

Guiding Question: What is a balanced chemical equation and why is it an important part of chemical reactions?**Students will be able to:**

- Understand that chemical equations are used to predict the amounts and behavior of certain molecular compounds when combined or separated forming products.
- Describe the location of reactants and products in a chemical equation.
- Recognize that the number of atoms of each element is conserved in a chemical reaction.
- Identify whether or not a simple chemical equation is balanced.
- Investigate the difference between coefficients and subscripts in a chemical equation.

Background:

Students working on this lesson have completed study of atoms and molecules- See [Build an Atom](#), [Build a molecule](#). Students are able to understand that a coefficient multiplies all atoms in a molecule and subscripts are a part of each unique molecule. I have included a homework assignment that will refresh this knowledge and may be used as part of the pre-lab or separately as an in-class assignment or homework. [What's in a Chemical Formula?](#)

Teacher notes:

	indicates students write a response		indicates students discuss with partner
	Indicates students should check in with teacher before going further		

- Let the groups (two or three students) explore - It is useful for students to discover the basics of the simulation on their own before starting the activity. It will make the instructions in the student guide easier to follow.
- The purpose of the **pre-lab** is to introduce the topic of balancing equations and conservation of matter but the learning will occur using the simulation. It is important to re-administer or discuss as a group, the pre-lab material. It will allow you to assess the level of proficiency in the students.
- The [Enrichment homework](#) gives students basic instruction on how to “balance” equations. One level is for students to recognize if an equation is balanced or not –this is addressed in the simulation. The next level is to challenge the students to complete the process of balancing equations on their own.