

## Mixtures vs Pure Substances

Look around you. What do you see? A room filled with people, desks, 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 only different kinds of atoms. Some matter has *only one* kind of atom. Matter that has only one kind of atoms is called an *element*. Some examples of elements are gold, oxygen, iron, and hydrogen.

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 a compound, the atoms are linked together to form *molecules*. Water is a common compound. Some other compounds are salt, alcohol, and chalk.

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*.

A mixture, then, is made up of two or more different things *close together*. The parts may be different in any way. The parts can be elements or compounds. Many things you know are mixtures. Tossed salads, salad dressing, coffee, tea, even soft drinks are mixtures.

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 water you drink are mixtures. Air is a mixture of several gases. Drinking water has many 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. \_\_\_\_\_ Water is a mixture.
9. \_\_\_\_\_ Oxygen is a compound.
10. \_\_\_\_\_ We can see atoms.
11. Is Kool-Aid a mixture or pure substance? Explain.



Complete The Sentence:

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 a(n) \_\_\_\_\_.
4. Matter that has two or more different kinds of atoms linked together is called a(n) \_\_\_\_\_.
5. Atoms link together to form \_\_\_\_\_.
6. Two or more different things close together is called a(n) \_\_\_\_\_.
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. Water has several \_\_\_\_\_ in it.

Matching:

- |                            |   |
|----------------------------|---|
| 11. ___ element            | a) has two or more different kinds of atoms linked together |
| 12. ___ compound           | b) mixed in with water                                      |
| 13. ___ mixture            | c) a mixture of gases                                       |
| 14. ___ gases and minerals | d) different things close together                          |
| 15. ___ air                | e) has only one kind of atom                                |

Decide if the following are mixtures or pure substances (M or P):

16. \_\_\_ Hot oatmeal in the morning
17. \_\_\_ the salt in a shaker
18. \_\_\_ a diamond on a ring
19. \_\_\_ Ms. Crownhart's tea
20. \_\_\_ Helium Gas
21. \_\_\_ Ranch Dressing
22. \_\_\_ Monster Drinks
23. \_\_\_ Distilled Water
24. \_\_\_ Chocolate Chip Cookie
25. \_\_\_ Elmer's Glue
26. \_\_\_ Oxygen in a divers tank
27. \_\_\_ Graphite in your pencil
28. \_\_\_ The air in the classroom
29. \_\_\_ A loaded baked potato
30. \_\_\_ the water in the fish tank
31. \_\_\_ a piece of obsidian
32. \_\_\_ chocolate pudding
33. \_\_\_ Nickel
34. \_\_\_ Gasoline
35. \_\_\_ Magnesium Metal