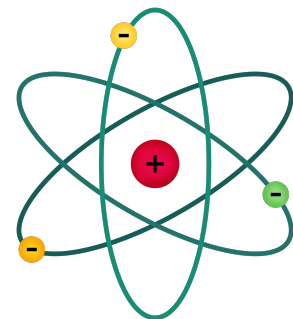


MOLECULE BUILDER



BACKGROUND

Atoms are the basic building blocks of matter. An atom is a **single** particle of any element. We find information about elements from the **periodic table**. The periodic table tells us which atoms will likely **bond** together to make molecules. Molecules consist of **two or more** atoms bonded together.

PURPOSE

The purpose of this activity is to learn how atoms can bond together to form molecules and ionic compounds.

MS.PS1.1

I can... develop a model for the atomic composition of simple molecules and extended structures.

MATERIALS/KEY

1. White gumdrop = oxygen (O)
2. Red gumdrop = hydrogen (H)
3. Purple gumdrop = carbon (C)
4. Green gumdrop = nitrogen (N)
5. Yellow gumdrop = sodium ion (Na⁺)
6. Orange gumdrop = chlorine ion (Cl⁻)
7. Toothpicks = bonds between atoms

VOCABULARY

Atom – the smallest unit of matter

Element – a pure substance that is made from a single type of atom

Molecule – two or more atoms bonded together

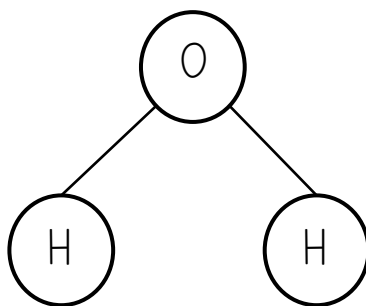
Ion – an atom or molecule with a positive or negative charge

Bond – the force or connection that holds atoms together

DIRECTIONS

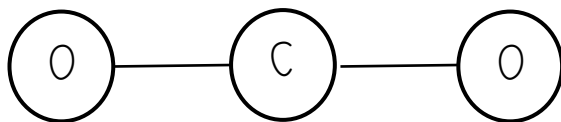
Build each of the following molecules using the gumdrops and toothpicks. Follow the key and answer the questions as you build your molecules.

Create a Water (H_2O) Molecule



1. How many atoms make up a water molecule? _____
2. Which elements are in a water molecule? _____
3. What do the toothpicks represent? _____
4. Is this a neutral molecule or an ionic compound? _____

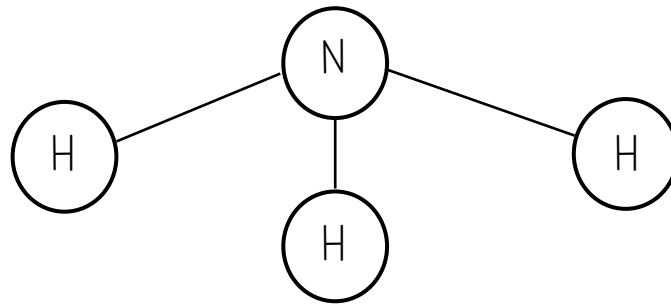
Create a Carbon Dioxide (CO_2) Molecule



1. How many atoms make up a carbon dioxide molecule? _____
2. Which elements are in a carbon dioxide molecule? _____
3. Is this a neutral molecule or an ionic compound? _____
4. How do you know? _____

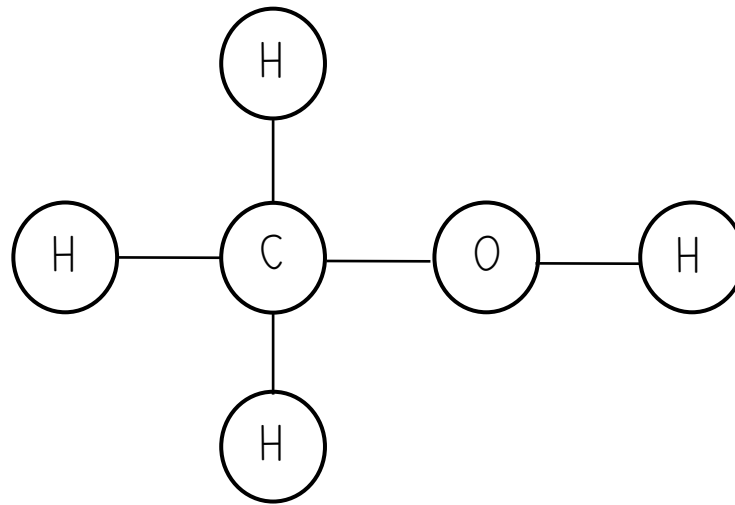
5. What is carbon dioxide used for? _____

Create an Ammonia (NH_3) Molecule



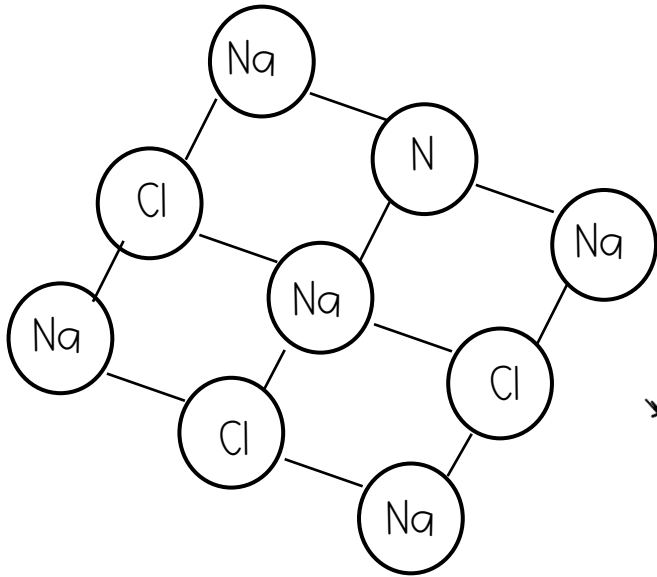
1. How many atoms make up an ammonia molecule? _____
2. Which elements are in an ammonia molecule? _____
3. What is ammonia commonly used for? _____
4. Is ammonia safe to consume? _____

Create a Methanol (CH_4O) Molecule



1. How many atoms make up a **methanol** molecule? _____
 2. Which elements are in a **methanol** molecule? _____
 3. What is methanol commonly used for? _____
-

Create a Sodium Chloride ($NaCl$) Molecule

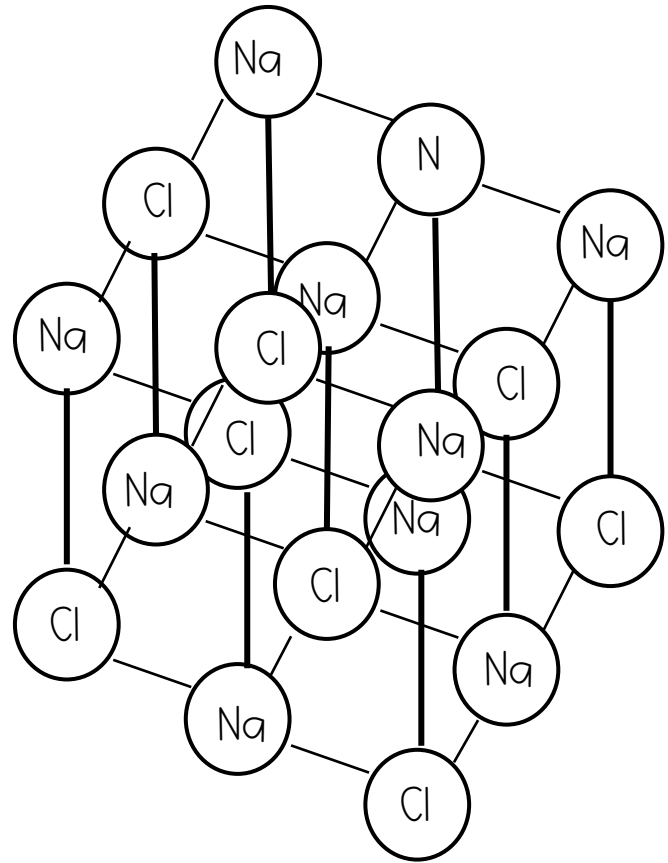


STEP 1

Make 3 sheets that look like this! One must have an **opposite** pattern as the other two.

STEP 2

Stack the 3 sheets and attach them using toothpicks.



Ionic compounds are created when there is a **transfer** of electrons from one atom to another forming a molecule. Table salt forms a **crystalline** shape because of the way the atoms interact with each other, causing a specific **arrangement**.

1. Why does table salt form a crystal? _____

2. Where do you commonly see $NaCl$ in everyday life? _____
