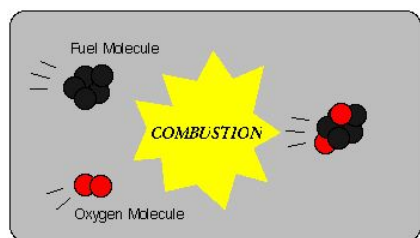


## Combustion Reactions

### Skills to Develop

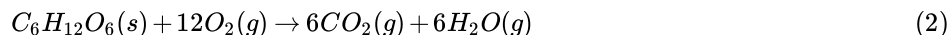
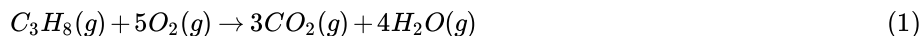
- Identify a general chemical equation for combustion reactions
- Describe some of the characteristics of combustion reactions

**Combustion reactions** are common and very important. Combustion means burning, usually in oxygen but sometimes with other **oxidants** such as fluorine. A combustion reaction happens quickly, producing heat, and usually light and fire. Combustion describes how the reaction happens, not the reactants and products. Chemists as early as Lavoisier suggested that people get their energy from combustion-like reactions, but even though the products and reactants are the same when you burn food in a fire and in your body, the way it happens is different. In a combustion reaction, the thing that burns (the reactant that isn't O<sub>2</sub> or F<sub>2</sub>) is called the **fuel**. Combustion reactions are a type of **redox** reaction.



A simplified diagram of a combustion reaction where oxygen is the oxidant.

The classic chemistry class combustion reaction involves a compound of C and H reacting with O<sub>2</sub> to form CO<sub>2</sub> and H<sub>2</sub>O. Sometimes the reactant has some other elements, like O, S or N in it. The O will form water, the S will form usually SO<sub>2</sub> and the N will often produce N<sub>2</sub>, but sometimes a little bit of a nitrogen oxide. For class purposes, you can usually write equations in which carbon dioxide is produced. In real life, often some or a lot of CO is produced, depending on how much oxygen is present and other factors. In general, most elements in a compound that is combusted will form oxides, but you won't be able to say for sure how much of each oxide will be produced (CO or CO<sub>2</sub>, SO<sub>2</sub> or SO<sub>3</sub>, etc). Here are some example equations. When you balance combustion reactions, usually start with the C, and the fuel, and do the oxygen last.



Reaction 4.2 is sugar burning, which may also represent an animal or plant using stored energy.

### Contributors and Attributions

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