X_____ Name _____ Per ___

My child studied for 15 minutes.

Atoms and Molecules Test Review

ALL Matter is made of atoms. They only place where there is not any atoms is in SPACE. There are no atoms in SPACE.

Matter: Anything that has mass and takes up space

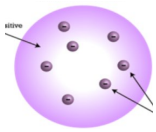
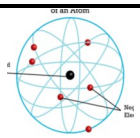
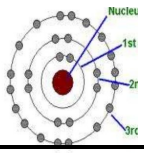
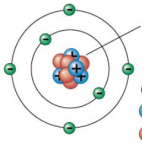
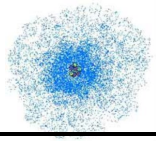
Atom: Smallest unit of matter that has its own unique properties. Atoms are too tiny to see clearly. Even with powerful microscopes. They are too tiny. We know what an atoms probably looks like because scientists have done many experiments that prove their ideas.

Examples of atoms (aka Elements): Gold, Hydrogen, Copper, Mercury, Calcium

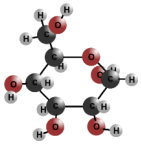
A 100% Neon gas sample is made up of Neon Atoms. A 100% liquid silver is made of silver atoms. A block of 100% titanium is made of titanium atoms.

All atoms can be in solid, liquid or gas form depending on the temperature. We may not be able to reach those temperatures on earth, but if we could, it would be possible to see all three phases.

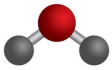
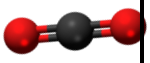
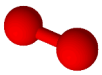
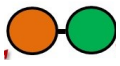
It took 100's of years for scientist to develop the current model of the atom.

450 BC	1800	1897	1899	1913	1932	Today
Democritus	John Dalton	J.J. Thompson	Ernest Rutherford	Niels Bohr	James Chadwick	Modern Day
1st Person to conceptualize atoms	Claimed atoms were like solid balls	Discovered that atoms had electrons	Discovered that atoms have positively charged proton in the nucleus	Discovered that electrons traveled in energy fields	Discovered the neutron in the nucleus of an atom	Electrons don't more in orbits, but bounce around in their energy field.
						

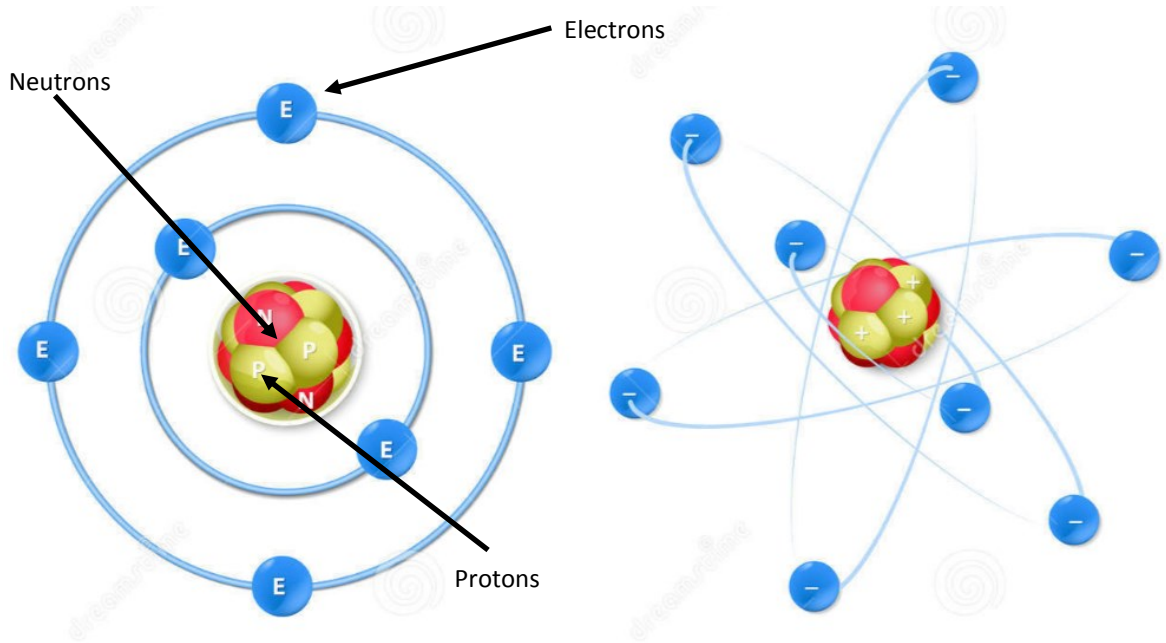
There are 92 naturally occurring atoms or elements on earth. These atoms combine with other atoms to form molecules. Molecules are bigger than atoms.

$C_6H_{12}O_6$ is the formula for the molecule Glucose. I could also draw glucose like this: 

Glucose has 24 atoms in ONE molecule of glucose. H_2O has 3 atoms in ONE molecule.

Water	H_2O		2 Hydrogen and 1 Oxygen		Carbon Monoxide	CO	 1 Carbon and 1 Oxygen
Carbon Dioxide	CO_2		1 Carbon and 2 Oxygen		Oxygen Gas	O_2	 2 Oxygen Atoms
Salt	NaCl		1 Sodium and 1 Chlorine				

There are many different ways to model an atom. For example these are both carbon:



BUT there are limitations to these models. Atoms really don't look this way. The following table shows things that are correct and incorrect about the model.

When atoms and molecules combine:

Correct	Incorrect
Most of the atoms particles are shown in the middle	It is not to scale. If the nucleus were the size of an apple, then the frst electron would have to be drawn 5 football fields away. These models have been squished together to fit on a page.
All of the parts are labeled correctly.	Electrons are way more tinier than protons and neutrons. They should be the size of a microdot.
Electrons are shown in different	Atoms don't have different colored parts.
	You can't see the electrons long enough to take a picture. They are moving too fast.
	Electrons do not travel in orbits. They bounce around like crazy within their energy field.

Atoms and molecules can react with each other to form other molecules. For example when you mix baking soda and vinegar, they tear each other apart and recombine into something new. This a called a chemical reaction. All of the atoms are still there, they have just been rearranged.

Baking Soda (acidic acid)+ Vinegar (sodium bicarbonate)=Sodium Acetate + Water + Carbon Dioxide