The Simple Bare
Necessities of Life

Would it surprise you to learn that you have the same basic needs as a tree, a frog, or a fly? In fact, almost every organism has the same basic needs: food, water, air, and living space.

Food
All living things need food. Food provides organisms with the energy and raw materials needed to carry on life processes and to build and repair cells and body parts. But not all organisms get food in the same way. In fact, organisms can be grouped into three different categories based on how they get their food.

Making Food
Some organisms, such as plants, are called producers because they can produce their own food. Like most producers, plants use energy from the sun to make food from water and carbon dioxide. Some producers, like the microorganisms in Motile Cave, obtain energy and food from the chemicals in their environment.

Getting Food
Other organisms are called consumers because they must eat (consume) other organisms to get food. The salamander in Figure 8 is an example of a consumer. It gets the energy it needs by eating insects and other organisms. Some consumers are decomposers. Decomposers are organisms that get their food by breaking down the nutrients in dead organisms or animal wastes.

Water
You may have heard that your body is made mostly of water. In fact, your cells and the cells of almost all living organisms are approximately 70 percent water—even the cells of a cactus and a camel. Most of the chemical reactions involved in metabolism require water.

Organisms differ greatly in terms of how much water they need and how they obtain it. You could survive for only about 3 days without water. You obtain water from the fluids you drink and the food you eat. The desert-dwelling kangaroo rat never drinks. It gets all of its water from its food.
Air
Air is a mixture of several different gases, including oxygen and carbon dioxide. Animals, plants, and most other living things use oxygen in the chemical process that releases energy from food. Organisms that live on land get oxygen from the air. Organisms living in fresh water and salt water either take in dissolved oxygen, from the water or come to the water’s surface to get oxygen from the air. Some organisms, such as the European diving spider in Figure 9, go to great lengths to get oxygen.

Green plants, algae, and some bacteria need carbon dioxide gas in addition to oxygen. The food these organisms produce is made from carbon dioxide and water by photosynthesis (poh TAY IH thuh SIS), the process that converts the energy in sunlight to energy stored in food.

A Place to Live
All organisms must have somewhere to live that contains all of the things they need to survive. Some organisms, such as elephants, require a large amount of space. Other organisms, such as bacteria, may live their entire life in a single pore on the tip of your nose.

Because the amount of space on Earth is limited, organisms often compete with each other for food, water, and other necessities. Many animals, including the warbler in Figure 10, will claim a particular space and try to keep other animals away. Plants also compete with each other for living space and for access to water and sunlight.

Fire and Life
Demonsl both a human and a bug candle share some qualities of life. Briefly hold a cold glass that is inverted over a candle flame. The glass fogged with water droplets indicate a cold glass, as we know it will happen. Besides water, both use oxygen, food (or wax) and give off water, both use oxygen, food (or wax) and give off carbon dioxide and energy.

Figure 9 This spider surrounds itself with an air bubble so that it can obtain oxygen underwater.

Figure 10 A warbler’s song is more than just a pretty tune. The warbler is protecting its home by telling other warblers to stay out of its territory.

Answers to Review
1. Decomposers are consumers because they must obtain the food they need from other organisms. Unlike producers, decomposers cannot produce their own food.
2. Most of the chemical reactions that occur in cells depend on the presence of water.
3. Life could not exist as we know it. Green plants, algae, and some bacteria need carbon dioxide gas as well as oxygen. Without the carbon dioxide, they could not survive, and other organisms could not rely on them as a food source.
4. Answers will vary. A cave could be a place to live. An ant could be food. A lake could be a place to live as well as a source of water.

Quiz
1. Give an example of producer, consumer, and decomposer. (producer: plant; consumer: any animal; decomposer: fungi)
2. What factors affect a plant or animal life? (competition with other organisms and the availability of water and food)

3 Close

Alternative Assignment
Have students construct pictures from the notes and create a poster that shows the home of a plant or animal with all the qualities of life that were discussed in the section. Then have each student write a script for a nature documentary to accompany the poster.