

ISBN 978-1-61629-891-3



9 781616 298913

Grade 1 Unit 1 Story Cards



SCIENCE
TECHBOOK

Plant Shapes



Copyright © 2022 by Discovery Education, Inc. All rights reserved. No part of this work may be reproduced, distributed, or transmitted in any form or by any means, or stored in a retrieval or database system, without the prior written permission of Discovery Education, Inc.

To obtain permission(s) or for inquiries, submit a request to:

Discovery Education, Inc.
4350 Congress Street, Suite 700
Charlotte, NC 28209
800-323-9084
Education_Info@DiscoveryEd.com

ISBN 13: 978-1-61629-891-3

Printed in the United States of America.

1 2 3 4 5 6 7 8 9 10 SA 25 24 23 22 A

Acknowledgments

Acknowledgment is given to photographers, artists, and agents for permission to feature their copyrighted material.

UNIT 1

Card 3: showcake / Shutterstock.com; **Card 5:** Paul Fuqua; **Card 6:** (a) Boonchuay1970 / Shutterstock.com, (b) Pixabay, (c) 5 second Studio / Shutterstock.com, (d) Nataly Studio / Shutterstock.com; (e) SOMMAI / Shutterstock.com, (f) New Africa / Shutterstock.com; **Card 7:** Paul Fuqua; **Card 8:** NokHoOkNoi / Shutterstock.com; **Card 9:** alexdov / Shutterstock.com; **Card 10:** (a) Leonid Ikan / Shutterstock.com, (b) Shutterstock.com, (c) Bogdan Wankowicz / Shutterstock.com, (e) Fomin Serhii / Shutterstock.com (f) Paul Fuqua, (g) Shutterstock.com; **Card 11:** (a) Paul Fuqua, (b) EQRoy / Shutterstock.com; **Card 12:** Floki / Shutterstock.com



Purpose

The Story Cards are designed to lay the foundation for the concepts that students will be learning within each unit of Science Techbook. The Story Cards use vocabulary from each unit and integrate literacy skills into science.

How to Use the Story Cards

The Story Cards can be used in a variety of ways. They can be set on an easel to focus on one card at a time. They can also be displayed throughout the classroom. They are designed to be used as a complete story that is read in a whole-class shared reading setting, or they can be utilized in small-group instruction, focusing on one card at a time. Overall, the cards help students visualize stories related to the unit's Anchor Phenomenon in Science Techbook.

Each Story Card unit presents a cohesive storyline. The Discovery Education characters serve as narrators for the storyline and introduce students to a problem to solve or a phenomenon to learn about. Each Story Card unit contains both reading passages and activity cards. Teacher notes on the back side of each card give step-by-step instructions on how to present the reading passage or conduct the activity.

Ideas for Use

These ideas focus on suggestions for use and are explained using a before-during-after reading framework.

Before Starting the Lessons

As you discuss the questions that are associated with the Unit Anchor Phenomenon, introduce the Story Cards to the students. Conduct a picture walk with students, giving small groups a card and asking them to predict what the information will tell them. Once students have shared their thinking with the class, read the Story Cards aloud to students.

During the Lessons

Here are suggestions for how to use individual cards:

- Read and reread a Story Card. Engage students in either echo or choral reading.
- Conduct an alphabet-letter or sight-word hunt with the Story Card text.
- Select a science vocabulary word from the text and explore the Science Techbook glossary to find the word, watch the video and animations, and “read” the image.
- Two suggestions for using reading passages include:
 - Provide students with sticky notes and let them draw a small illustration for the text. The sticky notes can be placed right on the Story Card.
 - Select three images from Discovery Education and have students vote on which image would best fit the text.

After the Lessons

The final Story Card is a culminating activity that ties back to the problem or phenomenon presented at the beginning of the story. Students draw or write to show what they have learned. This activity may be conducted as a shared or interactive experience.



Activity Card Types



Song/Poem

Encourage students to make movements that capture the ideas in the song or poem.



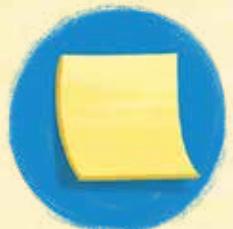
Word Fill

Students use letters (in Kindergarten) or words (in Grades 1–2) to either fill in a crossword or label images.



Picture Search

Students search a large image for objects discussed in the text. Encourage the use of a magnifying glass to better observe the image if the object(s) to locate are small.



Sticky Note Cover Up

Use sticky notes to cover up a word or an image. Students guess the contents under the sticky notes.



Story Starter

Given a “What if” prompt related to the Story Cards, students work together to dictate an imaginative story to the teacher (Kindergarten) or continue the story on their own using words or both pictures and words.



Modified Charades

Students are given various images that relate to the vocabulary in the unit. Each image is given a number, and students draw numbers from a bag. Students take turns acting out the vocabulary word seen in their image and the class tries to guess.



Spin and Speak

This activity is a modification of the Spotlight on Strategies (SOS) AEIOU Strategy and is designed to strengthen oral communication. A spinner is split into segments with a topic in the middle and the vowels A, E, I, O, and U in the segments. Using a paper clip and a pencil, the teacher spins the spinner. Students must respond orally based on the letter on which the spinner lands.

A = Students provide an **adjective** that describes something they saw or learned.

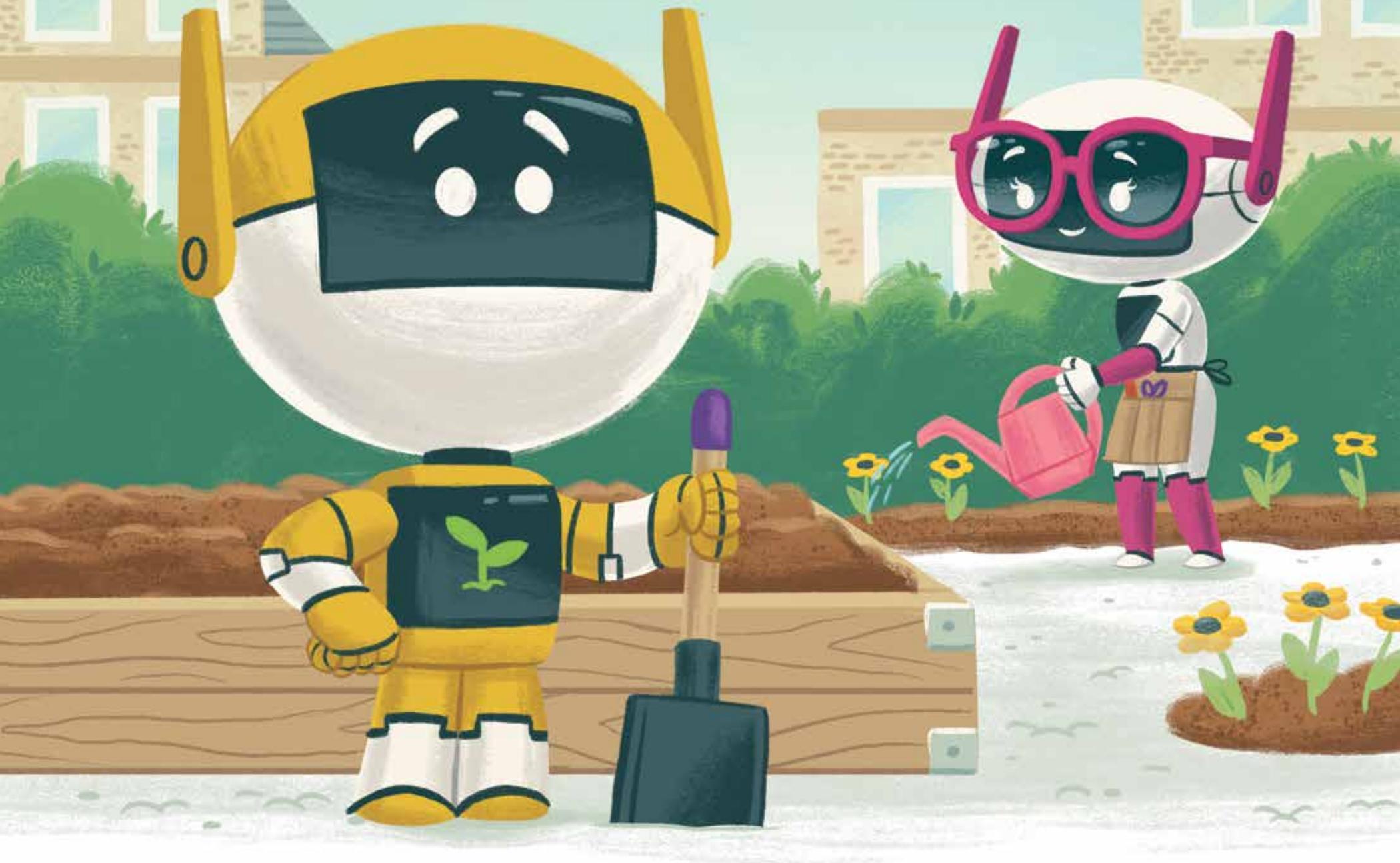
E = Students state an **emotion** that describes how the topic makes them feel.

I = Students say something about the topic that they find **interesting**.

O = Students provide something about the topic that surprised them or made them say **“Oh!”**

U = Students pose a question (**Um?**) they have about the topic.

Let's Plant a Garden



Hi! I'm Victor. My family gave me this patch of soil for a garden. What kind of plants should I grow? I like to eat vegetables. I also like pretty flowers. My friend Zoe is helping me. You can help me too!

Teacher Talking Points

Help students become familiar with the story's main idea. **SAY** *In this story, you will meet Victor, a robot who wants to grow plants in a garden. All sorts of plants will grow well in a garden, but which plants should Victor choose? Victor has a friend named Zoe who will help him learn about plants and how they grow. We can help too! We can help Victor decide what plants to grow and how he can help them meet their needs.*



Activate students' prior knowledge about plants by facilitating a whole-class discussion or having students discuss with a partner.

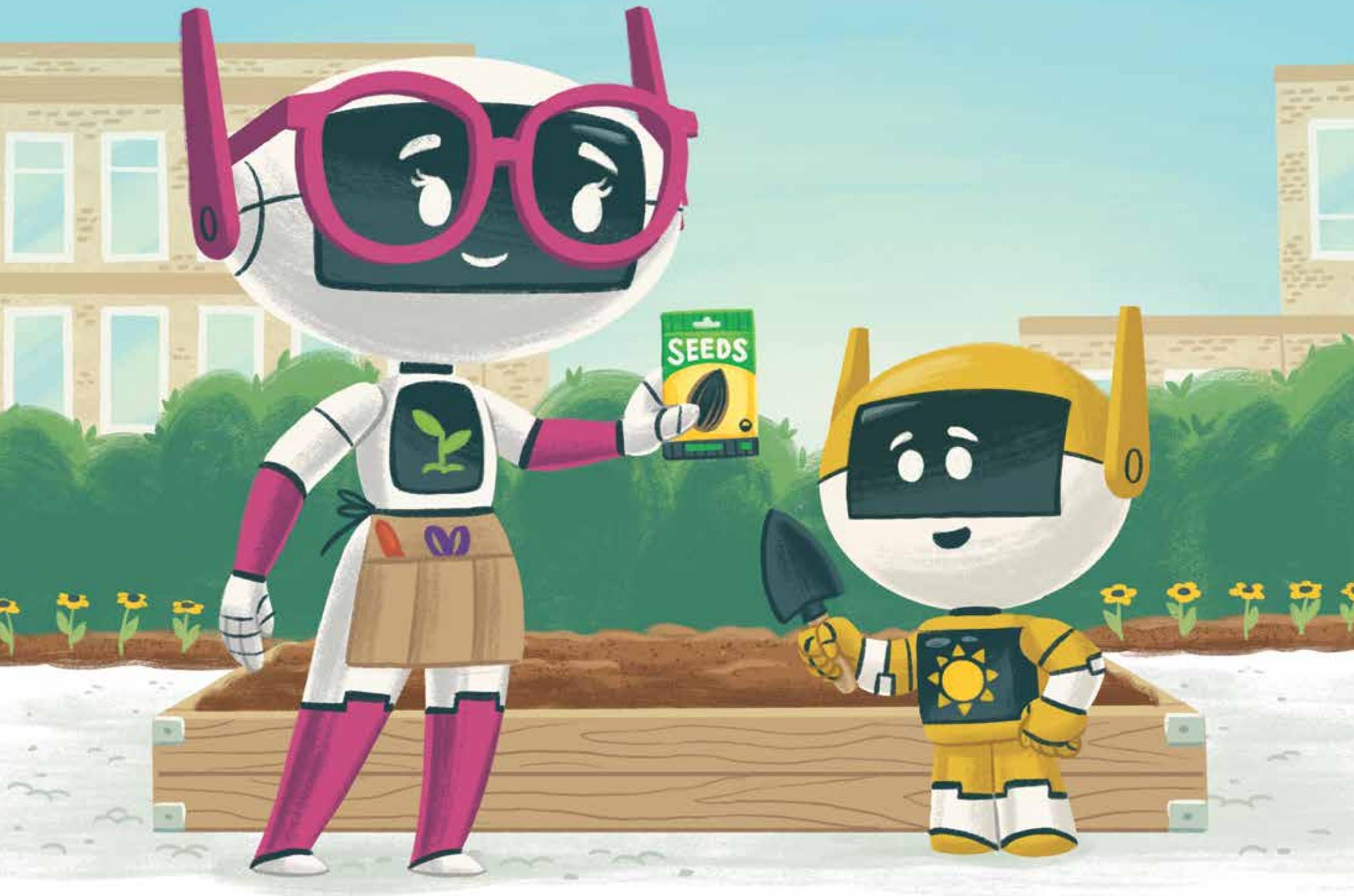
- SAY**
- *Have you ever seen a garden? What kinds of plants were growing in it?*
 - *What do you know about plants and how to grow them?*

Suggestions for Differentiation

Provide visuals of gardens for students needing extra vocabulary support.



Hi! I'm Victor. My family gave me this patch of soil for a garden. What kind of plants should I grow? I like to eat vegetables. I also like pretty flowers. My friend Zoe is helping me. You can help me too!



I can grow many plants in my garden. I can choose two plants, three plants, four plants, or more plants!

Zoe says, “Not so fast! You should go slow. Do you even know what a plant needs to live and grow?”

Teacher Talking Points

Focus on the words *slow*, *know*, and *grow*. **SAY** What do you notice about the words *slow*, *know*, and *grow*? **Sample answers:** They rhyme. They all end in the *-ow* ending.

DO Have students use a dry-erase marker to circle the *-ow* words they can find on the story card.

 Use Zoe's question, *Do you even know what a plant needs to live and grow?*, to get students thinking about the needs of plants. **SAY** How would you take care of a plant? Do all plants need the same things to live and grow?

DO Begin a class KWL chart on a large sheet of paper or use Techbook to record what students think they know and want to know about plant needs.

Suggestions for Differentiation

- For students needing additional support, use magnetic letters to display the *-ow* words. As the initial letter or pair of letters is replaced to form new rhyming words, help students practice saying the new initial sound.
- To extend this lesson, have students generate additional words with *-ow* endings, such as *bow*, *row*, *glow*, and *flow*.
- For additional extensions, focus on reading and spelling number words, such as *five*, *six*, *seven*, *eight*, and so on. Or focus on the words *fast* and *slow*. Explain that these two words are opposites. Have students generate a list of other opposite word pairs.



I can grow many plants in my garden. I can choose two plants, three plants, four plants, or more plants!

Zoe says, “Not so fast! You should go slow. Do you even know what a plant needs to live and grow?”

Plant Characteristics

Read like a scientist to learn how plants live.



What plant parts do you see?

A plant has three main parts. Roots hold a plant in the ground. They also take in water.

Stems hold up the plant. They carry water to the leaves.

Plants are special because they make their own food. Leaves use the power of sunlight to make food from air and water. Leaves have pores that take in air.

Leaves also absorb light from the sun.



Teacher Talking Points

SAY Victor has discovered that plants have three main parts. Each part does a different job to help a plant meet its needs and to live and grow. What are the names of these parts? What does each part do?

You may wish to organize students' responses in a three-column graphic organizer. Display the blank organizer on the board or an easel. Lead students to help you name and record the three main parts of a plant: roots, stems, and leaves. Then, label the parts on the story card.

- DO**
- Point out that the first sentence says that plants have three main parts. Then, model how readers can find the names of these parts. Use a dry-erase marker to circle instances in the text of the words *roots*, *stems*, and *leaves*.
 - Ask students to identify any words in the passage that are new or unfamiliar to them. Examples may include *pores* and *absorb*. Help students use context clues to define these words. Pores in leaves are small holes for air. To absorb is to take in from the outside.

Plant Characteristics

Read like a scientist to learn how plants live.



What plant parts do you see?



A plant has three main parts. Roots hold a plant in the ground. They also take in water.

Stems hold up the plant. They carry water to the leaves.

Plants are special because they make their own food. Leaves use the power of sunlight to make food from air and water. Leaves have pores that take in air.

Leaves also absorb light from the sun.



Story Card 3

Suggestions for Differentiation

- For students needing additional support, work with them to construct one simple descriptive sentence for each plant part. Examples are "Roots are in the ground," "Stems hold up plants," and "Leaves make food." Write these sentences as students speak them, and have students read them back to you.
- If students need enrichment, guide them on a scavenger hunt around the school to look for examples of plant parts. Students may find examples of roots (exposed tree roots), examples of stems (on flowers and as the trunk of a tree), and examples of leaves (on bushes, trees, or indoor plants). Students can sketch their observations of these various plant parts.



Victor wonders what his plants need to grow.
What are the three main needs of a plant?

Handwriting practice area with three sets of lines (top solid blue, middle dashed pink, bottom solid blue) on the left side of a central illustration.

The illustration shows a green plant with several leaves growing out of a brown soil layer. A yellow sun is positioned above the plant, with yellow rays of light shining down onto the leaves. A black arrow points to one of the leaves. Below the soil line, the brown roots of the plant are visible, with two blue arrows pointing towards them from the left.

Teacher Talking Points

DO Read aloud the question that introduces the card. Then, point to the drawing of the plant and the three lines for writing labels on the diagram.

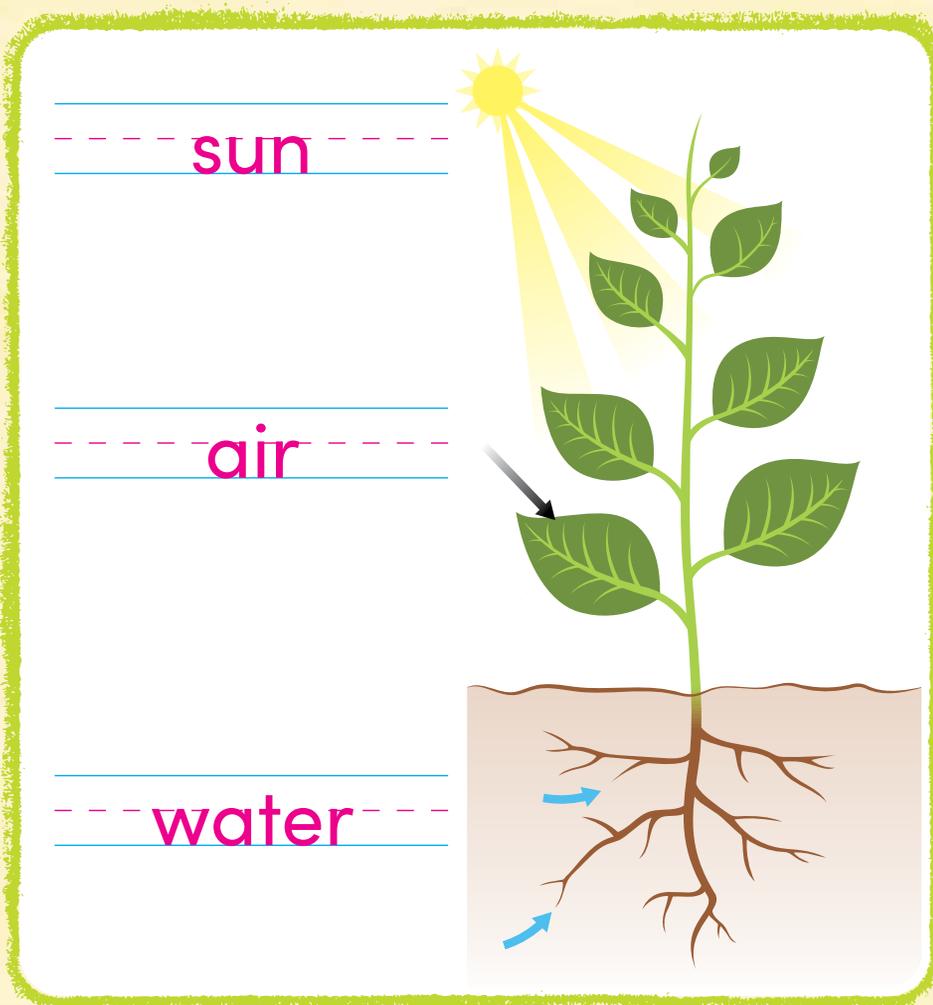
SAY *What is missing from this drawing of a plant?* Answers: sun (or sunlight), water, air

Suggestions for Differentiation

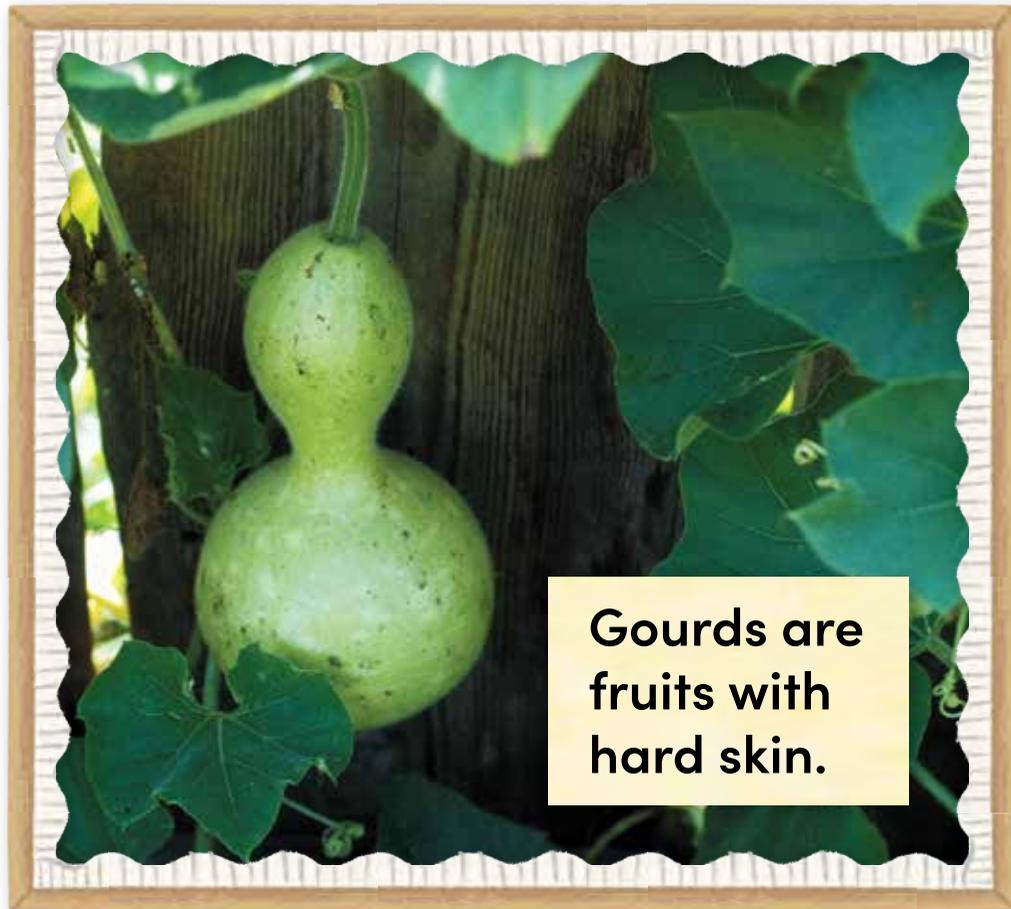
- For students who are struggling with identifying the words *sun*, *water*, and *air*, write these words on a blank space of the card. Then, invite students to draw a line from each word to its correct position in the diagram.
- For students who would benefit from enrichment, distribute construction paper, scissors, markers, and other craft materials. Ask students to construct and label their own models of a plant. Students may then use their models to explain how a plant uses its parts to meet its needs.



Victor wonders what his plants need to grow.
What are the three main needs of a plant?



Edible Plants



Plants that can be eaten are called edible. Some plants, such as carrots and parsnips, have edible roots.

Celery has edible stems.

Spinach and chard have edible leaves.

Fruits, flowers, and seeds can be edible too.



Teacher Talking Points

SAY Victor is deciding what kind of plants he should grow in his garden. Maybe he will grow edible plants. What are some edible garden plants that Victor might choose?

DO Read aloud the text, and then point out the caption with the photo. Discuss how this text feature gives more information about a photo or other picture.

Ask for student volunteers to name common edible plants that can be grown in a garden. Record the responses on a sheet of chart paper or on the board. Examples include carrots, spinach, peppers, squash, cucumbers, radishes, lettuce, and asparagus.

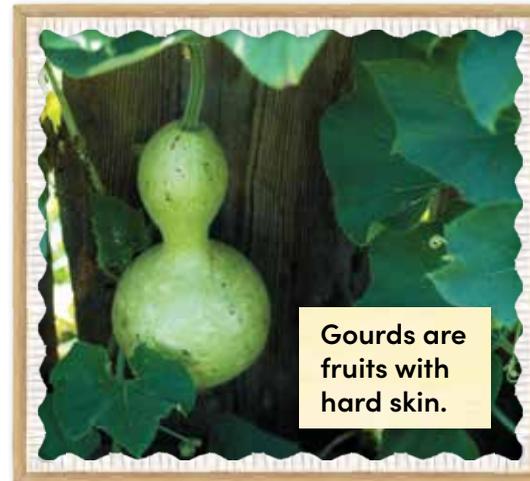
Students may suggest trees that bear fruit or have other edible parts. Respond by saying that trees take a long time to grow and need a lot of space, so they may not be the best choice for a garden.

Save the list you generate for the conclusion of the lesson.

Suggestions for Differentiation

- For students who may benefit from concrete examples, display carrots, spinach, celery, or other edible plants that are mentioned in the text or show photos of these plants. For a fun presentation, mix the photos of plants in a bowl as a “tossed salad.” Then, have students pick out individual parts to examine.
- Ask students to compare the edible parts of these plants with the roots, stems, and leaves shown in the photo on Story Card 3.

Edible Plants



Plants that can be eaten are called **edible**. Some plants, such as carrots and parsnips, have edible roots.

Celery has edible stems.

Spinach and chard have edible leaves.

Fruits, flowers, and seeds can be edible too.





Here are some edible parts of plants.
What kinds of parts are they?



Lettuce



Apples



Broccoli



Cucumber



Carrots



Corn

Teacher Talking Points

SAY Remember that plants have roots, stems, and leaves. Many plants also make flowers. The flowers make fruits and seeds. What plant parts do you see in these six foods? **Answers:** Lettuce is leaves. Broccoli is stems and flowers. Carrots are roots. Apples are fruit and seeds. Cucumber is fruit and seeds. Corn is seeds.

DO For each photo, have students vote on the kind of plant part they see. Give students hints as necessary, such as that broccoli comes from two plant parts. Alternatively, write the answers on sticky notes, and invite volunteers to match each sticky note to the correct photo.

Students may find some of the plant parts surprising. For broccoli, discuss how not all flowers have large, colorful petals or sweet smells. Some flowers are simple and plain. The tufted ends of a broccoli stalk are the flowers of the plant.

Students will likely recognize apples as fruits, but they may be surprised to learn that many vegetables, such as cucumbers, are also the fruits of a plant.

SAY Not all fruits are tasty and sweet. The fruit is the plant part that holds seeds. Cucumbers have seeds inside them, so they are the fruits of the plant.

Suggestions for Differentiation

- For students who struggle to read or recognize some of the names of the foods, read the names aloud one syllable at a time.
- For students who would benefit from an extension, have them name the plant parts for the edible plants you listed as a class when reviewing Story Card 5.



Here are some edible parts of plants.
What kinds of parts are they?



Lettuce



Apples



Broccoli



Cucumber



Carrots

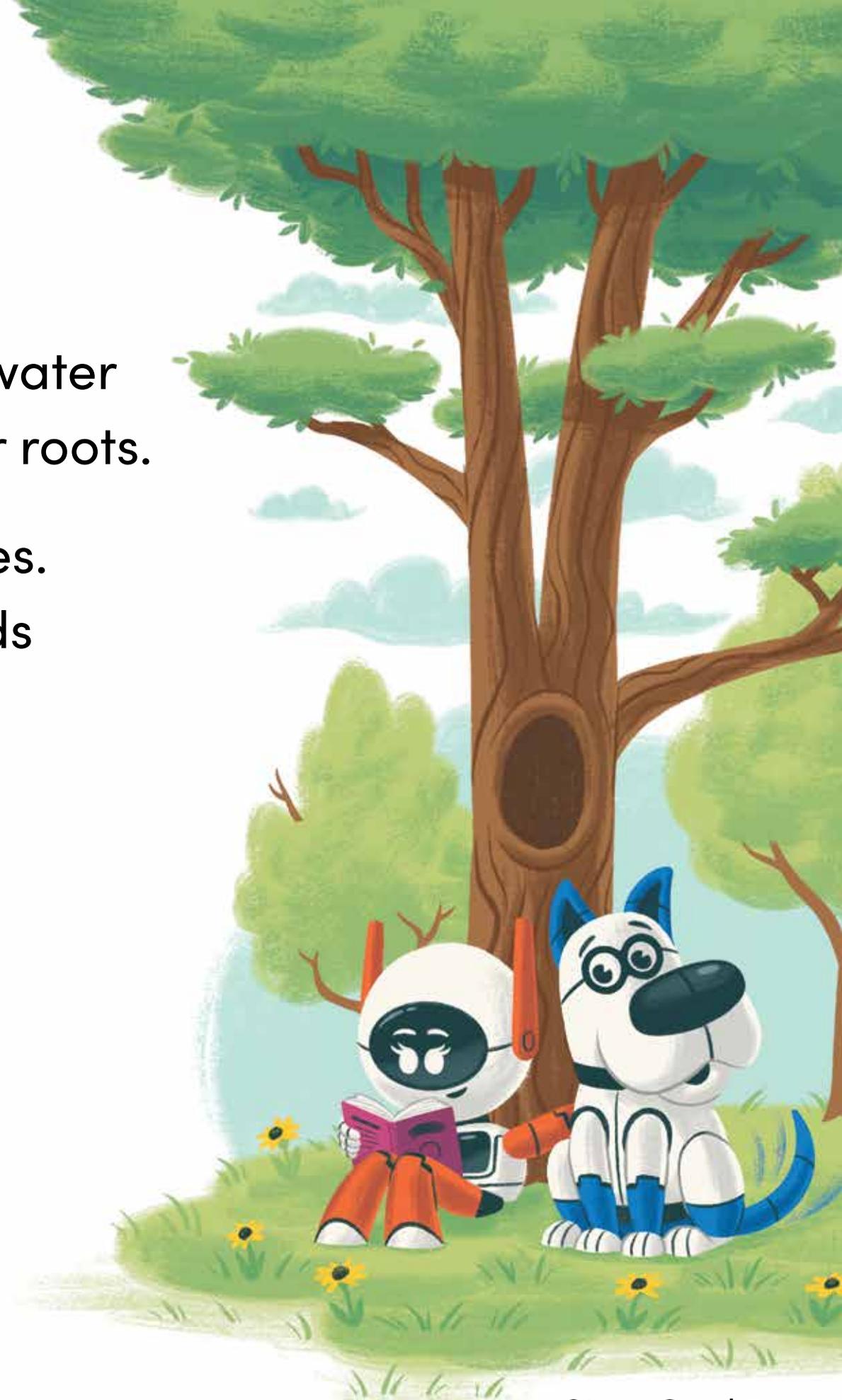


Corn

What Do Plants Need?

Plants need nutrients. Most plants get water and nutrients from the soil through their roots.

Some plants grow flowers to attract bees. Bees help flowers make seeds. The seeds will grow into new plants.



Teacher Talking Points

SAY Victor is excited to get started on his garden, but does he have everything he needs to help the garden grow? Looking down, he thinks about the question. The answer is right at his feet! Soil!

Soil has nutrients. Nutrients in the soil help plants grow. All plants need nutrients. Do plants need other things too? Think about what we learned earlier in these cards.

 Have students turn and talk to partners. Encourage them to discuss their ideas before sharing aloud with the class. **Sample answer: Plants need water, air, and sunlight.**

DO Draw a satellite graphic organizer with the word *flower* in the center. Ask students to name words that describe the flower shown on the card and other flowers like it. Record their responses. **Sample answers: colorful, many petals, sweet smell, pretty, beautiful**

Discuss how bees are attracted to flowers just like people are. Their visits help flowers make seeds.

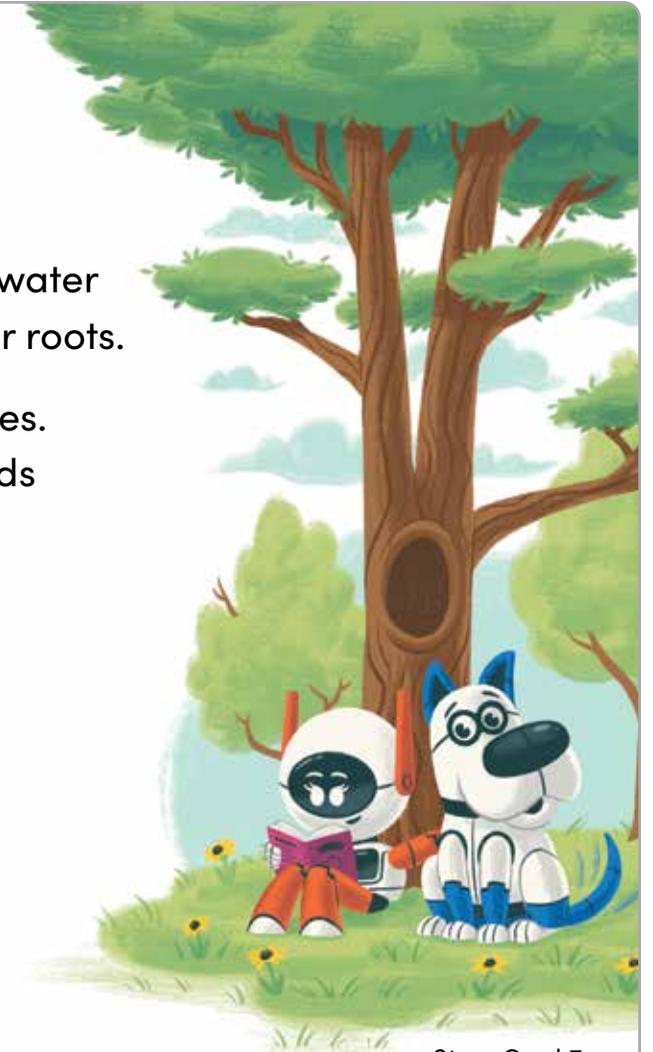
Suggestions for Differentiation

For students who may benefit from concrete examples, show them a real or artificial flower to observe and describe. For students needing enrichment, help them use describing words to make an acrostic about a flower. (Examples: ROSE = Red, Open, Scent, Enchanting; LILY = Lovely, Interesting, Light, Yellow)

What Do Plants Need?

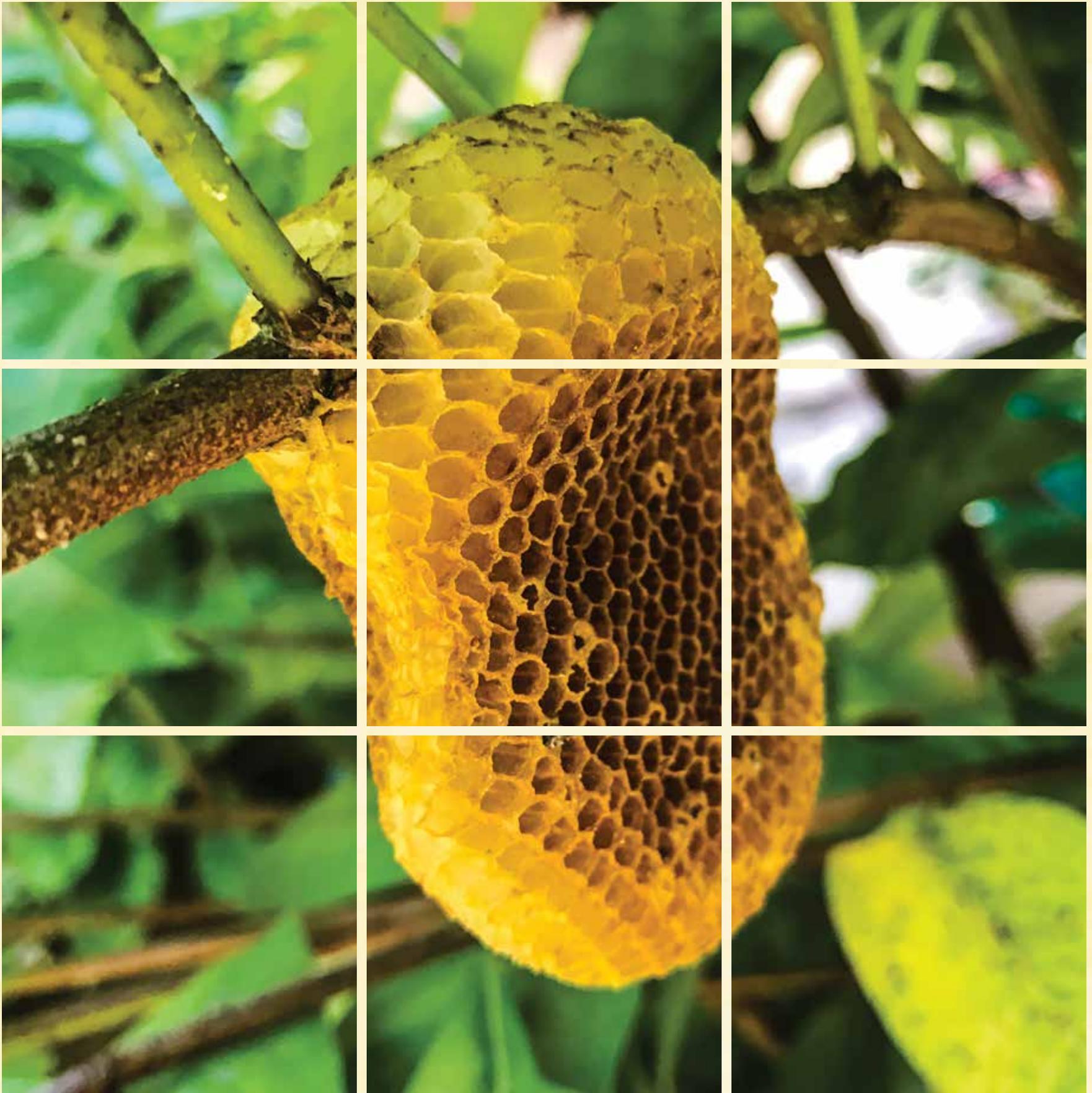
Plants need **nutrients**. Most plants get water and nutrients from the soil through their roots.

Some plants grow flowers to attract bees. Bees help flowers make seeds. The seeds will grow into new plants.





Zoe notices something in the yard that may help Victor with his garden. Can you guess what the photo shows?



Teacher Talking Points

DO Before sharing this story card with students, label nine large sticky notes from 1 to 9. Place the sticky notes over the nine gridded portions of the photo.

SAY *I put sticky notes over a photo of what Zoe saw. I will ask you questions about plants and how they grow. When a student answers a question correctly, that student can remove one sticky note and guess what the photo shows.*

Pose these questions to the class. Choose a different volunteer to answer each question.

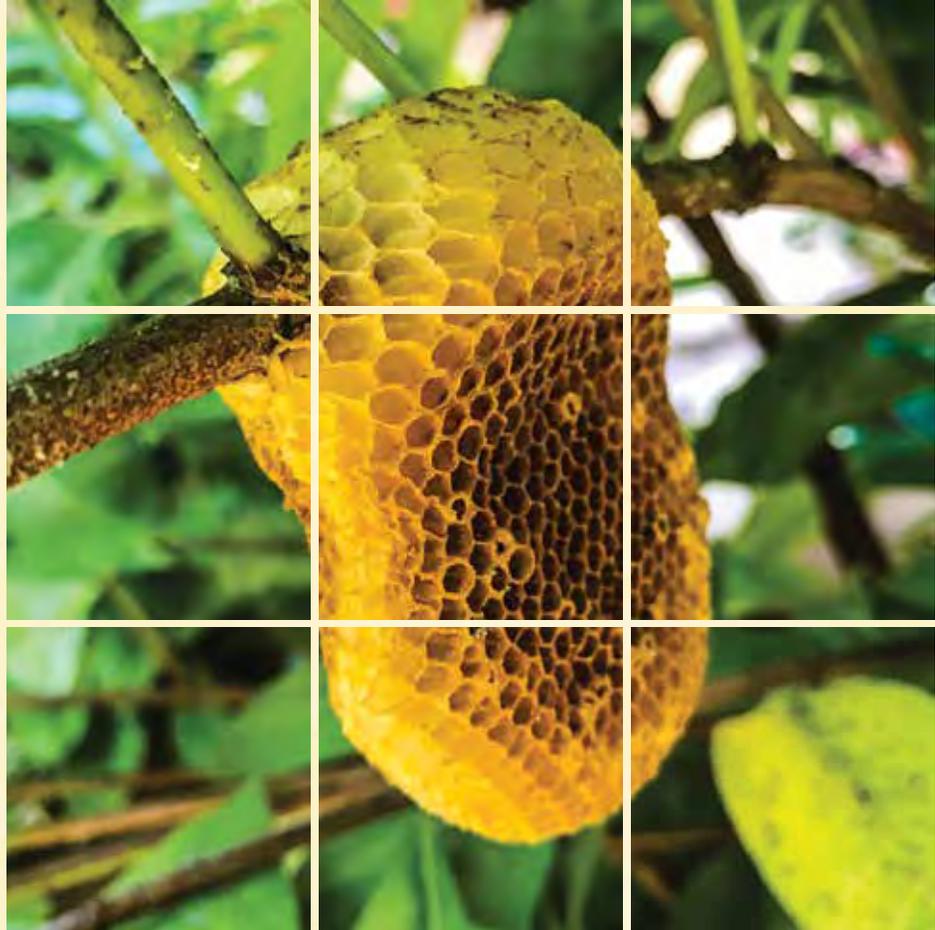
- What are the three main parts of every plant?
Answer: roots, stems, leaves
- Which plant part takes in water from the soil? **Answer: roots**
- Which plant part carries water from the roots to the leaves?
Answer: stems
- What do leaves do? **Answer: They make food for the plant.**
- What gives leaves the energy they need to make food?
Answer: sunlight (or the sun)
- Name a plant that has edible leaves. **Sample answers: lettuce, spinach**
- Name a plant that has edible roots. **Sample answers: carrots, parsnips**
- Roots take in water from the soil. What else do they take in? **Answer: nutrients**
- What animals help a plant make seeds when they visit flowers?
Sample answer: bees

Suggestions for Differentiation

For students who struggle with the answer to a question, allow them to ask a friend for help. Or provide a hint to the answer, such as by showing one of the previous story cards.



Zoe notices something in the yard that may help Victor with his garden. Can you guess what the photo shows?



Parts of a Plant



This green plant is growing in the ground.

Plants begin to grow when a seed is buried in soil.

With water, air, and light, the seed will begin to grow into a new plant.

Each part of the plant helps the plant grow.



Teacher Talking Points

 **SAY** Look at the photo. Where is the seed? What happened to the seed? **Sample answers:** The seed is at the end of the stem and above the roots. The seed grew into roots, a stem, and leaves.

Consider recording student responses on the board to reinforce concepts and vocabulary.

DO Draw students' attention to the caption: *This green plant is growing in the ground.* Discuss how captions help readers understand photos. Have students focus on the *gr-* consonant pair and circle it in the words in which it appears. As a class, brainstorm a list of words with the *gr-* consonant pair.

Suggestions for Differentiation

- For students who are struggling with reading or spelling words with the *gr-* consonant pair, have them select a *gr-* word from the caption or passage. Then, have them write the word on paper or use letter tiles or letter toys to spell the word.
- For students who would benefit from enrichment, have them draw a series of pictures of a plant growing from a seed. The first picture should show a seed, and each subsequent picture should show a larger and larger plant. Students may also be able to write simple captions or labels to explain their drawings.

Parts of a Plant



This green plant is growing in the ground.

Plants begin to grow when a seed is buried in soil.

With water, air, and light, the seed will begin to grow into a new plant.

Each part of the plant helps the plant grow.



Story Card 9



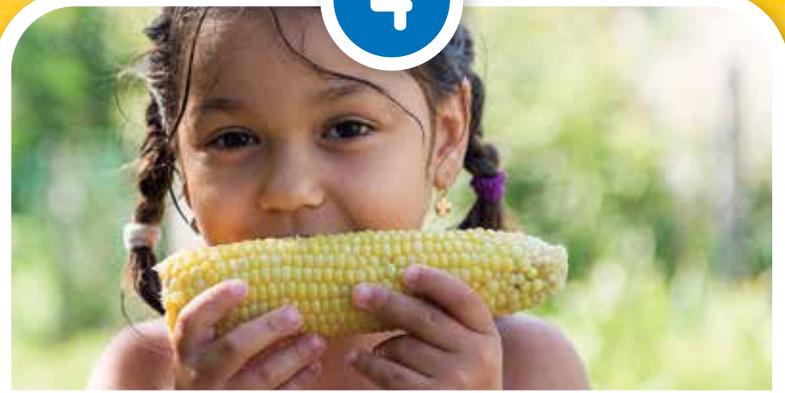
Zoe shows Victor these six photos. Can you help Victor by acting out what you have learned so far about plants?

1



Leaves make food.

4



Many plant parts are edible.

2



Roots take in water and nutrients.

5



Bees help flowers make seeds.

3



A seed grows into a plant.

6



Plants need room to grow.

Teacher Talking Points

Before displaying this card to students, write the numbers 1 to 6 on small pieces of paper. Then, place the numbered pieces in a brown paper bag or other container.

Begin the activity by reading the introduction. Then, use echo reading or choral reading to read the captions for the six photos.

SAY *Now we are going to play a game. First, a player will pick a piece of paper that shows a number from 1 to 6. Then, the player will act out the photo with that number. The rest of us will try to guess which photo the player is acting out. Players acting out photos can move their bodies however they like, but they cannot speak.*

DO Invite a volunteer to go first. After the volunteer selects a number, give the player some time to think about how to act out the photo. You may wish to suggest ideas in a private consultation. Alternatively, call out ideas if the player struggles to perform.

Direct students to raise their hands when they would like to guess which photo is being acted out. Be sure to call on all students during the session.

When the correct photo is guessed, return the numbered paper to the bag. Then, invite the player who correctly guessed the photo to take the next turn. As the game continues, make sure all students have a chance to act.

Suggestions for Differentiation

For students who struggle to act out a photo, consider acting with them and inviting them to copy your gestures. Or have students act out photos in pairs or groups of three.



Zoe shows Victor these six photos. Can you help Victor by acting out what you have learned so far about plants?



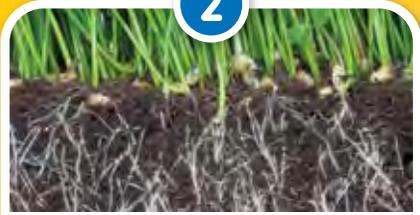
1

Leaves make food.



4

Many plant parts are edible.



2

Roots take in water and nutrients.



5

Bees help flowers make seeds.



3

A seed grows into a plant.



6

Plants need room to grow.

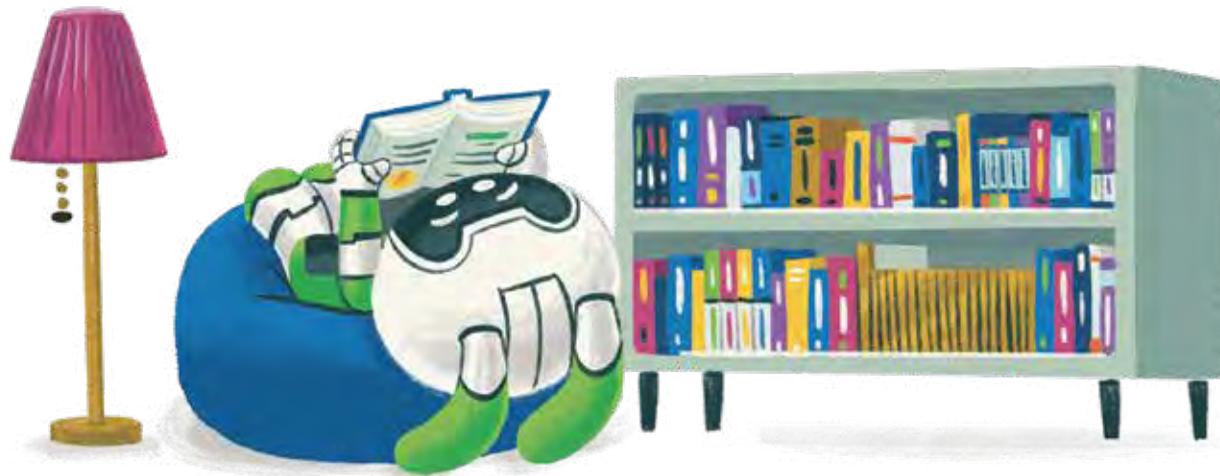


Story Card 10

Designing Structures

Architects and engineers use nature to help them design structures.

Trees have a large trunk section with branches that reach out in all directions. Engineers and architects have used the shape of a tree to design structures that hold up large surfaces.



Fern Tree



Airport

Teacher Talking Points

SAY A tree provides Victor and Zoe with shade as they sit down to discuss the options for the garden. Nature can often help us think of great ideas. Look at the photos to compare the airport with the tree. How are they alike? Discuss with a partner. **Sample answers:** The airport has columns like tree trunks. The parts on top of the columns are like the branches of a tree.

DO Circle the words *architects*, *engineers*, and *structures* in the text. **SAY** When I don't know the meaning of a word that I read, I look at the pictures and I read the words and sentences around the word I don't know. What do the clues in this story card tell you about architects, engineers, and structures? **Sample answer:** Architects and engineers work to design structures, such as the airport shown in the photo.

Suggestions for Differentiation

For students who are struggling with reading multisyllabic words, have them read aloud the parts of the sentence that they are able to read, and then ask them to say each word that is unfamiliar to them. Repeat, this time encouraging students to include the unfamiliar words as they read the sentence.

Designing Structures

Architects and engineers use nature to help them design structures.

Trees have a large trunk section with branches that reach out in all directions. Engineers and architects have used the shape of a tree to design structures that hold up large surfaces.



Fern Tree



Airport





Victor thinks about growing carrots in his garden. Let's complete the story.

What Happens Next?

Victor says, "Today, I am planting carrot seeds in my garden. Carrots are yummy!"

What happens next?



Teacher Talking Points

After reading the story card, discuss it with students. **SAY** *Victor is thinking about planting carrot seeds and is looking forward to eating carrots. But every good story has a problem. What could be Victor's problem? What will be the solution? Let's use our imaginations to finish the story.*

 Allow students to dictate and provide sequenced ideas that you can use to model story writing on chart paper.

SAY *What do you think could happen next in the story? Sample answer: The carrots start growing, but then the leaves start to droop. Victor gives the plants more water. The leaves look healthy. Finally, he pulls up a carrot root. Crunch! It is tasty.*

Discuss possible scenarios for continuing the story. Remind students that plants need air, water, sunlight, and nutrients to grow. Explore how each of these needs might not be met, such as if the weather is dry or if the garden is too shady. If carrot plants are bunched too closely together, then Victor might want to pull some of the plants to make room for the other plants to grow.

Encourage students to recognize that gardeners can help their plants in many ways. Ignoring garden plants may not lead to the flowers or vegetables that the gardener wants.

Suggestions for Differentiation

- Some students may benefit from seeing model sentences that could continue the story. Write possible sentences on the board for students to consider and then select. Examples include *Victor plans to water the carrot plants every day*, and *Victor decides to plant sunflowers next to the carrots*.
- If students want extra practice, provide them with the opening sentences of a story in which Victor decides to plant another type of garden plant.



Victor thinks about growing carrots in his garden. Let's complete the story.

What Happens Next?

Victor says, "Today, I am planting carrot seeds in my garden. Carrots are yummy!"

What happens next?



What plants should Victor grow in his garden? Draw a picture of a plant that you think would be a good choice. Then, show the needs of the plant.



Teacher Talking Points

Now that students have explored plants and how they grow, provide them with the opportunity to show what they know.

DO Give each student a sticky note. In the middle of the sticky note, ask students to draw a plant that they think Victor should grow in a garden. To generate ideas, you may wish to have students revisit the list of plants that they made for Story Card 5.

Students should draw pictures surrounding the plant to show the needs of the plant, such as sunlight, water, soil, and air.

 To help students reflect, give them the opportunity to describe their drawings to a partner. Students should explain to their partner why they chose their plant for the garden. **Sample answers:** I chose broccoli because you can eat the stems and flowers. I chose sunflowers because they are large and pretty, and we can eat the seeds.

DO Place the sticky notes on Story Card 13.

Invite students to share and discuss their work with the class. Then, celebrate the garden that Victor and Zoe have planted.

Suggestions for Differentiation

- For students who need guidance for this activity, have them use any of the earlier story cards as a reference for their drawings of a plant. Students may also refer to Story Card 4 to remember the needs of a plant.
- For students who would benefit from an extension, have them write labels or captions to describe their drawings. Students may use more than one sticky note if necessary, or they may complete the extension on a separate sheet of paper.



What plants should Victor grow in his garden? Draw a picture of a plant that you think would be a good choice. Then, show the needs of the plant.

Story Card 13

EDUCATION | SCIENCE TECHBOOK

APPROVED

ISBN 978-1-61629-909-5



Grade 2 Unit 3 Story Cards



SCIENCE
TECHBOOK

How Landscapes Change

APPROVED



Copyright © 2022 by Discovery Education, Inc. All rights reserved. No part of this work may be reproduced, distributed, or transmitted in any form or by any means, or stored in a retrieval or database system, without the prior written permission of Discovery Education, Inc.

To obtain permission(s) or for inquiries, submit a request to:

Discovery Education, Inc.
4350 Congress Street, Suite 700
Charlotte, NC 28209
800-323-9084
Education_Info@DiscoveryEd.com

ISBN 13: 978-1-61629-909-5

Printed in the United States of America.

1 2 3 4 5 6 7 8 9 10 SA 25 24 23 22 A

Acknowledgments

Acknowledgment is given to photographers, artists, and agents for permission to feature their copyrighted material.

UNIT 3

Card 3: Veranika848 / Shutterstock.com; **Card 4:** Jennifer de Graaf / Shutterstock.com; **Card 5:** Ingus Kruklitis / Shutterstock.com; **Card 6:** Ariyaphol Jiwalak / Shutterstock.com; **Card 7:** Fotos593 / Shutterstock.com; **Card 8:** (a) Robert Crow / Shutterstock.com, (b) Narongsak Nagadhana / Shutterstock.com, (c) Supertrooper / Shutterstock.com; **Card 9:** Everett Collection / Shutterstock.com; **Card 10:** Everett Collection / Shutterstock.com; **Card 11:** John T Callery / Shutterstock.com; **Card 12:** John Bill / Shutterstock.com; **Card 13:** 4.murat / Shutterstock.com; **Card 14:** (a) sumikophoto / Shutterstock.com, (b) naihei / Shutterstock.com, (c) 4.murat / Shutterstock.com

Abuelo's Story



My name is Eduardo. Today, I am visiting Abuelo.

We found an old photo album. Abuelo says, "Look! That was our family's farm a long time ago. But the farm is gone."

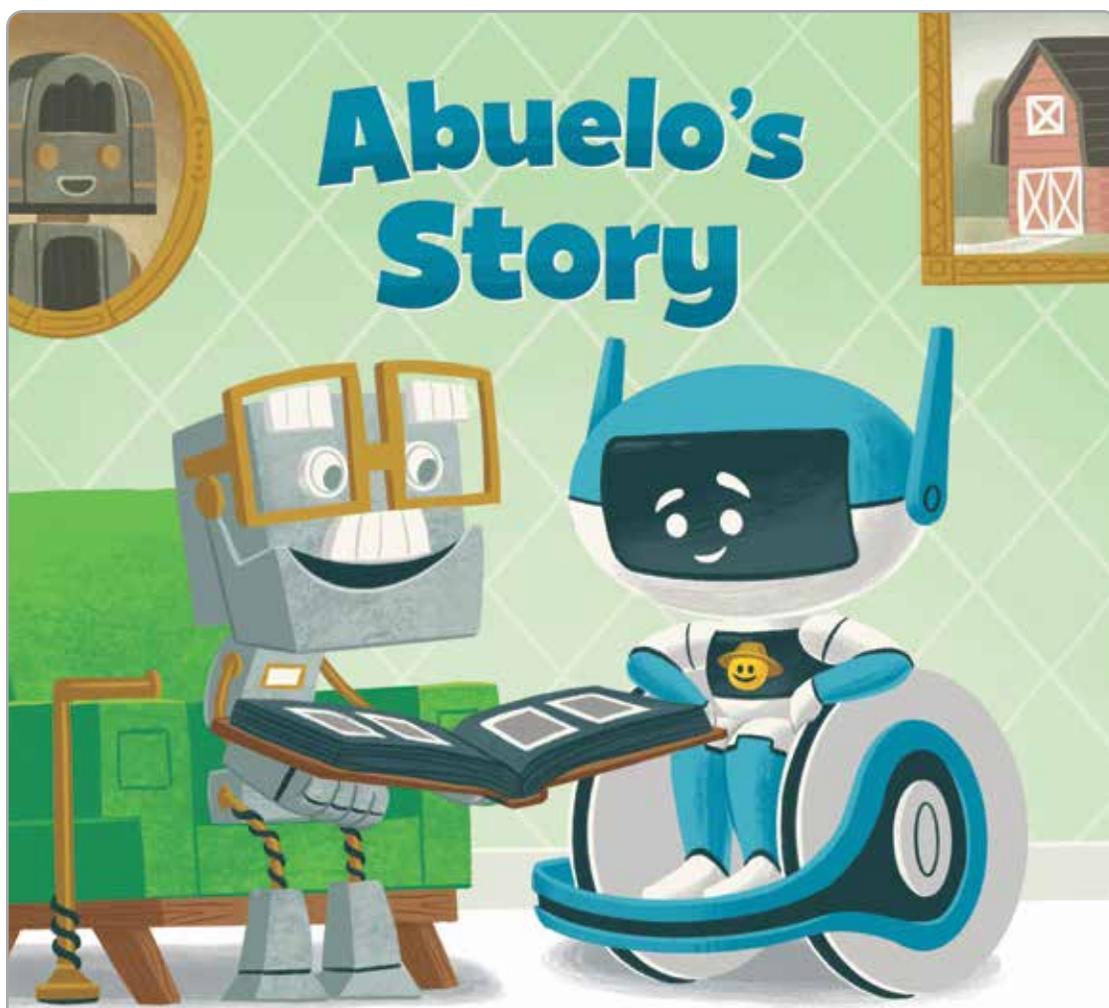
Teacher Talking Points

Help students become familiar with the story's main idea. **SAY** *In this story, you are going to meet Eduardo and Abuelo, his grandfather. Eduardo is curious about the old family farm he sees in the photo album. What happened to the farm? We will help him find out.*

 Invite students to share their own experience looking at family photo albums with grandparents or older family members. **SAY** *Why is it helpful to look at photos with a family member instead of by yourself? Answer: They can explain what is happening in the photo and who is in the photo.*

 Activate students' prior knowledge about farms by facilitating a whole-class discussion or having students discuss with a partner.

- SAY**
- *What do people do on a farm? What do they need to help crops grow?*
 - *What does a farm look like? What kind of land do people use for farms?*

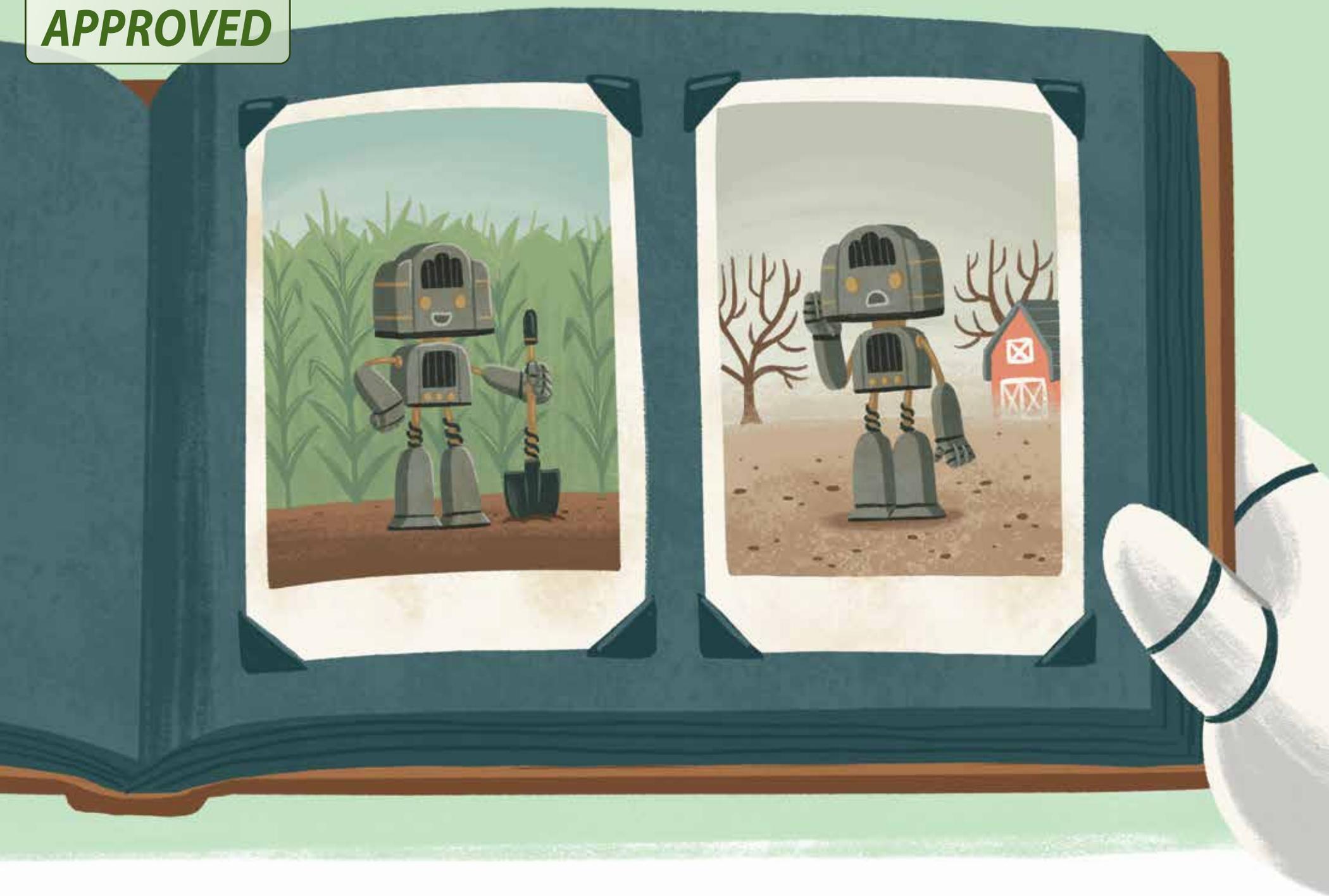


My name is Eduardo. Today, I am visiting Abuelo.

We found an old photo album. Abuelo says, "Look! That was our family's farm a long time ago. But the farm is gone."

Suggestions for Differentiation

For students needing extra vocabulary support, provide visuals of things on farms, such as a barn, a tractor, farm animals, wheat, and corn.



I look at the photos. “Who is this?” I ask. “Why does he look sad in the second photo?”

“That is my great, great grandfather,” Abuelo says. “Life on the farm was good, but then the land changed.”

I ask, “What made the land change, Abuelo?”
Abuelo looks sad. He does not answer.

Teacher Talking Points

Reread the first two paragraphs, using a different voice for each character and reading expressively to show Eduardo's curiosity and Abuelo's sadness.

SAY How does Eduardo feel about the photos? Is that different from how Abuelo feels? How do you know? **Answers:** Eduardo is curious; he asks questions. Abuelo feels sad, not curious; the story says he looks sad.

DO Have pairs practice rereading the dialogue in the story expressively to show how the characters feel. Point out that sometimes the dialogue is broken up by narration (“I ask” or “Abuelo says”).

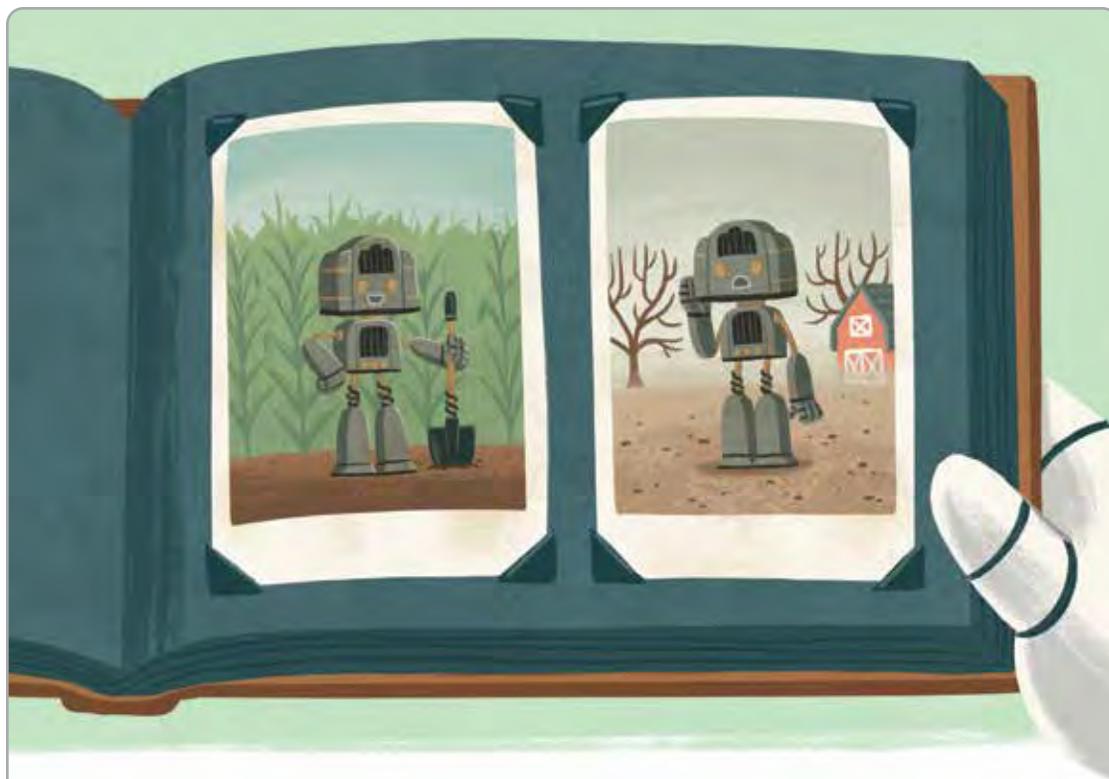
 As a class, discuss how the land changed. Invite volunteers to point out differences in the two pictures. Note their answers in a two-column chart with headings *Before* and *After*.

SAY Does Abuelo answer Eduardo's question? **Answer:** The card ends with the question “What made the land change?” Abuelo does not answer this question; readers are left wondering what made the land change.

DO Tell students they are going to figure out the answer to this question along with Eduardo. Encourage students to make predictions and make a list to revisit later.

Suggestions for Differentiation

- For students needing additional support identifying dialogue, use a dry-erase marker to underline the dialogue in the story. Point out or circle the quotation marks.
- For students who would benefit from language support to contrast the pictures, provide sentence frames: *At first, _____, but later, _____.* To provide additional support, you may also wish to use guiding questions, for example: *Do you see crops in both pictures? What is the soil like in each picture?*
- For students needing enrichment, extend the activity by focusing on vocabulary used to describe feelings. After generating a list, act out the words, using facial expressions.



I look at the photos. “Who is this?” I ask. “Why does he look sad in the second photo?”

“That is my great, great grandfather,” Abuelo says. “Life on the farm was good, but then the land changed.”

I ask, “What made the land change, Abuelo?”
Abuelo looks sad. He does not answer.

Weathering

Weathering is the breaking down of rocks into smaller pieces. Water can cause weathering. Sometimes, water freezes inside a crack in a rock. The frozen water expands and makes the crack larger. The rock breaks apart into smaller pieces. Water flowing over rocks can make sharp edges smooth over time.



Weathering caused the cracks in this rock.

Teacher Talking Points

SAY Eduardo wants to figure out why the land changed and what happened to the farm. He learns that the land can change through a process called “weathering.” Let’s read to find out how.

DO Point out how the bolded text shows that the word *weathering* is important. Underline the vowel team *ea* in *weathering* and *breaking* in the first sentence. Point out that in *weathering*, *ea* has the short-*e* sound, as in *edge*, while in *breaking*, *ea* has the long-*a* sound, as in *make*. Remind students that the vowel team *ea* can also have the long-*e* sound, as in *bead* or *team*.

DO Circle *cause* in the second sentence. Explain that a cause is a reason something happens, and an effect is what happens as a result. Make a diagram to show the chain of causes and effects in the text. Draw four boxes with arrows between them. Guide students to add the following events:

- Water freezes in a crack in the rock.
- The frozen water expands.
- The crack in the rock gets larger.
- The rock breaks apart into smaller pieces.

SAY Can you find another cause and effect in the text? **Answer:** Cause: Water flows over rocks. Effect: The sharp edges of the rocks become smoother.

Suggestions for Differentiation

For students who would benefit from extra practice with the vowel team *ea*, have students list more examples of words that have *ea* with the short-*e* sound (e.g., *bread*, *breakfast*, *feather*, *head*, *sweater*) and long-*a* sound (e.g., *great*, *steak*).

Weathering

Weathering is the breaking down of rocks into smaller pieces. Water can cause weathering. Sometimes, water freezes inside a crack in a rock. The frozen water expands and makes the crack larger. The rock breaks apart into smaller pieces. Water flowing over rocks can make sharp edges smooth over time.



Weathering caused the cracks in this rock.



APPROVED

Eduardo is learning about rocks and how they change.



What evidence of weathering do you observe in this rock?

Teacher Talking Points

SAY Eduardo wants to understand weathering. Let's help him.

DO Point out the rock in the picture. If feasible, invite students to use a hand lens to observe the rock more closely.

SAY What evidence can you observe that shows that the rock has been weathered? **Answers:** The rock is outside in the open air. It has small cracks in it. It looks like it has been split in two pieces.

 Encourage students to suggest ways the rock could have been weathered. For a hint, tell students that water acted to weather the rock, but that the water changed with the weather.

SAY If there is water in a crack in the rock, and it freezes, what is the effect? **Answer:** The ice expands (gets bigger) and splits open the rock.

SAY What would you tell Eduardo? Do you think this kind of weathering caused the land to change on the farm? Why or why not? Revisit the picture on this card and the drawings of the farm on Story Card 2. You may also wish to refer to the *Before and After* two-column chart. Guide students to conclude that there are no large rocks like this on the farm (and if there had been, breaking them down into soil would take an extremely long time), so it is unlikely the land changed due to weathering of rocks.

Eduardo is learning about rocks and how they change.



What evidence of weathering do you observe in this rock?



Story Card 4

Suggestions for Differentiation

- For students who need additional support with sequence or cause and effect, make simple sketches on three index cards that show a rock with cracks, water seeping into the cracks, and then water freezing to split apart the rock. Students can practice arranging the cards in order.
- Extend the activity by focusing on transition words that indicate sequence. Students can practice writing ordinal numbers such as first (1st), second (2nd), third (3rd), and so on. Or they can practice using words like *first*, *next*, and *last*.

Slowly over Time



Colorado River Canyon

Rivers usually change the land slowly. Over time, a fast-moving river can erode rock and soil. The Colorado River has cut out parts of the Grand Canyon over thousands of years.

The hardest rocks take a very long time to weather. Many landforms show that softer rocks have eroded away, while the harder rocks remain.

Teacher Talking Points

SAY *Could water have caused the weathering on Eduardo’s family’s farm? Let’s read more to find out.*

DO Help students use context clues to understand the meaning of *erode*. Reread the second sentence of the first paragraph. Discuss how the context clue “cut out parts of the [rock]” helps explain the meaning. Read the last sentence of the passage, and guide students to notice that “eroded away” and “remain” are opposites.

DO Discuss how the picture helps readers understand the text. Read the caption, and have students point to the canyon and the river. **SAY** *Thousands of years ago, where was the canyon? Where was the river? Answer: The canyon was not there; the land was flat, and the river was on top. If it took thousands of years for the canyon to form, do you think the rock we see now in the canyon is hard or soft? Answer: Hard, the softer rock has eroded away.*

Suggestions for Differentiation

- For students who would benefit from a visual representation, have students draw before and after pictures of the canyon in the photo.
- If students struggle with the term *landform*, use a dry-erase marker to draw a line between the two parts of the word, and have students use these to define the word.

Slowly over Time



Colorado River Canyon

Rivers usually change the land slowly. Over time, a fast-moving river can **erode** rock and soil. The Colorado River has cut out parts of the Grand Canyon over thousands of years.

The hardest rocks take a very long time to weather. Many landforms show that softer rocks have eroded away, while the harder rocks remain.



Eduardo is thinking about how a river can change the land. Read the poem and help Eduardo.

River Shapes

Roaring river,
Flowing free,
Carving canyon,
Moving me.



Teacher Talking Points

SAY Eduardo thinks about how a river can slowly change the shape of the land. How would you describe the shape of the river in the picture? **Sample answers:** curvy, wavy

DO Circle the *-ing* words.

SAY These words describe action. According to the poem, what does the river do? **Answer:** The river roars, flows, carves, and moves.

SAY Sometimes writers arrange the words of a poem to emphasize its meaning. These are called concrete poems. If we arrange the words of the poem in the shape of a river, we can emphasize the movement that a river makes. Let's "reshape" this poem together.

DO Use a dry-erase marker to draw a curvy line below the photo, similar to the path of a river. Model how to rewrite the words of the poem on the curvy line. Instruct students to draw their own curvy line on paper and write their own words on the curvy line that describe the different things a river can do.

SAY Now that you know more about how rivers can shape the land slowly, what would you tell Eduardo? Do you think this kind of erosion happened on his family's farm? **Answer:** no How do you know? Revisit Story Card 2. Guide students to notice that there is no river on the farm, and the photos show a much faster change (within one robot's lifetime).

Suggestions for Differentiation

- Provide students needing vocabulary support with modeling clay to reinforce the word *carve*. Students can carve the words of the poem into the clay or use the clay to carve out a canyon.
- Extend the lesson by focusing on how to add *-ing* to the end of words. After identifying root words, discuss how to add *-ing* to the words ending in consonants (roar, flow) and how to drop the silent e and add *-ing* to the words *carve* and *move*.
- Extend the lesson by identifying the repetition of sounds used in the poem (alliteration). Circle the repeated *r*, *f*, *c*, and *m*.



Eduardo is thinking about how a river can change the land. Read the poem and help Eduardo.

River Shapes

Roaring river,
Flowing free,
Carving canyon,
Moving me.



Landslides, Earthquakes, and Volcanoes

Not all changes in a landscape happen slowly. A landslide can move earth quickly. Gravity pulls rocks and dirt down a hill.

Earthquakes are sudden movements in Earth's crust. They change the shape of Earth's surface. A volcano is an opening in Earth's crust. A volcano releases hot rocks and ashes when it erupts.



Teacher Talking Points

SAY Eduardo tells Abuelo everything he has learned so far. Abuelo smiles. "You are right," he says. "It did not take thousands of years to change the land on the farm. It happened a lot faster than that!" Eduardo thinks hard. What can change the land quickly?

DO Read the title of the reading passage with students. Point out that *landslide* and *earthquake* are compound words. Use the word parts to help students define the words. Explain that *quake* is another word for *shake*.

SAY What happens in a landslide? Answer: Land slides down a hill. What happens in an earthquake? Answer: The earth, or ground, shakes.



Have pairs work together to answer this question about each event: *How does it change the land?* For example, students might explain that a landslide moves dirt and rocks downhill.

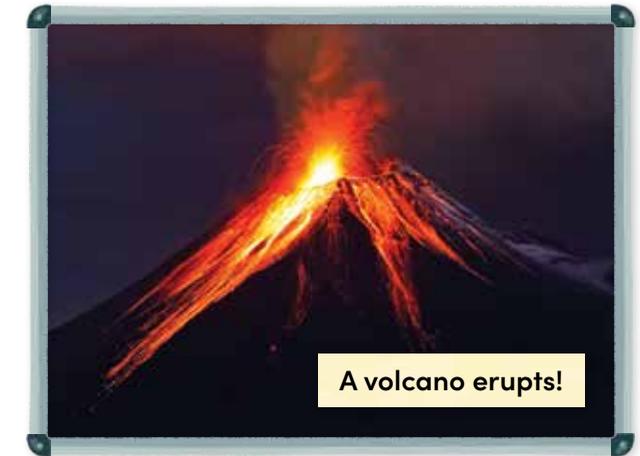
Suggestions for Differentiation

- For students who need vocabulary support, discuss the multiple-meaning word *crust*. Elicit any familiar meanings, such as a bread crust. Point out that in science, *crust* refers to the surface of Earth.
- For students who could benefit from enrichment, allow them to read additional books about volcanoes. Students can draw a diagram of a volcano and label its parts (ash, crater, lava, magma, vent).

Landslides, Earthquakes, and Volcanoes

Not all changes in a landscape happen slowly. A landslide can move earth quickly. Gravity pulls rocks and dirt down a hill.

Earthquakes are sudden movements in Earth's **crust**. They change the shape of Earth's surface. A volcano is an opening in Earth's crust. A volcano releases hot rocks and ashes when it erupts.





Eduardo is thinking about how the land changes quickly. What caused these changes?



Land Changes





Teacher Talking Points

DO Read aloud the opening text and question that introduces the card. Point out the missing labels on each picture.

SAY Have students, as a class or in pairs, discuss details in each picture and decide how to label each one. Remind them to take turns and listen. Model building on each other's ideas and asking questions. For example, if a student says they see black rocks that look hot, **SAY** Yes! These rocks are called lava. Where could lava come from?

Answer: a volcano

DO Take a vote for how to label each picture.

SAY Let's help Eduardo decide if any of these events made the land change on the farm. Revisit the pictures of the farm on Story Card 2. You may also wish to use the *Before* and *After* two-column chart. Have students compare the changes to the farm to the changes shown on Story Card 8.

SAY • Could the farm have been changed by a volcano? Why or why not? **Answer:** No, because there is no lava covering the farm.

• Could it have been an earthquake? Why or why not? **Sample answer:** Probably not, because there are no big cracks or shifts in the land.

• Could it have been a landslide? Why or why not? **Sample answer:** Maybe, because a landslide moves soil and rocks. However, landslides move things downhill, and there do not seem to be any hills on the farm.

Suggestions for Differentiation

To extend the activity, have students write a few sentences explaining how each event caused the damage in the picture. Encourage them to state the topic at the beginning, and end with a concluding statement that sums up their ideas.



Eduardo is thinking about how the land changes quickly. What caused these changes?



volcano

Land
Changes



earthquake



landslide

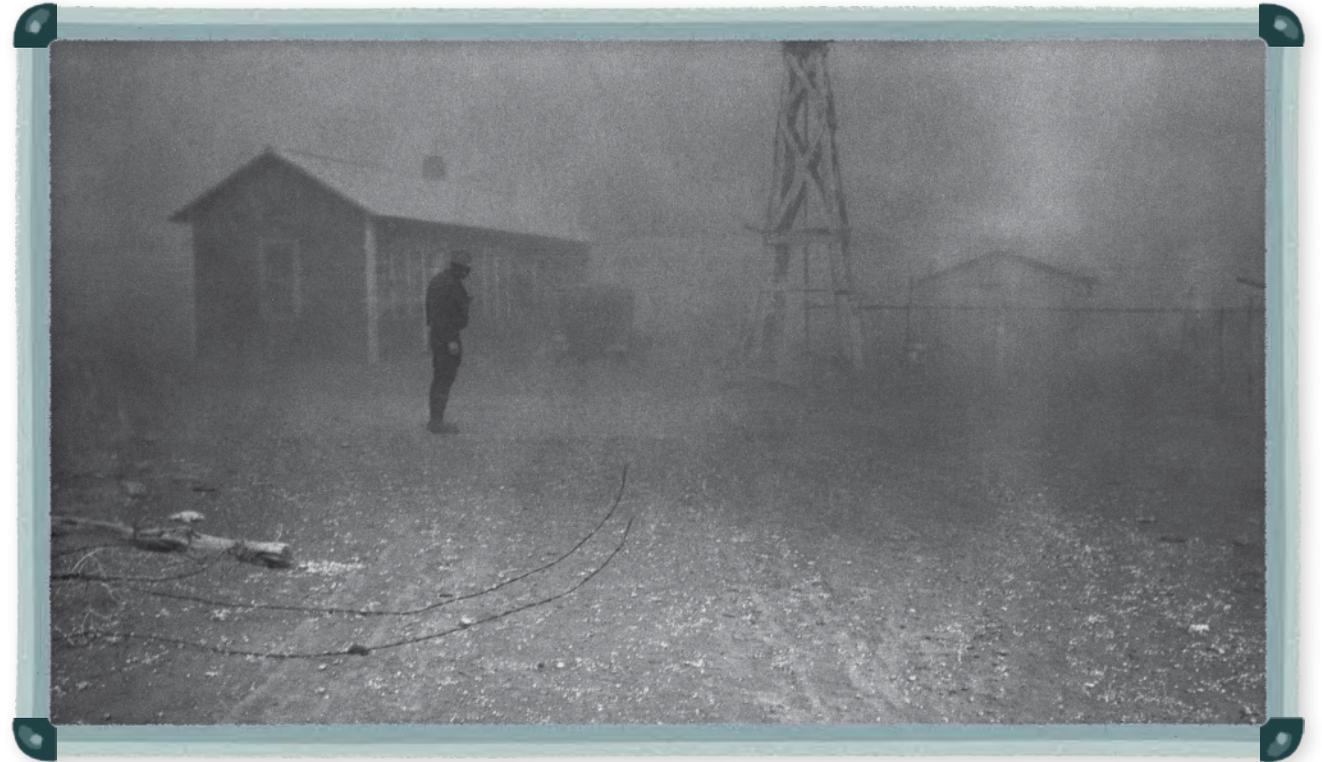


Story Card 8

Farm Soil

Many years ago, farmers in the midwestern United States had a problem. For a long time, there was no rain. The top layers of soil got very dry. The wind began blowing the top layers of soil.

The erosion of the soil made the land very dusty. It ruined the farms!



Dust Storm in the 1930s



Teacher Talking Points

SAY Abuelo is ready to tell Eduardo the story of what happened to his great, great grandfather's farm. Let's read to find out.

 Have students turn and talk to partners about what they think happened to the farm. Revisit students' predictions from Story Card 2. Invite volunteers to share their predictions. Then, read the passage.

DO Discuss the main purpose of the text. Guide students to conclude that the purpose of the text is to describe the problems caused by soil erosion. **SAY** Why was it a problem that the wind blew away soil? **Answer: Crops need soil to grow.**

 Prompt students to use what they learned from the text to help them understand what happened to Eduardo's family's farm.

- SAY**
- Why did the land change on Abuelo's great, great grandfather's farm? **Answer: Wind eroded the soil.**
 - What weather conditions caused this to happen? **Answer: There was no rain, so the soil was dry. Wind blew it away.**
 - How do you think it changed life for farmers? **Sample answer: Their crops did not grow, so they did not have enough money or food.**

Suggestions for Differentiation

To extend the activity, have students write a description of what is happening in the picture.

Farm Soil

Many years ago, farmers in the midwestern United States had a problem. For a long time, there was no rain. The top layers of soil got very dry. The wind began blowing the top layers of soil.

The **erosion** of the soil made the land very dusty. It ruined the farms!



Dust Storm in the 1930s





Abuelo begins a story about his great, great grandfather. Let's complete the story.

What Happens Next?

My great, great grandfather looked around the farm. He was sad.

He was hungry, too.

What happens next?



Farm Covered in Dust

Teacher Talking Points

DO After reading the story card, invite volunteers to summarize what happened to Abuelo's great, great grandfather's farm. **SAY** *How does he feel? Answer: sad and hungry Do you think that is the end of his story?* Tell students that you are going to write a happy ending for Abuelo's great, great grandfather.

 Allow students to dictate and provide sequenced ideas that you can use to model story writing on chart paper. **SAY** *What happened first? What happened next? What happened last?*

DO Explain that every story has a beginning, a middle, and an end. **SAY** *The end wraps up the story. It makes sense with all the events that came before. How can we write a good ending for Abuelo's great, great grandfather?* Brainstorm as a class. For example, he might start a new farm somewhere else and be very happy, or he might give up on farm life and get a job making robot parts in the city.

DO Encourage students to include details to describe Abuelo's great, great grandfather's thoughts and feelings.



Abuelo begins a story about his great, great grandfather. Let's complete the story.

What Happens Next?

My great, great grandfather looked around the farm. He was sad.
He was hungry, too.

What happens next?



Farm Covered in Dust

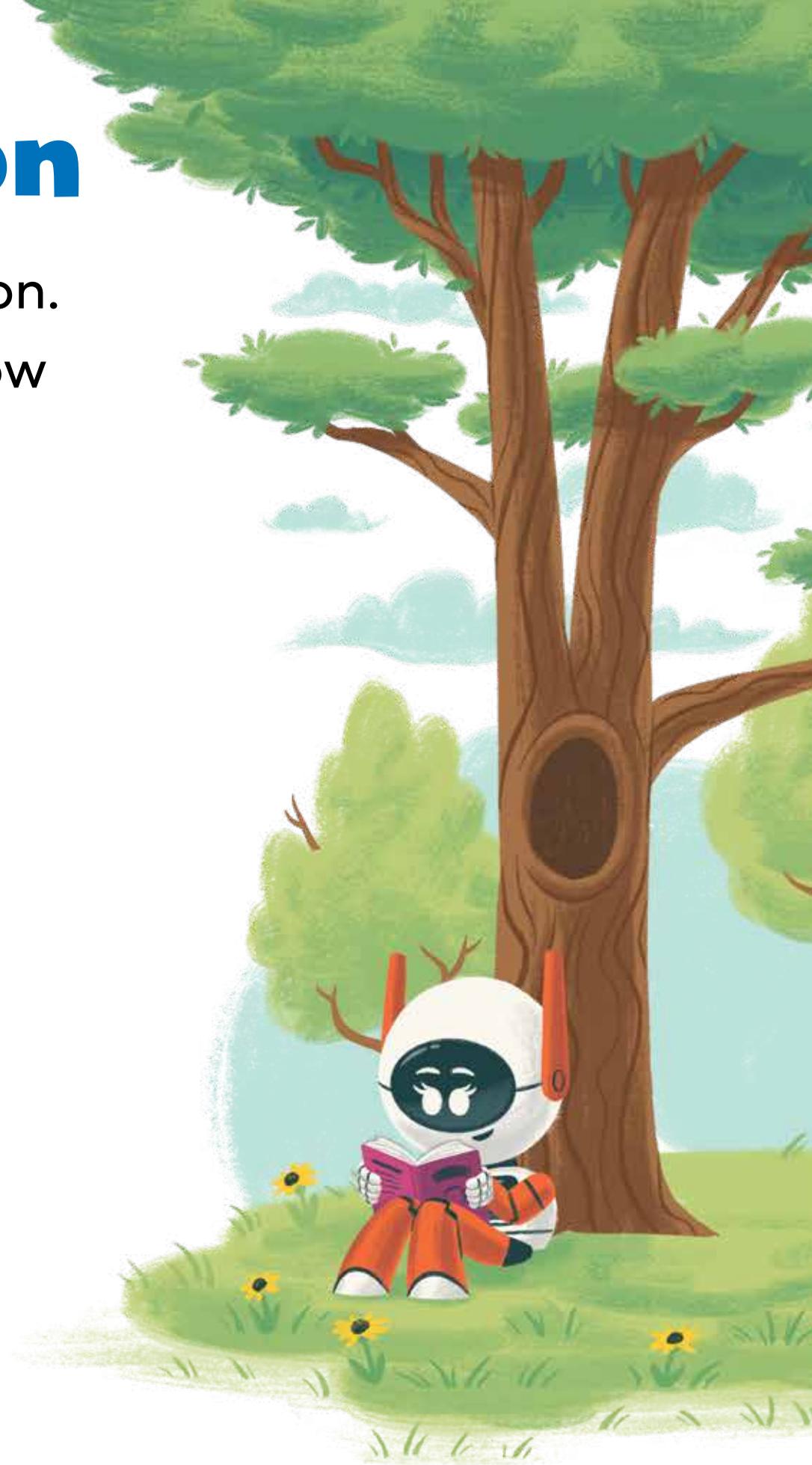
Suggestions for Differentiation

- To help students write a clear sequence of events, provide frames with sequence words: *First, he _____. Next, _____. Then, _____. Finally, _____.*
- For students who are visual learners, have them draw the events in the story as a comic before writing it. Encourage them to draw on separate sheets of paper, index cards, or sticky notes so they can arrange the events in an order that makes sense for the story.

Slow or Stop Erosion

There are many ways to slow or stop erosion. One way is to make a barrier. Trees can slow or block the wind. Walls or fences can trap moving soil.

The roots of plants help keep soil in place. Wood chips or pine needles can cover the ground to protect soil.



Teacher Talking Points

SAY Eduardo feels sad about Abuelo's story. "How can we stop erosion from happening?" he says. "I don't want other farms to be lost." Abuelo tells him that now farmers know many ways to help keep the soil in place.

DO Point out the word *barrier* in the second sentence. Help students identify context clues that show the meaning of this word. The next sentences all discuss examples of barriers, such as trees, walls, and fences. Students should also look at the picture and discuss how it shows a barrier.

 Have students turn and talk to a partner and discuss the information in the passage. As needed, supply guiding questions. For example, **SAY** How does a row of trees help the soil? What examples of barriers have you seen where you live?

SAY Why do you think Abuelo's great, great grandfather could not stop the erosion on his farm? **Sample answer:** He might not have known why the soil was eroding or how to slow or stop erosion.

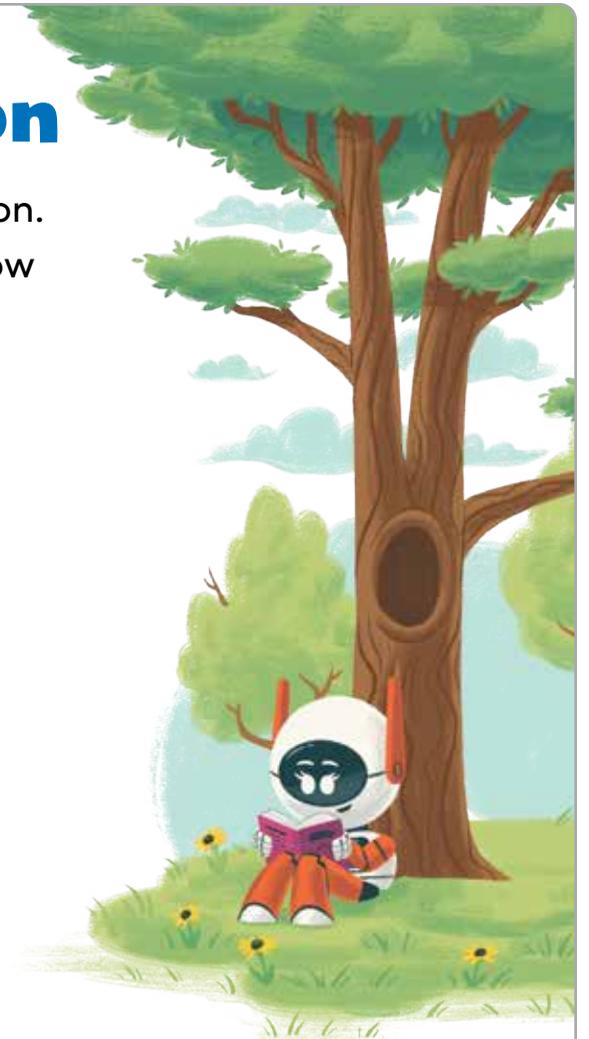
Suggestions for Differentiation

- For students who would find a visual representation helpful, have them divide a sheet of paper and draw a picture of each way to stop or slow erosion.
- For students who would benefit from enrichment, guide them on a tour of the schoolyard to look for examples of erosion and preventive barriers. Have students write a letter to the principal explaining any areas of concern, using commas in greetings and closings.

Slow or Stop Erosion

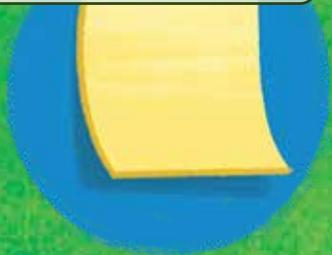
There are many ways to slow or stop erosion. One way is to make a barrier. Trees can slow or block the wind. Walls or fences can trap moving soil.

The roots of plants help keep soil in place. Wood chips or pine needles can cover the ground to protect soil.

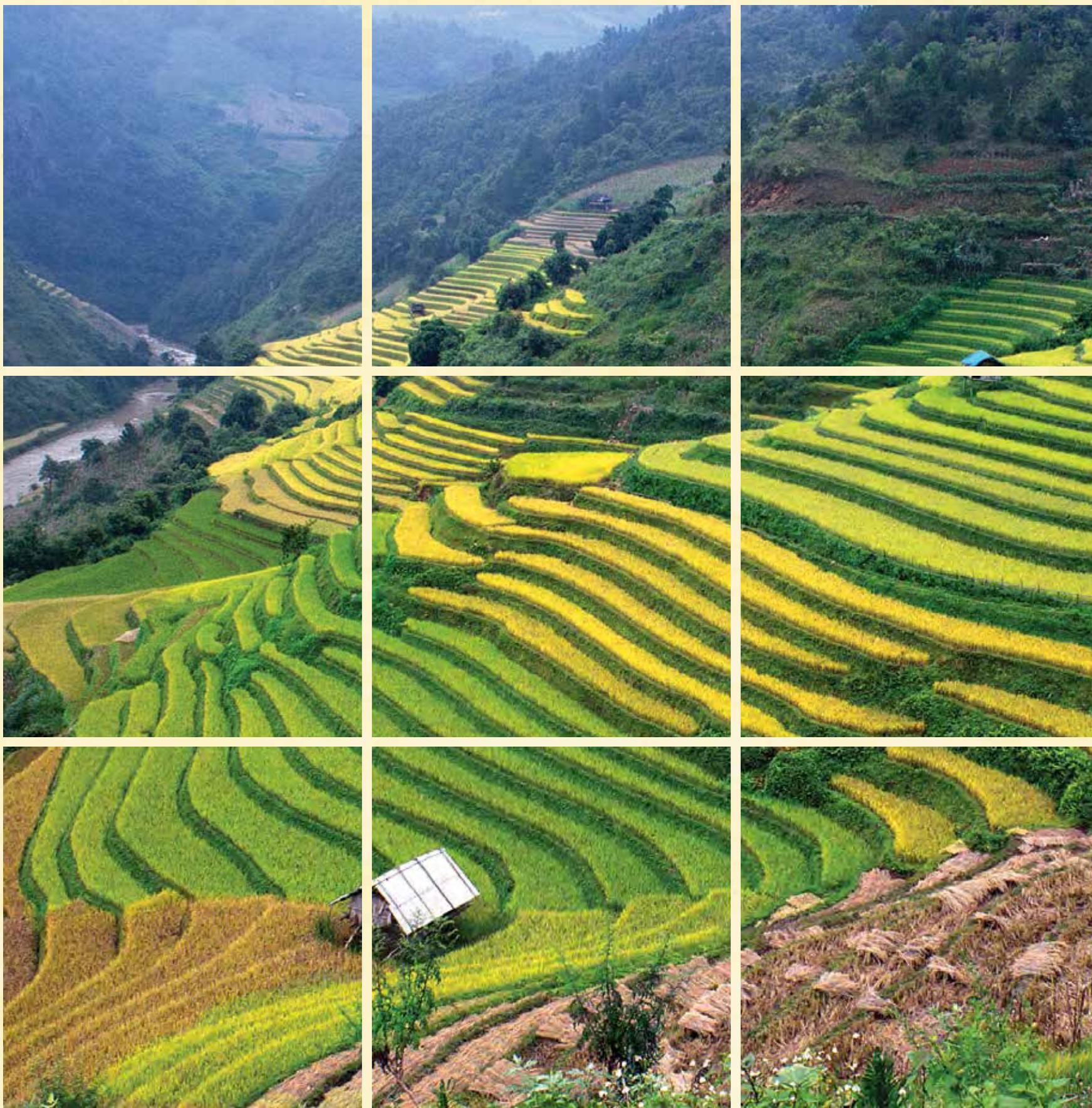


Story Card 11

APPROVED



Answer the questions to uncover the picture.
Can you guess what the picture shows?



Teacher Talking Points

DO Prior to sharing the story card with students, use sticky notes to cover up the nine squares in the grid. Number the sticky notes 1–9.

SAY *If you answer a question correctly, you get to pick which sticky note to remove. See if you can guess what the picture shows!*

- *What is erosion?* **Answer:** Erosion happens when rocks or soil are moved from one location to another.
- *How does wind erode soil?* **Answer:** It blows away the top layers of soil.
- *Why might erosion happen after no rain?* **Answer:** The soil dries out and can more easily be blown away.
- *What are some ways to block erosion by wind?* **Sample answers:** trees, walls, fences
- *How can plant roots help stop soil erosion?* **Answer:** They hold the soil in place.
- *What are some events that cause the land to change quickly?* **Answer:** earthquakes, landslides, volcanoes
- *How does a landslide affect the soil?* **Answer:** It pushes the soil down a hill.
- *If water flows down a hill, what might happen to the soil?* **Answer:** The water might erode the soil.
- *If there is not enough soil, what might happen to the crops?* **Answer:** The crops might not grow well.

 If students have not already guessed, tell them that this picture shows a farm on a hillside. Explain that each terrace, or step, is a flat place to grow crops. Explain that the terraces help prevent erosion by keeping soil and water in place.

Suggestions for Differentiation

Consider calling on students rather than having them volunteer to answer. As needed, repeat the question, allow time for students to think about their answer before they give it, and allow students to change or reword their answer if they wish.



Answer the questions to uncover the picture.
Can you guess what the picture shows?





Story Card 12

Change from Earthquakes

How can engineers design a building or structure that will last during an earthquake? Engineers use shapes that are flexible. The shape bends instead of breaks when the earth shakes. The structure will be safer.

Round disks can fit between the ground and the floor of a building. The disks allow the entire building to move as the earth moves.



This building was damaged in an earthquake.

Teacher Talking Points

SAY Eduardo has learned so much about how the land changes that he wonders if he might use this knowledge one day in his career. Maybe he can become an engineer! **DO** After reading the first paragraph, explain that the job of engineers is to use science to solve problems. **SAY** Engineers might improve something or create something new.

After reading, discuss the main purpose of the text.

SAY Why did the author write this text? What is the author trying to explain? **Answer:** The author is explaining how engineers make buildings safe during earthquakes.



Have students turn and talk to a partner. Ask them to retell in their own words two ways engineers make buildings safe during earthquakes. Then, ask a volunteer pair to share their answers. As a class, discuss why it might be helpful to design something in advance, rather than fixing problems after they have already happened.

Suggestions for Differentiation

- For students who are unsure of the meaning of *flexible*, point out the context clue *bend*, and have students bend in their seats to show they are flexible.
- Have students sketch a house or a building with disks between the ground and the floor. Have them use their drawing to describe why this might be helpful in an earthquake.

Change from Earthquakes

How can engineers design a building or structure that will last during an earthquake? Engineers use shapes that are flexible. The shape bends instead of breaks when the earth shakes. The structure will be safer.

Round disks can fit between the ground and the floor of a building. The disks allow the entire building to move as the earth moves.



This building was damaged in an earthquake.

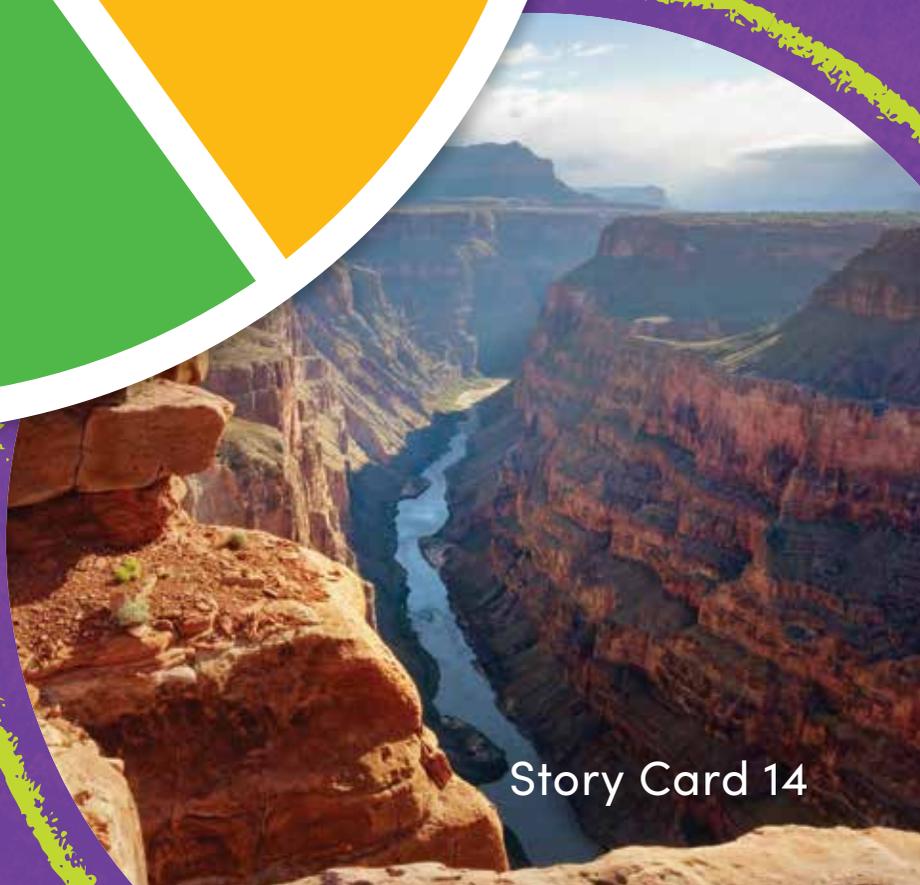


APPROVED



Spin the wheel and talk about what you have learned about changes in the landscape.

KEY: A = Adjective, E = Emotion,
I = Interesting, O = Oh!, U = Um?



Teacher Talking Points

SAY Now, let's talk about what we learned with Eduardo about the way Earth can change.

DO Before introducing this story card, have a paper clip and a pencil available to use as a spinner. Explain the rules of the game: you will spin the spinner, and students will respond, based on the section it lands on.

- SAY**
- A is for "adjective." You will use an adjective to describe something you learned about.
 - E is for "emotion." You will talk about how something you learned made you feel.
 - I is for "interesting." You will talk about the most interesting thing you learned.
 - O is for "Oh!" You will tell what you learned that surprised you and made you say, "Oh!"?
 - U is for "Um?" You will ask a question about what you learned.

DO Have students look at the pictures to help them recall some of the topics they have learned about.

DO For emotion, you may want to suggest that students think about the Dust Bowl farmers and how the farmers might have felt as the wind eroded the soil on their farms.

Suggestions for Differentiation

- If students struggle to respond, encourage them to first describe one of the pictures on the story card.
- For students who would benefit from language support, provide sentence frames as needed: ____ is (dangerous). ____ makes me feel (sad). I think it is (interesting/surprising) that _____. For questions, provide a list of question words: who, what, when, how, why.

Spin the wheel and talk about what you have learned about changes in the landscape.

KEY: A = Adjective, E = Emotion, I = Interesting, O = Oh!, U = Um?

Landscape Changes

SCIENCE TECHBOOK EDUCATION

Story Card 14



How can the land change?
Draw your own pictures of the
land before and after.



Teacher Talking Points

Now that students have explored how the land changes, provide them with the opportunity to show what they know.

DO Students will pretend they are science photographers who take photos of landscape changes before and after they happen. Give each student two sticky notes. On the first sticky note, they should draw a *before* picture of a landscape. On the second sticky note, they should show what the landscape looked like *after* a slow or quick change. The change to the landscape can be caused by wind or water, or result from a landslide, volcano, or earthquake. Work with the class so that a variety of examples are chosen.

 To help students reflect, give them the opportunity to describe their drawings to a partner. Students should explain to their partner the type of change to the land they drew, as well as a solution that might lessen the impact.

Sample answers: An earthquake can make the earth shake and buildings collapse, but engineers can design flexible buildings so they do not fall down. Soil can erode by falling downhill, but farmers can place barriers such as trees to block the wind or use walls and fences to trap the moving soil.

DO Place the sticky notes on Story Card 15. Invite students to share and discuss their work with the class. Then, review all the sticky notes together and discuss how they show the changes to the land. **SAY** *We helped Eduardo learn about these kinds of changes, and now he knows what happened to his family's farm.*

Suggestions for Differentiation

- For students who need guidance for this activity, have them use any of the earlier story cards as a reference for their drawings.
- For students who would benefit from an extension, have them write labels or captions to describe their drawings. Students may use more than one sticky note if necessary, or they may complete the extension on a separate sheet of paper.



**How can the land change?
 Draw your own pictures of the
 land before and after.**





Story Card 15

APPROVED

ISBN 978-1-61629-889-0



9 781616 298890

Grade K Unit 4 Story Cards



SCIENCE
TECHBOOK

Motion and Change

APPROVED



Copyright © 2022 by Discovery Education, Inc. All rights reserved. No part of this work may be reproduced, distributed, or transmitted in any form or by any means, or stored in a retrieval or database system, without the prior written permission of Discovery Education, Inc.

To obtain permission(s) or for inquiries, submit a request to:

Discovery Education, Inc.
4350 Congress Street, Suite 700
Charlotte, NC 28209
800-323-9084
Education_Info@DiscoveryEd.com

ISBN 13: 978-1-61629-889-0

Printed in the United States of America.

1 2 3 4 5 6 7 8 9 10 SA 25 24 23 22 A

Acknowledgments

Acknowledgment is given to photographers, artists, and agents for permission to feature their copyrighted material.

UNIT 4

Card 3: Peakstock / Shutterstock.com; **Card 4:** (a) kwanchai.c / Shutterstock.com, (b) Helen Sushitskaya / Shutterstock.com, (c) Syda Productions / Shutterstock.com, (d) saranya33 / Shutterstock.com; **Card 5:** GNT STUDIO / Shutterstock.com; **Card 6:** Olesia Bilkei / Shutterstock.com; **Card 7:** (a) TuktaBaby / Shutterstock.com, (b) TinnaPong / Shutterstock.com, (c) Ladanifer / Shutterstock.com, (d) jesterpop / Shutterstock.com, (e) Pressmaster / Shutterstock.com, (f) aastock / Shutterstock.com; **Card 8:** dreamnikon / Shutterstock.com; **Card 9:** Butus / Shutterstock.com; **Card 10:** SOMKKU / Shutterstock.com; **Card 11:** (a) Seregam / Shutterstock.com, (b) Fotyma / Shutterstock.com, (c) WilleeCole Photography / Shutterstock.com, (d) Ilyarexi / Shutterstock.com, (e) ThreeDiCube / Shutterstock.com, (f) CHIARI VFX / Shutterstock.com, (g) Nikita Rublev / Shutterstock.com, (h) Sashkin / Shutterstock.com, (i) bestv / Shutterstock.com, (j) Double Brain / Shutterstock.com, (k) AndriyA / Shutterstock.com, (l) Anton Vakhachev / Shutterstock.com

A Cart for Disco



Look! Disco is carrying her dog treats. She gets boxes of treats every month. Carrying them takes a long time. I want to make a cart for Disco. Victor can help me. You can help too!

Teacher Talking Points

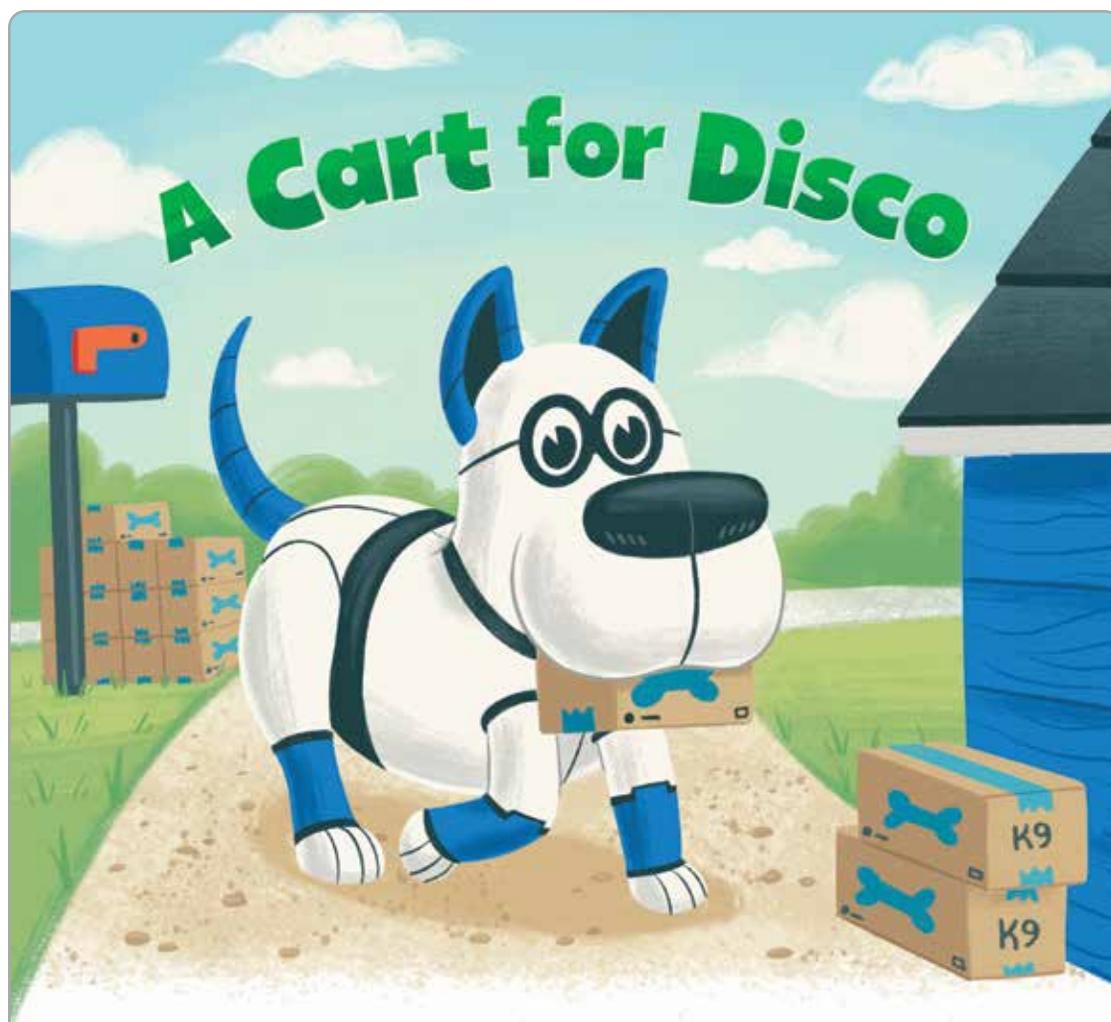
Help students become familiar with the story's main idea. **SAY** *In this story, you are going to see how Zoe helps Disco, the robot dog. Disco needs a cart to carry boxes of dog treats to her doghouse. How can Zoe make a cart? Victor will help her. We can help too!*

 Activate students' prior knowledge about carts by facilitating a whole-class discussion or having students discuss with a partner.

- SAY**
- *What kinds of carts have you seen or used? Why is a cart useful?*
 - *What are some parts of a cart? What does each part do?*

Suggestions for Differentiation

Provide visuals of a shopping cart and a wagon for students needing extra vocabulary support.



Look! Disco is carrying her dog treats. She gets boxes of treats every month. Carrying them takes a long time. I want to make a cart for Disco. Victor can help me. You can help too!



I tell Victor, “Let’s build a cart! It can help Disco. It can carry all her treats.”

Victor says, “Zoe, I have some questions. What kind of cart should we build? Where will Disco put things in the cart? How will Disco move the cart? Should she push the cart or pull it?”

Teacher Talking Points

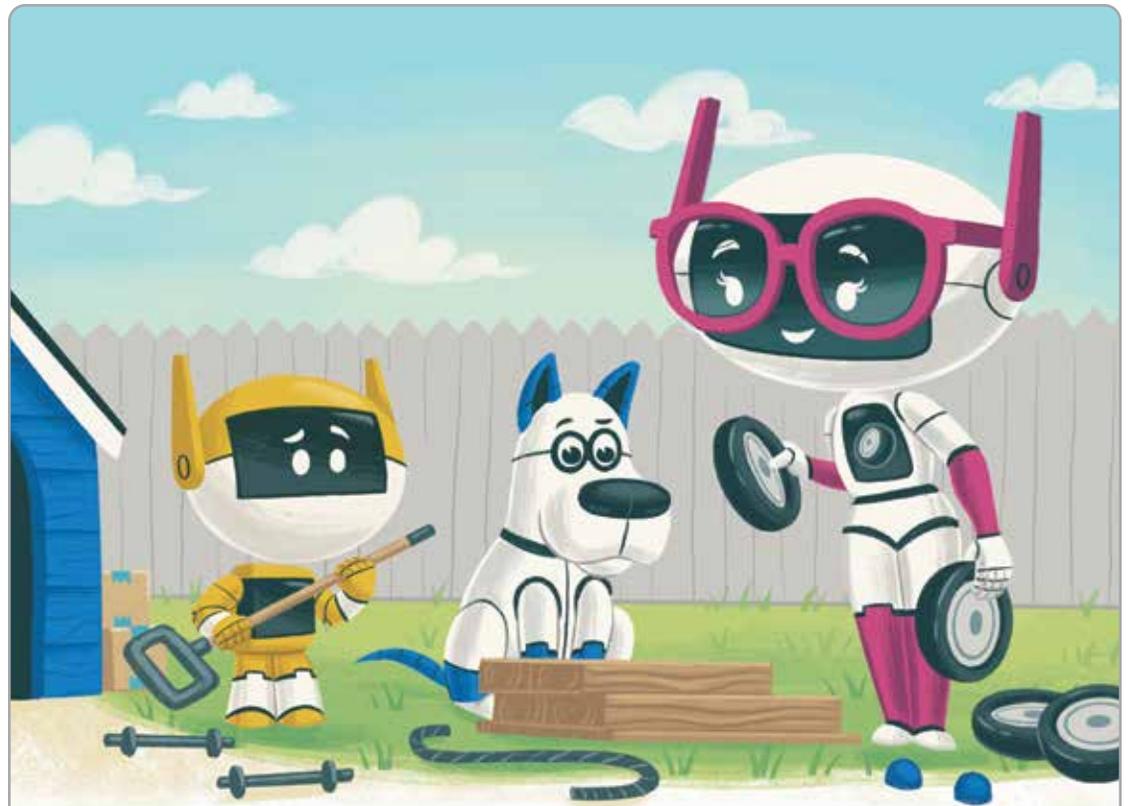
Reread the questions Victor asks, exaggerating the intonation to highlight that these sentences are asking something.

SAY *What end mark is at the end of each sentence? What kind of sentences are they?* **Answers: a question mark; questions**

DO Have students circle the question words (*where, what kind, how*) with a dry-erase marker. Explain that *where* asks about a place, *what kind* asks what something is like, and *how* asks about the way something works. Point to *wh* in *where* and *what kind* and have students repeat the sound. Do the same with *h* in *how*.

 Use pictures of carts (such as a shopping cart, a wagon, a dolly, or a wheelbarrow) to get students thinking about what kind of cart Disco might need. **SAY** *Where do you put things in a cart? How many wheels are on a cart? How do you move a cart?* Invite volunteers to act out using each cart.

DO Begin a class chart on a large sheet of paper or use Techbook. Write Victor's questions, leaving space under each one to make notes. Use students' ideas from this story card to make notes about possible answers to the questions.



I tell Victor, "Let's build a cart! It can help Disco. It can carry all her treats."

Victor says, "Zoe, I have some questions. What kind of cart should we build? Where will Disco put things in the cart? How will Disco move the cart? Should she push the cart or pull it?"

Suggestions for Differentiation

- For students needing additional support, review the three types of end marks. Write each mark in the margin with a dry-erase marker. Explain that a telling sentence ends in a period, an asking sentence ends in a question mark, and an exclamation ends in an exclamation point. Invite students to point to examples of each in the text.
- To extend this lesson, have students ask and answer other questions about the carts you have shown them (for example: *How can you use this cart?* or *What color is this cart?*).

Living and Nonliving Things Move

Read like a scientist to learn how things move.



Walk in the Park

Motion describes how things move.

Both living and nonliving things can have motion.

Living things, such as people, can run, walk, crawl, bend, jump, or hop.

Nonliving things can bounce or slide. Some things are round or have wheels. They can roll.

Things can move fast and slow.

Teacher Talking Points

SAY Victor has more questions about carts. He asks, “Is the cart a living thing or a nonliving thing?” **Answer: It is a nonliving thing.** How does a cart move? **Sample answer: It rolls on wheels.**

DO Make a two-column chart with the headings *Living Things* and *Nonliving Things*. Point to *living* and explain that it means “alive.” Point to *nonliving* and explain that it means “not alive.” Give students examples to classify, adding them to the correct column of the chart: *child, dog, tree, book, car, and rock.*

DO Use a dry-erase marker to underline “Living things” in the third paragraph of the reading passage. Point out that this paragraph is about how living things move. Ask students to name the motions in this paragraph. Point to the two-column chart. **SAY** *Can a (child) walk? Can a (car) walk?* Follow the same process for “Nonliving things” in the next paragraph.

DO Invite students to give examples of things that can bounce or roll. Guide students to notice that living things can move on their own, while nonliving things cannot.

Help students connect the photo and the text. **SAY** *What living things do you see? How are they moving?* **Sample answer: A parent and a child are walking.** *Is the stroller a living thing or a nonliving thing? How is it moving?* **Answer: It is a nonliving thing. It is rolling.** *Why can it roll?* **Answer: It has wheels.**

Suggestions for Differentiation

- For students who are struggling with the words *living* and *nonliving*, use one color of dry-erase marker to draw a box around details about living things. Use another color to draw a box around details about nonliving things.
- To extend the activity, invite students to brainstorm ways they can move (climb, skip, stretch, and so on). Discuss whether nonliving things can move in those ways.

Living and Nonliving Things Move

Read like a scientist to learn how things move.



Walk in the Park

Motion describes how things move.

Both living and nonliving things can have motion.

Living things, such as people, can run, walk, crawl, bend, jump, or hop.

Nonliving things can bounce or slide. Some things are round or have wheels. They can roll.

Things can move fast and slow.

APPROVED



Zoe helps Victor describe how things move. Label each picture to describe each movement.

How can things move in different ways?



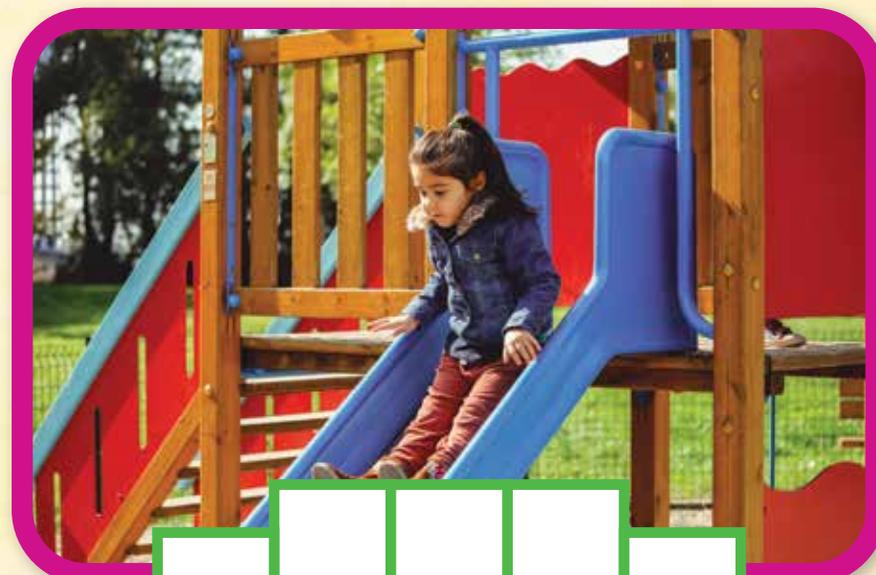
--	--	--	--



--	--	--	--



--	--	--	--	--	--



--	--	--	--	--	--

a b c d e f g h i j k l m n o p q r s t u v w x y z

Teacher Talking Points

DO Read aloud the text that introduces the card. Point out the spaces for labels on each picture. As a class, choose and write a label to describe the motion shown in each picture.

Point to the first picture. **SAY** *What is this girl doing?* **Answer:** *bending* If students are unsure, lead them in imitating the movement. Write in the letter spaces to label the motion. Continue with the remaining pictures. **Answers:** *bend, roll, bounce, slide*

 For the upper-right picture (roll), have students point to the wheels on the truck. Challenge them to think about how the truck might move if it did not have wheels. **Answer:** *It would slide.* Discuss whether students think it would be easier to roll something on wheels or slide it along the ground. Guide them to conclude that wheels make things easier to move. Add students' ideas to the class chart under Victor's question "How will Disco move the cart?"

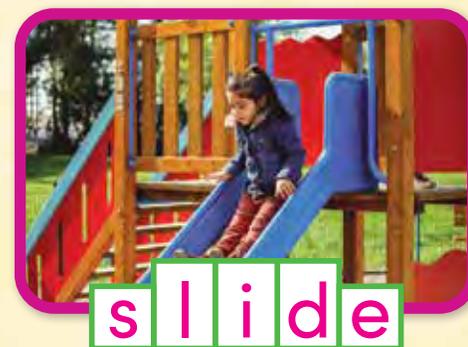
Suggestions for Differentiation

- For more support, provide a word bank with the words *bend, bounce, roll, slide*. Cross off each word as you use it.
- For students who struggle to distinguish the meanings of the words, provide a concrete example of each motion. Invite volunteers to model *bend*. Ask volunteers to *bounce* or *roll* a ball or *slide* a book across a desk.
- If students need enrichment, play "Simon Says" with the motion words. Give commands, such as "Simon says, 'Bend to the side.'" Students should do the action only if you say "Simon says."



Zoe helps Victor describe how things move. Label each picture to describe each movement.

How can things move in different ways?



a b c d e f g h i j k l m n o p q r s t u v w x y z



Oh no! Some of the words got covered up.
Help Zoe and Victor guess the covered words.

Wheels

If a car has no wheels,
then it would not need tires.
How would a fire truck
put out all the fires?

You can find wheels
on bikes and in clocks.
In a world without wheels,
you would take long walks.

The tires hit the gravel,
so now it's time to travel.
You know how great that feels.
Let's all cheer for wheels!



Teacher Talking Points

DO Prior to sharing the story card with students, use sticky notes to cover the words *tires* in stanza 1, *walks* in stanza 2, and *travel* and *feels* in stanza 3. For added context, draw a wheel on the front of each sticky note.

SAY *Victor wonders if Disco's cart needs wheels. What is so great about wheels?*

DO Students will use what they know about rhyming words to predict each covered word. Provide clues as necessary (*fires* for *tires*, *clocks* for *walks*, *gravel* for *travel*, and *wheels* for *feels*). After students guess each correct word, remove the sticky note.

DO Prompt students to answer questions about key details in the text. Reread each stanza as needed to help them answer. **SAY** *Why are wheels important for fire trucks? Where are wheels? What would you do without wheels? How do wheels make people feel? Sample answers: Wheels help fire trucks move quickly. Wheels are on bikes and in clocks. Without wheels, you would walk a lot. People like to travel with wheels. It feels great!*

Provide a sentence frame to help students retell the text in one sentence in their own words. **SAY** *Wheels make it easier to _____.* **Sample answer: get from one place to another**

 **SAY** *Do you think Disco's cart needs wheels? Why or why not? Add students' responses to the class chart.*

Suggestions for Differentiation

Adapt this activity to meet students' needs by providing more or fewer clues or covering nonrhyming words or phrases. Sketch vocabulary such as *fire truck*, *bike*, or *clock* as needed. Point to the *gravel* road in the picture.



Oh no! Some of the words got covered up. Help Zoe and Victor guess the covered words.

Wheels

If a car has no wheels,
then it would not need tires.

How would a fire truck
put out all the fires?

You can find wheels
on bikes and in clocks.
In a world without wheels,
you would take long walks.

The tires hit the gravel,
so now it's time to travel.
You know how great that feels.
Let's all cheer for wheels!



Playground Motion



Children go up and down on a seesaw.

A force makes something move.
A force can be a push or a pull.

You can make a ball move by pushing it.

You can bring an object closer to you by pulling it.



Teacher Talking Points

SAY Victor and Zoe are thinking about how Disco will use her cart. Remember, the cart is a nonliving thing. It cannot move on its own. Disco will have to make it move. What are two ways she could make it move?

Answer: push it or pull it

Point to the photo of the seesaw. **SAY** What kind of force are these children using: a push or a pull? Answer: a push Explain or elicit that each child pushes on the ground to make their side of the seesaw go up. Discuss how the children may have had to pull one of the seats downward to get on the seesaw.

DO Have students push a ball or book across their desk. Then, have them pull the ball or book back toward them. Have students chorally name the force you are using as you pull the classroom door open and push it shut.

 Revisit pictures of carts you shared with students when discussing Story Card 2. Have students point to carts that are pushed (for example, a wheelbarrow and a dolly) and carts that are pulled (a wagon).

SAY Do you push this in front of you or pull it behind you? Add students' ideas to the class chart under Victor's question, "Should she push the cart or pull it?"

Suggestions for Differentiation

For students who have difficulty distinguishing the words *push* and *pull*, build the word *push* with letter tiles. Space out the letters for each sound (*p-u-sh*) and say the word slowly with students. Push the letters together and blend the sounds to say the word. Next, take away *sh* and replace it with *ll*. Repeat the process with the word *pull*.

Playground Motion



Children go up and down on a seesaw.

A **force** makes something move.

A force can be a push or a pull.

You can make a ball move by pushing it.

You can bring an object closer to you by pulling it.



APPROVED



Help Victor and Zoe see that pushes and pulls are all around them. Look at the pictures. Find the pushes and pulls.



Teacher Talking Points

SAY Remember that a force can be a push or a pull. Look at the pictures of children on the playground. Who is pushing? Who is pulling? You may wish to provide students with a magnifying glass to better see where they can spy pushes and pulls in the images.

DO As a class, discuss what is happening in each picture. Have students vote on whether the motion is a push or a pull. Then, use a red dry-erase marker to circle the pushes and a blue dry-erase marker to circle the pulls.

As needed, remind students that people push something *away* from them, and pull something *toward* them. Have students mime pushing and pulling to help them remember.

Students may be surprised that the boy on the monkey bars is pulling, because the bars do not move. Point out that he is pulling himself closer to the next bar.

Point to the picture of the boy on the slide. **SAY** Why is he pushing? Discuss that he is pushing himself off the slide to stand up. As needed, have a volunteer demonstrate pushing to get up from the floor or a chair. **Answers:** Pushes are used on the seesaw, the basketball shot, the swing, and the slide. Pulls are used on the monkey bars. Pushes and pulls may be used on the merry-go-round.



Help Victor and Zoe see that pushes and pulls are all around them. Look at the pictures. Find the pushes and pulls.



Suggestions for Differentiation

- For students who struggle to decide whether a motion is a push or a pull, use a dry-erase marker to draw an arrow to show the direction of the force (pushing away or pulling toward).
- For students who would benefit from enrichment, have them use modeling clay to make a model of a piece of playground equipment. Demonstrate how students will both pull and push the clay to make the model. Then, have them use the model to explain how they would use pushes or pulls as they played on it.

Collisions

Imagine a baseball game. A pitcher throws the ball. The batter swings. The bat hits the baseball. The ball flies out into the field.

When one object hits another, they **collide**. In the baseball game, the ball and bat collide with each other.

An object in motion can change its motion when it collides with another object.



What will happen when the bat hits the ball?



Teacher Talking Points

SAY The word collide means “hit.” When Disco uses her cart, she has to be careful! What might happen if the cart collides with another object? Will its motion change?

 Have students turn and talk to a partner about their answers. Remind them to take turns and listen to their partner’s ideas. **Sample answers:** It might go in a different direction. It might stop. It might tip over.

DO Draw a large diamond representing a baseball field. Mark the pitcher in the center and the batter at the bottom. Then, have students help you draw the path of the ball as you reread the description in the first paragraph. **SAY** How does the ball’s motion change? Discuss that its direction changed. Point out that the speed of the ball can also change when a force is added to it.

Suggestions for Differentiation

- For students who struggle to understand baseball terms in the text, display pictures of a pitcher, a batter, and other aspects of the game. Explain how baseball is played.
- For students who may benefit from concrete examples, have them sit in a circle. Roll a ball to one student, have that student roll the ball to a classmate, and so on, keeping the ball in motion. Point out how the ball’s motion changes when it collides with a student’s hands.

Collisions

Imagine a baseball game. A pitcher throws the ball. The batter swings. The bat hits the baseball. The ball flies out into the field.

When one object hits another, they **collide**. In the baseball game, the ball and bat collide with each other.

An object in motion can change its motion when it collides with another object.



What will happen when the bat hits the ball?



APPROVED



Warning! Disco's yard has many rocks.
What will happen if the cart hits a rock?
Let's complete the story.

What Happens Next?

Disco has a new cart! She puts treats in it.
She rolls it to her doghouse.

Oh no! A rock is in the way!

What happens next?



Teacher Talking Points

Read the story card aloud. **SAY** Zoe and Victor are imagining how Disco will use the cart. That helps them think about any problems she could have with the cart. Then, they can fix the problems. What is the problem for the cart? **Sample answers:** There is a rock in front of it. Yes, the cart is going to collide with the rock! Let's help Zoe and Victor by completing the story.

 Allow students to dictate and provide sequenced ideas that you can use to model story writing on chart paper. Start with this sentence: *The cart hits the rock!*

SAY What do you think could happen next in the story? How does Disco feel? **Sample answers:** The cart tips over. The dog treats fall out. Disco feels sad. She needs help standing the cart on its wheels.

 Discuss possible scenarios for continuing the story. Remind students that the cart's motion will change when it collides with the rock.

SAY How can Zoe and Victor fix the cart? **Sample answers:** They can make a handle so that Disco can stop the cart. They can make the sides of the cart taller, so the dog treats do not fall out.



Warning! Disco's yard has many rocks. What will happen if the cart hits a rock? Let's complete the story.

What Happens Next?

Disco has a new cart! She puts treats in it. She rolls it to her doghouse.

Oh no! A rock is in the way!

What happens next?



Suggestions for Differentiation

- Some students may benefit from sentence frames to help them continue the story. Provide frames such as the following: *The cart _____. The dog treats _____. Disco feels _____.*
- For students who are visual learners, have them draw a picture of what happens next in the story before they discuss or write about it.

Controlling Motion



How do you control how a soccer ball moves?

We can use force to control the direction an object moves.

A soccer player can kick a ball toward the goal.

The rubber tires on a cart keep it going forward and not sideways. The handles on a cart help turn the wheels.



Teacher Talking Points

 **SAY** Look at the photo. How did the soccer ball get into the net? Elicit or explain that a player kicked the ball and made it soar into the net.

SAY Zoe and Victor are learning how to control the direction of an object. Do you think Disco's cart needs to be controlled? Why or why not? Encourage students to think back to their story starter on Story Card 9. **Sample answer: Yes. The cart needs to be controlled to avoid hitting a rock or other objects.** Add students' ideas to the class chart under Victor's question "What kind of cart should we build?"

DO Have students focus on words that tell where. Using a dry-erase marker, underline *forward* and *sideways* in the text. Gesture to show these directions, and have students imitate you. Then, circle the preposition *toward*. Explain that the word *toward* also tells where. Discuss the meaning of the prepositional phrase "toward the goal."

Suggestions for Differentiation

- For students who would find a visual representation helpful, help them draw a bike and label the tires and handlebars. They can draw an arrow to show the direction of the bike.
- To extend the activity, point out that students control the direction of an object when they write. That object is a pencil. Have students write a few familiar letters to notice how they use force to change the direction of the pencil.
- For students who are ready, focus on the sounds of hard/soft *c* (hard *c*: *control*, *soccer*; soft *c*: *force*). Have students raise a hand when they hear the hard or soft *c* sound as you read a sentence.

Controlling Motion



How do you control how a soccer ball moves?

We can use force to control the direction an object moves.

A soccer player can kick a ball toward the goal.

The rubber tires on a cart keep it going forward and not sideways. The handles on a cart help turn the wheels.



Story Card 10

APPROVED



Look at the pictures. Choose parts for Disco's cart. Circle the parts Zoe and Victor need.



Teacher Talking Points

SAY Remember, Disco needs a cart to carry boxes of dog treats to her doghouse. Now, it is time to choose parts to help Zoe and Victor build the cart!

DO Have students vote on whether each object shown on the card is a part needed for Disco's cart. Circle the chosen objects with a dry-erase marker. Allow students to point to the objects in any order they choose.

 After voting is complete, discuss whether the parts students chose make a complete cart. Use these guiding questions:

- SAY**
- How does the cart move? What part or parts does it need to move?
 - Do you push or pull the cart? What parts can you hold to push or pull?
 - How does the cart stop? How does it hold things so they do not fall out?

If there are too many parts or some parts are redundant, work with students to go back and erase parts that are not needed. Encourage students to listen to their classmates and take turns speaking as they discuss and decide on parts.

Suggestions for Differentiation

For students who struggle to explain their choices, provide sentence frames, for example: *It is a(n) ____.* *It helps you ____.* Supply vocabulary for the parts as needed.



Look at the pictures. Choose parts for Disco's cart. Circle the parts Zoe and Victor need.





What kind of cart should Zoe and Victor make for Disco? Draw a picture of the cart. Show the important parts.



Teacher Talking Points

Now that students have explored carts and how they move, provide them with the opportunity to show what they know.

DO Revisit the class chart with Victor's questions. **SAY** *Victor asked these questions to help Zoe plan the most useful cart for Disco. What makes the cart useful?* Discuss each question and the ideas students propose. Relate their ideas to the parts they chose on Story Card 11.

DO Have each student use a sticky note to draw the cart they think Zoe and Victor should make for Disco. Remind them that their cart should include the following:

- a part to hold the dog treats (container)
- parts that move (wheels)
- a part that helps Disco to pull or push the cart, control its direction, and make it stop (handle)

Encourage students to be creative in their designs. After students complete their drawings, have them post them on the story card. You may also work together as a class to design a cart that incorporates all of the students' ideas.

 To reflect, give students the opportunity to describe the cart to a partner.

Invite students to imagine what Disco would think of the cart they designed. Discuss how she would feel and how she would use the cart. Point out that Disco would thank Zoe and Victor for their help.

Suggestions for Differentiation

For students who need more guidance for their drawings, invite them to refer to the sample carts you shared earlier. However, make sure students do not simply copy these designs. Guide them to think about which might be most useful for Disco to carry her dog treats.

What kind of cart should Zoe and Victor make for Disco? Draw a picture of the cart. Show the important parts.







Story Card 12