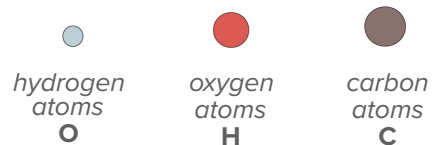


Unit M1 • Small, Smaller, Smallest

PHOTOSYNTHESIS

One of the most important chemical reactions for life on earth takes place in plants and is called photosynthesis. Plants take in carbon dioxide and water, and by using energy from sunlight, produce oxygen molecules and sugar molecules called glucose. The sugar molecules provide food to animals, but are also used by plants as basic building blocks for their own woody and leafy bodies.

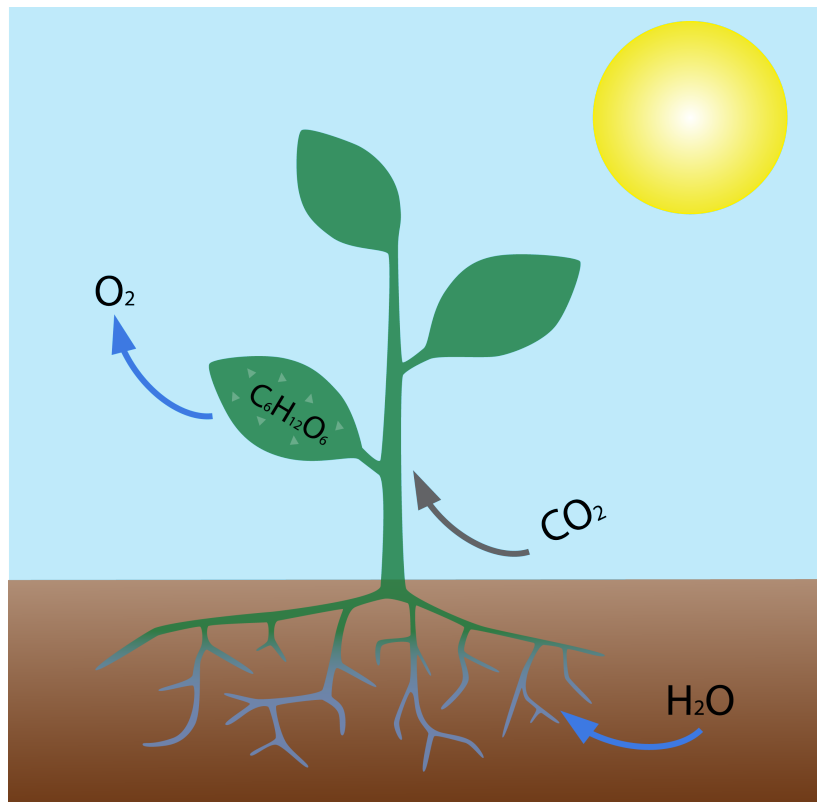
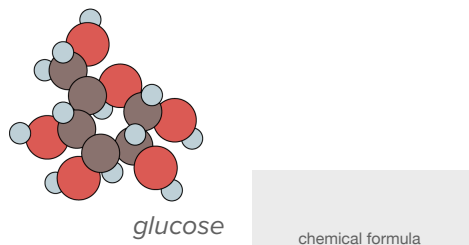
Plants have a certain way they go about this amazing feat! They use these atoms:



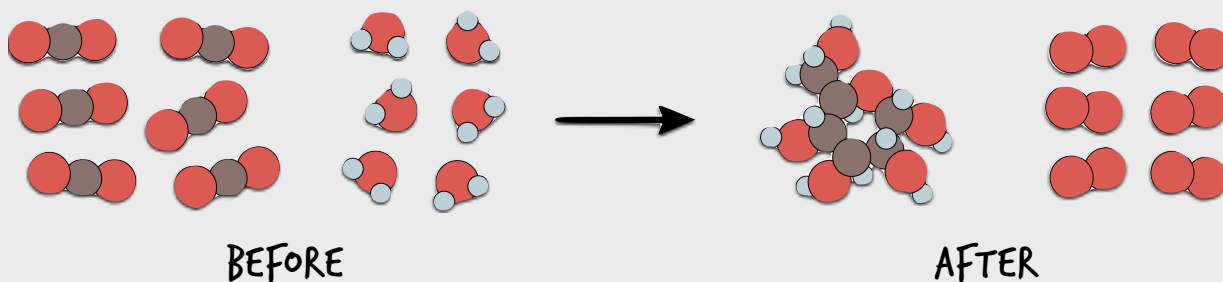
The process starts with the atoms grouped as these molecules:




When the process is over, they are grouped as two different kinds of molecules:



For this to work right, the molecules must be available in certain proportions. Here is a model of how it works:



Note that no atoms are destroyed or created in a chemical reaction. Atoms are just rearranged. Since the mass of the substances involved is just the mass of the atoms, there is no change of mass in the reaction. This sameness of mass before and after is called the *Law of Conservation of Matter*, because mass is *conserved* (kept the same) in chemical reactions.

 **TURN AND TALK:** Imagine a friend of yours insists that the mass is less after photosynthesis because there are 12 molecules before and only seven molecules after. Can you use the model to prove it's actually the same mass?