

Marshmallow Molecules



Grade Level: Middle School, 6th-8th

Content Area: Physical Science – Molecular Arrangement

Presented by: Torey Getz

Lesson Overview

- Using marshmallows and toothpicks, you will be able to develop models of molecular structures. The marshmallows will represent atoms and the toothpicks will represent bonds.
- You will learn about different types of matter, phase changes, physical properties, and factors that affect physical properties.

Essential Questions

- How do particles combine into new substances?
- What evidence can show how the physical and chemical properties of the substances change?

Materials Needed

- Colored Marshmallows – about 28
 - orange(8), pink(13), green(5), yellow(2)
- Toothpicks – at least 14
- Piece of paper/cardstock
- Pencils, markers, crayons, etc.



Time to Engage

In the next slide, let's get a refresher on some major chemistry concepts and see what we already know!

What do you know right now?

First, check out this video!

- <https://www.youtube.com/watch?v=QXT4OVM4vXI>
- This video will hopefully give you a nice review of some major chemistry concepts.

Then, reflect on what you know.

- What is the smallest component of an element?
- How are elements organized in the periodic table?
- What do the particles look like in elements, molecules, compounds, and mixtures?

Possible Answers to Previous Questions

- What is the smallest component of an element?
 - an atom; consists of the nucleus, protons, and neutrons
- How are elements organized in the periodic table?
 - Within the periodic table, elements are put into groups of similar properties; highly reactive metals, less reactive metals, highly reactive nonmetals, and non-reactive gases
- What do the particles look like in elements, molecules, compounds, and mixtures?
 - Consists of atoms and bonds, but are formed in different ways

Now to Explore & Explain

In the next slide, we will talk about the important points and vocabulary to learn for this lesson!

Quick Vocabulary!

[Blank box for definition]

- A substance whose atoms all have the same number of protons; all atoms have the same atomic number

[Blank box for definition]

- A particle made up of two or more atoms that are chemically bonded together

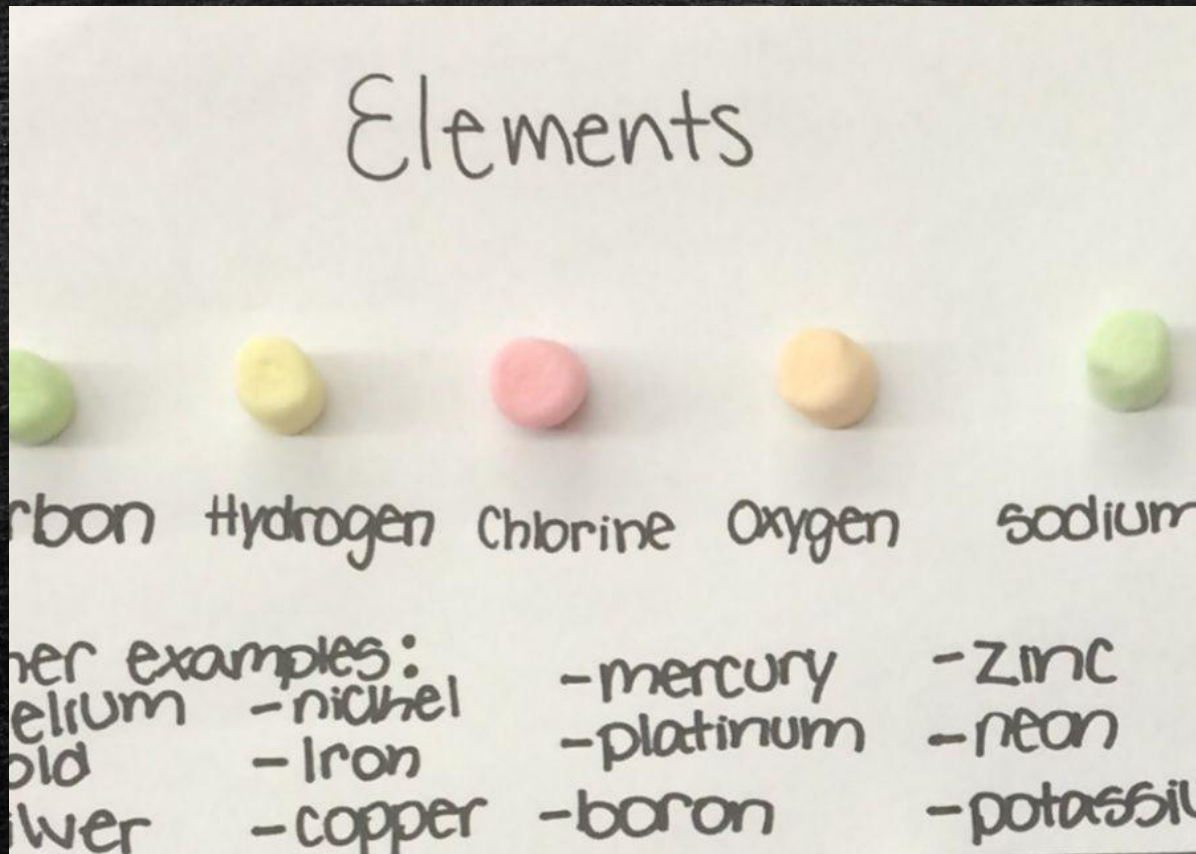
[Blank box for definition]

- A substance formed when two or more chemical elements are chemically bonded together

[Blank box for definition]

- Contains two or more substances that have no chemical bonds together

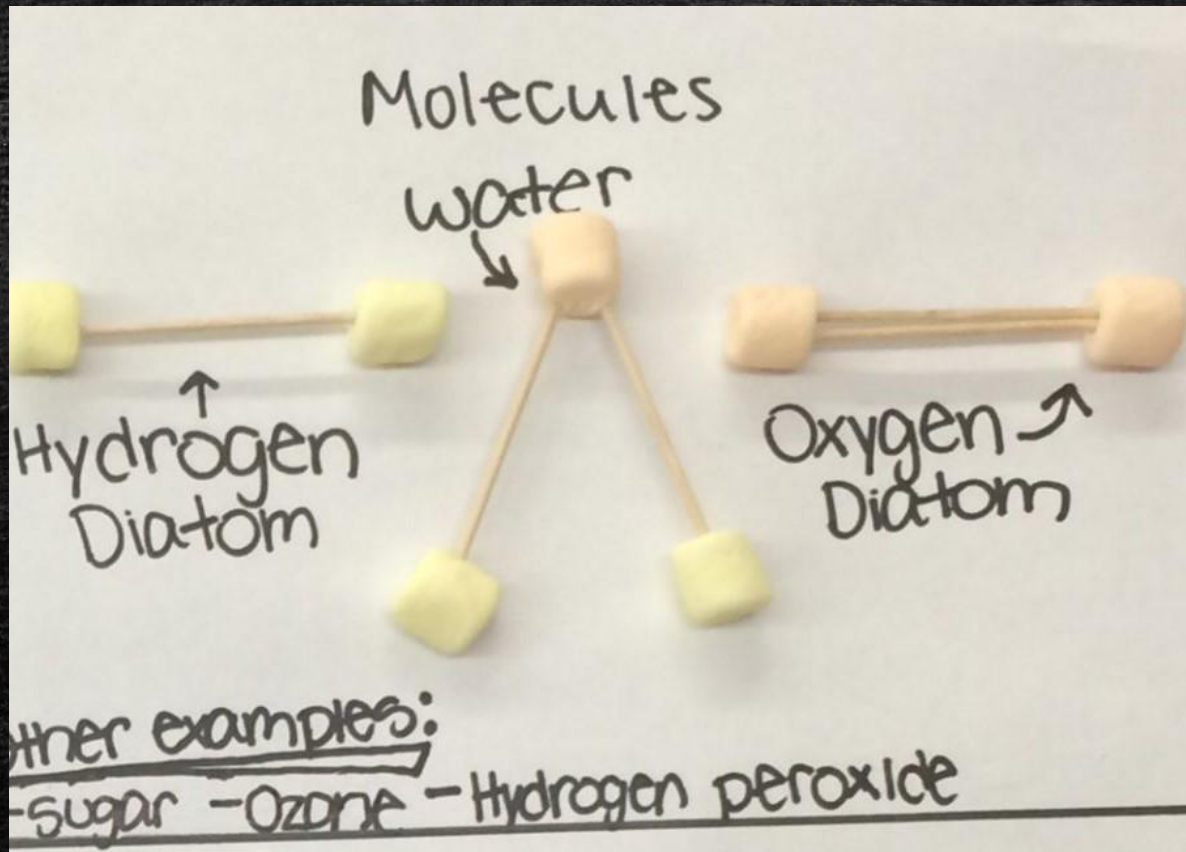
Forms of Elements



These can all be found of the Periodic Table of Elements. A few that will be important to know for our lesson is...

- Carbon
- Hydrogen
- Chlorine
- Oxygen
- Sodium

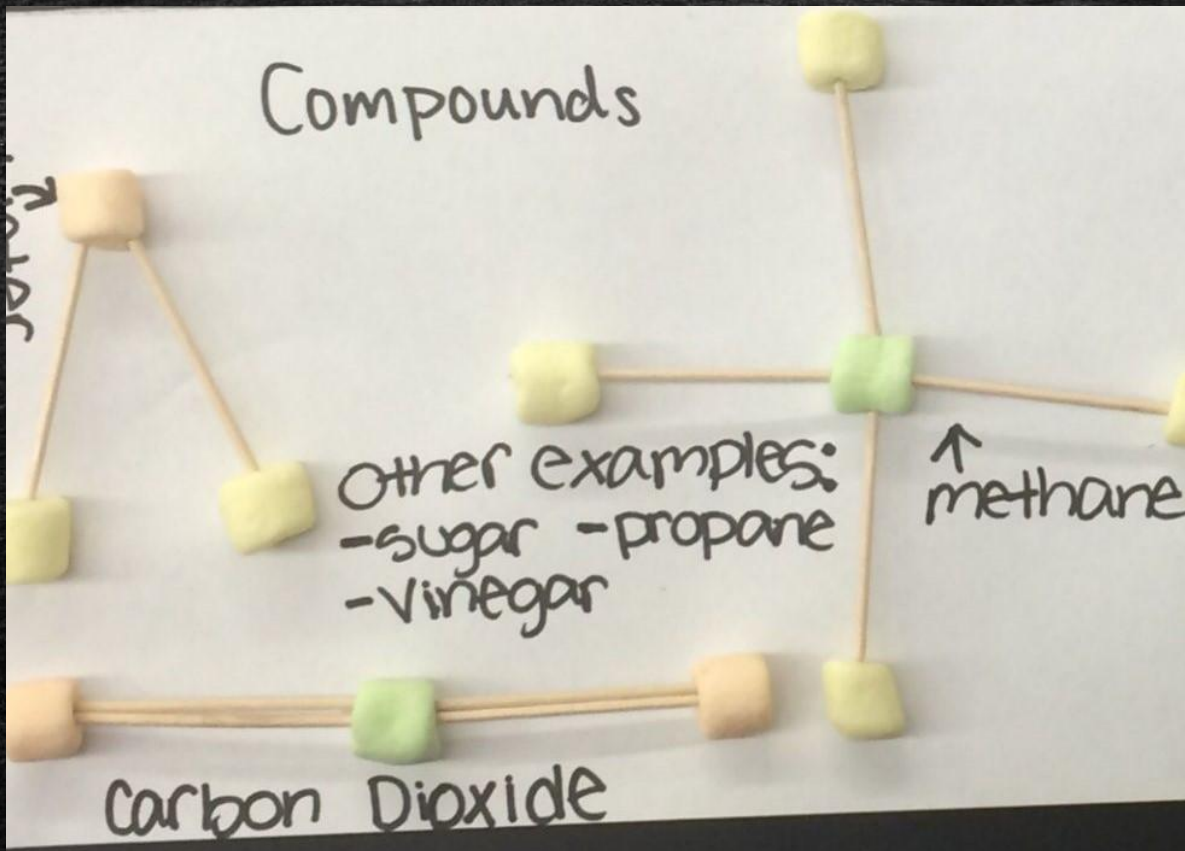
Forms of Molecules



Do you see the number of atoms included in each molecule?

*Water, hydrogen, and oxygen are important elements to remember for this lesson!

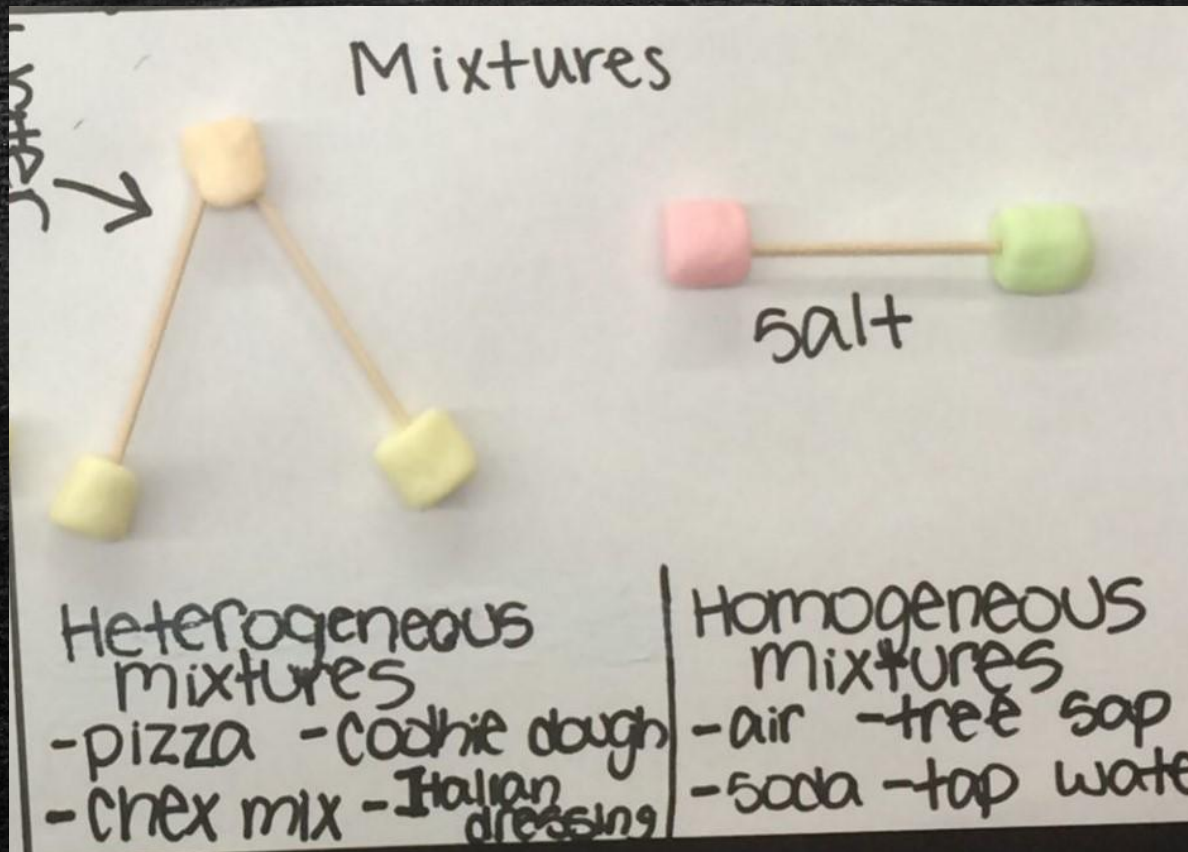
Forms of Compounds



Do you see the different elements included in each molecule?

*Water, methane, and carbon dioxide are important to remember for this lesson!

Forms of Mixtures

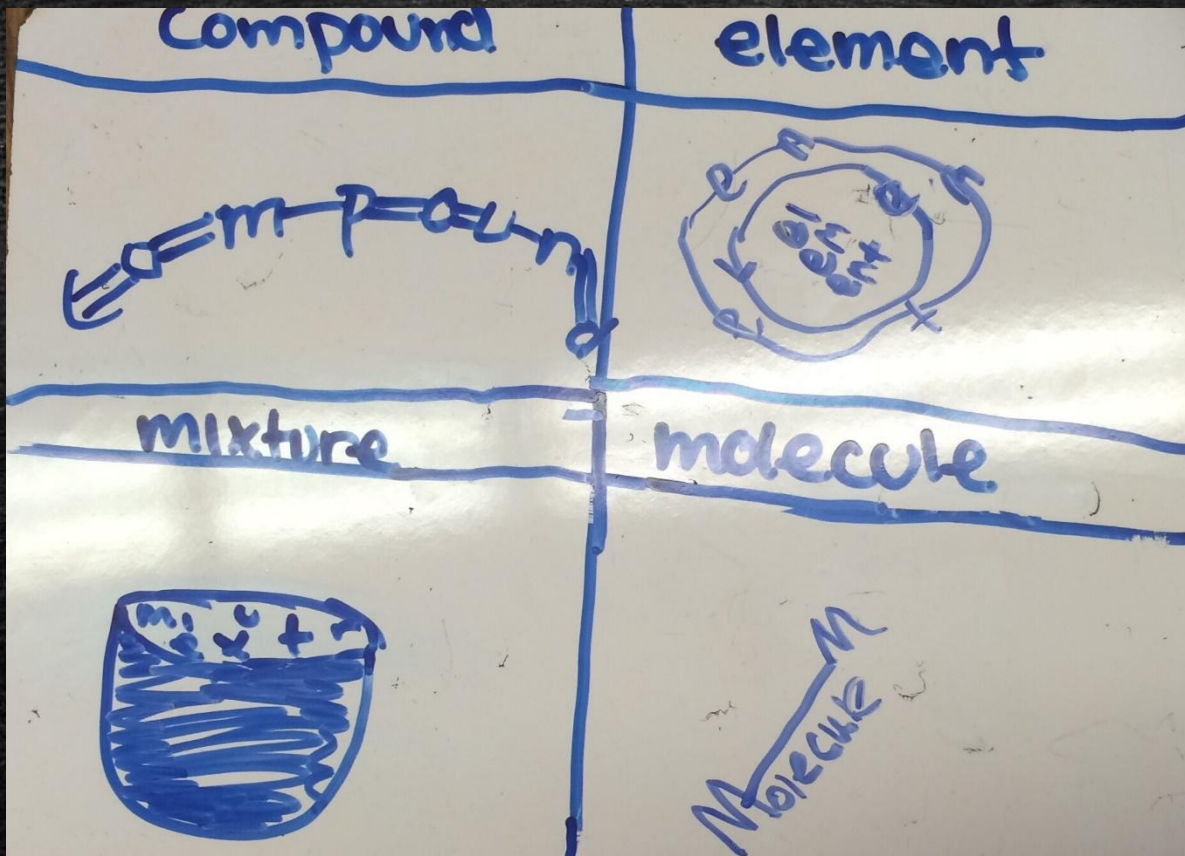


Note!

- **Heterogeneous mixtures:** particles/elements are distributed non-uniformly
- **Homogeneous mixtures:** particles/elements are distributed uniformly

*Water and salt are important mixtures to know the form of for this lesson!

Your Turn!



Find your own definitions, using words or pictures for the following words:

- Elements
- Molecules
- Compounds
- Mixtures

*This picture is an example of picture definitions!

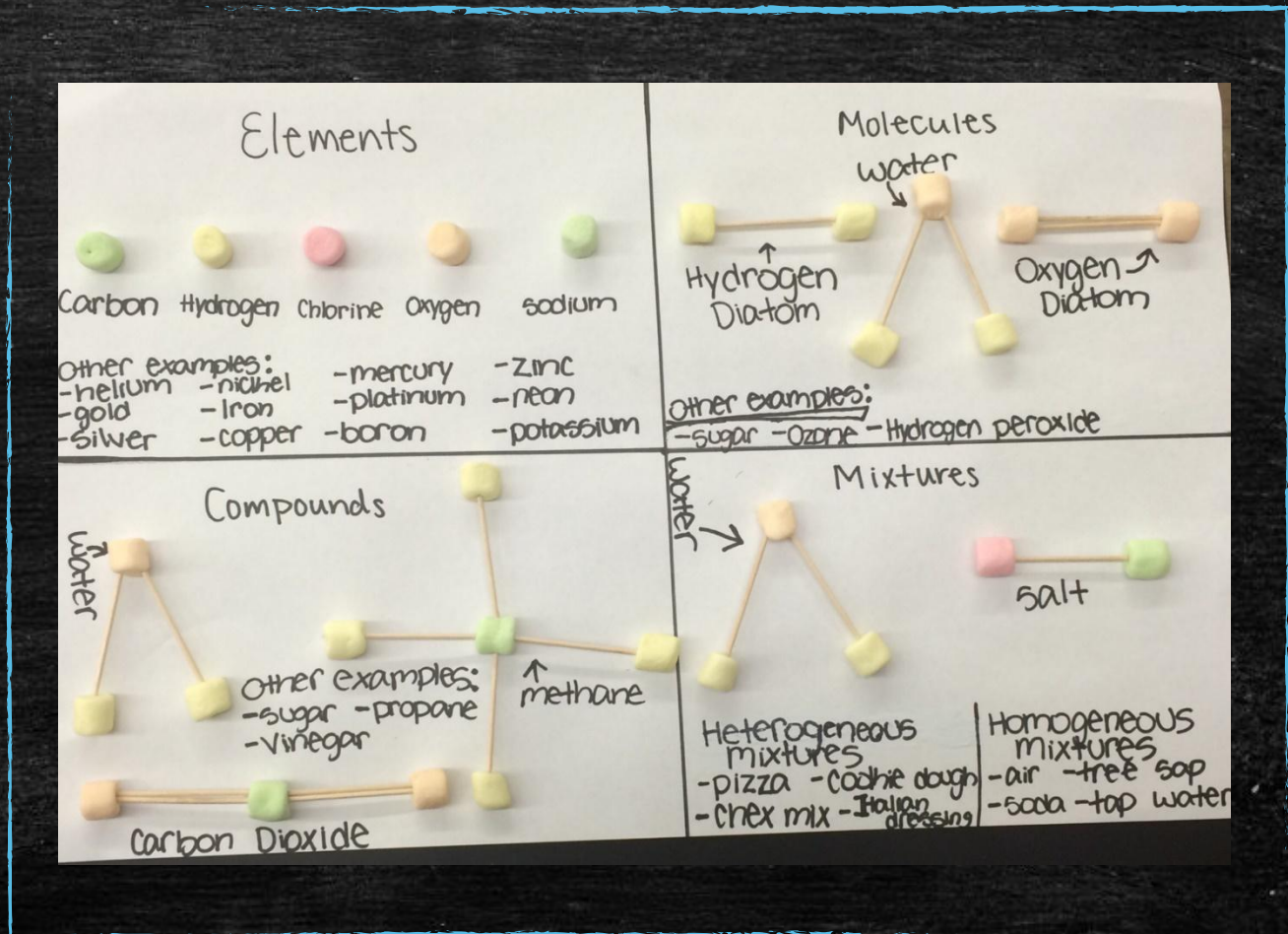
Let's Elaborate on That

Time to use our marshmallows and toothpicks to make models of elements, molecules, compounds, and mixtures!

Time to get to work!

Get together your marshmallows and toothpicks – let's make some models!

* Directions in the next slide



Directions for Marshmallow Molecules

- On your piece of paper/card stocker, split the space up into 4 sections
- In each section you will define and construct each vocabulary word.
 - Define the word by using examples of it, or by writing out an explanation of it
 - Construct the word with your marshmallows and toothpicks by creating a representation of the structure!

I would love to see your work!

- If you've made it through this lesson and are wanting to show me the models you created, I'd love to see them!
- Or, if you have any questions about this lesson, I'd love to try to answer them for you!

Feel free to email me at tgetz23@my.whitworth.edu

Works Cited – Vocabulary & Images

- <https://www.chemicool.com/definition/element.html>
- <https://www.chemicool.com/definition/molecule.html>
- <https://www.chemicool.com/definition/compound.html>
- <https://www.chemicool.com/definition/mixture.html>
- https://betterlesson.com/lesson/634009/marshmallow-molecules?from=home_favorites_lesson_name
- <https://www.thoughtco.com/heterogeneous-and-homogeneous-mixtures-606106>