A tiny fish called the pygmy goby lives in coral reefs. It begins its life as an egg. The goby hatches and then floats through the ocean. After about three weeks, it becomes an adult. Then, the goby lays eggs and dies. This fish only lives for about two months. A tortoise, on the other hand, lives for much longer. Tortoises hatch from eggs. Then they slowly grow into adults. Some tortoises can live for more than one hundred years!

Some animals, such as the pygmy goby, have very short life cycles. Other animals, such as the tortoise, have long life cycles. Plants have life cycles, too. They usually begin as seeds and grow into adult plants. But what exactly is a life cycle? Do all life cycles involve the same stages? Do they all happen the same way?

What happens in the life cycle of a butterfly and a beetle?
A *life cycle* is the process of being born, growing into an adult, and dying. Life cycles of different organisms have different stages, though. For example, when a baby fox is born, it looks just like its parents, only smaller. It has four legs, big ears, and red fur. Most baby *mammals* look like their parents. But most insects do not start their lives looking like their parents. They start out looking very different from adults. Butterflies and beetles are two examples of this kind of insect.

- **Butterfly life cycle:** The egg is the first part of the butterfly life cycle. When an egg hatches, a larva comes out. A *larva* is the second part of the butterfly’s life cycle. The larva does not look anything like the adult. A butterfly larva is called a caterpillar. The caterpillar eats as many leaves as it can. It grows bigger and bigger. Soon, it becomes a pupa. A pupa is the third part of the butterfly life cycle. The pupa is in a protective case. A butterfly pupa is called a chrysalis. Inside the chrysalis, the pupa turns into an adult butterfly. When the chrysalis cracks open, an adult butterfly comes out. The adult butterfly looks very different from the caterpillar. The adult lives for several weeks, lays eggs, and then dies.

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*Reflect*

A *mammal* is an animal that has hair or fur, is warm-blooded, and feeds milk to its young.
• **Beetle life cycle:** The beetle life cycle is similar to the butterfly life cycle. It also has four parts. The beetle starts out as an egg. The egg hatches and a tiny larva emerges. The larva looks like a worm and is called a mealworm. The mealworm eats as much as it can and grows larger. Then it starts the pupa part of its life cycle. It wraps itself up in a protective case. Soon, an adult beetle comes out of the pupa case. The adult beetle looks very different from the mealworm. The adult beetle may live for several weeks or months. It will lay eggs and then die.

![Egg, Larva, Pupa, Adult Stages of a Beetle Life Cycle](image)

**Look out!**

Most insects have a life cycle with four parts. But some insects have a life cycle with only three parts. A grasshopper is an example of an insect with three parts in its life cycle. A grasshopper starts as an egg. When the egg hatches, a small version of an adult grasshopper comes out. This small version is called a *nymph*. It grows and eventually turns into an adult. It looks similar to the adult grasshopper but doesn’t have full wings. Once the nymph develops those full wings, we consider it an adult grasshopper and no longer a nymph.

**What do you think?**

How are the life cycles of the butterfly and the beetle similar? How are they different? Describe as many similarities and differences as you can.

**Everyday Life: What are the parts of the human life cycle?**

When you were born, you were very tiny. Most newborn babies only weigh about eight or nine pounds. A full-grown adult usually weighs about 170 pounds. That’s a pretty big change!

Humans go through the same general stages of a life cycle. Life begins with the birth of a baby. Babies cannot do much on their own, but they grow quickly. Soon, they become children. Children are larger than babies. They can walk, talk, play sports, and learn more complicated things. When children turn 13, they are called teenagers. The teenage years are when the human body changes from a child to an adult. It takes several years for teenagers to develop into adults. Adults may start families and have
children of their own. When adults get very old, their bodies begin to weaken. Many activities like walking and exercising are more difficult than they were when they were younger adults. Older adults continue aging until they die.

**What happens in the life cycle of a radish plant and a lima bean plant?**

Plants begin their lives as seeds. They grow into small plants. Eventually, they become adult plants. Unlike insects, young plants look a lot like adult plants. Let’s learn more about the life cycles of two types of plants.

- **Radish:** Radishes are a delicious plant that humans can eat. The seed part of the radish life cycle is very short. Once a radish seed is planted, it grows into a seedling in about three or four days. A *seedling*, or *sprout*, is a young plant that grows out of the seed. It is much smaller than the adult plant but looks pretty similar. The seedling grows for several weeks before becoming an adult plant. The adult radish plant grows flowers.

![Seedling](image1)

These flowers turn into seeds. The seeds fall onto the ground and may begin to grow into new radish plants.

- **Lima Bean:** Have you ever eaten lima beans? Cooked lima beans are a nutritious part of a meal. A lima bean plant also starts as a seed. The seed is inside the bean. When the lima bean is watered, the bean swells. The sides of the bean break and the seeds spill out. Once planted, a seedling grows out of the seed after about seven days. A lima bean plant grows into an adult in a few months. The adult plant grows beans. When the seeds inside the beans fall to the ground, new lima bean plants might start to grow.

![Seedling](image2)
To learn more about a bean plant’s life cycle, grow your own bean plants.

1. You will need a few different kinds of dried beans. Lima, kidney beans, and green beans work well. Do not eat any uncooked beans. They can make you sick.
2. Soak the beans in cool water overnight. Be sure to soak them in separate containers so you do not mix the different bean types.
3. Put four or five of each type of bean in their own plastic, zippered baggie. Place moist paper towels or cotton balls in with the beans. Put the plastic bags in a warm place. The bags do not need to be in sunlight.
4. Check the bags each day for several days. Write down your observations.
5. How many days did it take for the first seedling to appear? Which type of bean sprouted first? Which type sprouted last? What do the seedlings look like?
6. Find images of what each adult bean plant looks like. Do the seedlings look similar to the adult plants? Do they look different?

**What Do You Know?**
Look at the chart below. It contains lists of words that are related to life cycles. Each list has one word that does not belong. Circle the word that does not belong. Use the space in the right column to explain why it does not belong.

<table>
<thead>
<tr>
<th>Which item does not belong?</th>
<th>Why doesn’t this item belong?</th>
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</thead>
<tbody>
<tr>
<td>Chrysalis</td>
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<td>Adult beetle</td>
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<tr>
<td>Caterpillar</td>
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<td>Caterpillar</td>
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Acting Out an Insect Life Cycle
Help your child explore the life cycle of an insect by engaging in some dramatic play.

1. Work with your child to research the life cycle of an insect (other than a butterfly or beetle) that undergoes complete metamorphosis, such as a honeybee. Discuss with your child that complete metamorphosis has four stages: egg, pupa, larva, and adult. Incomplete metamorphosis involves three stages: egg, nymph, and adult.

2. Research information about the four different stages of your insect’s life cycle. Try to find out where the adults lay their eggs and what the larva eats. Read about the pupa stage and learn about any special names for the protective case. Find out what the adult insect looks like and describe how it is different from the larva. Try to find images of all four stages of this insect’s life cycle.

3. When you have collected all of this information, work with your child to create a skit or puppet show about your insect’s life cycle. Your child could dress up as the insect in each of the four stages. You could also construct puppets from felt or construction paper and put on a puppet show.

Here are some questions to discuss with students:
- What does the larva stage of this insect look like? What does the adult stage look like?
- Do the larva and adult look similar?
- How long is this insect’s life cycle? How much time does each stage of the life cycle last?