

# Gumdrop Elements, Molecules, and Compounds

**S8P1. Students will examine the scientific view of the nature of matter.**

- a. Distinguish between atoms and molecules.
- b. Describe the difference between pure substances (elements and compounds) and mixtures.

Atoms - small particles that make up elements and compounds

Molecules - two or more atoms bonded together

Elements - molecules with only one type of atom

Compounds - two or more different types of atoms bonded together

Covalent bond - sharing of a pair of electrons between two atoms

- Occurs between two nonmetals

Ionic bond - transfer of electrons to create ions (charged particles)

- Occurs between a metal and a nonmetal

## Materials:

Paper Towel

Toothpicks

Gumdrops

Colored pencils

## Procedure:

1. Color the candy key according to the gumdrops provided.
2. For each molecule/compound listed in the table you will need to:
  - A. List the names of the atoms involved
  - B. Identify the number of each atom in the molecule
  - C. Identify the atoms as either metal or nonmetal
  - D. Identify the type of bond (ionic or covalent)
  - E. Make the gumdrop model
  - F. Color the model in the table

(You need to take apart some models to make other molecules. But make sure you have received the teacher's initials next to the model before you take it apart. For instance, you need to make  $\text{CH}_4$  and  $\text{CO}_2$  with the same carbon molecule.)

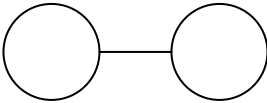
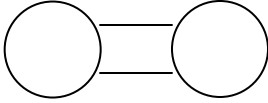
3. After you have completed all of the models, you must answer the questions on the back of the data table to ensure comprehension of the material.

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

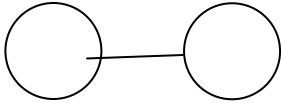
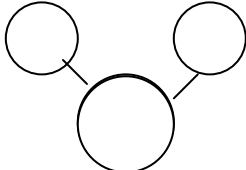
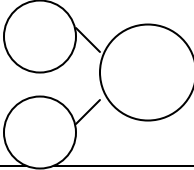
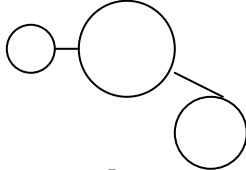
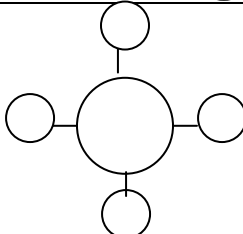
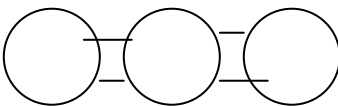
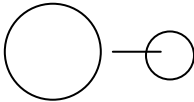
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## Element/Molecule Models

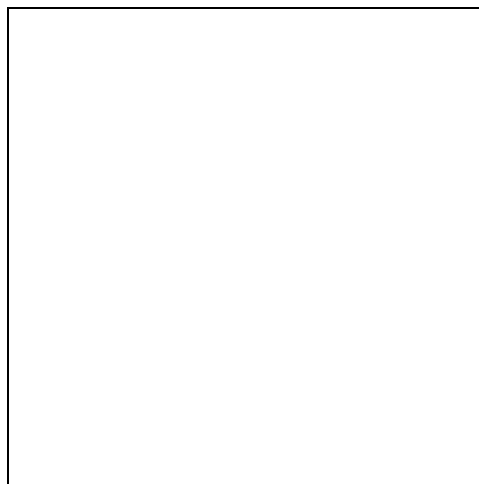
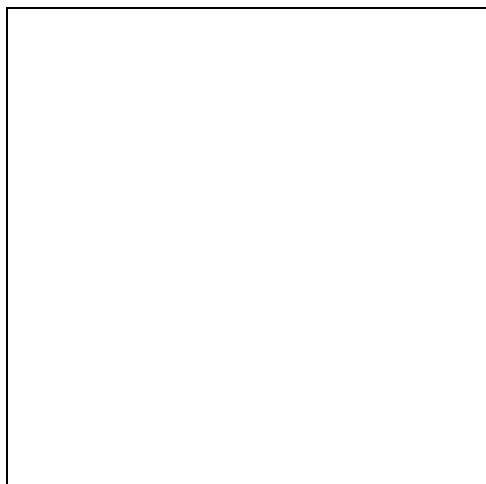
Substance	Formula	Atom Names	# of Atoms	M or NM	Molecule Model	Type of bond
Hydrogen gas	H <sub>2</sub>					
Oxygen gas	O <sub>2</sub>					

## Compound/Molecule Models

Substance	Formula	Atom Names	# of Atoms	M or NM	Model	Type of bond
Salt	NaCl					
Water	H <sub>2</sub> O					
Sodium Oxide	Na <sub>2</sub> O					
Sodium hydroxide (Lye)	NaOH					
Methane	CH <sub>4</sub>					
Carbon dioxide	CO <sub>2</sub>					
Hydrochloric acid	HCl					

Post-Lab Questions:







1. What small particle makes up all substances?
2. Which is larger, an atom or a molecule? Explain.
3. How is a compound different from a molecule?
4. Are all molecules, compounds? Explain.
5. Draw a Bohr model of an oxygen atom in first box and a hydrogen atom in the second.



6. Looking at the models above, explain why are two hydrogen atoms bond to an oxygen atom to make a stable water molecule? (Hint: Look at the valence electrons)
7. One of the properties of a pure substance it that they always exist in fixed proportions.
  - How many hydrogen atoms are needed to form 5 water molecules? \_\_\_\_\_
  - How many oxygen atoms are needed to form 5 water molecules? \_\_\_\_\_
8. What is an ionic bond? What two substances form ionic bonds?
9. What is a covalent bond? What two substances for a covalent bond?
10. Answer the Essential Question: How do compounds and molecules form?

### Candy Compounds - Candy Key







Count the number of gumdrops you have for each color and match to the key. Use a crayon or colored pencil to color each gum drop. Match the colors to the numbers!

 4 - Hydrogen     3 - Chlorine     2 - Oxygen  
 2 - Sodium     1 - Carbon     1 - Calcium

Names: \_\_\_\_\_

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