

## Lab - Matter Models

Name: \_\_\_\_\_

**Purpose:** To draw pictures of what we believe atoms and molecules look like in order to better help us picture mixtures on the atomic scale.

**Introduction:** In this activity, we will develop visualizations of what atoms and molecules look like. There is no microscope in the world that can allow us to see an atom or molecule. However, we should be able to make drawings/ representations of what different combinations of atoms and molecules based on a few principles.

1) Atoms and molecules are extremely small, but can be represented by circles, other shapes and letters.

2) Not all atoms at the molecular level would be the same size, or perhaps even the same color.

3) Compounds would exist when two different atoms are in contact with one another.

1) Draw a model of a homogeneous mixture of three different elements. At least one of the elements should be diatomic.

2) Draw a model of each of the following samples of matter.

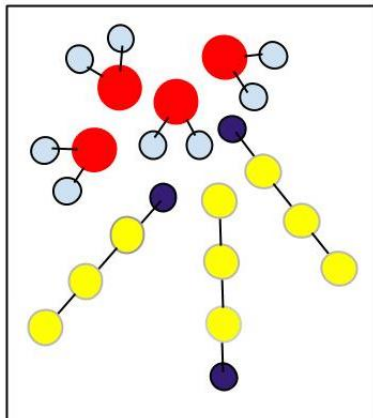
a) A mixture of gaseous elements X and Z.

c) A four atom compound of X and Z

b) A two atom compound of X and Z

d) A homogeneous mixture that has a two atom compound of L and R, and a compound composed of two atoms of D and one atom of T.

3) What kind of matter does the following picture represent? Explain your reasoning.



4a) Is it possible to draw a model of an element that is also a molecule? Explain.

b) Is it possible to draw a model of a compound that is also an atom? Explain.

5) The element iodine has a greater density in the solid than in the gaseous state. Draw a model for each state that shows the difference in these two states. Iodine is a two-atom element.

6) Draw a model of a homogenous mixture of an element and two compounds, all of which are molecules, and none of which have the same number of atoms in the respective molecules.

7) You have been interpreting and creating two-dimensional models of three-dimensional molecules.

a) What are the limitations of the two-dimensional representations?

b) How could you enhance the drawings to indicate that the objects you are modeling are actually three-dimensional?

c) Give an example of some materials that you could use to make three-dimensional models.

8) Two students are asked to draw a model of a homogeneous mixture of an element and a compound. The two diagrams drawn are below. Which student drew an appropriate model? Explain.

