



Life Science

Plant Diversity

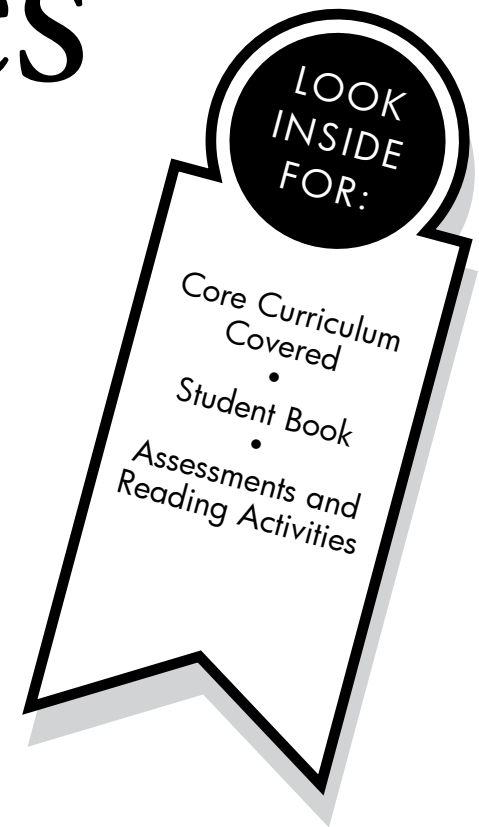
On Level

Life Cycles of Plants

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Life Cycles of Plants

How are plants alike and different?

CORE CURRICULUM STATEMENTS

Living things are both similar to and different from each other and from nonliving things.

Plants require air, water, nutrients, and light in order to live and thrive.

Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.

The continuity of life is sustained through reproduction and development.

Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.

Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant.

The length of time from beginning of development to death of the plant is called its life span.

Life cycles of some plants include changes from seed to mature plant.

Organisms maintain a dynamic equilibrium that sustains life.

Plants respond to changes in their environment.



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Student Book

Life Cycles of Plants

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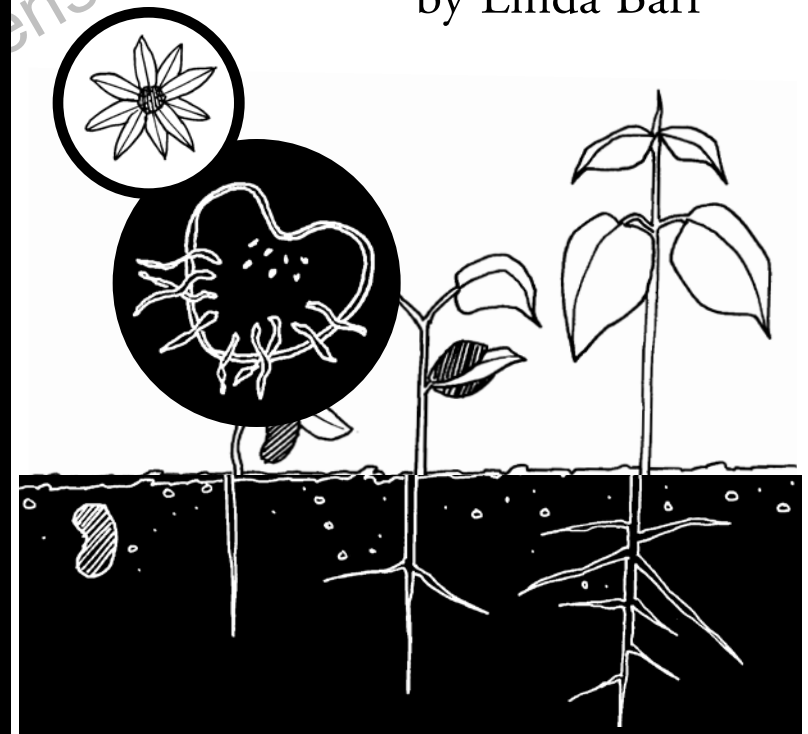


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Plant Diversity

Life Cycles of Plants

by Linda Barr





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– Predict –

*What do you think you will
learn from reading this book?*

INTRODUCTION

Is It Real?

Have you ever seen “fake” plants and flowers? They are made of plastic, paper, or silk. These plants are not alive. They require no care. You can usually tell that a plant is not real by how it looks or how it feels.

What are other differences between fake plants and real ones? Real plants have needs. They must have sunlight and air to make their own food. All real plants must have water and space to grow. They need nutrients which comes from the soil where they live. A fake plant does not need anything.

Real plants grow and react to changes around them. For example, they turn to face the sunlight. When the days become shorter in the fall, the leaves on trees change colors and then fall off the tree. Fake plants do not react to changes in their **environment**.

Real plants reproduce and grow into new plants of the same kind. However, all plants do not reproduce in the same way. In this book, you will learn different ways that real plants reproduce.

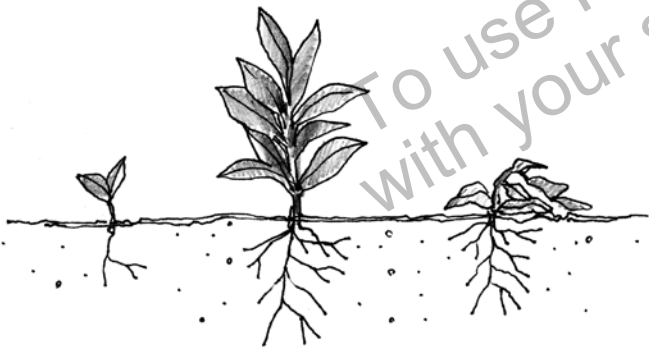
– Apply –
*How would you investigate
whether a plant is real?*

environment: the things that surround living things
reproduce: to produce offspring—new plants or animals

Plants Have a Life Span

All plants have a life span. A life span is the amount of time an **organism** remains alive. All plants grow up, grow old, and then die.

A plant's life span is affected by many things such as available soil, light, and water. Wind, fire, and disease also affect a plant's life span.



All plants grow up, grow old, and then die.

organism: any living thing

Different plants have different life spans. For example, the life span of an oak tree is longer than that of a daisy. An oak tree can live for hundreds of years. A daisy usually lives from three to ten years.



An oak tree has a longer life span than a daisy.

Life Cycles of Plants

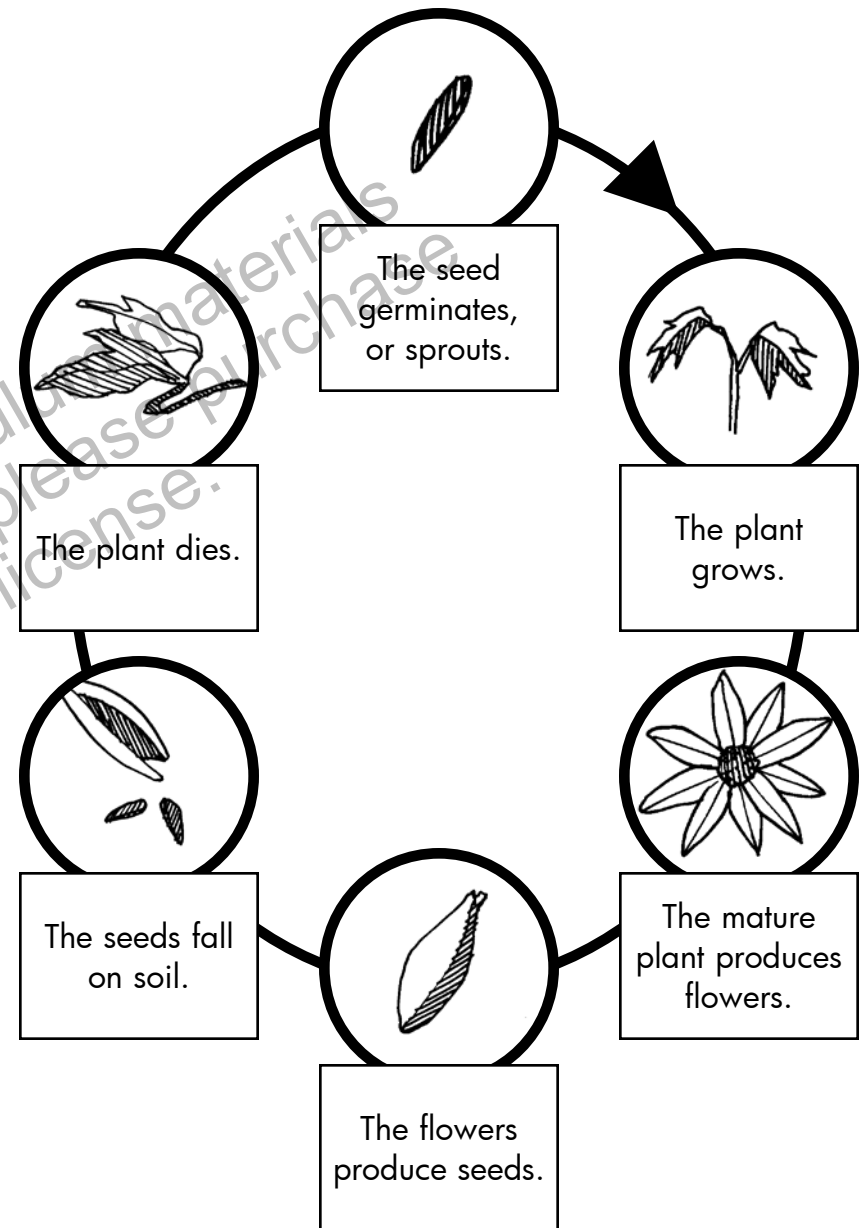
People and other animals have life cycles. They are born or hatch, grow into adults, often reproduce, and die.

Plants have life cycles, too. They grow from seeds, bulbs, spores, or parts of a parent plant. Then, young plants grow until they **mature**. The mature plants reproduce by creating seeds, bulbs, or young plants. In time, like animals, plants die. However, their seeds, bulbs, or new plants continue the cycle.

In this chapter, you will learn about four ways that plants reproduce. The diagram on the next page shows the life cycle of a seed plant.

mature: the adult stage in the cycle of a living thing

Life Cycle of a Seed Plant



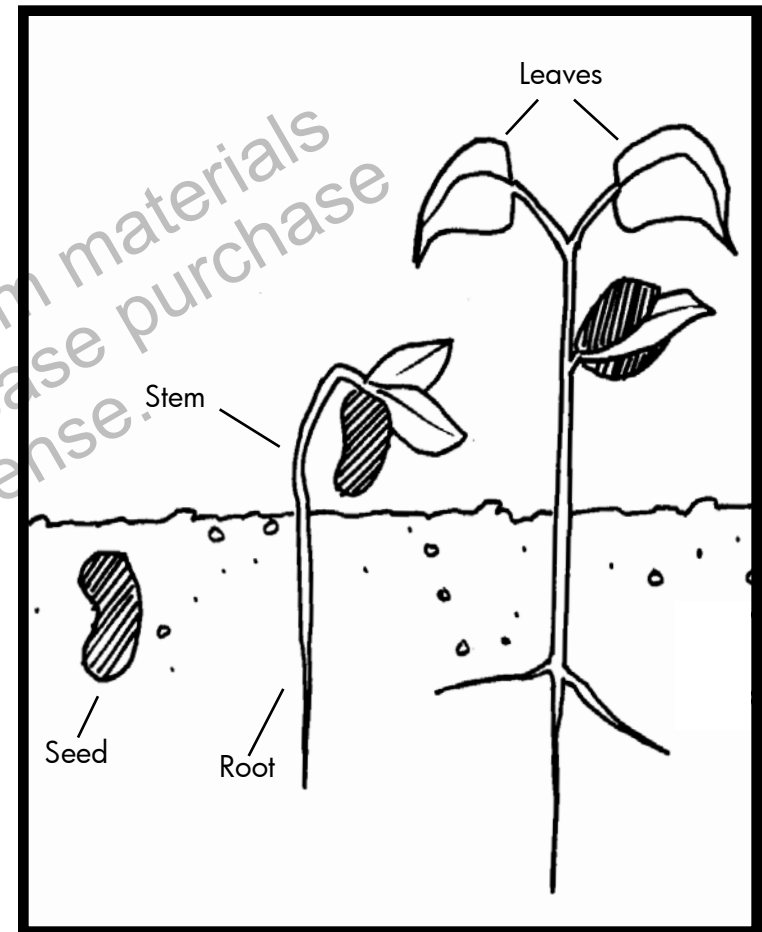
Plants That Grow from Seeds

A seed might look dead on the outside. But, inside is a tiny plant called an embryo. When the conditions are right, moisture causes a seed covering to swell and crack open. The seed **germinates**, and the **embryo** starts to grow.

The seed then sends tiny roots into the soil. Soon a tiny stem pushes out of the soil and grows small leaves. The plant begins to use sunlight, water, and air to make food. Many plants reproduce from seeds such as sunflowers, pumpkins, apple trees, and beans.

germinate: to sprout; to start to grow
embryo: a tiny plant inside a seed

Germination of a Seed



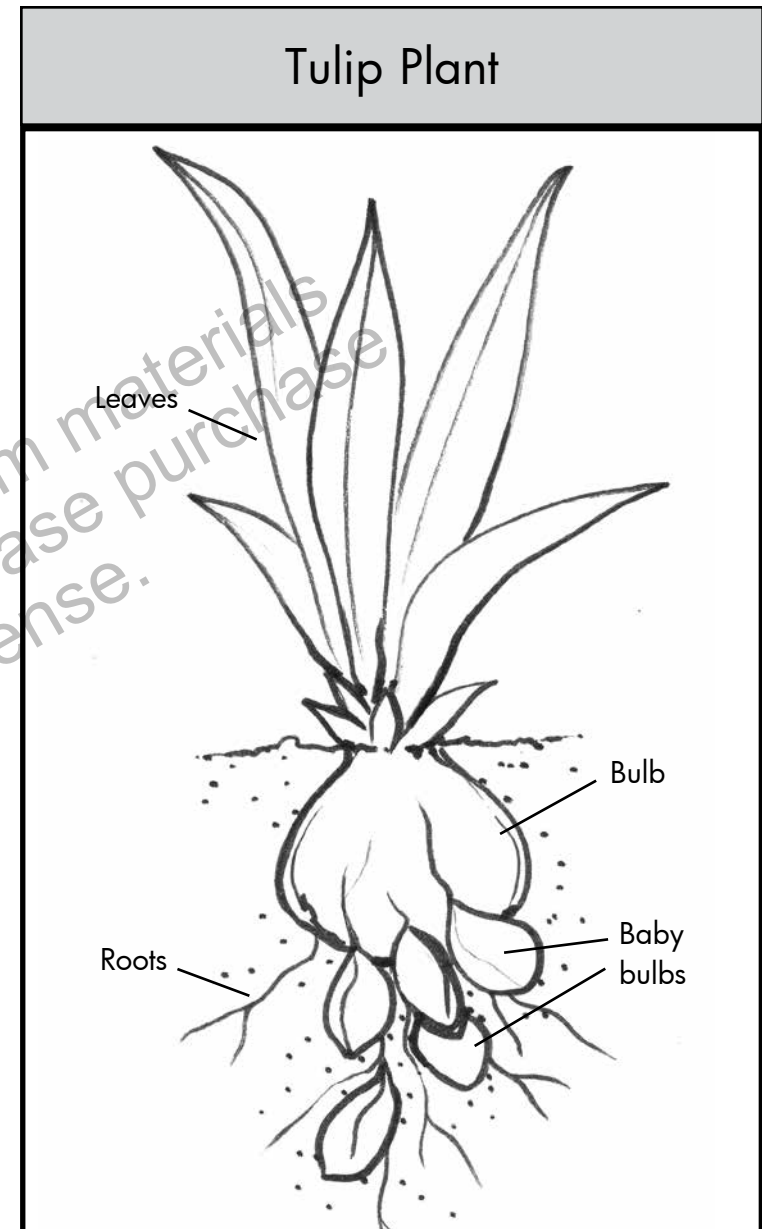
Moisture causes a seed to crack open. A tiny root then grows into the soil. Soon a stem pushes out of the soil. As the seedling grows, more leaves appear.

Plants That Grow from Bulbs

Some plants, such as tulips and daffodils, grow from seeds. But they also grow from bulbs. These plants produce “baby” bulbs attached to a parent bulb. In time, the baby bulbs separate from their parent. When these bulbs are mature, they produce new tulips or daffodils.

Onions reproduce in the same way. A small bud on the side of an onion bulb grows into a new onion plant.

– Explain –
How could you prove that tulips do not need seeds to reproduce?



Some plants, such as tulips and daffodils, grow from bulbs.

Plants That Grow from Other Parts of a Plant

Some plants grow by sending out runners. These are stems that grow into new plants. Strawberry plants and spider plants grow by **runners**. The runners send roots into the soil. A new plant grows.

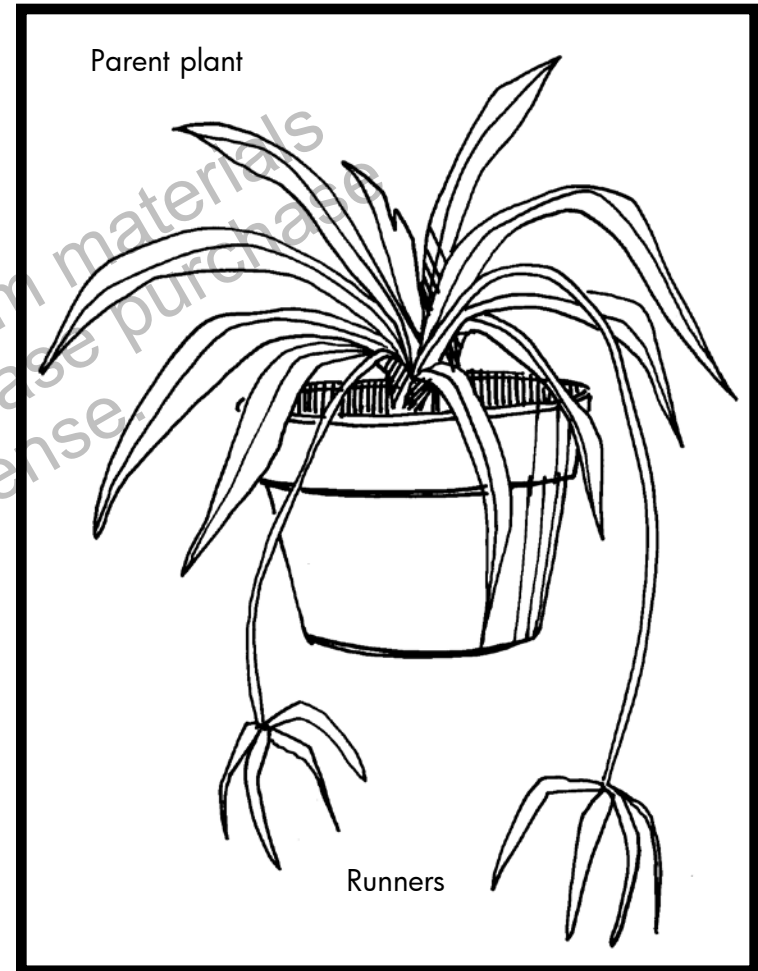
New potato plants grow from the “eyes” on a potato. Cut a potato up and plant the eyes. Each eye will grow into a new plant. To get a new African violet plant, just put a leaf in soil. It will produce a new plant.

– Compare –

What is the difference between reproducing with seeds and with bulbs?

runners: stems that grow from a parent plant and can become a new plant

Reproducing by Runners



Runners from a parent plant grow into new plants.

Plants That Grow from Spores

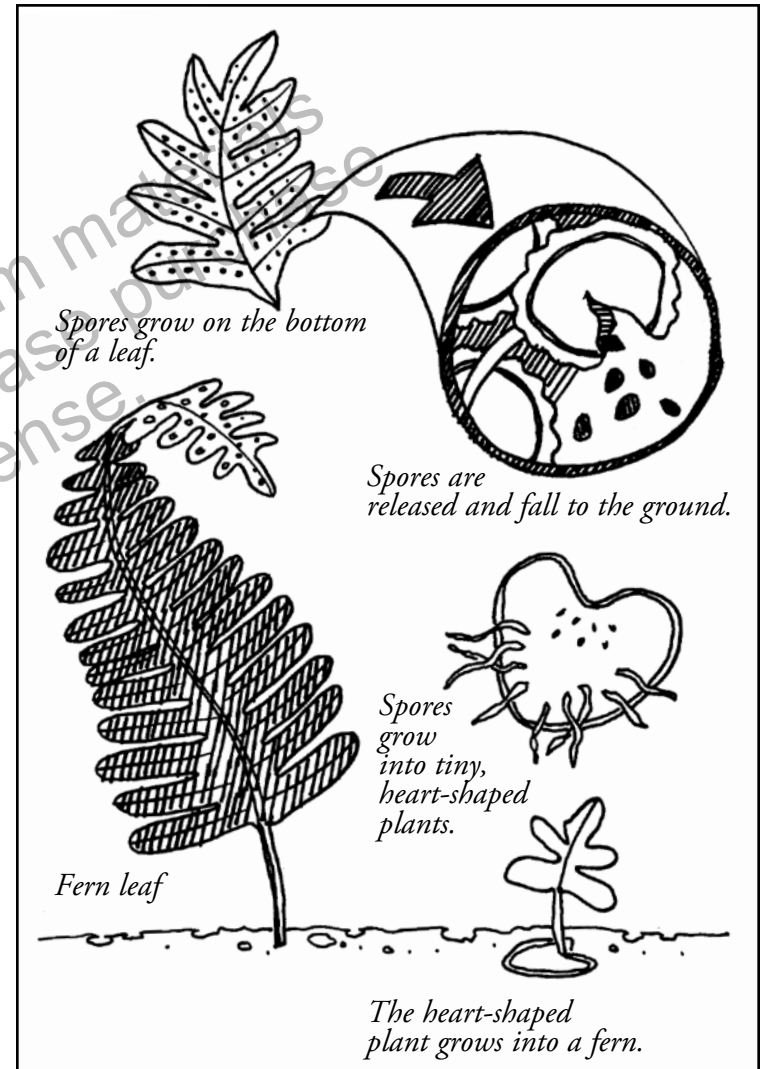
Some plants, such as ferns and mosses, reproduce without growing seeds or bulbs. If you turn over a fern leaf, you probably will see rows of spores. When these spores fall on moist soil they grow into tiny, heart-shaped plants. Tiny ferns grow from these plants.

Real Plants Are Alive

Now you know that real plants are alive. They grow, reproduce, and die. They also reproduce in different ways so their life cycles continue.

– Compare –
What is the difference between
reproducing with seeds and with spores?

Life Cycle of a Spore



Glossary

embryo—a tiny plant inside a seed

environment—the things that surround living things

germinate—to sprout; to start to grow

mature—the adult stage in the cycle of a living thing

organism—any living thing

reproduce—to produce offspring—new plants or animals

runners—stems that grow from a parent plant and can become a new plant

To Find Out More . . .

Want to learn more about the life cycles of plants?

Try these books

From Seed to Plant by Allan Fowler.
Children's Press, 2001.

Read and Learn: Plants—Seeds (Plants)
by Patricia Whitehouse. Raintree, 2004.

A Seed Is Sleepy by Dianna Hutts Aston.
Chronicle, 2007.

Seeds (Plant Parts) by Vijaya Bodach.
Capstone, 2006.

Seeds by Ken Robbins. Atheneum, 2005.

Access these Web sites

The Great Plant Escape
www.urbanext.uiuc.edu/gpel/index.html

Biology of Plants: Missouri Botanical
Garden
www.mbgnet.net/bioplants/main.html

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Plant Diversity

On Level

Assessments

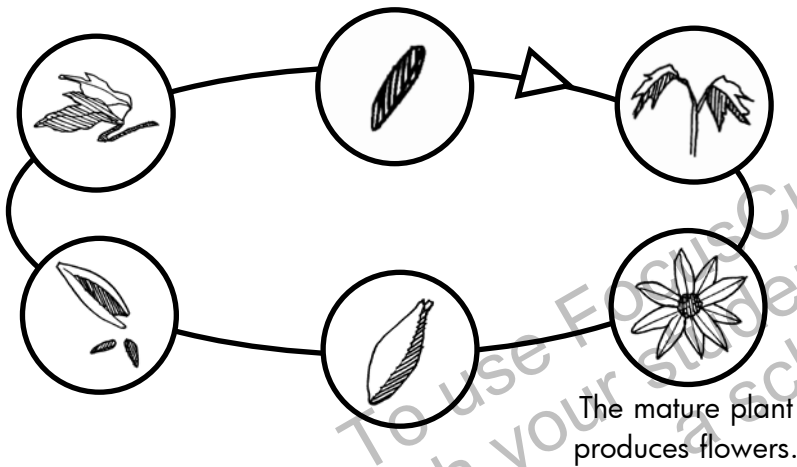
Life Cycles of Plants

Print pages 18–20 of this PDF for the assessments.

Check Understanding

Shade the circle next to the correct answer.

1. The diagram below shows the life cycle of a seed plant.



What happens after the mature plant produces flowers?

- (A) The seeds produce bulbs.
- (B) The seeds fall on soil.
- (C) The flowers produce seeds.
- (D) The plant dies.

2. A plant sits on a table. Which statement proves that the plant is alive?

- (A) It turns toward sunlight.
- (C) It is green.
- (B) It has flowers.
- (D) It is in a pot.

3. Stems that grow into plants from a parent plant are called

- (A) bulbs
- (B) seeds
- (C) runners
- (D) spores

Check Understanding

Shade the circle next to the correct answer or write your answer on the lines provided.

4. A seed contains

- Ⓐ a bulb
- Ⓑ an embryo
- Ⓒ a flower
- Ⓓ a root

5. Which plant uses bulbs to reproduce?

- Ⓐ tulip
- Ⓑ potato
- Ⓒ spider plant
- Ⓓ strawberry

6. All plants grow up, grow old, and then die. Identify **two** things that can affect a plant's life span.

(1) _____

(2) _____

7. What is the last stage in a plant's life cycle?

- Ⓐ germination
- Ⓑ reproduction
- Ⓒ growth
- Ⓓ death

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Assessment Scoring Guidelines

1. Answer C is correct.
2. Answer A is correct.
3. Answer C is correct.
4. Answer B is correct.
5. Answer A is correct.
6. Type of plant; available soil, light, and water;
wind; fire; and disease
7. Answer D is correct.

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Plant Diversity

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English Language Arts Activities

Life Cycles of Plants

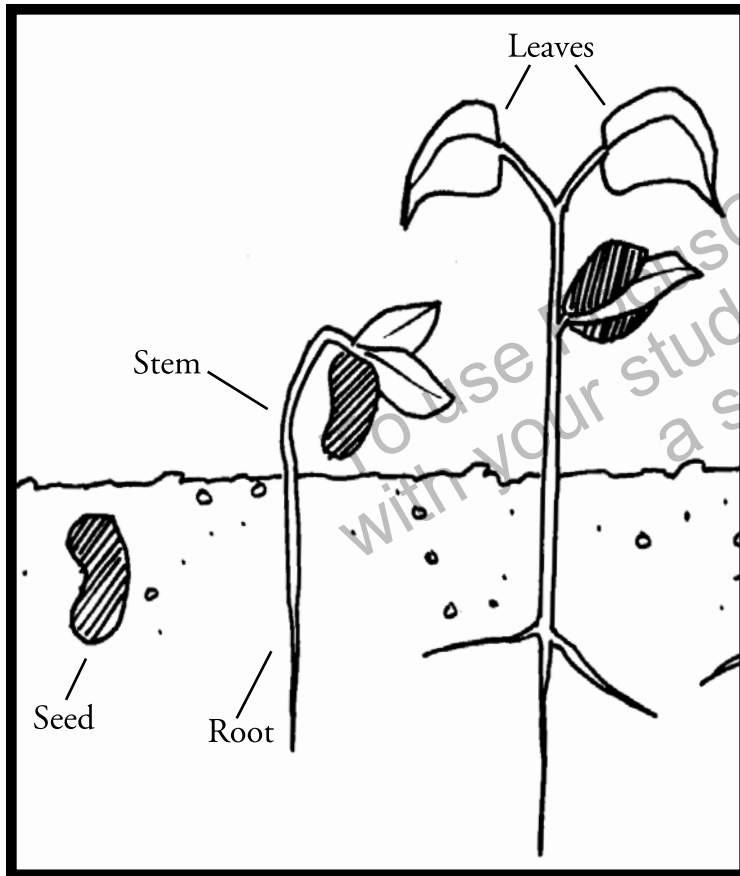
Print pages 22–26 of this PDF for the reading activities.

Interpret Graphics

TRY THE SKILL

Graphics can give you information quickly and help you understand things better.

Look at this graphic from *Life Cycles of Plants*.



Use the graphic to the left to answer the questions. Shade the circle next to the correct answer.

1. A plant starts as a
 - (A) seed
 - (B) stem
 - (C) root
 - (D) leaf
2. What part of the plant stays in the soil as the plant grows?
 - (A) seed
 - (B) root
 - (C) stem
 - (D) leaf

Summarize

TRY THE SKILL

To summarize means to briefly retell something. Summarizing can help you remember what you have read.

Read this paragraph from *Life Cycles of Plants*. How would you say the same thing more briefly?

Different plants have different life spans. For example, the life span of an oak tree is longer than that of a daisy. An oak tree can live for hundreds of years. A daisy usually lives from three to ten years.

Is this a good summary?

The life span of an oak tree is hundreds of years.

No, it is too specific.

Is this a good summary?

Some plants have longer life spans than others.

Yes, it tells the main idea of the paragraph.

Read the passage below. Then write a summary.

Real plants grow and react to changes around them. For example, they turn to face the sunlight. When the days become shorter in the fall, the leaves on trees change colors and then fall off the tree. Fake plants do not react to changes in their environment.

Read for a Purpose

TRY THE SKILL

Here are the main reasons for reading:

- to gain information or understanding
- to learn how to do something
- to be entertained

For example, you read this book to gain information. You learned about plant life cycles.

When you are choosing what to read, pay attention to titles. They can help you decide whether an article or book will fit your purpose in reading.

Read the list of titles. Then write the correct letters beside each purpose for reading.

- A. *How Plants Reproduce*
- B. *Growing a Strawberry Plant*
- C. *A Jungle Adventure*
- D. *How to Plant an Indoor Garden*
- E. *Earth's Longest Living Plants*
- F. *Jack and the Beanstalk*

1. Which two titles would you read for information? _____
2. Which two titles would you read to learn how to do something? _____
3. Which two titles would you read to be entertained? _____

Prefixes

TRY THE SKILL

A prefix comes at the beginning of a word.
It changes the meaning of the word.

In this book, you learned many new words.
For example, you learned that *reproduce* means
“to produce new offspring—plants or animals.”
The prefix *re-* means “again.” In other words,
reproduce means “to produce again.”

**Think about the meanings of the words below.
Then answer the questions on the other side of
this page.**

recharge reappear reforest

**Read each sentence. Shade in the circle next to the
word that correctly matches the meaning.**

1. To plant trees again

- (A) recharge
- (B) reappear
- (C) reforest

2. To gain energy again

- (A) recharge
- (B) reappear
- (C) reforest

3. To show up again

- (A) recharge
- (B) reappear
- (C) reforest

Answer Key

Interpret Graphics

1. A
2. B

Summarize

Real plants grow and react to changes around them. Fake plants do not.

Read for a Purpose

1. A, E
2. B, D
3. C, F

Prefixes

1. C
2. A
3. B

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