

# The Life Cycle of Seed Plants

**Key Words** • root • stem • leaf • flower • seed • reproduce • life cycle • pollen • pollination • fruit  
• germinate • seedling • mature

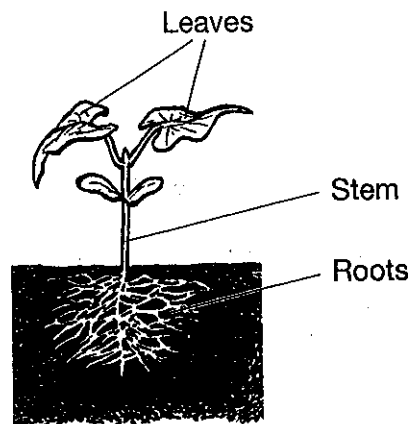


## Getting the Idea

All living things begin life and then grow and change. All kinds of living things make more living things like themselves. And all living things die. This is a pattern. These things happen in order. All living things follow this pattern. Seed plants follow this pattern, too.

## Plant Parts

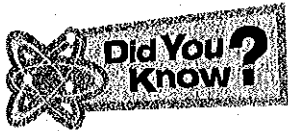
Most plants have a body made of roots, a stem, and leaves. The picture below shows the roots, stem, and leaves of a young bean plant. The plant needs all three parts in order to stay alive.



A plant's roots usually grow in the ground. A **root** is a plant part that takes in water and nutrients from the soil. A *nutrient* is a material that living things need in order to live and grow. Roots also hold the plant in the ground.

A plant's **stem** moves water and nutrients from the roots to the leaves and other parts of the plant. The stem also holds up the plant.

A **leaf** is a plant part that makes food for the whole plant. A green material in the leaf takes in sunlight. The leaf uses the light to make food. Plants also take in air through tiny openings in their leaves.

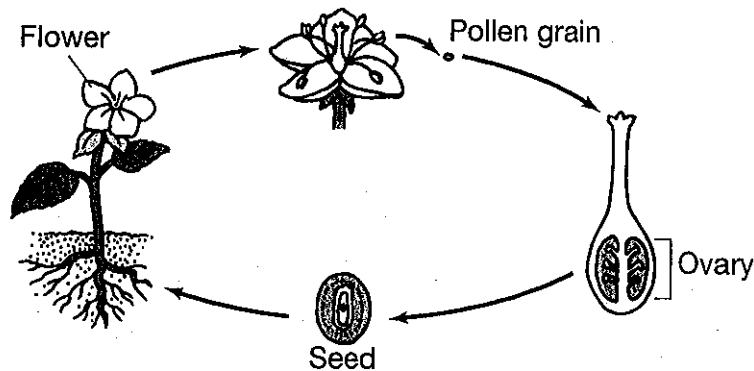


Many cactus plants have leaves that are too small to make food. Instead, the plants have big, thick stems that gather sunlight and make food for the plants.

Many plants have flowers. Such plants are called flowering plants. A **flower** is a plant part that makes seeds. A **seed** holds a new plant and keeps it safe. A seed also stores food to help the new plant start growing. You will learn more about seeds and other plant parts in Lesson 10.

### Growing from Seeds

All flowering plants reproduce by making seeds. To **reproduce** means to make more living things of the same kind. The diagram below shows the life cycle of a flowering plant. A **life cycle** is the pattern of growing and changing a living thing goes through from birth to death.



Flowers make a powdery material called **pollen**. Pollen lets seed plants reproduce. Bees and other insects spread pollen from flower to flower. Wind also spreads pollen. The spreading of pollen from flower to flower is called **pollination**. When a flower gets pollen, seeds form in a part of the flower called an ovary. The ovary becomes a fruit. A **fruit** is a plant part that stores and protects seeds.

A new plant is inside each seed. The seed contains food for the new plant. The stored food, along with water and warmth, helps the new plant germinate. To **germinate** means to begin to grow. When the new plant starts growing, a new life cycle has begun. A young, new plant is called a **seedling**.

The new plant grows roots, a stem, and leaves. Over time, the plant gets bigger and taller. When a plant is **mature**, or has become an adult, it forms flowers. Then the plant is ready to reproduce. After a time, the plant dies, but new plants may grow from some of its seeds.

## Discussion Question

Why might a plant not go through its complete life cycle?



## Lesson Review

1. What does the word *germinate* mean?
  - A. to form seeds
  - B. to make germs
  - C. to form leaves
  - D. to start growing
2. Which part of a flowering plant uses sunlight to make food?
  - A. roots
  - B. stems
  - C. leaves
  - D. flowers
3. What does the stem of a flowering plant do?
  - A. helps the plant take in air
  - B. moves water and nutrients
  - C. helps the plant reproduce
  - D. keeps the plant in the ground

4. Which is NOT something the roots do?
  - A. help spread pollen
  - B. hold the plant in the ground
  - C. take in water
  - D. take in nutrients
  
5. The seedling of a flowering plant starts to grow. What happens next in the life cycle of this plant?
  - A. The plant grows roots, a stem, and leaves.
  - B. Seeds start to form in the plant's flowers.
  - C. The plant's flowers make pollen.
  - D. Seeds start to germinate.

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# Life Cycles of Animals

**Key Words** • offspring • metamorphosis • larva • pupa



## Getting the Idea

Once you were a baby. You are bigger and stronger now. You are growing up. One day, you will be an adult. How will you be different then? All living things go through changes in their lifetimes. Animals, like plants, have a life cycle.

### Growing and Changing

Animals, plants, and all other living things begin life, grow and change, and later die. During their lifetimes, living things reproduce, or make more of their own kind. A mother cat has kittens. The kittens will grow up to be adult cats. Those adult cats may have kittens.

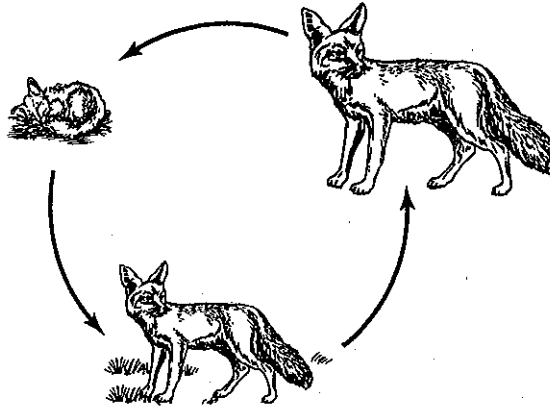
When living things reproduce, the new living things are called **offspring**. You are the offspring of your parents. Offspring are always the same kind of living things as their parents. Cats produce cats. Turkeys produce turkeys. Humans produce humans.

Offspring usually look like their parents in some ways. When a kitten grows up, it may be bigger or smaller than its parents. Its fur may not be the same color as its parents' fur. But it will look somewhat like its parents.

### Animals That Do Not Change Form

Some kinds of animals give birth to live young. Examples include humans, horses, cats, and foxes. For example, fox cubs are the live young of a fox. They have the same shape as an adult fox. They have four legs, a head, and a tail. They look a lot like their parents.

The mother feeds and cares for the cubs. As they grow, they begin to feed and care for themselves. They change, but they keep the same general shape. In time, they become adult foxes. The picture below shows the life cycle of a fox.

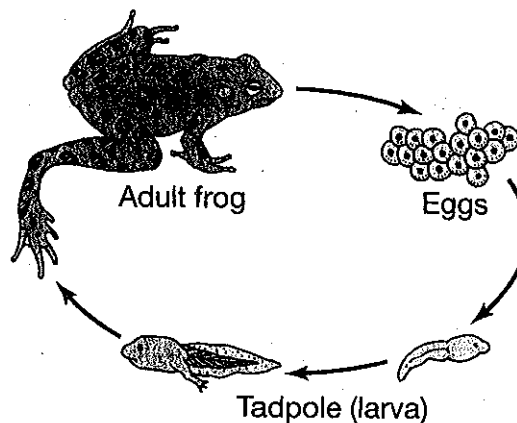


Other animals lay eggs. When a baby bird comes out of an egg, the baby has the same form as its parents. It has two legs and two wings. It has a head and a tail. The baby bird's parents feed and care for it until it learns to fly and can find its own food.

Most snakes reproduce by laying eggs. When the eggs hatch, young snakes come out that have the same shape as an adult snake. Snakes do not take care of their offspring. The young snakes are able to feed and care for themselves as they grow and change.

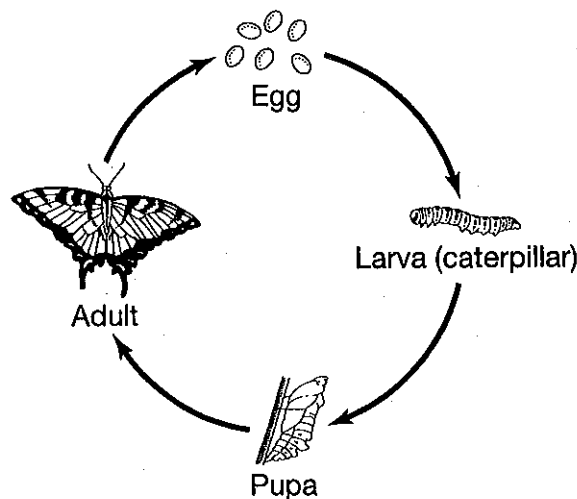
### Animals That Change Form

Some animals change form in their life cycles. The change in form is called **metamorphosis**. The picture below shows the metamorphosis in the life cycle of a frog.

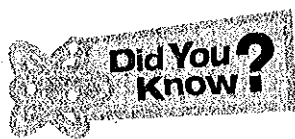


An adult frog lays eggs in the water. A tadpole comes out of an egg. The tadpole lives in the water. It breathes underwater like a fish. It swims and eats. In time, it grows legs. It gets bigger, and its tail disappears. Now it breathes air. It lives on land and in the water. It is an adult frog.

Many insects have four stages in their life cycles—egg, larva, pupa, and adult. The picture below shows metamorphosis in the life cycle of a butterfly.



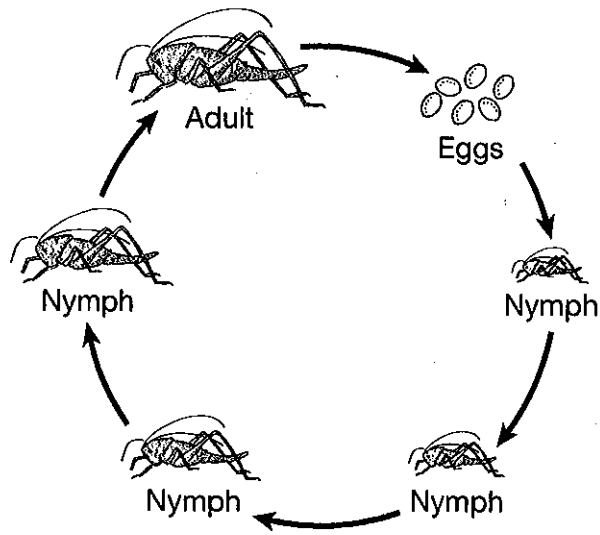
An adult butterfly lays eggs on a leaf. A caterpillar comes out of an egg. The caterpillar is the **larva** stage of a butterfly. Then the caterpillar makes a hard case around itself. The insect is now in the **pupa** stage. The caterpillar changes form inside the case. After a few weeks, an adult butterfly comes out. If it is a female, it lays eggs and starts the life cycle over again.



Caterpillars have been called "eating machines." Some caterpillars double their weight every day.

Some insects, such as crickets, go through only three stages in their life cycles—egg, nymph, and adult. Adults and nymphs have the same basic form. A nymph does not have wings. Adults do have wings. Nymphs do not have body parts for reproducing. Adults do have those body parts. As nymphs grow, they change into adult crickets.

The picture below shows the life cycle of a cricket.



### Discussion Question

What would happen if animals stopped reproducing?



### Lesson Review

1. Which of these living things goes through metamorphosis in its life cycle?
  - A. cat
  - B. snake
  - C. frog
  - D. human



2. Which of these living things does NOT reproduce by laying eggs?
- A. butterfly
  - B. cricket
  - C. frog
  - D. fox
3. Which pair of animals has life cycles that are the MOST alike?
- A. human and frog
  - B. frog and butterfly
  - C. butterfly and fox
  - D. fox and human
4. Which sentence is true?
- A. All animals change during their life cycles.
  - B. Only some animals change during their life cycles.
  - C. All animals have live young during their life cycles.
  - D. All animals go through metamorphosis during their life cycles.