. In the equation 4Na2O16, how many Na atoms are there? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, how many total atoms? \_\_\_\_\_\_\_\_\_\_\_\_
9. Compounds are made of \_\_\_\_\_\_\_\_\_\_\_\_ or more \_\_\_\_\_\_\_\_\_\_\_\_ elements, molecules are made of 2 or more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, atoms represent pure substance, which are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. During chemical reactions \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are broken and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to form new substances with different properties, but mass is still \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Models, explanations and charts**

1. Write out the law of conservation of mass (matter) in your own words.
2. How can you prove the law of conservation of mass?
3. What does C + O +O → CO2 show? Explain your answer AND create a model for the equation (reactants and products)



1. What are some ways to prove mass is conserved during a chemical change?

**Part 3: ERQ Practice**

1. Use the data table below to complete the questions:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substances**  **Before** | **Density(g/mL)** | **Soluble in water** | **Boiling point (C degrees)** | **Mass (g)** |
| **Vinegar**  **(C2H4O2)** | **1.011** | **Yes** | **100.5** | **5** |
| **Baking Soda**  **(NaHCO3)** | **2.159** | **Yes** | **851** | **10** |
| **Substances After** |  |  |  |  |
| **Sodium Acetate**  **(NaC2H3O2)** | **1.528** | **Yes** | **881.4** | **5** |
| **Water**  **(H2O)** | **1.00** | **N/A** | **100** | **7** |
| **Carbon Dioxide gas**  **(CO2)** | **.00196** | **Yes** | **-78.5** | **3** |

* Has a chemical or physical change occured? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Evidence to support your claim:
* Explain HOW your evidence supports/proves your claim:
* Using the information from the data table create a model (mathematical or atomic) to show that mass is conserved during the reaction.

|  |
| --- |
|  |

* Explain HOW/WHY your model proves that mass has been conserved.