

NAME _____ SECTION _____

PARTNER(S) _____ DATE _____

KINDS OF MATTER

Work in groups of four (or less if specified by the instructor). Each group should obtain a set of four vials with the Roman numerals I and II on the lids.

1. Each of the vials marked I contains a sample of the simplest kind of matter, the *elements*. Chemists represent the smallest unit of an element that acts like that element, an *atom*, with chemical *symbols*. The symbol for each element is written on the vial. The symbol, in addition to standing for a single atom, also stands for a collection of atoms of that element. You would need 115 vials to have a sample of all the known elements. Some additional samples of elements are on the front lab table in vials marked with I.

Examine your samples marked I. In each of the bottle diagrams below, write the symbol and 3 or 4 physical properties for the **element**.



2. The vial marked II contains a sample of another kind of matter, a *compound*. Chemists represent compounds by *formulas*. The formula for the compound is written on the vial.

Elements and compounds are both referred to as *pure substances*.

Write the formula for this **compound** in the bottle on the right. Examine the compound and write 3 or 4 physical properties under the formula.



From the *formula alone*, what can you say about the composition of this compound?

From the physical properties alone, could you have determined the identity of the elements that are combined to make up this **compound**? Explain your answer.

What general statement can you make about the properties of elements when they combine to form compounds?

Make an attempt at an explanation for the small number written below one of the symbols.

Place a very small amount of the three elements from the vials marked I, into a small empty beaker or bottle.

Draw a picture of what you made in the bottle at the right and label it.

Did you make the compound that is the chemical combination of these three elements? Explain your answer.



The matter in the above bottle is an example of the third and most numerous kind of matter, **mixtures**.

If you add more of the second element into the bottle would you change the identity of the mixture in the bottle? _____

How could you easily retrieve the first element from the mixture you have made?

Could you use the same technique for removing that element from the compound in vial II? Explain.

In your notebook, write definitions of element, compound, mixture, atom, symbol, and formula. Include examples of each.