

Teacher Background

Chapter 4, Lesson 4

A common approach to figuring out how atoms bond covalently and ionically is to use the “octet rule”. This rule relies on the fact that atoms bond until they have 8 electrons in their outer energy levels or 2 electrons in the outer level in the case of hydrogen and helium. It is often stated that atoms “want” to have 8 electrons in their outer energy level, so they bond until they have 8 as if having 8 electrons is a goal in itself.

The approach taken in Lessons 4 and 5 achieves the same result but it does not use the goal of having 8 electrons or “wanting” 8 electrons as the reason why atoms bond. Instead, the approach emphasizes the fact that, if the attractions are favorable in both directions and there is room to accommodate electrons, atoms continue to bond until it is unfavorable to do so. This occurs when the outer energy levels of the atoms are full.