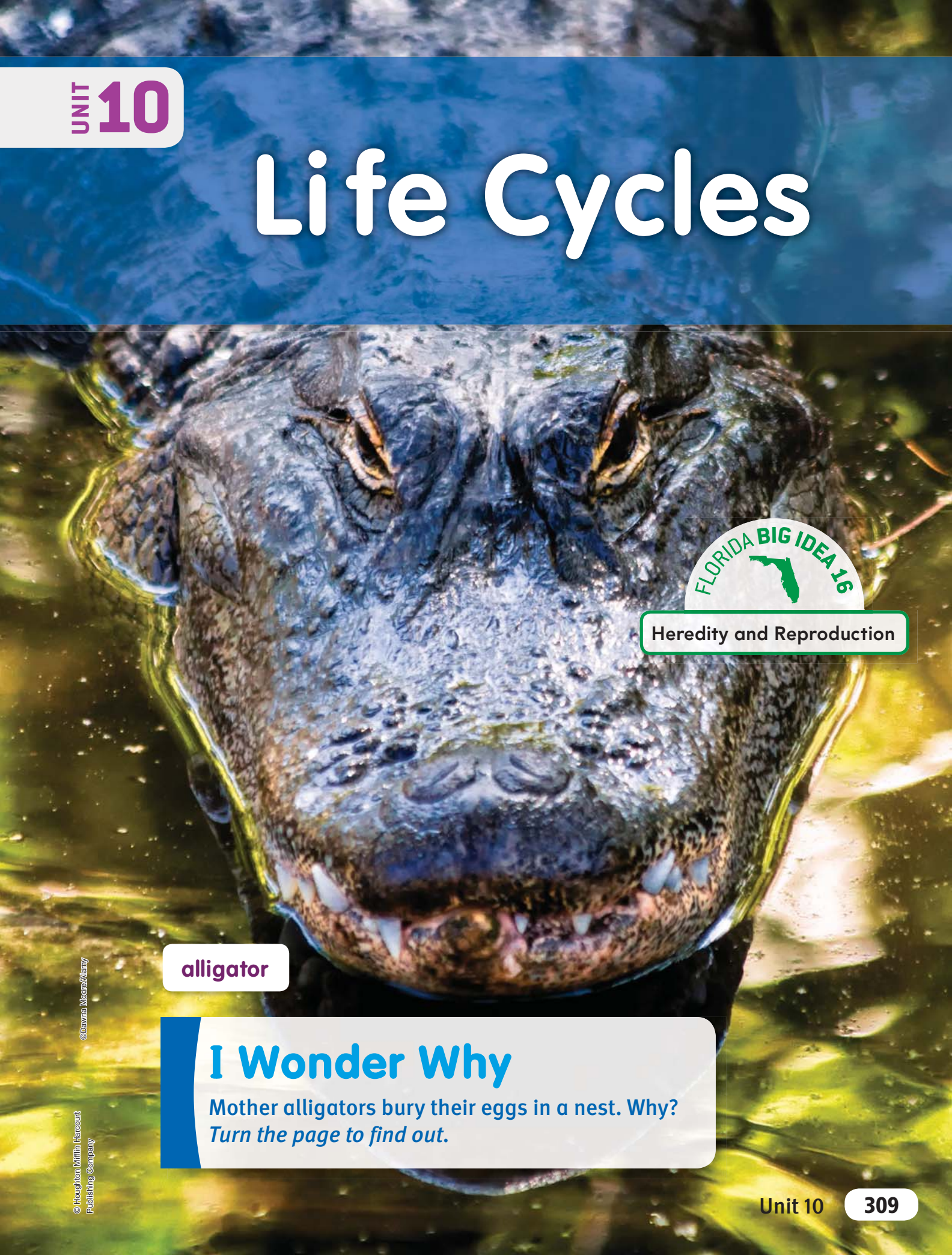
UNIT 10

Life Cycles



FLORIDA BIG IDEA 16

Heredity and Reproduction

alligator

I Wonder Why

Mother alligators bury their eggs in a nest. Why?
Turn the page to find out.

Here's Why

Mother alligators need to keep their eggs warm and protected for the young alligators to hatch.

Essential Questions and Florida Benchmarks

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Science Notebook

Before you begin each lesson, write your thoughts about the Essential Question.

Essential Question

What Are Some Animal Life Cycles?

Engage Your Brain

Find the answer to the riddle in this lesson.

When is a frog not like a frog?

When it is a

_____.

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Active Reading

Lesson Vocabulary

1. Preview the lesson.
2. Write the 6 vocabulary terms here.

_____ _____

_____ _____

_____ _____

Animal Start-Ups

A dog can have puppies. A cat can have kittens. Adult animals can **reproduce**, or have young. Animals such as puppies and kittens look like their parents. How does a kitten look like an adult cat?

Other young animals look very different from their parents. They go through changes and become like their parents.

A young butterfly does not look like its parents.

A young cat looks like its parents.

▶ **Name another animal that looks like its parents.**

_____

What's in the Egg?

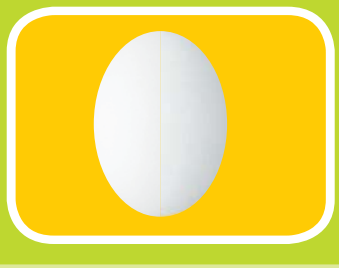
Many animals begin life by hatching from an egg. Animals change as they grow. The changes that happen to an animal during its life make up its **life cycle**.

How are the animals in this chart alike?

_____

_____

Animal Life Cycles

Kind of Animal	Egg	Young	Adult
Chicken			
Turtle			
Rainbow Trout			

1

Egg

A frog begins life inside a tiny egg.

2

Young Tadpole

A **tadpole** hatches from the egg. It lives in water. It takes in oxygen with gills.

Hatch, Swim, Hop

Did you know that a frog begins life inside a tiny egg? The young frog goes through changes to become an adult. These changes are called **metamorphosis**.

Active Reading

Circle the name of the body parts that a tadpole uses to take in oxygen. Underline the name of the body parts that an adult frog uses to take in oxygen.

3

Growing Tadpole

The tadpole gets bigger. It grows four legs. Later, it loses its tail.

4

Frog

The adult can live on land or in the water. It hops. It breathes with lungs.

Polar Parenting

It is late October. A female polar bear gets a shelter ready for her cubs. She digs a den in the snow. The den will keep her young warm and safe. She gives birth in winter.

How is a polar bear's life cycle different from a frog's life cycle?

_____

1

Newborn

A polar bear cub is born inside the den. It drinks milk from its mother's body.

2

Growing Cub

The cub begins to explore outside the den.

We'll stay with our mother for almost three years, until we're grown up.

3

Young Polar Bear

The young polar bear learns to swim and hunt.

4

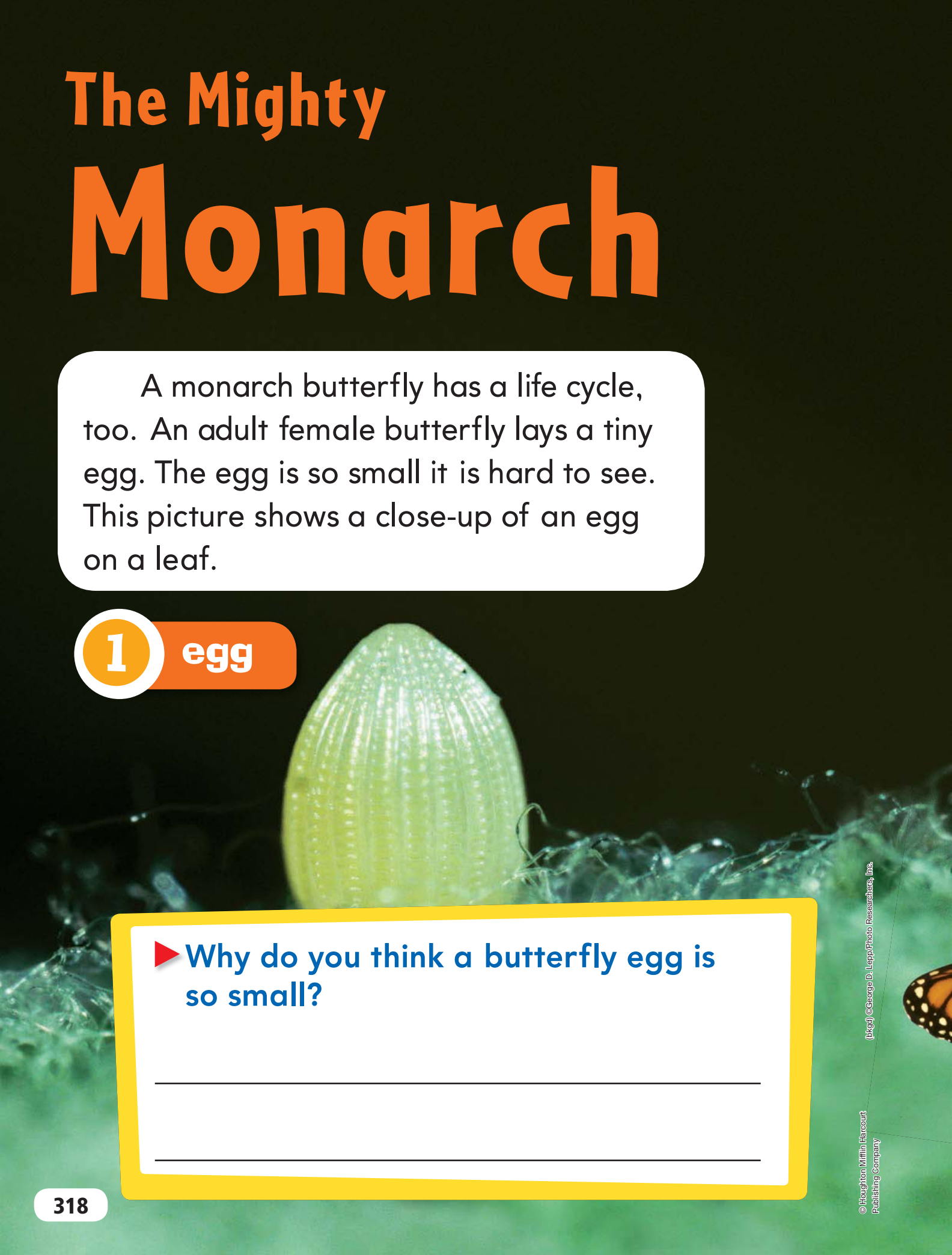
Adult Polar Bear

The adult polar bear can live on its own. It can have its own young.

The Mighty Monarch

A monarch butterfly has a life cycle, too. An adult female butterfly lays a tiny egg. The egg is so small it is hard to see. This picture shows a close-up of an egg on a leaf.

1 egg



▶ **Why do you think a butterfly egg is so small?**

_____

_____

2 larva

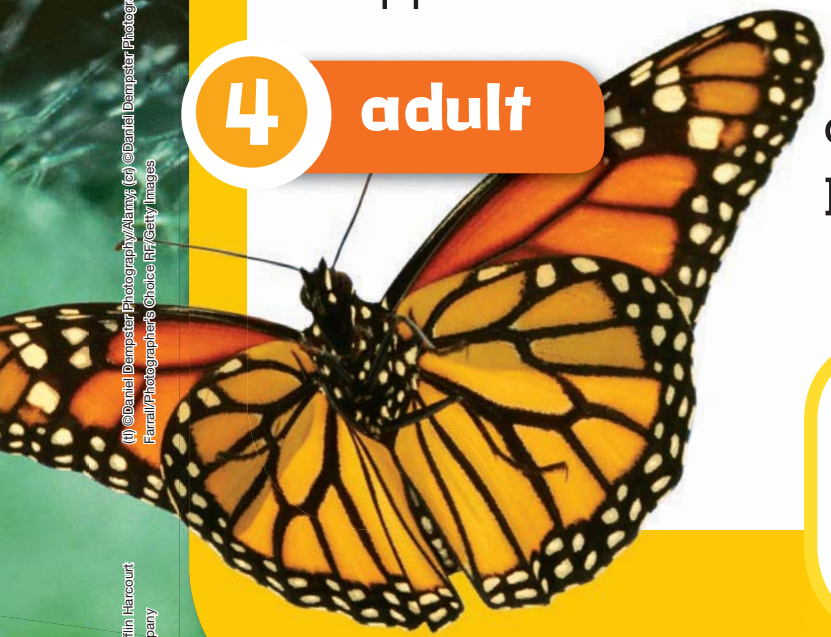
A tiny **larva**, or caterpillar, hatches from the egg. A caterpillar is a young butterfly. The larva eats a lot and grows quickly.

Then the larva stops eating and moving. The larva becomes a pupa. It makes a hard covering.

A **pupa** goes through metamorphosis inside the covering. It grows wings. Many other changes also happen.

3 pupa

4 adult



Finally, an adult butterfly comes out of the covering. It can have its own young.

Active Reading

Clue words can help you find the order of events. Draw a box around the clue words **then** and **finally**.

Sum It Up »

1 Mark It!

Draw an X on the animal that does not look like its young.

2 Draw It!

Draw a picture of this animal's mother.

3 Solve It!

Answer the riddle.

I am little now.
I will change and grow.
Someday I will be
an adult cat.

What am I?

_____

4 Think About It!

Is a  most like

a  , a  , or

a  ? Why?

Name _____

Vocabulary Review

Use these words to complete the puzzle.

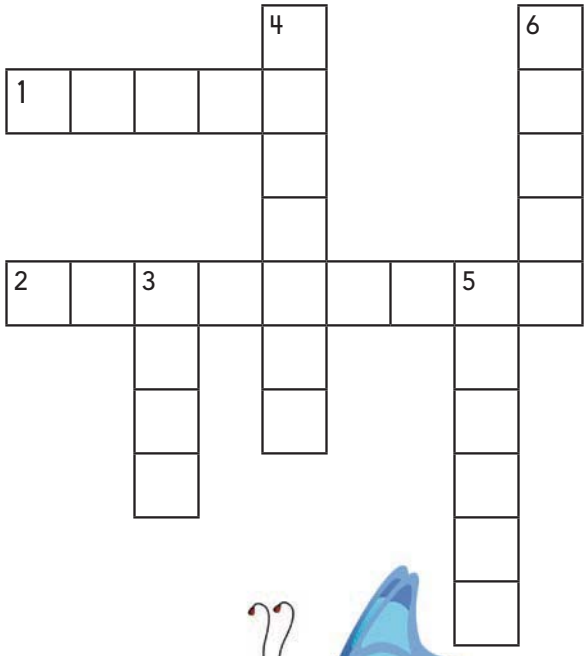
tadpole	**change**	**pupa**	**larva**	**reproduce**	**cycle**

Across

1. The stage in a butterfly's life cycle after the egg
2. To make more living things of the same kind

Down

3. The stage in a butterfly's life between larva and adult
4. A young frog that lives in water
5. This takes place during metamorphosis in frogs and butterflies
6. All the stages of an animal's life make up its life _____.



Apply Concepts

How is the life cycle of a butterfly different from the life cycle of a polar bear? Use this chart to show your answer.

Life Cycles

Butterfly	Polar Bear
A butterfly hatches from an egg.	_____ _____
_____ _____	A polar bear cub drinks milk from its mother's body.
_____ _____	A polar bear cub looks a lot like its parents.
A butterfly larva does not stay with its parents.	_____ _____

Take It Home! **Family Members:** *See ScienceSaurus®* for more information about living things.

Learn About ...

Salim Ali

Salim Ali is called the "Birdman of India." He traveled around India to study birds in their habitats. Ali discovered some kinds of birds. He wrote books about the birds he observed. Many people enjoyed reading his books.

...Fun Fact

Bird watchers use binoculars like these to see birds more closely.

Watch the Bird Grow!

Salim Ali learned about birds. You can learn about birds, too.

▶ **Order the life cycle of a robin. Number the pictures from 1 to 4.**

___

young robin

___

adult robin

___

robin chick

___

robin eggs

▶ **How is a robin's life cycle like the life cycles of other animals you know?**

Name _____

Essential Question

How Does a Bean Plant Grow?

Materials

- pencil
- soil in cup
- beans
- water

EXPLORE

You can grow your own bean plant! Observe how the plant changes as it grows.

Before You Begin—Preview the Steps

1. Use the pencil to make holes in the soil. Place a bean in each hole. Cover the beans with soil.
2. Water the soil. Place the cup in a warm, sunny place.
3. Observe the cup each day for two weeks. Water the soil when it is dry.

Set a Purpose

Explain what you will learn from this activity.

Think About the Procedure

1. Why must you give the plant water and sunlight?

2. Compare the way that your bean plant grew with the way that a classmate's bean plant grew. What was the same?

Name _____

Record Your Data

Write and draw to record your observations in this chart.

Date	Observations

Claims • Evidence • Reasoning

1. Write a claim about how a bean plant changes during its life cycle.

2. What evidence supports your claim?

3. Why does your evidence support your claim?

Ask More Questions

What other questions can you ask about how plants grow?

SC.2.L.16.1 Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.

LESSON 3

Essential Question

What Are Some Plant Life Cycles?

Engage Your Brain

Find the answer to the question in this lesson.

What does the flower part of a dandelion make?

It makes _____.

Active Reading

Lesson Vocabulary

1. Preview the lesson.
2. Write the 4 vocabulary terms here.

_____ _____

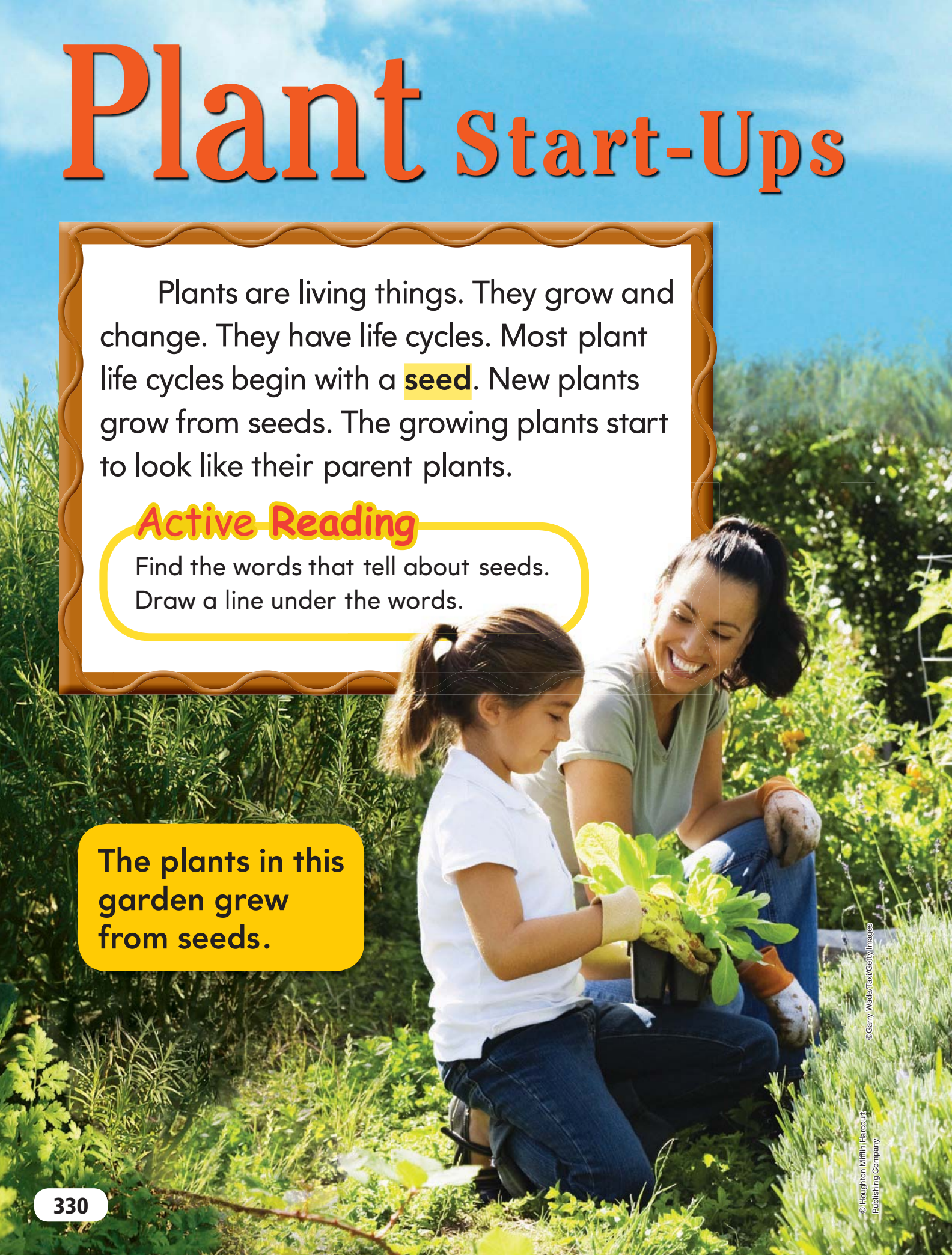
_____ _____

Plant Start-Ups

Plants are living things. They grow and change. They have life cycles. Most plant life cycles begin with a **seed**. New plants grow from seeds. The growing plants start to look like their parent plants.

Active Reading

Find the words that tell about seeds. Draw a line under the words.



The plants in this garden grew from seeds.

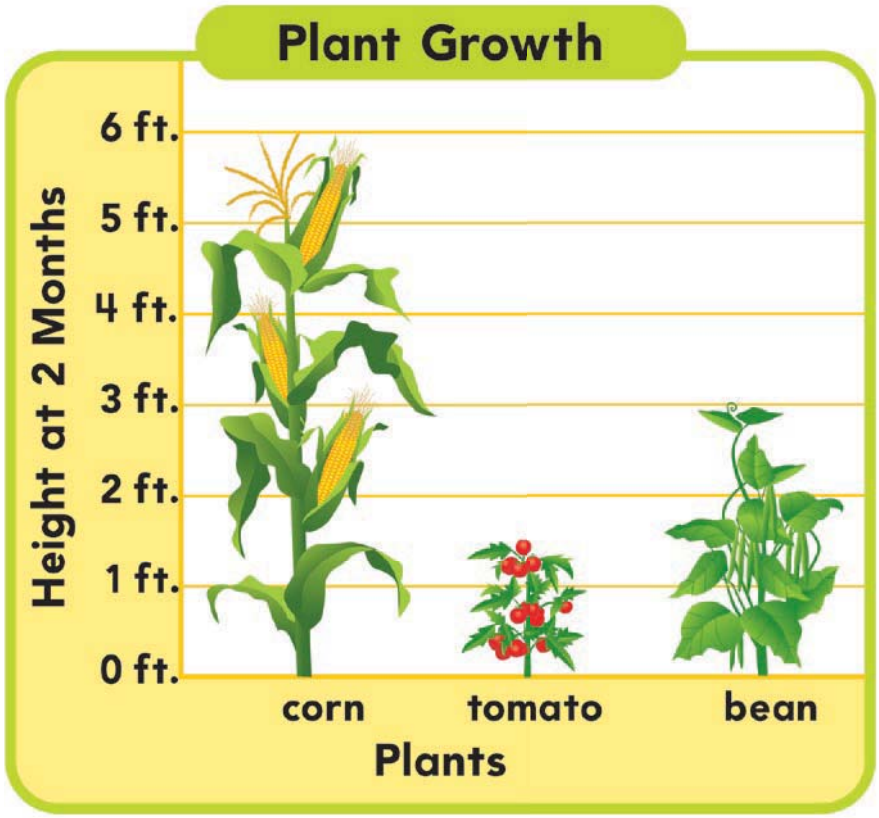
How Fast Do Plants Grow?

Some plants grow quickly. Plants in a vegetable garden take just a few months to become adult plants. Other plants, such as trees, take many years to become adults.

Do the Math

Interpret a Table

Use the chart to answer the question.



▶ How much taller did the corn plant grow than the bean plant?

Start with a Seed

What happens when you plant a seed? When a seed gets warmth, air, and water, it may germinate. **Germinate** means to start to grow. The stem of the tiny plant breaks through the ground. The plant gets taller and grows leaves.

Which plant parts grow from the seed first?

_____

A tiny plant is inside a seed.

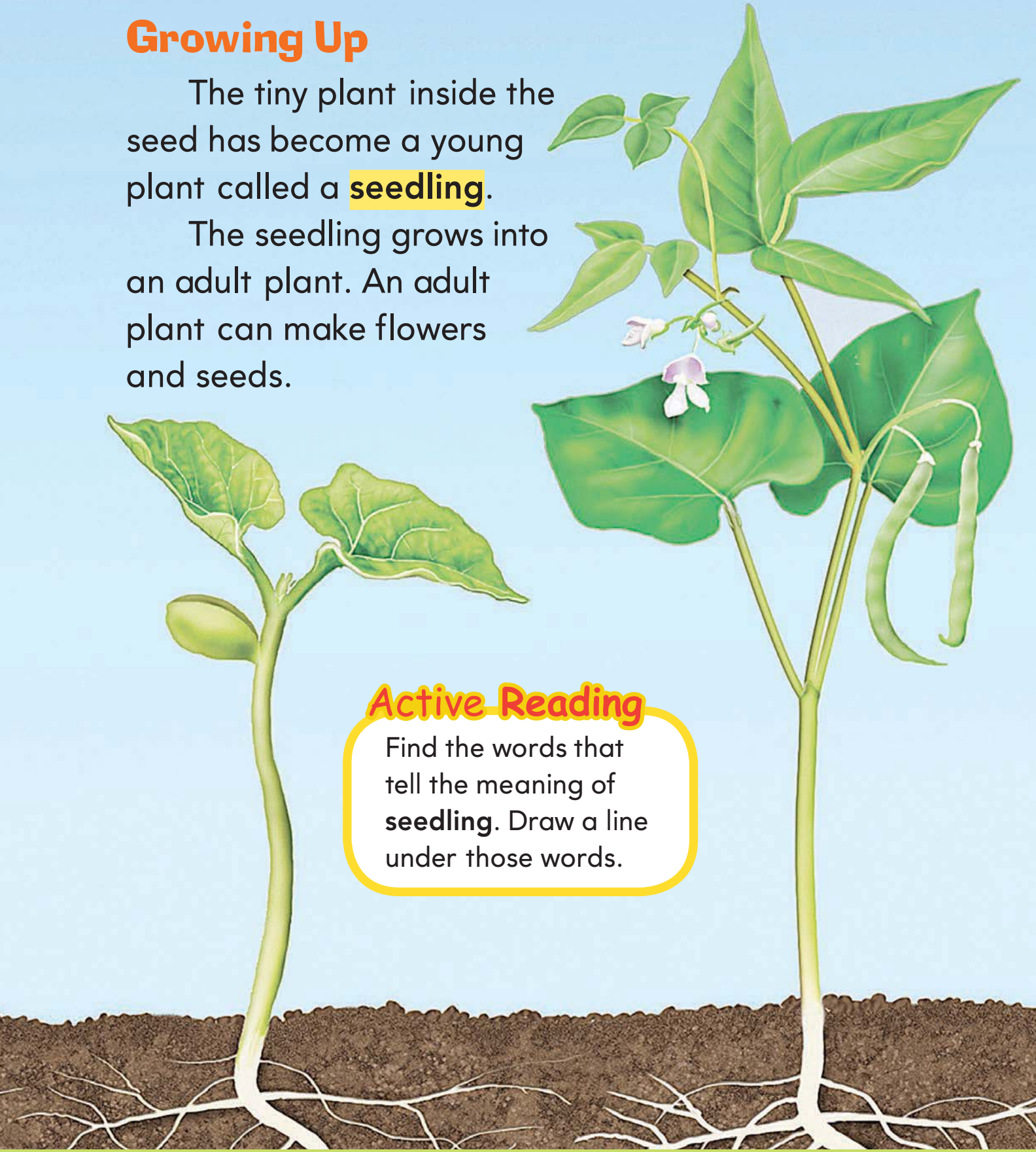
The seed germinates. The roots grow down.

The stem grows up toward the light.

Growing Up

The tiny plant inside the seed has become a young plant called a **seedling**.

The seedling grows into an adult plant. An adult plant can make flowers and seeds.



Active Reading

Find the words that tell the meaning of **seedling**. Draw a line under those words.

The plant grows more roots and leaves.

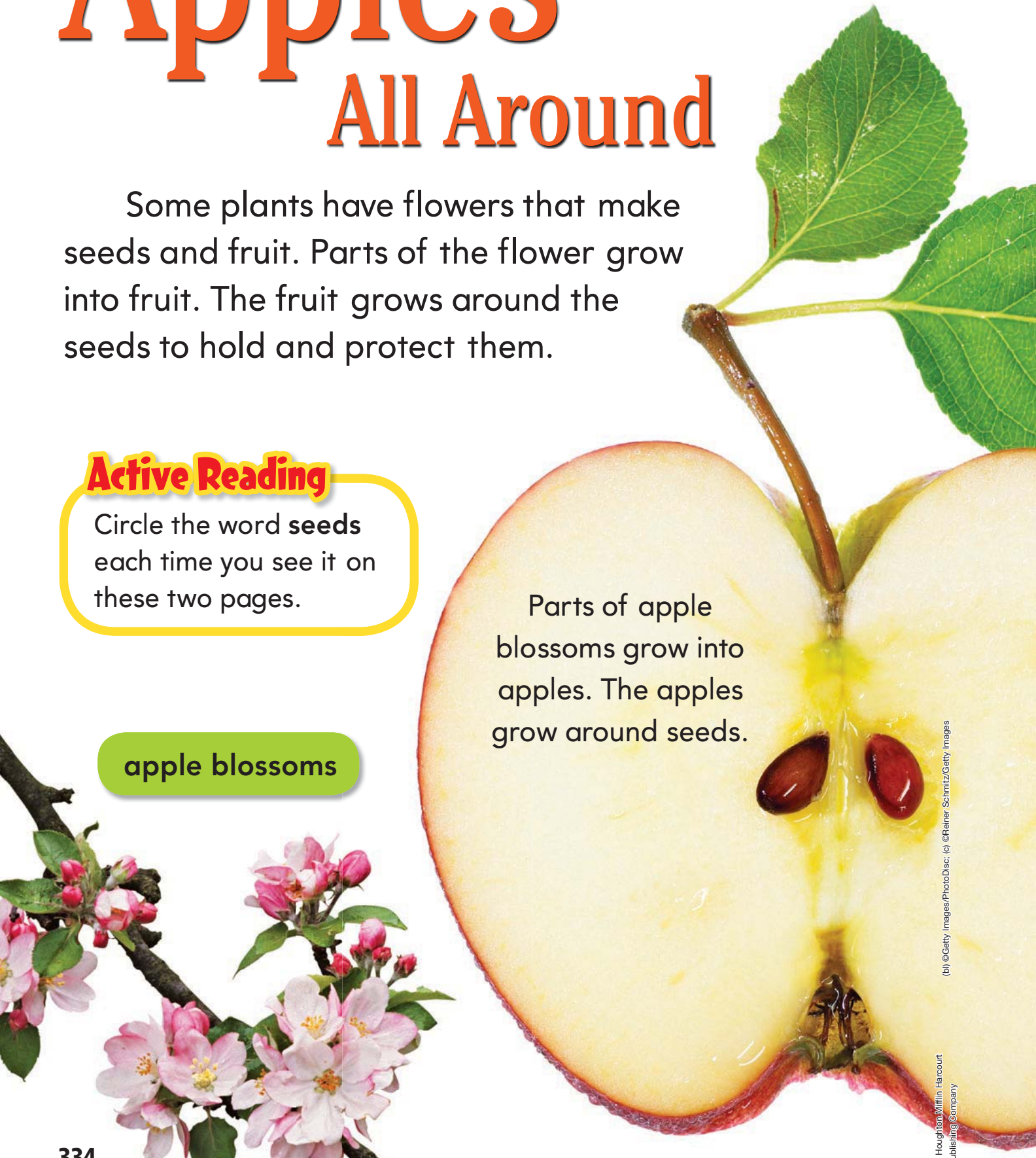
The adult plant grows flowers.

Apples All Around

Some plants have flowers that make seeds and fruit. Parts of the flower grow into fruit. The fruit grows around the seeds to hold and protect them.

Active Reading

Circle the word **seeds** each time you see it on these two pages.



Parts of apple blossoms grow into apples. The apples grow around seeds.

apple blossoms

A Long Life

Some plants have short lives. They die soon after their flowers make seeds. Other plants, such as apple trees, can live for many years. An apple tree can live for a hundred years or more!

▶ What do apple blossoms make?

_____

Inside a Cone

Some plants, like pine trees, do not have flowers. But they do have seeds. Where do their seeds grow? A **cone** is a part of a pine tree and some other plants. Seeds grow inside the cone.

closed pinecones

open pinecones with seeds

The cone protects the seeds until they are ready to germinate. Then the cone opens up, and the seeds can fall out.

▶ **Where do pine seeds form?**

_____

Pine Tree Beginnings

Pine seeds fall to the ground and germinate. As the seedlings grow, they start to look like their parent plants. After a few years, the pine trees grow cones and make seeds. The life cycle begins again.

adult pine trees

▶ What happens after an adult pine tree grows cones and makes seeds?

_____

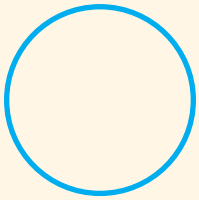
_____

Sum It Up »

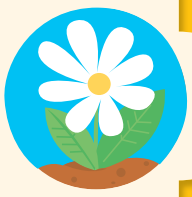
1 Draw It!

Draw the missing step in the plant's life cycle. Label your picture.


seed


_____


seedling


adult

2 Mark It!

Draw an X on the plant part that does not have seeds.

3 Think About It!

How are flowers and pinecones alike?

_____

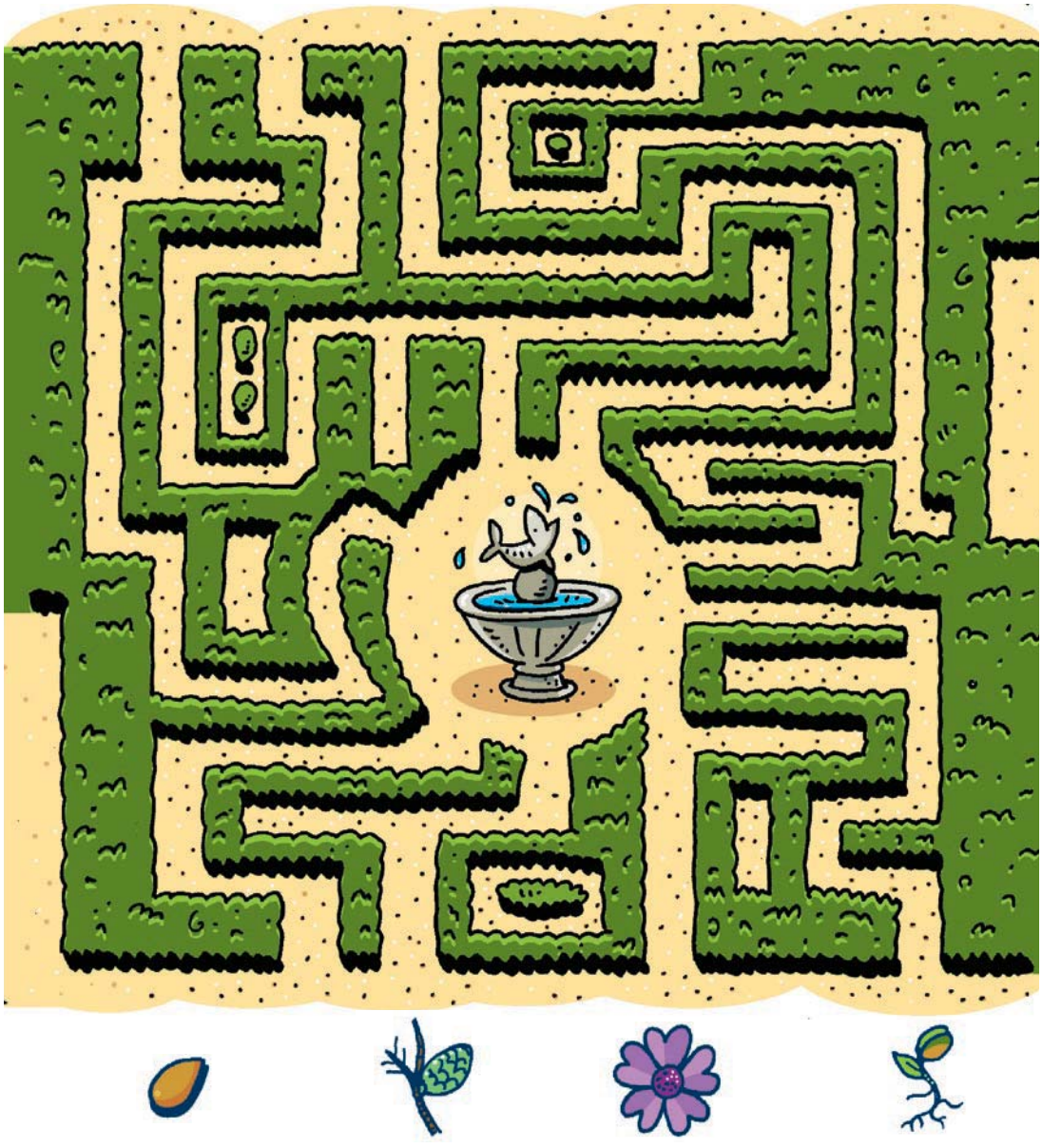
_____

Name _____

Vocabulary Review

Read each word. Trace a path through the maze to connect each word to its picture.

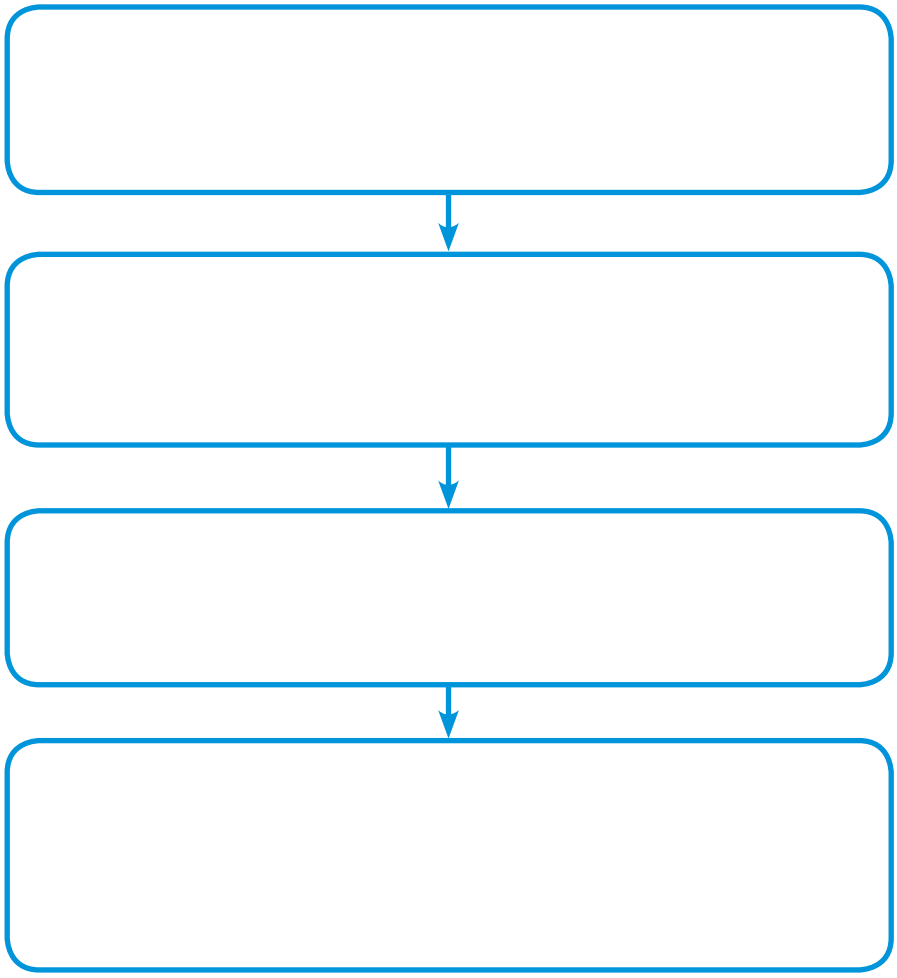
seed	cone	flower	seedling



Apply Concepts

Write to tell about the life cycle of a plant.
Use the words germinate, seed, and seedling.

Life Cycle of a Plant



Take It Home!

Family Members: Ask your child to tell you about plant life cycles. Then take a walk around your neighborhood. Talk about the plants you see.

SC.2.N.1.1 Raise questions … investigate them in teams … and generate appropriate explanations based on those explorations. **SC.2.N.1.3** Ask "how do you know?" in appropriate situations. **SC.2.L.16.1** Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.

S.T.E.M.

ENGINEERING & TECHNOLOGY

On the Farm

Farm System

A farm is a kind of system. A system is a group of parts that work together. All parts must work for the whole system to run well. Some parts of a farm are the crops, animals, people, and tools.

Farmers use tools, such as fences, to care for their crops and animals.

Farmers plan where to plant crops. They know what times of year are best to plant.

S.T.E.M. (continued)

What to Do?

Read the story. Then write how you would solve the problem.

You have a small farm. Everything is working well. One day, wind knocks down part of a fence on your farm.

1. How could the broken fence affect the farm?
2. What would you do to fix the problem?
3. How do you think your solution will help?

1. _____

_____

_____

2. _____

_____

_____

3. _____

_____

_____

ENGINEERING DESIGN CHALLENGE

Design It:

Guard the Lettuce!

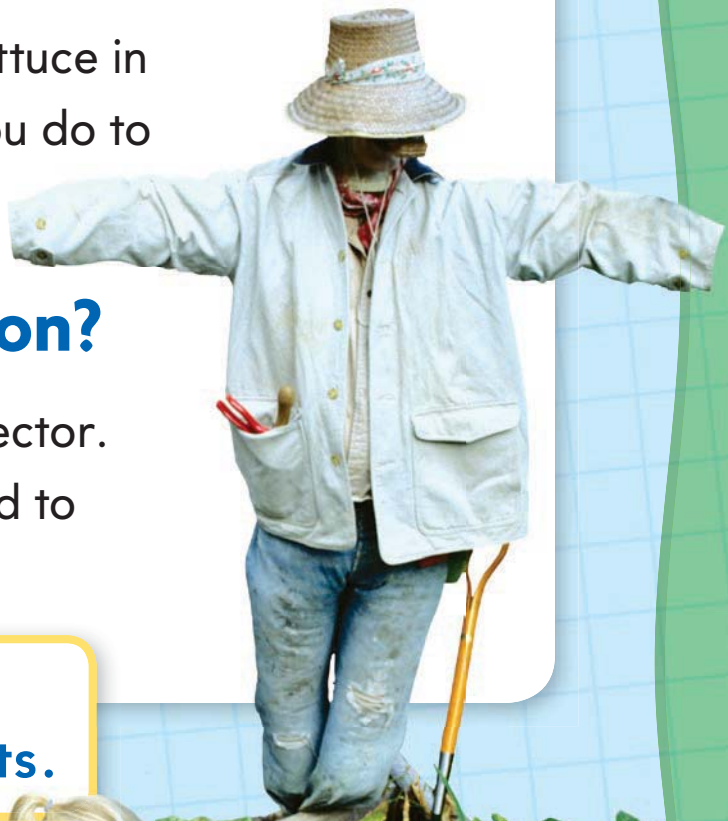
Follow the steps of the design process to solve the problem.

What's the Problem?

Rabbits keep eating the lettuce in your garden. What can you do to protect the lettuce?

What's the Solution?

Try building a lettuce protector. Think about what you need to build the protector.



▼ Rabbits eat lettuce and other leafy plants.

Make It:

These materials might help you get started.

1. Make a test garden with two plants.
2. Build a protector for the plants. Draw your design.
3. Test your protector. How could you improve it?
4. Draw and write about your design and results in your Science Notebook.

UNIT **10**

Benchmark Review

Name ______________________________

Vocabulary Review

Use the terms in the box to complete the sentences.

metamorphosis
reproduce
seed

1. Most plants grow from a ____________________.

2. Adult animals have young, or ____________________.

3. The changes an animal goes through are called ____________________.

Science Concepts

Fill in the letter of the choice that best answers the question.

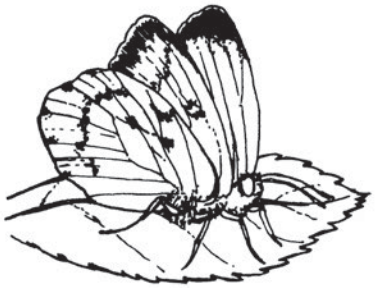
4. How is a frog's life cycle the same as a bird's life cycle?
   - Ⓐ Both hatch from an egg.
   - Ⓑ Both go through metamorphosis.
   - Ⓒ Both look like their parents when they are born.

5. Which plant part makes seeds?
   - Ⓐ flower
   - Ⓑ leaves
   - Ⓒ roots

6. Which part of the plant life cycle does this picture show?

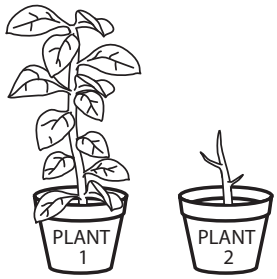
Ⓐ adult plant
Ⓑ seed
Ⓒ seedling

7. Which stage of the butterfly life cycle does this picture show?



Ⓐ adult
Ⓑ larva
Ⓒ pupa

8. Tina does an experiment with two plants of the same kind. She gives Plant 1 fresh water. She gives Plant 2 salt water. The pictures show the results of Tina's experiment.



Which claim is supported by Tina's evidence?

Ⓐ These plants grow better with salt water than with fresh water.
Ⓑ These plants grow better with fresh water than with salt water.
Ⓒ These plants grow the same with either fresh water or salt water.

Name _____

9. How do you know that this plant is an adult plant?

Ⓐ The plant has roots.
Ⓑ The plant has leaves.
Ⓒ The plant has a flower.

10. What does a cone do?

Ⓐ A cone grows fruit.
Ⓑ A cone holds seeds.
Ⓒ A cone makes pollen.

11. Three identical plants were planted at the same time. Which one grew **fastest**?

Ⓐ the one on the left
Ⓑ the one in the middle
Ⓒ the one on the right

12. This bird is hatching from an egg.

Which animal's life cycle is **most** similar to the bird's life cycle?

Ⓐ a bear
Ⓑ a dog
Ⓒ a turtle

Inquiry and the Big Idea

Write the answers to these questions.

13. Identify and describe the three main stages in this animal's life cycle.

a. _____

b. _____

c. _____

14. Look at this plant.

a. Write a claim about this plant's life cycle.

_____

b. What evidence supports your claim?

_____

c. Why does the evidence support your claim?

_____

_____

_____