

## Lesson plan for *Reactants, Products, and Leftovers* Activity 2:

### **Limiting Reactants in Chemical Reactions Review**

<http://phet.colorado.edu>

**Learning Goals:** Students will be able to:

- Predict the amounts of products and leftovers after reaction using the concept of limiting reactant
- Predict the initial amounts of reactants given the amount of products and leftovers using the concept of limiting reactant
- Translate from symbolic (chemical formula) to molecular (pictorial) representations of matter
- Explain how subscripts and coefficients are used to solve limiting reactant problems.

**Background:** I give a major exam in late February over material typically covered in college-level General Chemistry I. This activity will be part of the review. There is a very similar version of this activity ([Reactants, Products, and Leftovers 2](#)) that I wrote to be used in a stoichiometry unit; I am not sure which version I will use. Also, during the review, I do a lab where the students make Smore's Lab to help reinforce this important concept (I have included my version of the lab with the activity). After the exam, we use a high school text to introduce solution chemistry - kinetics, equilibrium, acid/base/salts, colligative properties, and electrochemistry. See my [course syllabus](#) for more information about integration of PhET sims.

**Learning goals from [Reactants, Products, and Leftovers Activity 1](#):** (which we did in September)

- Relate the real-world example of making sandwiches to chemical reactions
- Describe what "limiting reactant" means using examples of sandwiches and chemicals at a particle level.
- Identify the limiting reactant in a chemical reaction

#### ***Reactants, Products, and Leftovers* Introduction:**

This sim shouldn't require any introduction. Check the [Teaching Tips](#) from the design team for some helpful information.

**Lesson:** My students use this as homework or in class depending on availability of computers.

**Post lesson:** I will the clicker questions on my website for students to use or we may use them as a class activity.