



The Life Cycle of a Butterfly

8

✓ Lesson Objectives

Core Content Objectives

Students will:

- ✓ Explain that a cycle is a sequence of events that repeats itself again and again
- ✓ Describe the seasonal cycle: spring, summer, autumn, winter
- ✓ Explain effects of seasonal changes on plants and animals
- ✓ Define the term *life cycle*
- ✓ Identify the stages of the life cycle of a butterfly (egg to egg)
- ✓ Explain metamorphosis

Language Arts Objectives

The following language arts objectives are addressed in this lesson. Objectives aligning with the Common Core State Standards are noted with the corresponding standard in parentheses. Refer to the Alignment Chart in the Introduction for additional standards addressed in all lessons in this domain.

Students will:

- ✓ Identify the main topic of “The Life Cycle of a Butterfly” (RI.2.2)
- ✓ Compare and contrast the life cycle of a chicken to the life cycle of a frog (RI.2.9)
- ✓ Identify new meanings for the word *round* and apply them accurately (L.2.5a)
- ✓ Make and describe a personal connection to how outgrowing one’s clothes resembles a caterpillar molting its skin.
- ✓ Sequence four to six pictures illustrating the life cycle of a butterfly

Core Vocabulary

larva, *n.* The early form of an insect that is not completely developed

Example: A larva must go through many stages of growth before becoming an adult insect.

Variation(s): larvae

molt, *v.* To shed an outer layer


Example: When it comes time for my pet snake to molt, he sheds all of his scales at once.

Variation(s): molts, molted, molting

transparent, *adj.* Clear; able to see through

Example: Judy planted her seeds in a large, transparent, plastic cup so she could watch the roots develop beneath the soil.

Variation(s): none

<i>At a Glance</i>	Exercise	Materials	Minutes
<i>Introducing the Read-Aloud</i>	What Have We Already Learned?	Image Cards 10–16	10
	Purpose for Listening		
<i>Presenting the Read-Aloud</i>	Life Cycle of a Butterfly	U.S. map; ruler	15
<i>Discussing the Read-Aloud</i>	Comprehension Questions	Cycles Poster 6 (Life Cycle of a Butterfly)	10
	Word Work: Transparent		5
 Complete Remainder of the Lesson Later in the Day			
<i>Extensions</i>	Sequencing the Life Cycle of a Butterfly	Instructional Master 8B-1; Cycles Poster 6; drawing paper, drawing tools; glue or tape; scissors	20



The Life Cycle of a Butterfly

8A

Introducing the Read-Aloud

10 minutes

What Have We Already Learned?

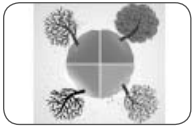
Review with students that a cycle is a sequence of events that repeats itself again and again. A life cycle includes all the stages a living thing goes through from birth to adult. Discuss with students how the seasonal cycle affects the life cycles of living things: most new life occurs in the spring, when there is more sunlight and temperatures are warmer.

Remind students that when a living thing becomes an adult, it is then able to reproduce, or make more of its own kind, to begin the life cycle again. In the case of plants and trees, remind students that we can describe their life cycles as going from “seed to seed.” Remind students that as they have discovered with chickens and frogs, animals also journey through stages from egg to adult called a life cycle.

Have students use Image Cards 10–16 to help them compare and contrast the life cycle of a chicken and a frog. How do the life cycles of chickens and frogs begin?

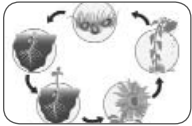
Purpose for Listening

Explain to students that they are going to continue learning about another life cycle—the life cycle of a butterfly. Tell students to listen for the main topic in today’s read-aloud: the changes that occur in the butterfly’s life cycle from egg to adult butterfly. Tell them to listen carefully for the word *metamorphosis* and its role in the life cycle of this animal.

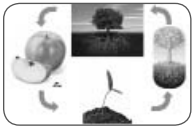


The Life Cycle of a Butterfly

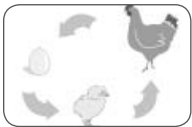
← Show image 8A-1: Seasonal Cycle



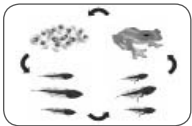
← Show image 8A-2: Plant Life Cycle



← Show image 8A-3: Tree Life Cycle



← Show image 8A-4: Chicken Life Cycle



← Show image 8A-5: Frog Life Cycle

1 [Use images 8A-1 through 8A-5 to help students review these cycles.]

2 At what time of the year do we see butterflies? (We usually see butterflies during spring and summer. If it is warm enough we might see them in early fall too.)



3 [Use a ruler to show students these lengths.]

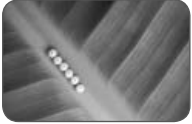
You have already learned about five cycles!¹ You have learned about the seasonal cycle, the life cycle of a flowering plant, the life cycle of a tree, the life cycle of a chicken, and the life cycle of a frog. Today you will learn about the life cycle of a butterfly. A butterfly's life cycle is somewhat different because it goes through a stage called metamorphosis. Metamorphosis is a process in which a living thing changes or transforms from one shape into another. This means that it literally changes its entire appearance. Let's hear more about the extraordinary life cycle of those beautiful creatures called butterflies.²

← Show image 8A-6: Butterflies

Did you know that there are about 25,000 different kinds of butterflies in the world? Butterflies vary in size from about one-eighth of an inch, to almost twelve inches in size.³ The largest butterfly in the world is the Queen Alexandra Birdwing. Its wingspan is twelve inches wide! It lives in the rainforests of Papua New Guinea. The smallest butterfly is the Western Pygmy Blue from Africa.

4 85°F is the temperature on a warm, summer day.

5 55°F is the temperature on a chilly day.



← **Show image 8A-7: Butterfly eggs**

6 Here, the word *round* refers to the shape of the eggs. The word *round* also can mean to go or pass around something.

7 [Show students something that is cylinder-shaped in your classroom for reference.]



← **Show image 8A-8: Butterfly larva**

8 Let's try to move like caterpillars!

Incredibly, butterflies can only fly when their bodies are warm enough. The butterfly's body temperature must be 85°F for them to take to the air.⁴ When they do, the fastest butterflies can fly at 12 mph. They cannot move at all if their body temperature drops below 55°F.⁵ Well, now that you know some interesting facts about butterflies, it's time to find out about their life cycle.

A butterfly begins its life as an egg that has been produced by its mother. Butterfly eggs can be round or oval.⁶ There are even some that are cylindrical in shape.⁷ The shape of the egg often depends on the kind of butterfly that laid the egg.

Female butterflies lay their eggs on the leaves of plants. They do this so that when their young hatch, there is food right there for them to eat. They choose these leaves carefully, selecting only the leaves that their young will eat. Depending on the kind of butterfly, it can take from six days to twenty days for the eggs to hatch.

Can you guess what hatches out of a butterfly egg? Well, it isn't a butterfly. It is actually a tiny caterpillar, also called a **larva**. A caterpillar is a small creature that moves by squeezing its muscles. It squeezes its muscles starting at the back end of its body and moving up to its head. This movement pushes the caterpillar forward.⁸

A caterpillar also uses its muscles to eat. The caterpillar's job is to eat as much as it can. A caterpillar eats the egg that sheltered it. Then it begins to eat the leaf on which it was born. The tiny caterpillar keeps on eating, devouring all the leaves around it. Caterpillars don't sleep, so they eat during the day and at nighttime, too. They grow very quickly.

Because caterpillars grow so quickly, they outgrow their skin. This means that because their skin does not grow with them the way yours does, they **molt**, or shed, their outer skin to reveal new skin underneath. They do this repeatedly until they are fully grown. Some caterpillars even eat their own old skin!⁹

9 What happens when you outgrow your clothes?

A caterpillar is usually fully grown somewhere between nine and twenty days. At this stage, the caterpillar will leave its food supply and go in search of a safe, leafy place to enter into the next stage of its life cycle. Once in this safe place, it attaches itself to a twig or small branch by making a silk pad on the bottom of the branch or twig. The caterpillar then hooks itself onto the silk pad.



◀ **Show image 8A-9: Pupa in chrysalis**

In the next stage, the caterpillar forms a protective outer casing called a pupa, or chrysalis. The formation of the chrysalis is the final stage of molting, or shedding outer skin. When it molts for the final time, the new skin becomes the outer shell of the chrysalis.

Inside the chrysalis something incredible happens. The caterpillar transforms from one thing into another in the process called metamorphosis.



◀ **Show image 8A-10: Newly hatched butterfly**

Think about what a caterpillar looks like when it is fully grown, just before metamorphosis. It is small and round. When it emerges from the chrysalis, it is no longer a caterpillar but a delicate, beautifully colored butterfly with wings. The caterpillar's body has completely changed. (For some butterflies it is sometimes possible to tell when the butterfly is fully transformed and ready to emerge because its chrysalis becomes **transparent**, or see-through.) The butterfly does not look anything like the small, round-bodied creature it used to be. Instead of mouthparts that chew, the butterfly has a straw-like tube that can suck nectar from sweet-tasting flowers. It has antennae. This metamorphosis takes between ten to fourteen days to complete.

At first, the butterfly's wings are very delicate. They are quite soft and are folded up, not yet ready to carry the butterfly up into the air. It will take several hours before the butterfly is ready to take to the sky. During this time, a fluid is being pumped all around the butterfly's body, especially into the wings. When the butterfly is ready to fly, it is also ready to find a mate.



← **Show image 8A-11: Butterfly body parts**

Butterflies use their eyes to find a mate. Male butterflies send out special scents to attract female butterflies. Male butterflies fertilize the eggs of female butterflies. The life cycle begins all over again as female butterflies search for the right places to lay their eggs.

Amazingly, female butterflies use their feet to find the best place to lay their eggs. The butterfly “tastes” various leaves using her feet to find just the right home for her young. She knows that when her eggs hatch, they will need an instant food supply.



← **Show image 8A-12: Migration**

Did you know that butterflies do not live for a very long time? Many butterflies live for just about one month. There are even some that live for just a matter of days. However, there are a few, such as the Monarch butterfly, that can live for almost a year and in the fall migrate thousands of miles.¹⁰

10 What does the word *migrate* mean again?



← **Show image 8A-13: Butterfly Life Cycle**

During their lifetime, butterflies help to pollinate our flowering plants. Because they are cold-blooded and like only warm weather, we only see them in the late spring and summer. But when we do, they are a beautiful sight to see in our gardens and parks. Perhaps now that you know all about the life cycle of a butterfly, when you next see one, you will appreciate them even more.

Discussing the Read-Aloud

15 minutes

Comprehension Questions

10 minutes

1. *Evaluative* What is the main topic of the read-aloud? (The main topic of the read-aloud is the life cycle of a butterfly.)
2. *Literal* How does a butterfly begin its life? (A butterfly begins its life as an egg.)
3. *Literal* What hatches out of the egg? (A caterpillar or larva hatches out of the egg.)

4. *Literal* Caterpillars grow so quickly that they outgrow their skin. What does a caterpillar do with the skin it outgrows? (A caterpillar will molt or shed the skin it outgrows.)
5. *Literal* What is the next stage called when the caterpillar forms a protective case? (When a caterpillar forms a protective case, this is called the chrysalis or pupa stage.)
6. *Literal* What comes out of the chrysalis or pupa? (An adult butterfly comes out of the chrysalis or pupa.)
7. *Evaluative* [You may wish to have students refer to Cycles Poster 6 as they answer the following question.] What are the four stages in the life cycle of a butterfly? (The four stages in the life cycle of a butterfly are egg, larva/caterpillar, chrysalis/pupa, and adult).
8. *Evaluative* After metamorphosis, does the adult animal look like it did when it was younger? (After metamorphosis, the adult does not look like it did when it was younger.)
9. *Inferential* Why do some butterflies migrate? (For those butterflies that live longer, they cannot stay in cold, wet conditions. When temperatures fall below 55°F, they cannot move. If it is very cold, they will die, and so in order to survive, they must migrate.)

[Please continue to model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

10. *Evaluative Think Pair Share:* The life cycle of a flowering plant could be described as going from seed to seed, and the life cycles of a frog and a chicken, from egg to egg. How would you describe the life cycle of a butterfly? (Using that example, the life cycle of a butterfly could be described as going from egg to egg. When the adult butterfly lays an egg, the life cycle begins. The larva/caterpillar hatches from the egg; the larva/caterpillar molts several times as it grows; the chrysalis/pupa forms; and finally the chrysalis/pupa splits open so the adult butterfly can emerge. The adult butterfly is then able to reproduce, and the female lays eggs on a leaf to begin the life cycle again.)

11. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Transparent

5 minutes

1. In the read-aloud you heard, "For some butterflies it is sometimes possible to tell when the butterfly is fully transformed and ready to emerge because its chrysalis becomes *transparent*, or see-through."
2. Say the word *transparent* with me.
3. *Transparent* means see-through.
4. Mike's water bottle is transparent, so he is able to see how much water he has left.
5. What are things you have seen that are transparent? Try to use the word *transparent* when you tell about it. [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "_____ is transparent."]
6. What's the word we've been talking about?

Use a *Making Choices* activity for follow-up. Directions: I am going to name several things. If what I name is transparent, say, "_____ is transparent." If what I name is not transparent, say, "_____ is not transparent." Remember to answer in complete sentences.

1. a window (A window is transparent.)
2. a brown paper bag (A brown paper bag is not transparent.)
3. a classroom pet tank (A classroom pet tank is transparent.)
4. a book (A book is not transparent.)
5. the lenses in a pair of glasses (The lenses in a pair of glasses are transparent.)
6. clear plastic wrap (Clear plastic wrap is transparent.)



Complete Remainder of the Lesson Later in the Day



The Life Cycle of a Butterfly

8_B

Extensions

20 minutes

Sequencing the Life Cycle of a Butterfly (Instructional Master 8B-1)

Review the term *metamorphosis* with students. Help them understand that metamorphosis is the process by which some young animals change physical form completely as they become adults. Give each student a copy of Instructional Master 8B-1 and a large piece of drawing paper. Tell students that the worksheet has pictures of the different stages of the life cycle of a butterfly.

Have students color and cut out the pictures. Next, have them think about what is happening in each picture. Students should then arrange the pictures in their correct order to show the proper sequence of metamorphosis. Once the pictures have been sequenced, have students glue or tape the pictures onto drawing paper. As students complete this activity, have them work with a partner to retell the stages of the life cycle of a butterfly while referring to their sequenced pictures. Have students write sentences that describe the pictures and retell the metamorphosis of a butterfly.

You may also wish to show students Cycles Poster 6 (Life Cycle of a Butterfly) and have them once again identify the four stages of the butterfly's life and metamorphosis. You may wish to display the Poster on the classroom wall to reference throughout the domain.