

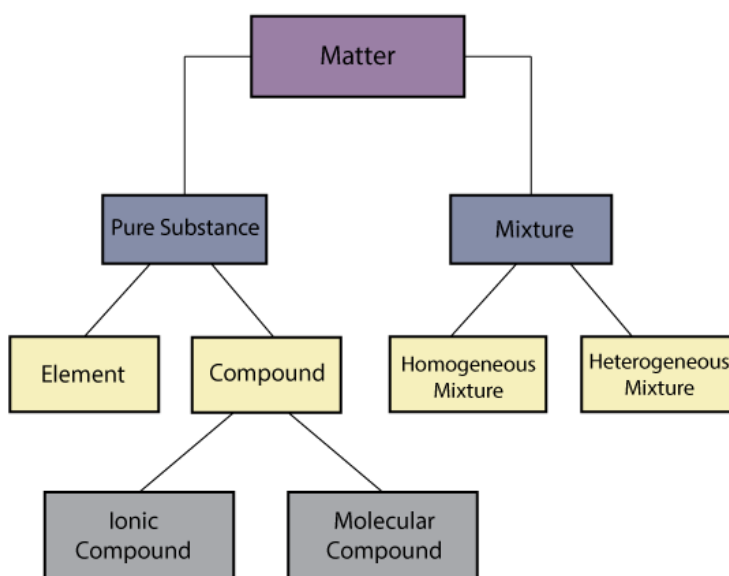
# PARTICLE DIAGRAM ACTIVITY

## INTRODUCTION

In this activity, you will demonstrate your knowledge of the different types of particles by drawing diagrams to model different substances.

Recall that matter can be classified into pure substances and mixtures. Pure substances are either elements, which can be made up of atoms or molecules, or compounds, which are made up of either molecules (in molecular compounds) or formula units (in ionic compounds).

Mixtures are composed of two or more pure substances.



## LEARNING GOALS

- Classify a substance as either a pure substance (element or compound) or a mixture
- Write the chemical formula for elements and compounds (both ionic and molecular)
- Represent the different types of particles using visual models
- Represent the different states of matter using visual models

## INSTRUCTIONS

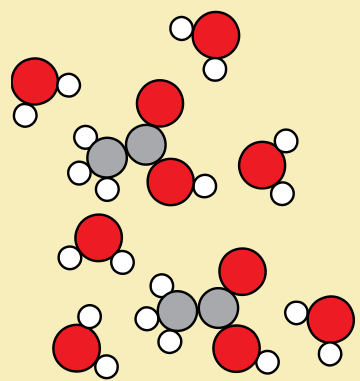
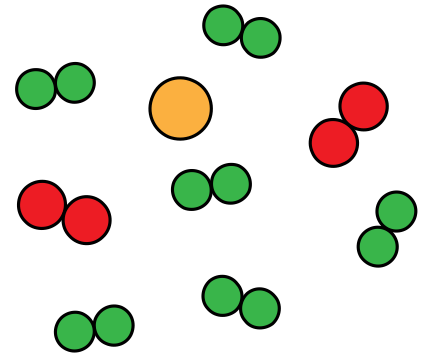
Complete the chart below for each of the following substances. Identify the type of substance as either an element, an ionic compound, a molecular compound, or a mixture, and then write the chemical formula for that substance. If the substance is a mixture, write the formulae for all of the components of the mixture. Identify the type(s) of particle(s) that make up the

substance (i.e. atom, molecule, formula unit). Finally, draw a diagram of the substance using **at least five** particles. Keep in mind when drawing your models the state of matter of each substance and the size of the different atoms/ions. Be sure to represent atoms of different elements using various colors or symbols. On a diagram of an ionic compound, indicate the ion charge of the different ions within the formula unit. On diagrams where a single particle is hard to identify, such as those where ionic compounds or other solid substances are illustrated, circle or highlight one particle. The first substance, liquid water, is provided as an example. The first substance, liquid water, is provided as an example.

TABLE OF SUBSTANCES

Substance	Substance Type	Chemical Formula(e)	Particle Type	Model
Water (l)	Molecular compound	H <sub>2</sub> O	Molecule	
Propane (g)	Molecular compound	C <sub>3</sub> H <sub>8</sub>	Molecule	
Iodine (s)	Element	I <sub>2</sub>	Molecule	

Magnesium chloride (s)	Ionic compound	$MgCl_2$	Formula Unit	
Silver (pure)(s)	Element	Ag	Atom	
Rubbing alcohol (l)	Molecular Compound	$C_3H_8O$	Molecule	
Copper (s)	Element	Cu	Atom	

Vinegar (aq)	Mixture	$C_2H_4O_2$ , $H_2O$	Molecule	
Air (g)	Mixture	$N_2$ , $O_2$ , Ar, other trace gases	Molecule, atom	
Neon (g)	Element	Ne	Atom	