Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Homeroom: \_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_

**Unit Test #2 Study Guide: Structure of Matter**

**Part I: Defining and Measuring Matter**

1. In order for something to be matter, it must have \_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. What measuring tool is used to measure *mass*?



1. What measuring tool is used to measure the *volume of a liquid*?
2. What is the volume of the rock pictured to the right?

**Part II: All Matter is Made of Atoms**

1. Define *atom* in two ways***:***
* The building block of all \_\_\_\_\_\_\_\_\_\_\_\_
* The smallest part of an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that still retains all of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of that element
1. Fill in the *entire* *table* below of the three subatomic particles.

|  |  |  |
| --- | --- | --- |
| **Subatomic Particle** | **Charge** | **Location** |
|  | Positive |  |
|  |  |  |
| Neutron |  |  |

1. What do Cam Newton, Mr. Cody, glacier freeze Gatorade, and an orange pen have in common (other than the fact that they are all awesome!)?

**Part III: Elements vs. Compounds**

*For the following write* ***E*** *for Element or* ***C*** *for Compound:*

1. Water
2. H2O2 (rubbing alcohol)
3. Hydrogen
4. Oxygen
5. Contains chemical bonds between two or more different atoms
6. CaCO3 (chalk)
7. **
8. ZnO (sunscreen)
9. HCl (stomach acid)
10. NaCl
11. (CH3)2CO (Fingernail Polish Remover/Acetone)
12. NH3 (Windex)
13. Chemical symbol
14. Chemical formula
15. Is unable to be divided further by physical or chemical means
16. Has subscripts (If you change the subscript, you change the ratio. If you change the ratio, you change its properties completely!)
17. Is made up of ONE TYPE of atoms

**Part IV: Compounds vs. Mixtures**

*For the following write* ***C*** *for Compound or* ***M*** *for mixture:*

1. C12H25SO4Na (Soap)
2. NaCl (Salt)
3. 
4. NaHCO3 (Baking Soda)
5. Our air
6. Dental amalgam (combo of silver & mercury)
7. 
8. 
9. Fresh-squeezed lemonade
10. 
11. C12H22O11 (Sucrose Sugar)
12. Saline solution
13. Rust formed on a old fence
14. 

 *Fill in the missing blanks in the following chart:*

|  |  |  |
| --- | --- | --- |
|  | **Compound** | **Mixture** |
| Are they made of atoms? |  |  |
| Combination of: | Two or more DIFFERENT elements |  |
| How are they combined? |  | Physically |
| Contain chemical bonds? |  |  |
| Separated by: |  |  |
| Are they completely new substances? |  |  |
| Does changing the ratio change the substance? |  | No. Mixtures are not formed using a specific and definite ratio. |
|  | **Compound** | **Mixture** |
| Do original properties of substances change? | YES! Compounds are new substances! Therefore, they will have new properties. These properties may or may not be similar to the properties of the elements that make them up. |  |
| Additional notes | Abbreviated by *chemical formulas* | Classified as *homogeneous* or *heterogeneous* |

**Part V: Drawing Models (of Atoms, Elements, Compounds and Mixtures)**

1. Draw the *Bohr model* for element fluorine (F).
2. Draw an atomic model for the element fluorine (F).
3. Draw the atomic arrangement for NaF (Toothpaste-*Colgate*)

**Part VI: The Chemical Make-Up of Our Atmosphere**

*Answer the following questions completely about Earth’s atmosphere.*

1. Earth’s atmosphere is a *mixture* of \_\_\_\_\_\_\_\_\_.
2. Which gas makes up most of the Earth’s atmosphere?
3. Approximately what percentage of Earth’s atmosphere is made up of *oxygen*?
4. Approximately what percentage of the Earth’s atmosphere is made up of *nitrogen*?
5. Two gases make up nearly 99 percent of Earth’s atmosphere. What are they?
6. What is the most abundant gas in Earth’s present atmosphere?
7. Draw the atomic arrangement for the mixture of gases in our atmosphere.
8. Label the following pie chart with the correct gases that make up Earth’s atmosphere:

 

9. Fill in the table below with the appropriate percentages for the following gases:

|  |  |  |  |
| --- | --- | --- | --- |
| **Gas** | **Chemical Symbol/Chemical Formula** | **Element or Compound?** | **% of Earth’s Atmosphere** |
| Hydrogen | H2 |  | >1% |
| Oxygen | O2 |  |  |
| Neon | Ne |  | >1% |
| Methane | CH4 |  | >1% |
| Krypton | Kr |  | >1% |
| Nitrogen Oxide | N2O |  | >1% |
| Argon | Ar |  | >1% (~.93) |
| Nitrogen | N2 |  |  |
| Helium | He |  | >1% |
| Carbon Dioxide | CO2 |  | >1%(~.033) |
| Ozone | O3 |  |  |
| Xenon | Xe |  | >1% |

**WHAT CAN YOU BE DOING TO “OWN IT”?**

* Work hard! Hard work coupled with perseverance and smart choices are the biggest factors in determining your future.
* Study our Cornell notes so we can rock it and top it!
* See Coach C or reach out to a peer for tutoring if you need extra help.
* If you understand this, push yourself to higher levels: learn more and help your friends.
* Apply what you are learning to the *real world!* This information is EVERYWHERE around us. I mean, come on, all matter is made of atoms!

**GOOD LUCK!!!**