SC.4.L.16.4 Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.

Life Cycles of Plants and Animals

What Is a Life Cycle?

Every living thing has a **life cycle**, or a series of changes that occur during its life. An organism's life cycle begins when it is born, hatches, or germinates. The organism grows and reaches adulthood or maturity. Eventually, all organisms die. The life cycle will continue, though, as long as the adults reproduced and their young survive.

Plant Life Cycles

Plants can be classified in two into two groups: those that produce seeds and those that do not. Most plants produce seeds. **Seeds** are the structures containing a tiny, undeveloped plant called an embryo that has started to grow inside. The hard outer covering of the seed, called the seed coat, protects the embryo. Seeds also have stored food for the embryo to use when the seed **germinates**, or begins to grow.

Mosses and ferns do not produce seeds. They produce spores. Like a seed, a spore will grow into a new plant. However, spores do not have an embryo inside, and they do not contain much stored food.

The fern life cycle is very complex. Spores develop on the underside of an adult ferns leaves. When a spore is released and lands on moist soil, it grows into a small, heart-shaped form from which an adult fern develops.

Flowering Plants

Flowering plants start life as a seed. Inside the seed, the embryo is dormant. It uses very little energy, and it is not growing. When the temperature and moisture are right, the seed germinates. A small root and stem start to grow. A small plant that has just started to grow is called a **seedling**. The plant continues to grow more roots, stems, and leaves. This is called the vegetative stage.

The next stage in a plant's life cycle is called a mature plant. At this time, the plant begins to make flowers. Flowers produce pollen. In order for new seeds to form, pollen must travel from one part of a flower to another. For many plants, bees carry pollen from one plant to another. In some plants, a fruit grows from part of the pollinated flower. Seeds develop inside the fruit, and the cycle starts again.

Cone-Bearing Plants

Some plants produce seeds without using flowers. These plants have cones instead. **Conifers,** which include pine trees, are one type of cone-bearing plants.

A seed contains an embryo. When conditions are just right, the seed germinates. It grows and becomes a seedling. The seedling grows into a mature, or adult, tree.

Male cones produce pollen. Wind carries the pollen to the female cones. Seeds develop in the female cones, and the life cycle continues.

Animal Life Cycles

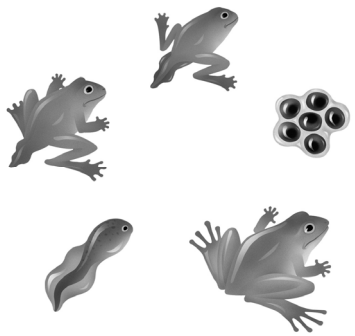
There are many variations in animal life cycles. Some young look very similar to the adults they will become. Other young do not look like adults of their species. They change drastically as they grow and develop.

When an animal goes through a change in body form as part of its life cycle, it is called **metamorphosis**. During metamorphosis, new body parts form. This change occurs as a young animal develops into an adult animal. Often, the young eat a different food source than the adults.

Frogs

Frogs start their lives in eggs. In the egg, a tadpole develops. When it hatches, it has a mouth, gills, and a tail. The tadpole sticks to the underside of a plant until it has grown more of a body and then begins to swim like a fish.

Metamorphosis begins after about six weeks. Tiny legs start to grow, and then tiny arms begin to grow. It looks like a frog with a long tail. By the twelfth week, the tail is absorbed into the body. The tadpole is now a small frog. Adult frogs have lungs and must breathe air. They can live on land, but their skin must stay moist.



Butterflies and Ladybugs

Butterflies and ladybugs are insects that change during their life cycles. Although they do not look alike, butterflies and ladybugs go through the same stages in their life cycles.

Both life cycles begin with an egg. When the egg hatches, a worm-like **larva** crawls out. Larvae eat a lot of food. Butterfly larvae, called caterpillars, eat leaves, Ladybug larvae eat tiny insects such as mites and aphids. As the larvae grow, they shed their skin several times.

Eventually, the larva will stop growing and attach itself to a leaf. It changes into a **pupa**. Inside the pupa, metamorphosis occurs. The organism grows wings and other new body parts. Its shape changes and it becomes an adult.

Adult butterflies no longer have mouthparts for chewing. Instead they sip nectar from flowers with their straw-like mouths. Adult ladybugs have a hard shell with wings underneath it. When adults reproduce, the female lays eggs and the life cycle begins again.

Chickens

Many animals, including birds, mammals, fish, and reptiles, do not undergo metamorphosis during their life cycle. In these animals, young are born live or hatch from an egg. The young have the same body form as the adults. The young grow and develop continuously and slowly become adults. When animals mature in this way, it is called **direct development**.

Chickens undergo direct development. The life cycle begins when an adult female lays a fertilized egg. Inside the egg, an embryo is developing. The chick hatches, and it has all the body parts of an adult. Each day, it grows and develops a little more. Eventually, it matures and becomes an adult. Adults can reproduce.

Name _____ Date _____

Student-Response Activity

❶ Use the terms in the word bank to label the life cycle stages for each organism.

Word Bank

seedling mature plant larva tadpole egg adult pupa

Flowering Plant

seed → _____ → _____

Ladybug

_____ → _____ → _____ → adult

Frog

egg → _____ → _____

❷ Some plants have flowers. Why are flowers important in the life cycle of some plants?

_____

_____

_____

_____

❸ How does the life cycle of a chicken differ from the life cycle of a frog?

_____

_____

_____

_____

Benchmark Assessment SC.4.L.16.4

Fill in the letter of the best choice.

❶ Which organism undergoes metamorphosis?

Ⓐ ladybug

Ⓑ fern

Ⓒ eagle

Ⓓ humans

❷ Jonah saved and planted a seed from his apple. What might he expect to see come up out of the ground first?

Ⓕ a small green apple

Ⓖ a seedling apple tree

Ⓗ roots of an apple tree

Ⓘ a mature apple tree

❸ Which is a young frog that will turn into an adult?

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

❹ A moth and a ladybug undergo the same life cycle stages. Which stage comes after a moth's pupa stage?

Ⓕ 

Ⓖ 

Ⓗ 

Ⓘ 

❺ When a caterpillar becomes a pupa, what happens inside?

Ⓐ It hibernates.

Ⓑ It grows different organs and wings.

Ⓒ It rests and comes out just the same.

Ⓓ It comes out the same shape, but smaller since it couldn't eat.