**Elements, Compounds, and Mixtures**

**NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block :\_\_\_\_\_\_\_\_\_\_\_\_\_**

**PART A**: Read the information on this site <http://www.chem4kids.com/files/atom_intro.html>

and read and answer the following questions:

1. What are atoms compared to and why?
2. List and describe the 3 parts of an atom? Include charge and location.
3. What is an orbital?

**PART B**: Matter can be classified in a few categories. Use this link: <http://www.dummies.com/how-to/content/how-to-distinguish-pure-substances-and-mixtures.html> and complete the chart that is given and define the words in the chart below.

Pure Substance-

* Element-
* Compound-

Mixture-

* Homogenous-
* Heterogenous-

**PART C**: Element Overview

Now go to this link: <http://chemistry.about.com/od/chemistryfaqs/f/element.htm>

1. What is the definition of an element given on this page?

Now go to this link: <http://education.jlab.org/qa/element.html> and answer the questions below:

1. What is the definition of an element given on this Page?

Now Click on the link for “What is the difference between atoms and elements? Or find the link:

<https://education.jlab.org/qa/atoms_and_elements.html> Answer the questions below.

1. Define element
2. Define atom
3. Define molecule
4. Define compound
5. Read the analogy and explain how ice cream scoops can be similar to elements, molecules, and compounds

**PART D**: So now we know that Matter can be either a pure substance or a mixture…Let’s look at **pure substances** first. They can be either elements or compounds. Read the information on this site <http://www.chem4kids.com/files/atom_compounds.html> to help answer the following questions.

1. What is a molecule?
2. What is compound?
3. How are molecules and compounds different?

OK- now use the following link to fill in the chart that helps us figure out the differences between elements and compounds. <http://www.diffen.com/difference/Compound_vs_Element>

|  |  |  |
| --- | --- | --- |
|  | Compound | Element |
| Definition |  |  |
| Distinguishing Features (representation) |  |  |
| Ability to Breakdown (separate) |  |  |
| Types |  |  |
| Composition |  |  |
| Examples (at least 2 ) |  |  |

Molecules and Compounds

Find the link: <https://education.jlab.org/qa/compound.html> and answer the questions below.

1. What is formed when two or more atoms join together chemically? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is formed when two or more different kinds of atoms or elements join together chemically?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is always a molecule, but a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is not always a compound.
4. Provide the chemical symbol for three molecules that are not compounds: \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Name 3 common compounds, using both their chemical symbol and their name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. One molecule of water contains \_\_\_\_\_\_\_\_\_\_\_ hydrogen atoms and \_\_\_\_\_\_\_\_\_\_ oxygen atom.
7. One molecule of carbon dioxide contains \_\_\_\_\_\_\_\_\_\_\_ carbon atom and \_\_\_\_\_\_\_\_\_\_\_\_ oxygen atoms.

**PART E**: MIXTURES

Use the link below to help you answer the following:

<http://www.chem4kids.com/files/matter_solution.html>

1. Is a heterogeneous mixture a solution? How do you know?
2. Define solute.
3. Define solvent.
4. What are the steps to making a solution?
5. Can anything change solutions? Be specific!
6. What is solubility?

#23-26 Now onto Mixtures. Let’s draw some pictures to help us. Use this website and fill in the pictures below.

<http://www.chem.purdue.edu/gchelp/atoms/elements.html>

Elements have only ONE type of atom. Lets draw what the elements in the pictures look like and use COLORED PENCILS! Notice each element picture only has ONE color.

Mixture of Argon,

Nitrogen and Water

Argon Nitrogen Water (H2O)

Now lets draw what the mixture looks like when we put all 3 of these things together. Remember a mixture is 2 or more different elements or compounds PHYSICALLY mixed together (not stuck to each other).

Now the compound. Notice it has 2 colors that are stuck to each other

Take the quiz at <http://www.funtrivia.com/playquiz/quiz148865110c980.html> and record your answers in the blanks provided.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_