

**Main Ideas, Key Points,
Questions:**

After watching the video segment, write down key points, main ideas and big questions.

Objective(s):

- *To carry out an investigation to determine limiting and excess reactants.*
- *To use dimensional analysis to determine the theoretical yield and percent yield of a chemical reaction.*
- *To plan a stoichiometry performance task using hydrogen and oxygen rockets.*

Notes:

During the video segment, use words, phrases or drawings to take notes.

Summary:

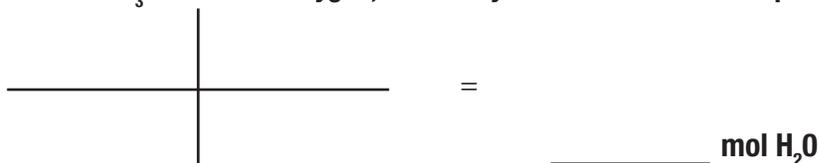
*After watching the video segment, write at least three sentences explaining what you learned.
You can ask yourself: "If I was going to explain this to someone else, what would I say?"*

After watching the video and performing any associated labs and/or experiments, you should be able to answer the following:

In video segment 6E, you are expected to carry out an activity using crackers, chocolate and marshmallows to make "S'mores." Complete this activity and then answer the questions:

1. In the S'mores activity, how many S'mores were you able to make?
2. How many leftover materials did you have?
3. What was the limiting reactant in your experiment?
4. What happens when the limiting reactant is consumed in the reaction?
5. What name is given to the reactants that are NOT used up in the reaction?
6. What is the theoretical yield in a chemical reaction?
7. Use dimensional analysis to draw a conversion chart to find the theoretical yield of water in the following reaction:

$$4\text{NH}_{3(g)} + 5\text{O}_{2(g)} \rightarrow 4\text{NO}_{(g)} + 6\text{H}_2\text{O}_{(l)}$$
 When 1.20 moles of NH_3 reacts with oxygen, how many moles of water will be produced?

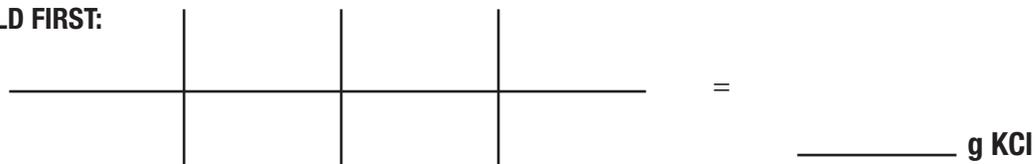


8. When a chemist performs a reaction and the amount of product recovered is different from the calculated yield, how would they analyze their data?
9. What is the formula for calculating percent yield?

Follow along with the example in the video to write the conversion chart for calculating theoretical yield and percent yield in the following reaction:

When 45.8 g of K_2CO_3 react with excess HCl, 46.3 g of KCl are formed.

Calculate THEORETICAL YIELD FIRST:



Calculate PERCENT YIELD next:

In Unit 6E, you should write out a plan for an experiment using hydrogen and oxygen pipette rockets. In the plan, make sure to use every possible ratio of hydrogen to oxygen. Use the Rocket Fuel Performance Task Guide in the Chemistry Matters Toolkit to help you with your experiment plan. Once that has been completed, you may continue to the Unit 6F video.