Here is a script of the video explaining the concept of valence electrons and ionic compounds:

Today we will be discussing the periodic table and how it is organized to show various trends. The periodic table lists the known elements in a certain order which helps us understand the nature of that element and how they interact with other elements to form compounds.

To understand the trends, we must first see and understand how an element is presented on the periodic table.

Here we have oxygen which we will use as an example. Each element is presented in a similar fashion, with the elemental symbol here in the middle. In this case, O represents Oxygen. Here at the top is the atomic number which designates the order and place of an element on the table. It also tells us how many protons are in the nucleus of this atom.

The bottom number shows the atomic mass which is an important number indicating the mass of each individual atom of the element. This number is the total number of protons and neutrons in the nucleus of an atom, in this case, the nucleus of an oxygen atom. (Draw structure of an atom). The protons and neutrons are located here, which is the nucleus. Protons have positive charge and a mass of 1 amu (atomic mass unit), while neutrons have no charge, or a neutral charge and a mass of 1 amu. Electrons orbit the nucleus and have a negative charge, but they do not have mass. This is why the atomic mass number only includes protons and neutrons. If we subtract the atomic number, or the number of protons, from the atomic mass number, or the total amount of protons and neutrons, we can find out how many neutrons are in an atom. Because each atom of an element found on the periodic table is neutral, meaning it has no positive or negative charge, the number of negative particles, or electrons, is the same as the number of positive particles, or protons.

Each element has an atomic number and an atomic mass number displayed as you can see. The periodic table is organized by these atomic numbers. The atomic number increases from left to right in rows which we call periods. The periodic table also is organized by a coupe other characteristic. Families: The alkali metals, alkaline earth metals, the biggest group which are the transition metals. Then there's the metalloids, the nonmetals, the halogens, and finally the noble gases. These tell us elements with similar properties

Finally, the elements are organized into columns called groups, 1-17. This will tell us how many electrons valence electrons orbit the nucleus of an atom. Valence electrons are the electrons on the outer shell of an atom and help us determine chemical compounds. Atoms want to have full valence electron shells. A full shell has 8 electrons. A helpful trick is to label the columns 1-8. Skipping transition metals. The noble gases here have full valence shells, and elements become attracted to each other to have full shells and will create bonds. This is an ionic bond.

Sodium Chloride, or salt, is a common ionic bond. If we look at the table, sodium is here at group 1, meaning it has 1 valence electron. The other element chlorine is here in the halogens in group 17, but for our trick it is under 7, meaning it has 7 valence electrons. Sodium and Chlorine will be attracted to each other to be able to complete their valence shells. The 1 electron from sodium will be given to chlorine to

complete the shell. Then, sodium will have a positive charge and chlorine will have a negative charge. Because these charges oppose each other, the elements bond together.

Water, or H20 is another example. Hydrogen, like sodium, has 1 valence electron. Oxygen being in group 6 has 6 electrons in its shell and is missing 2 electrons. It will need to take 2 electrons. Water has 2 hydrogens, and each hydrogen has 1 electron. So both hydrogens will give their one electron to oxygen, to fill up its shell to form a bond.

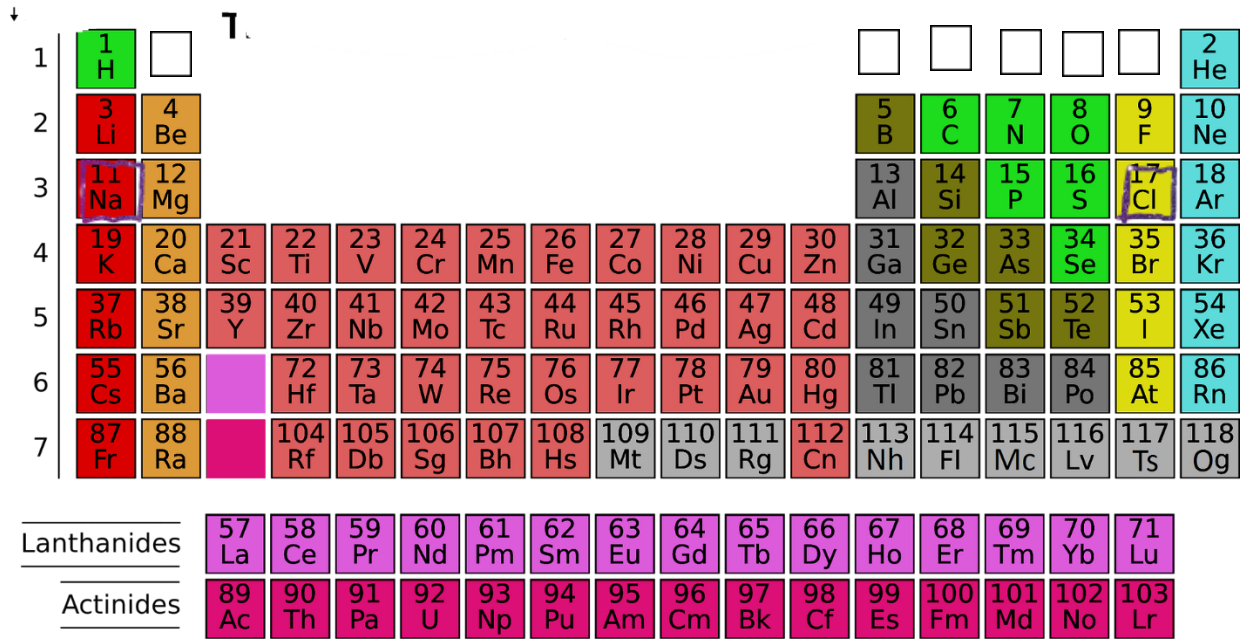
These are just a few examples of how the periodic table of elements can teach us the properties of the elements in our world and how they interact, there is much more to learn!

Instructions

Below is an assignment for students to use along with the video. After showing the video, make sure students understand the concepts of atomic structure and bond attractions. They will then use the below assignment to fill in the group number on the tox boxes (1-8). There will then be a few elements below the periodic table. Students will write how many valence electrons those elements have and write the compound that is created.

Service-Learning Assignment

Write in the boxes the number of valence electrons that the following periodic groups have:



Below are a few examples of common ionic compounds. Using what you learned about valence electrons, write how many valence electrons there on each element and write the compound

Example:

Na	Valence Electrons: 1	Cl	Valence Electrons: 7	Compound: NaCl

Try it yourself!

Na	Valence Electrons: _____	F	Valence Electrons: _____	Compound:
Mg	Valence Electrons: _____	Cl	Valence Electrons: _____	Compound:
Be	Valence Electrons: _____	S	Valence Electrons: _____	Compound: