Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour \_\_\_

Mixtures vs pure substances…

Look around you. What do you see? A room filled with people, desks, and windows? Everything you see around you is *matter*. Matter is anything that has weight and takes up space.

As you probably already know, matter is made up of tiny particles called *atoms*. Atoms are so tiny that they cannot be seen – not even with the most powerful microscope.

There are different kinds of atoms. Some matter has *only one* kind of atom. Matter that has only one kind of atom is called an *element*. Some examples of elements are gold, oxygen, iron, and potassium.

**Most matter**, however, is made up of *two or more* different kinds of atoms *linked together*. This kind of matter is called a *compound*. In elements and compounds, the atoms link together to form *molecules*.

Water (H2O) is a common compound. Some other compounds are table salt (NaCl), alcohol (C2H5OH), and Carbon Dioxide (CO2). Even though they have more than one element compounds are still PURE SUBSTANCES!!!!! Minerals are pure substances; some examples are Iron Oxide (FeO2), Calcite (CaCO3) and Gold (Au).

Some elements and compounds are found “alone”. They are not mixed with anything else. The salt in a salt shaker, for example, is a compound. It is salt “alone”. No other substance is mixed in with it. If you add pepper, or anything else to the salt, it is no longer salt “alone”. It is part of a *mixture*. Even though compounds are made of different elements, they are NOT mixtures!!

A mixture, then, is made up of two or more molecules *close together*. The parts may be different in any way. The parts can be *elements* or *compounds (both of these are pure substances)*. Many things you know are mixtures. Tossed salads, salad dressing, coffee, tea, even soft drinks are mixtures and of course ROCKS are mixtures as well.

As you know, matter can be a *solid, liquid,* or *gas*. These are called the three *states of matter*. Mixtures may be of solids only, liquids only, or gases only. Or, mixtures may be made of different combinations of solids, liquids, and gases.The air you breathe and the tap water you drink are mixtures. Air is a mixture of several gases. Drinking water has air and minerals mixed in with it.

True or false

1. \_\_\_\_\_\_ All matter is made up of atoms.
2. \_\_\_\_\_\_ A compound has only one kind of atom.
3. \_\_\_\_\_\_ An element has only one kind of atom.
4. \_\_\_\_\_\_ There are more compounds than elements.
5. \_\_\_\_\_\_ Mixtures are made of substances that are alike.
6. \_\_\_\_\_\_ Table salt is a mixture.
7. \_\_\_\_\_\_ The air is a mixture.
8. \_\_\_\_\_\_ Tap water is a mixture.
9. \_\_\_\_\_\_ Oxygen is a compound.
10. \_\_\_\_\_\_ We can see atoms.
11. Is Kool-Aid a mixture or pure substance? Explain .

**Completing Sentences:** One of these may be used twice.

atoms gases states of matter element liquid solid mixture molecules air minerals gas compound

1. The three states of matter are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Every bit of matter is made up of tiny \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Matter that has only one kind of atom is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Matter that has two or more different kinds of atoms linked together is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Compounds link together to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. Two or more different things close together is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
7. A mixture may contain any combination of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. A mixture that is all around us is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
9. Air is a mixture of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. Tap water has several \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in it.

Matching:

1. \_\_\_\_ element a) has two or more different kinds of atoms linked together
2. \_\_\_ compound b) mixed in with tap water
3. \_\_\_ mixture c) a mixture of gases
4. \_\_\_ gases and minerals d) different things close together
5. \_\_\_ air e) has only one kind of atom

Decide if the following are mixtures or pure substances: You may write M or PS

1. \_\_\_\_ Hot oatmeal in the morning
2. \_\_\_\_ the salt in a shaker
3. \_\_\_\_ a diamond on a ring
4. \_\_\_\_ Ms. Crownhart’s tea
5. \_\_\_\_ Helium Gas
6. \_\_\_\_ Ranch Dressing
7. \_\_\_\_ Monster Drinks
8. \_\_\_\_ Distilled Water (pure H2O)
9. \_\_\_\_ Chocolate Chip Cookie
10. \_\_\_\_ Elmer’s Glue
11. \_\_\_\_ Oxygen in a divers tank
12. \_\_\_\_ Graphite (carbon) in your pencil
13. \_\_\_\_ The air in the classroom
14. \_\_\_\_ A loaded baked potato
15. \_\_\_\_ the water in the fish tank
16. \_\_\_\_ a granite rock (by windows)
17. \_\_\_\_ Carbon Dioxide gas (CO2)
18. \_\_\_\_ Nickel (the element, Ni)
19. \_\_\_\_ Gasoline
20. \_\_\_\_ Magnesium Metal