



Marshmallow Molecules



1. Get a white piece of printer paper. Fold it into quarters (4 sections). You will also need some glue and your zip lock bag with marshmallows and toothpicks.
2. Divide your paper into four sections. Label the sections Elements, Molecules, Compounds, and Mixtures. Write these as titles at the top-center of each section (not in the middle of the section, write the titles at the top)
3. In this activity, the different colored marshmallows represent atoms and toothpicks represent bonds between atoms.
4. **Break the toothpicks in half. Do NOT use full toothpicks. They will not fit on the page. Break the toothpicks in half.**
5. Each element will be color coded. Oxygen is orange. Carbon is green. Chlorine is pink. Hydrogen is yellow. Sodium (Na) is also green. These colors should be represented correctly in each section. You will need a total of 8 orange, 13 yellow, 5 green, and 2 pink.
6. In the elements section of the paper, glue on one oxygen, carbon, chlorine, hydrogen, and sodium atom (marshmallow). Under each marshmallow, label it with its element name.
7. In the element section, under the marshmallows you just glued, write "Other Examples:". Look at the Periodic Table, list 3 other kinds of elements next as your "Other Examples".
8. In the Molecules section, use marshmallows and toothpicks to create a Hydrogen diatom (H_2). A hydrogen diatom occurs when one hydrogen atom bonds to another hydrogen atom. To do this, take a yellow marshmallow and connect it to another yellow marshmallow with a small toothpick. Glue this molecule in the Molecule section and label it "Hydrogen Diatom".
9. In the Molecules section, use the marshmallows and toothpicks to create an Oxygen diatom (O_2). An oxygen diatom molecule occurs when one oxygen atom bonds to another oxygen atom. Oxygen (O_2) is unique because it is formed with a double bond. There are four outer shell electrons being shared. To do this, take an orange marshmallow and connect it to another orange marshmallows with **two** small toothpicks to show the double bond. Glue this molecule in the Molecule section and label it "Oxygen Diatom".
10. In the Molecules section, use the marshmallows and toothpicks to create a Water molecule (H_2O). A water molecule is formed when one oxygen atom bonds with 2 hydrogen atoms. As you read in the notes page, a water molecule is in the shape of a triangle with the oxygen in between the hydrogen molecules. To do this, take an orange marshmallow and stick a yellow marshmallow to two sides of the orange molecules with one small toothpick each. Make sure it forms a triangle shape. Important: There should not be a toothpick that connects the two yellow marshmallows. Glue the molecule in the Molecule section. Label this molecule Water.

11. In the Molecule section, under the marshmallows you just glued, write "Other Examples:". Using a device, look up some other names of molecules. List three other kinds of molecules next as your "Other Examples".
12. In the Compound section, make another Water molecule. Remember, all compounds are also molecules. So, water can be located in the Molecule and the Compound section. In the Compounds section, use the marshmallows and toothpicks to create a Water molecule (H_2O). A water molecule is formed when one oxygen atom bonds with 2 hydrogen atoms. As you read in the notes page, a water molecule is in the shape of a triangle with the oxygen in between the hydrogen molecules. To do this, take an orange marshmallow and stick a yellow marshmallow to two sides of the orange molecules with one small toothpick each. Make sure it forms a triangle shape. Important: There should not be a toothpick that connects the two yellow marshmallows. Glue the molecule in the Compound section. Label this compound Water.
13. In the Compound section, create a carbon dioxide (CO_2) molecule. Carbon dioxide is formed when a carbon atom is double bonded to two oxygen atoms. To do this, take a green marshmallow and stick two small toothpicks to connect it to an orange marshmallow. Then, on the opposite side, stick two small toothpicks to connect it to another orange atom. This molecule should have marshmallows all in a straight line. Glue the molecule in the Compound section. Label this compound Carbon Dioxide (CO_2).
14. In the Compound section, create a methane (CH_4) molecule. Methane is formed when one carbon atom bonds to four hydrogen atoms. The key is that the carbon is connected to each of the hydrogens. To do this, take a green marshmallow and stick four small toothpicks into it (one on each side). It should look like an x or a + sign. Then, stick a yellow marshmallow on the end of all of the toothpicks. Glue the molecule in the Compound section. Label this compound Methane (CH_4).
15. In the Compound section, under the marshmallows you just glued, write "Other Examples:". Using a device, look up some other names of compounds. List three other kinds of compounds next as your "Other Examples".
16. In the mixtures section, create salt water. Salt water occurs when salt dissolves in water. These molecules mix, but do not bond together. To do this, make a salt molecule and a water molecule and simply sit them next to each other. To make a salt molecule (NaCl) take a green marshmallow and connect it with a small toothpick to a pink marshmallow. Create a water molecule just as you have in the previous sections (Remember, it's a triangle!). Glue the salt molecule and the water molecule next to each other. Do not add a toothpick that connects them! Label it Salt Water.
17. In the Mixture section, under the marshmallows you just glued, write "Heterogeneous Mixtures:" and "Homogeneous Mixtures:". Using a device look up some other names of heterogeneous and homogeneous mixtures. List three examples of each.
18. Show Mrs. Roehm your poster. Show Mrs. Roehm your poster.