



Minds in Motion



Molecule Making

Activity Rundown:

Molecules are the smallest unit of every substance in our universe! For example, a molecule of water is the smallest unit that can still be described as water. Molecules can range from a simple combination of two identical atoms to crazy combinations of millions of different atoms! In this activity, we'll be crafting some 3D models of a few different molecules.

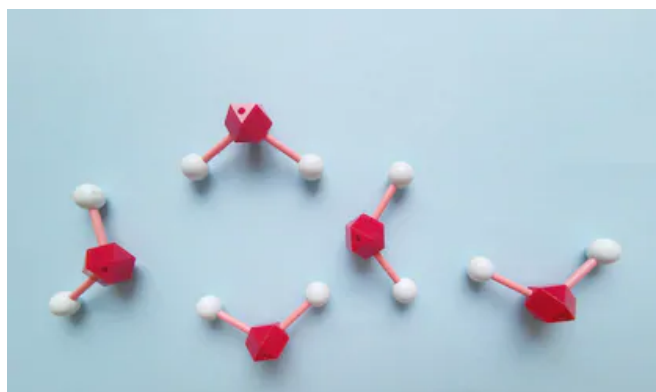
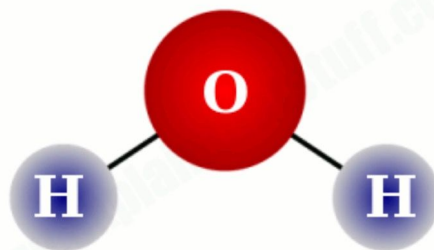
You will need:

- + Beads and jewellery wire
- + Mini marshmallows (or other soft candy) and toothpicks

Let's do it!

First Molecule: Water (H₂O)

1. Choose a colour for your hydrogen and oxygen atoms. Because the hydrogen atoms are the same identical element, they should be represented by the same colour.
2. Water molecules sit in a bent formation, shown below:



Example of water molecules.

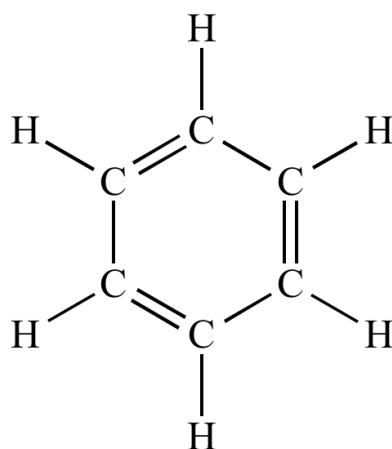


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- Using wire or toothpicks as the bonds, connect one oxygen “bead” or “marshmallow” to two hydrogen “beads” or “marshmallows”.

Second Molecule: Benzene Ring (C₆H₆)

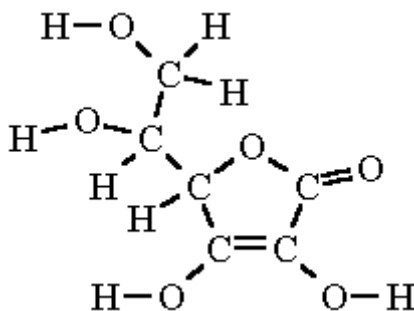
- Just like water, this molecule is only made up of two different atoms. Pick a colour for your carbon atoms and the hydrogen atoms.
- A benzene ring is (surprisingly) structured in a ring formation! Notice in the drawing below that some atoms are linked together by two bonds, make sure to add two bonds where applicable!



- Using wire or toothpicks as the bonds, connect the carbon “bead” or “marshmallow” to their respective hydrogen/carbon “beads” or “marshmallows”.

Third Molecule: Ascorbic Acid aka Vitamin C (C₈H₈O₆)

- This third and final molecule is made up of three different atoms: carbon, hydrogen, and oxygen. Pick a different colour for all three atoms!
- Ascorbic acid is a combination of linear bonds and ring bonds! Like the benzene ring, it also has a couple of double bonds.



- Using wire or toothpicks as the bonds, connect the different atoms in their respective order.



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Background:

What are atoms?

- Atoms are the smallest, basic unit that makes up everything in our universe!
- Atoms are made up of even smaller components: electrons, neutrons, and protons.

What are elements?

- An element is a species of atom having the same number of protons.
- There are 118 elements in the periodic table! Each has its own abbreviation. (H is for hydrogen, O is for oxygen, C is for carbon, Au if for gold, etc. Check out ptable.com to see the full periodic table!)

What are molecules?

- Molecules are groups of atoms bonded together which represent the smallest fundamental unit of a chemical species.

What are chemical bonds?

- Chemical bonds hold molecules together and create temporary connections.
- There are single bonds, double bonds, and triple bonds!
- These bonds are electrons trying to pair up. Electrons like having a “buddy” and always want to exist as doubles. When two atoms with unpaired electrons approach each other, the unpaired electrons may form a pair. Both atoms then share the pair. This holds the atoms together.

Resources:

- <https://kids.britannica.com/kids/article/molecule/353479>

Reach out!

We would love to hear from you about all the amazing STEM projects you are doing at home! Show us your finished products on any of the following social media platforms by tagging us or by using the following hashtags. We hope these projects have brought some excitement to your day during these difficult times.

Let us know how we did! Please [click here](#) to fill out a short survey on how well we did and what you would like to see more of in the future. Thank you!



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