

How to 6 Video Narrative

In “How to 6,” we will learn to use the Periodic Table to help determine the number of valence electrons.

This is a model of an atom of sodium. It has one valence electron. Remember, valence electrons are the electrons located in the outer-most energy level. In what group is sodium located on the Periodic Table? Sodium is located in Group 1, and it has one valence electron.

This is a model of an atom of Lithium. Notice it has one valence electron. Lithium is also located in Group 1.

Do you see a relationship between the group and the number of valence electrons? Let me help. All the elements in Group 1 have one valence electron in their outer-most energy level.

Would this idea work for Group 2? Well, let's see. Take, for example, beryllium. Beryllium has four protons and four electrons. This is a model of the Be atom. Notice that Be has two valence electrons. Be is located in Group 2.

So this how-to applies to beryllium, but does it apply to the other elements in Group 2? Well, there is one way to find out. Magnesium is located in Group 2. It has 12 protons and 12 electrons. This is a model of an atom of Mg. Notice that Mg has two valence electrons. So yes! Magnesium is located in Group 2, and it also has two valence electrons. And guess what! All the elements in Group 2 have two valence electrons.

We have seen that elements in Group 1 have one valence electron in their outer-most energy level, and Group 2 elements have two valence electrons.

Let's move to the opposite side of the Periodic Table: Group 13. Elements in Group 13 have three valence electrons. Elements in Group 14 have four valence electrons. Group 15 elements have five valence electrons, and Group 16 has . . . can you guess? Six valence electrons.

Do you notice a pattern here? How many valence electrons do you think Group 17 has? Seven? Yes, that's right! Elements in Group 18 have eight valence electrons, except for Helium. Helium only has two valence electrons.

Notice I skipped over the groups in the middle part of the Periodic Table. These elements are called the transition metals. The transition metals do not fit this pattern.

So remember . . . We can use the Periodic Table to help determine the valence electrons for many but not all of the elements.