



ESSENTIAL QUESTION

# How Do Animals Reproduce?



## Engage Your Brain

Find the answer to the following question in this lesson and record it here.

How do you think these young egrets will change as they grow up?

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## ACTIVE READING

### Lesson Vocabulary

List the terms. As you learn about each one, make notes in the Interactive Glossary.

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### Sequence

Many ideas in this lesson are in a sequence, or order, that describes the steps in a process. Active readers stay focused on sequence when they go from one stage or step in a process to another.

# Life **in** Full Circle

Like plants, animals have life cycles. Animals are born and then begin to grow up. When animals become adults, they may have young of their own. In this way, life continues to renew itself.

**ACTIVE READING** As you read the next page, underline the description of each stage of an animal's life, and number the stages in the correct order.



When a bird reaches adulthood, it mates with another bird.

Over time, the bird grows. Soon it can live on its own.

After the eggs hatch, the parents feed the young birds.

After mating, a female bird lays eggs. Birds hatch from eggs.

# Matching Game

Use the terms on the right to identify the correct life stages in each series of pictures.

Adult  
Newborn  
Youth



**M**ost animals reproduce sexually. During sexual reproduction, sperm from a male joins an egg from a female. The fertilized egg can then develop into a new animal.

In some animals, such as many kinds of fish, eggs are fertilized outside of the female's body. In other animals, such as birds, eggs are fertilized inside the female's body. After the eggs are fertilized, birds lay the eggs. Bird parents then protect the eggs until they have hatched.

After the young are born, they begin to grow and change. Over time, newborns develop into youths. Youths continue to develop until they grow into adults. Adult animals mate with one another to produce offspring. An animal's life cycle ends when the animal dies. However, the animal's offspring will likely have offspring of their own. In this way, the life cycle repeats again and again.

# Bringing Up Baby

Like birds, many other animals hatch out of eggs. For example, most fish, reptiles, and spiders hatch from eggs. Other animals give birth to live young. Dogs, horses, and mice are all born this way.

**ACTIVE READING** As you read these pages, draw a star next to the names of animals that hatch from eggs and a check mark next to the names of animals that are born live.

**W**hat happens after an animal is born? Some animals, such as turtles, are on their own as soon as they hatch from their eggs. Their parents do not help them. Other animals, such as penguins, give their young a great deal of care. They keep their young warm and fed until the young grow strong enough to take care of themselves.

Animals such as deer, bears, and rabbits take care of their young by feeding them milk. These animals may stay with their parents for months or years until they are able to live on their own.



Birds' eggshells are hard, but alligators and other reptiles have soft, leathery shells.



(bl) ©Marki Deable and Victoria Stone/Getty Images; (tr) ©Juniors Bildarchiv/Alamy

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► What are young kangaroos called?

Cats give birth to live young.  
Young cats drink their mother's milk.



## DO THE MATH

### Solve a Problem

Raccoons usually give birth to 3 to 5 young at one time. Raccoons give birth only once a year. Suppose a female raccoon lives 10 years. She is able to give birth for 9 of those years. How many offspring will she have?

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When kangaroos are born, they are about the size of a dime. They then develop in their mother's pouch.

1



When babies are born, they drink their mother's milk. They have no teeth, and they are not able to walk on their own.

2



Babies grow into toddlers. Toddlers learn how to walk. They also start learning how to speak. Humans get their first set of teeth when they are toddlers.

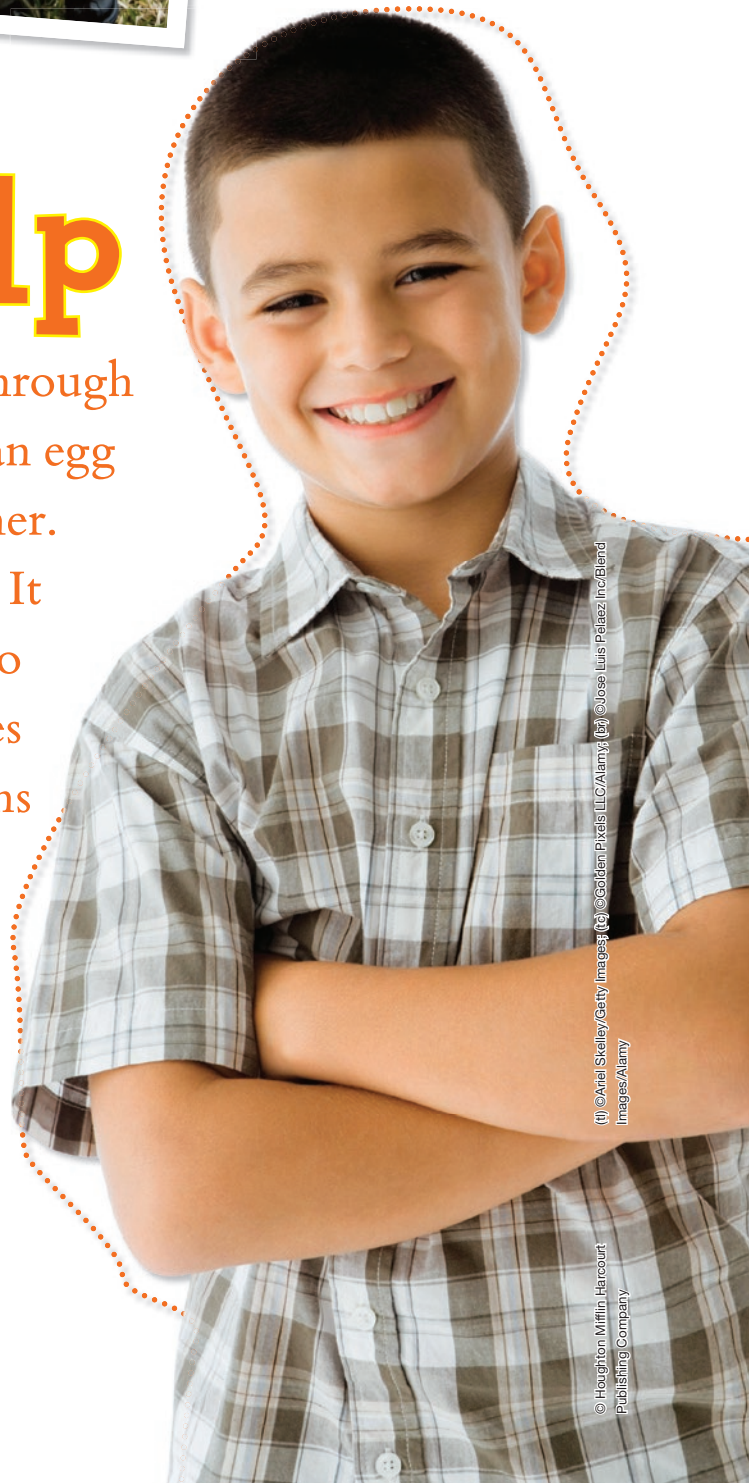
# Growing Up

Just like other animals, humans go through stages of development. After a human egg is fertilized, it grows inside the mother. After nine months, the baby is born. It takes many years for a human baby to grow into an adult. Study these pages to see all of the growth stages humans go through.

**ACTIVE READING** Put a star next to the life stage that you are currently in.

3

As a child develops, the first set of teeth is replaced by permanent teeth. The child grows and develops many physical and mental skills.



(1) ©Ariel Skelley/Getty Images; (2) ©Golden Pixels LLC/Alamy; (3) ©Jose Luis Pelaez Inc/Blend Images/Alamy

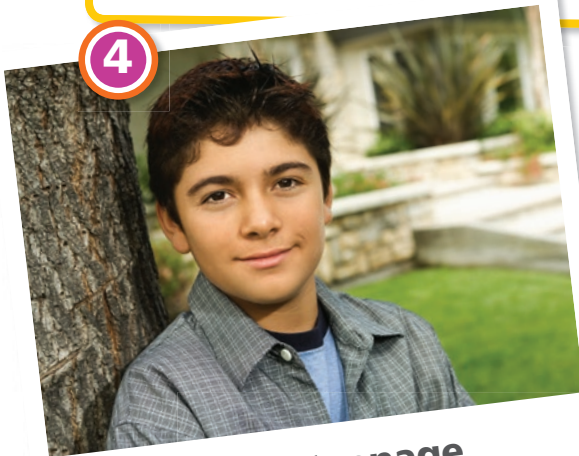
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# Growth Chart

At age 2, children are about 2 ft 10 in. tall. By age 5, children are about 3 ft 6 in. tall. Place these measurements into the chart. Then, measure yourself and an adult. Place those measurements in the chart.

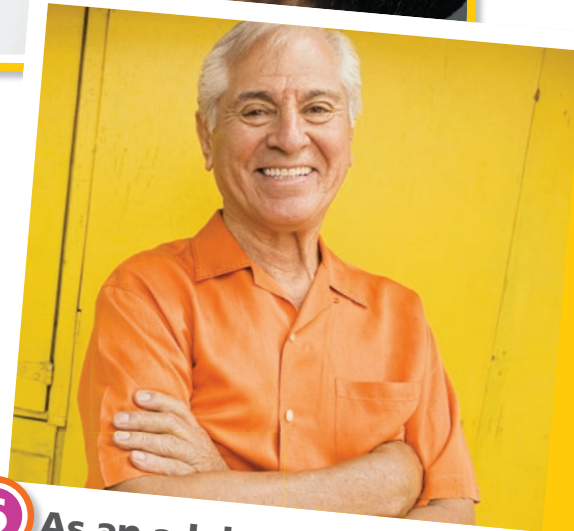
How do you change as you get older?

Age	Height
2	
5	
You	
Adult	



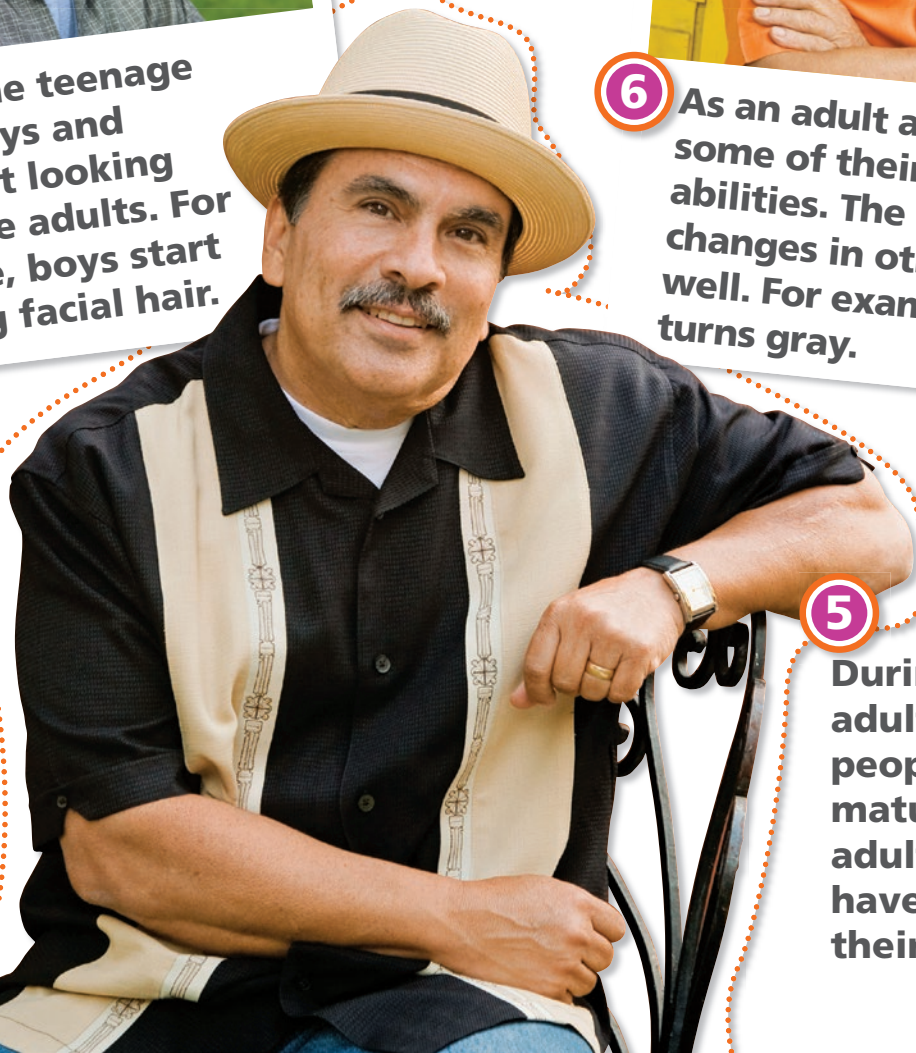
4

During the teenage years, boys and girls start looking more like adults. For example, boys start growing facial hair.



6

As an adult ages, they lose some of their physical abilities. The body changes in other ways, as well. For example, the hair turns gray.



5

During adulthood, people reach maturity. Often, adults marry and have children of their own.

# My, How You've Changed!



A young frog, or tadpole, has a long tail and no legs. As it grows, its tail becomes shorter, and it begins to grow legs. An adult frog has no tail, but has legs. The young go through a series of changes known as *metamorphosis*.

**ACTIVE READING** As you read the next page, underline the sentences that contain vocabulary terms.

► Write a caption for this photo of a butterfly breaking out of its chrysalis.

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## Complete Metamorphosis

Egg

Larva

Pupa

Adult

Butterflies go through complete metamorphosis. The larva of a butterfly is also called a caterpillar. The caterpillar grows into a pupa. Inside a chrysalis [kris•uh•lis], the pupa becomes an adult butterfly.



# Incomplete Metamorphosis

Adult

Grasshoppers will molt five times before they reach the adult stage.

Grasshoppers go through incomplete metamorphosis. Young grasshoppers hatch as nymphs. A nymph grows and molts.

Nymph

The female grasshopper lays eggs in the soil.

Eggs

In many animals, the young look similar to the adults. But in other animals, the young look very different. In **complete metamorphosis** [met•uh•MAWR•fuh•sis], an animal goes through four different stages in its life cycle. The egg hatches into a *larva*. The larvae [LAR•vee] of many insects look like worms. A larva develops into a *pupa* [PYOO•puh]. The pupa of a moth is enclosed in a cocoon. While in the cocoon, the pupa develops into an adult moth. The adult splits its cocoon and flies out.

Some insects, such as dragonflies and termites, go through a different series of changes. In **incomplete metamorphosis**, an animal goes through three different stages in its life cycle. First, the animal hatches from the egg as a **nymph** [NIMF]. Nymphs look like tiny adults, but they don't have wings. As the nymph grows larger, it molts. Molting happens when an insect sheds its hard outer skeleton. After several moltings, the insect, which now has wings, reaches its adult stage.

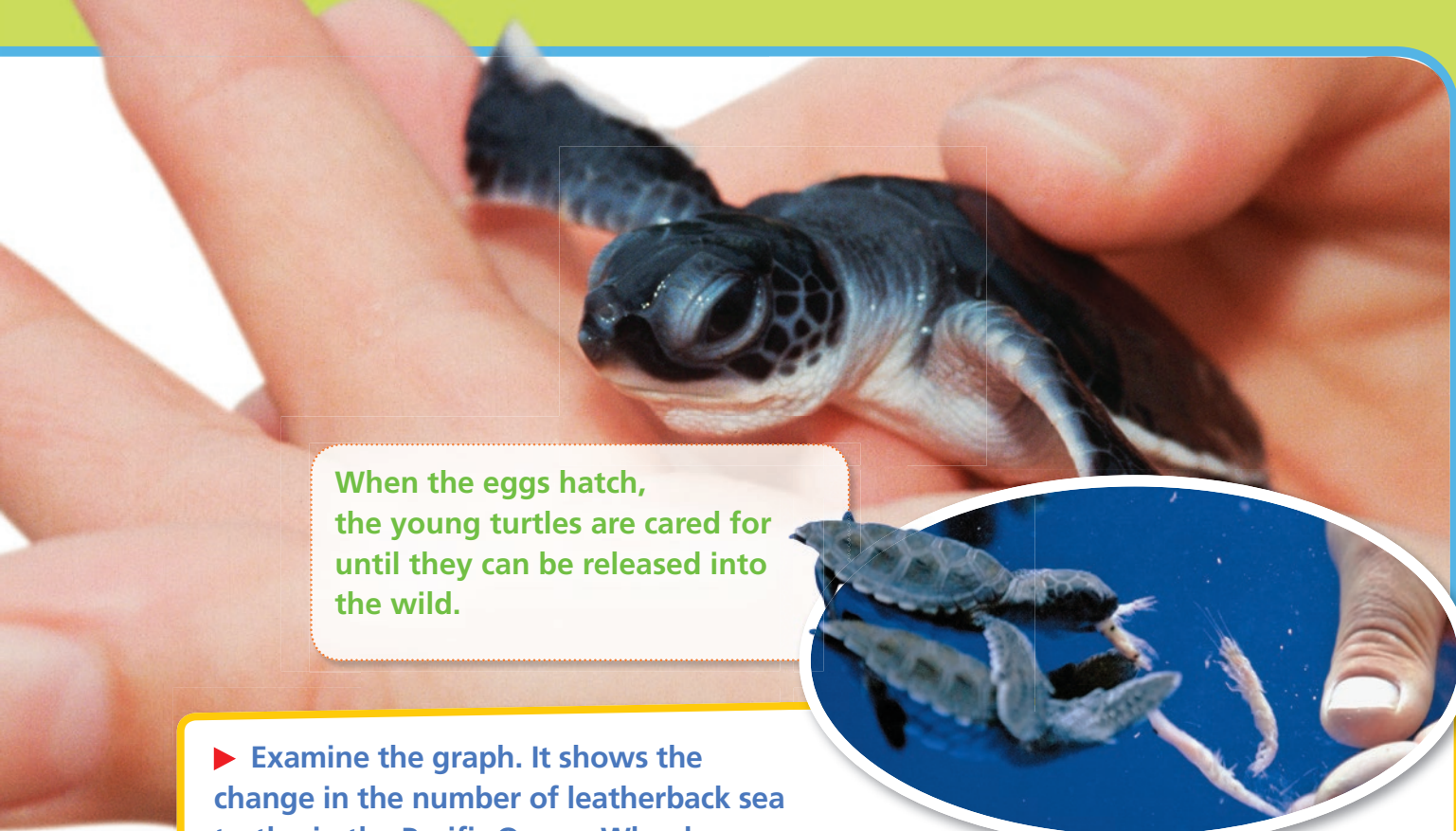
# Saving **the** Sea Turtles

Some kinds of animals are endangered. That means there are not many of them left. Scientists study the life cycles of endangered animals to try to save them and help them increase their numbers.

**S**ea turtles are one example of an endangered animal. Hunting, pollution, and beach erosion have caused the number of sea turtles to go down. To help sea turtles, people have learned about the sea turtle's life cycle. They have used what they learned to rear sea turtles. The turtles are then released into the wild. Over time, scientists hope this will help increase the number of sea turtles.

To rear sea turtles, eggs are collected.





When the eggs hatch, the young turtles are cared for until they can be released into the wild.



► Examine the graph. It shows the change in the number of leatherback sea turtles in the Pacific Ocean. Why do you think it is important for humans to try to rear sea turtles?

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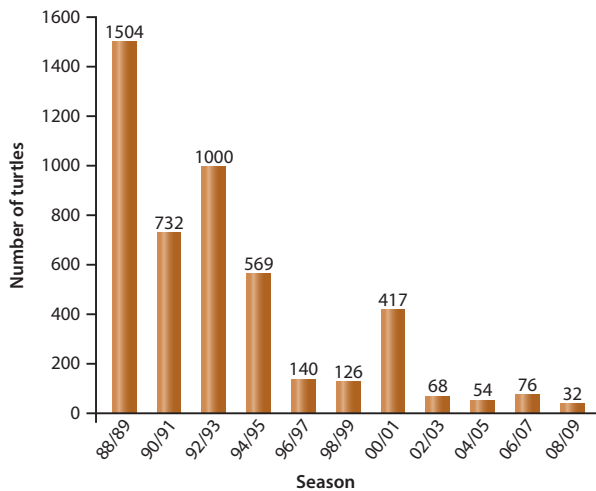


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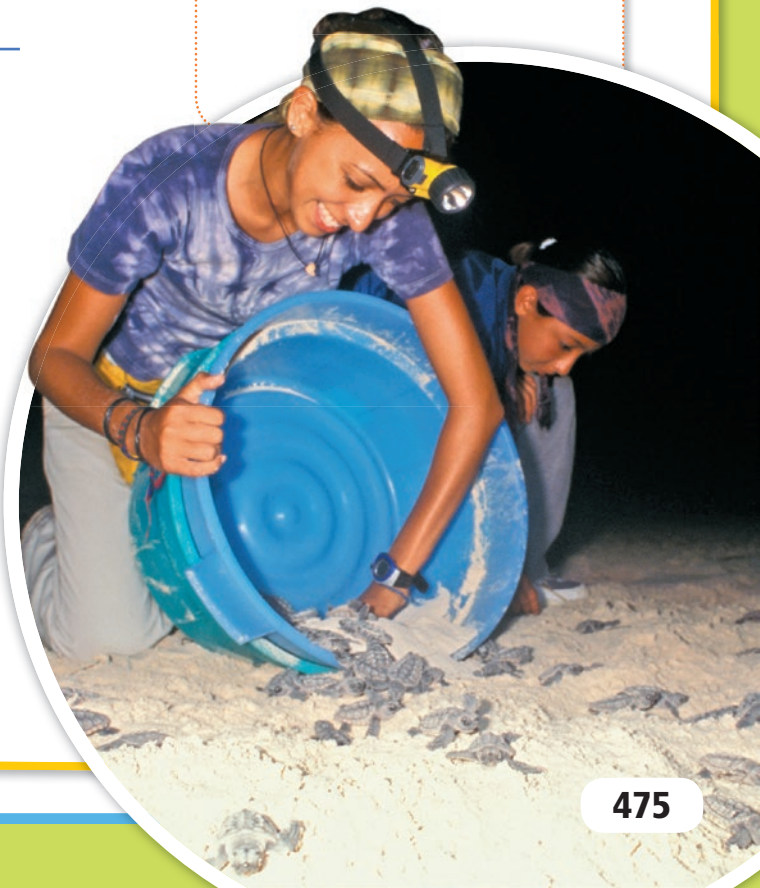


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Leatherbacks in the Eastern Pacific Over Time



When the turtles are ready, they are taken to a beach and released.



# Sum It Up >>

Read the summary statements below. Each one is incorrect. Change the part of the summary in blue to make it correct.

1 Most animals grow from a fertilized sperm cell.

\_\_\_\_\_

2 Some animals, such as cows, cats, and rabbits, give birth to live young and care for the young by feeding them worms.

\_\_\_\_\_

3 After human babies are born, they develop into teenagers, and then they eventually grow into toddlers and then adults.

\_\_\_\_\_  
\_\_\_\_\_

4 Animals that have a larva stage and a pupa stage undergo incomplete metamorphosis, while animals that have a nymph stage undergo complete metamorphosis.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5 Humans can try to help endangered animals by rearing them and releasing them into cities.

\_\_\_\_\_

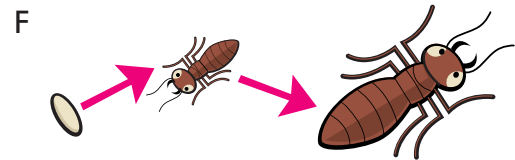
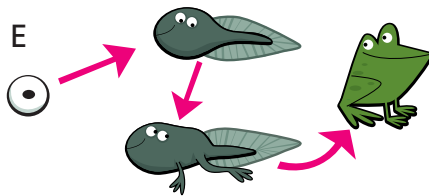
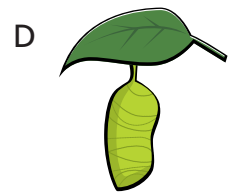
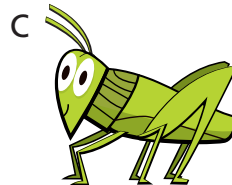
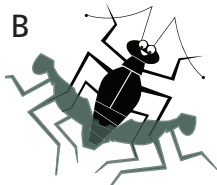
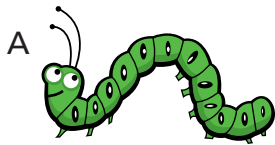


Name \_\_\_\_\_

## Vocabulary Review

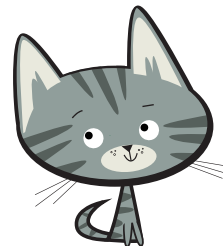
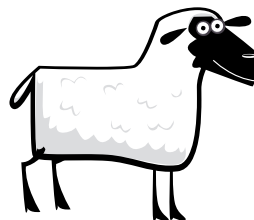
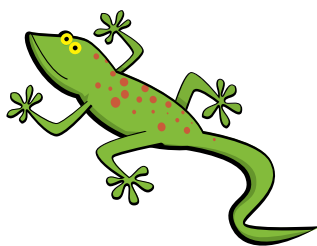
1 Match the words to the correct picture.

- \_\_\_ 1. metamorphosis
- \_\_\_ 2. incomplete metamorphosis
- \_\_\_ 3. larva
- \_\_\_ 4. nymph
- \_\_\_ 5. molt
- \_\_\_ 6. pupa



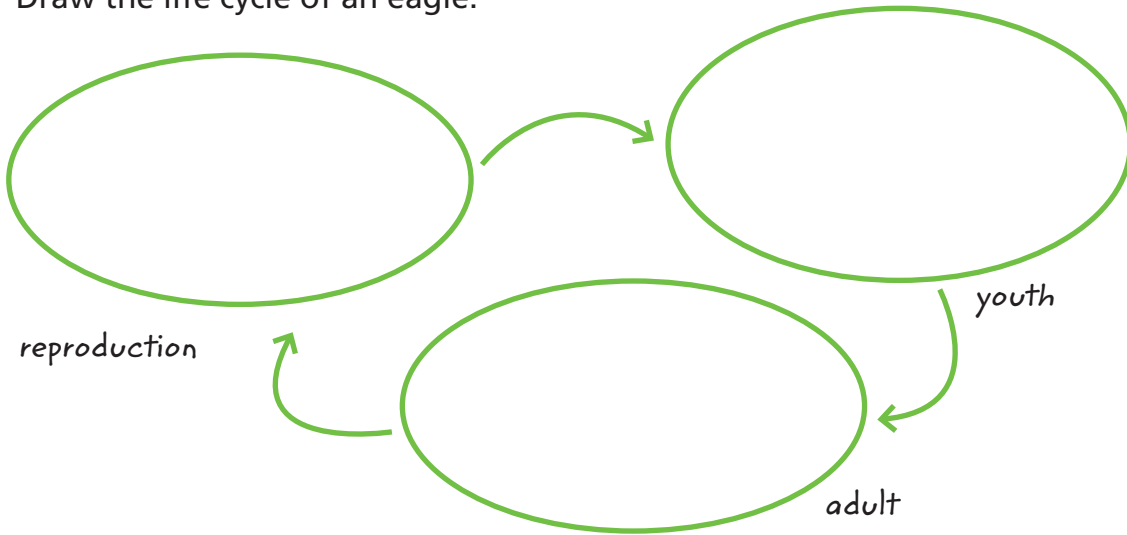
## Apply Concepts

2 Circle the animals that hatch from eggs.

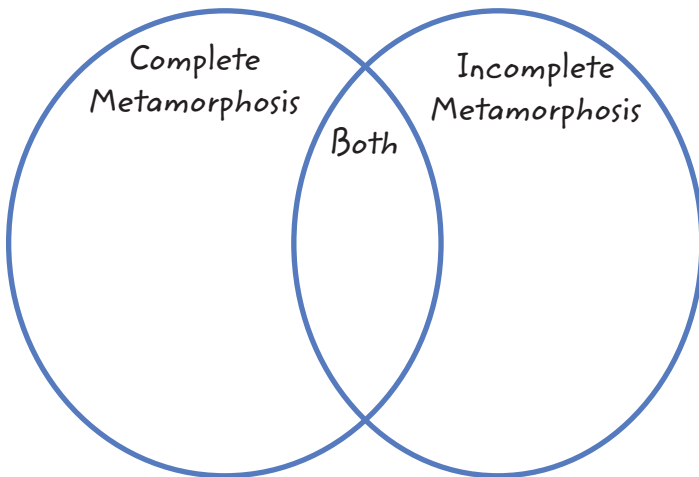


# Apply Concepts

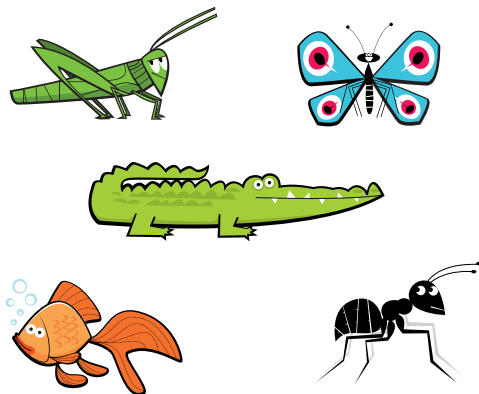
3 Draw the life cycle of an eagle.



4 Use the Venn diagram below to compare complete metamorphosis and incomplete metamorphosis.



5 Circle the one that undergoes incomplete metamorphosis.



**Take It Home!**

Ask to see childhood photographs of adult family members. How did your family members change as they grew and developed?