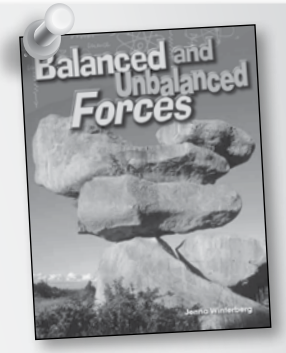
Balanced and Unbalanced Forces



Learning Objectives

Students will:

- describe cause-and-effect relationships in the text.
- write a paragraph describing a force with appropriate details.
- experiment with balanced and unbalanced forces on table tennis balls and golf balls.

Standards

- **Reading:** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- **Writing:** With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.
- **Content:** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- **Language:** Communicate information, ideas, and concepts necessary for academic success in the content area of Science.

Lesson Timeline

Day 1

Task

Introductory and **Lab Activities** (page 139)

Summary of Student Learning Activities

Experiment with lift, gravity, and air resistance.

Day 2

Task

Before Reading (page 140)

Summary of Student Learning Activities

Identify cause-and-effect relationships in the text.

Day 3

Task

During Reading (page 141)

Summary of Student Learning Activities

Identify cause-and-effect relationships in the text, and write a paragraph about one of the forces in the text.

Day 4

Task

After Reading (page 142)

Summary of Student Learning Activities

Make various connections with the text.

Day 5

Task

Activity from the Book (page 142) and **Assessments** (pages 147–148)

Summary of Student Learning Activities

Observe and record a pet at play, and take the assessments.

Materials

- copies of the *Forces Observation* activity sheet (page 143)
- paper
- hair dryers
- table tennis balls
- golf balls

Day 1

Experiment with lift, gravity, and air resistance.

Introductory Activity — Engage

1. Hold a sheet of paper by the top edge. Ask students to describe what is happening to the paper. Then, drop it. Ask students to describe what is happening to the paper.
2. Explain to students that their descriptions are the forces acting on the paper. Tell students that they will be learning about balanced and unbalanced forces.

Lab Activity — Explore & Explain

1. Place students in small groups. Distribute a hair dryer, table tennis balls, a golf ball, and copies of the *Forces Observation* activity sheet (page 143) to each group. Tell students that they will put the table tennis balls and golf balls above the air stream of the hair dryers and record what happens. Have students use the activity sheet to record their predictions and results.
2. Have students turn the hair dryers to the highest setting and point them straight up. Tell students to place a table tennis ball over the blowing air and record the results. Then, have students use a golf ball and record their results.
3. Have students experiment by adding more balls to see how many they can get to float at one time. Have them set the hair dryer to a lower setting and observe what happens.
4. Ask questions to guide students to the idea that balanced forces cause the balls to float, while unbalanced forces cause them to fall.
   - ➢ *What happened to the table tennis balls?*
   - ➢ *What happened to the golf ball?*
   - ➢ *What forces do you think are acting on the balls?*
   - ➢ *When did you see balanced and unbalanced forces? How can you tell?*
5. Bring the class together for instruction. Discuss how the forces of gravity, lift, and air resistance acted on the balls. Clarify misconceptions by having students explain their understandings using logic and evidence to support their ideas.

Balanced and Unbalanced Forces *(cont.)*

Materials

- *Balanced and Unbalanced Forces* books
- copies of the *Cause and Effect* activity sheet (page 144)
- drawing paper

Day 2

Identify cause-and-effect relationships in the text.

Vocabulary Word Bank

- air resistance
- friction
- inertia
- magnitude
- thrust
- vector

Before Reading — Elaborate

1. Write the vocabulary words on the board and discuss their meanings as a class. Distribute drawing paper to students. Have students create a flip-book with words and pictures that describe the words. Have students explain their drawings to a partner. Have students save their flip-books to support comprehension while reading.

2. Display the *Balanced and Unbalanced Forces* book for students. Tell students that when readers identify and describe the relationship between ideas in a text, they are better able to understand what they are reading. Tell students that they will focus on cause-and-effect relationships in the text.

3. Show students the image on page 9. Have them describe what they see in the picture. Ask them to identify the cause-and-effect relationship depicted in the image *(the bike is moving because the boy is pedaling)*. Then, show students the image at the bottom of page 8. Ask them to describe the cause-and-effect relationship in the image *(the girl is moving because the dog is pulling her)*. As a class, preview images in the book. Have students identify cause-and-effect relationships they see.

   ➢ You may wish to have students digitally annotate the PDF of the text.

4. Distribute copies of the *Cause and Effect* activity sheet (page 144) to students. Once students finish, have them share their findings with the class.

   ➢ Challenge **above-level learners** to preview another text and describe cause-and-effect relationships depicted in the images.

Materials

- *Balanced and Unbalanced Forces* book
- copies of the *All About a Force* activity sheet (page 145)

Day 3

Identify cause-and-effect relationships in the text, and write a paragraph about one of the forces in the text.

During Reading — Elaborate

1. Distribute the *Balanced and Unbalanced Forces* books to students. Conduct an echo reading for the first reading of the book. Pause periodically to point out cause-and-effect relationships in the text. For example, after reading page 4, explain to students that forces can be the cause of multiple effects such as stopping, changing direction, or moving.
   - ➢ You may choose to display the Interactiv-eBook for a more digitally enhanced reading experience.
2. Have students read in small groups for the second reading. Have group members take turns reading paragraphs aloud. Ask them to discuss any cause-and-effect relationships they notice. Tell students to closely observe the images, sidebars, and text when looking for these relationships. Once students have finished reading, ask them to share the cause-and-effect relationships they observed.
   - ➢ In a small group, help **below-level learners** and **English language learners** identify words that indicate a cause-and-effect relationship in the text such as *because*, *since*, *consequently*, *therefore*, *in order to*, and *if…then*.
   - ➢ For **below-level learners** and **English language learners**, you may choose to play the audio recording as students follow along to serve as a model of fluent reading. This may be done in small groups or at a listening station. The recording will help struggling readers practice fluency and aid in comprehension.
3. Tell students they will write a paragraph to explain one of the forces in the book. Distribute copies of the *All About a Force* activity sheet (page 145) to students. Tell students to write the force they chose on the line in the center of the sheet. Then, have them use the book to find details about this force, and write them around the center. Once students have finished the activity sheet, have them write their paragraphs on separate sheets of paper.

Balanced and Unbalanced Forces *(cont.)*

Materials

- *Balanced and Unbalanced Forces* book
- copies of the *My Connections*, *Balanced and Unbalanced Forces Quiz*, and *Sliding Data* activity sheets (pages 146–148)

Days 4 & 5

Make various connections with the text. Observe and record a pet at play, and take the assessments.

After Reading — Elaborate & Evaluate

1. Play a short game to review the vocabulary words. Divide the class into two teams. Choose one artist from each team. Show the artists one of the vocabulary words. Have each artist draw his or her own representation of the word on the board. Have students guess the word for their team. Award a point to the team that guesses the word first. Continue play until all the words have been used. **Note:** You may wish to add related words to the game to make it more challenging.

2. Distribute the *Balanced and Unbalanced Forces* books to students. Review the big ideas of the book with the class. Have students make text-to-self, text-to-text, and text-to-world connections to make the content more meaningful. You may wish to have students use sentence frames such as the ones below.
   - ➢ _____ *happens in my life when* _____.
   - ➢ *I have seen* _____ *in another text when* _____.
   - ➢ _____ *reminds me of* _____.

3. Distribute copies of the *My Connections* activity sheet (page 146) to students. Tell students to write two text-to-self, text-to-text, or text-to-world connections that they made with the book.

Activity from the Book

Read the Your Turn! prompt aloud from page 32 of the *Balanced and Unbalanced Forces* book. Have students watch a pet to observe the forces that act on it. Have students keep a log of what they observe, noting which forces are balanced and which are unbalanced.

1. A short posttest, *Balanced and Unbalanced Forces Quiz* (page 147), is provided to assess student learning from the book.

2. A data analysis activity, *Sliding Data* (page 148), is provided to assess students' understanding of how to analyze scientific data. Explain to students that the bar graph shows how long it took for blocks to slide down a ramp. STEM

3. The Interactiv-eBook activities may be used as a form of assessment (optional).

Name: _____ **Date:** _____

Forces Observation

Directions: Predict what will happen to each ball. Observe and write the results. Then, answer the questions below.

Ball	Prediction	Result
table tennis		
golf		

1. What happened when you added more balls?

_____

_____

2. What happened when you turned the hair dryer to a lower setting?

_____

_____

3. Record any additional observations you made.

_____

_____

Name: _____ **Date:** _____

Cause and Effect

Directions: Observe the noted images from the book. Write the cause and the effect you see in each image.

Page 7: image of cars

Cause	Effect

Page 21: image of paper clips

Cause	Effect

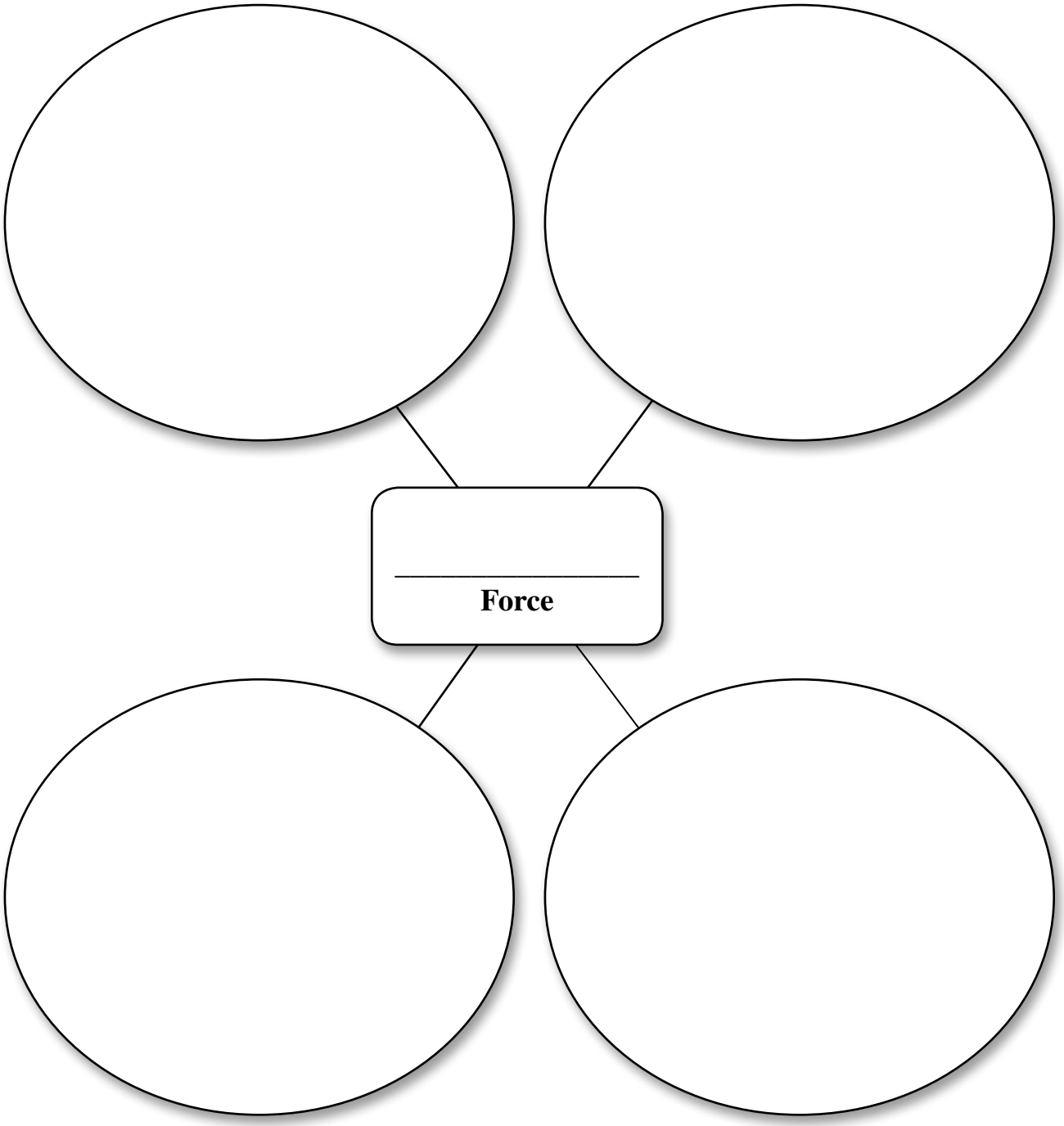
Page 5: image of fingers touching

Cause	Effect

Name: _____ **Date:** _____

All About a Force

Directions: Plan a paragraph explaining one of the forces from the book. List details about the force.



Name: _____ **Date:** _____

My Connections

Directions: Write two connections you made with the book.

The text says…	It reminds me of…

The text says…	It reminds me of…

Name: _____ **Date:** _____

Balanced and Unbalanced Forces Quiz

Directions: Read each question. Choose the best answer. Fill in the bubble for the answer you have chosen.

1 Which of the following is NOT a type of force?

- (A) contact
- (B) distant
- (C) combined
- (D) battle

2 Which of these sentences shows a cause-and-effect relationship?

- (A) Engineers spend a lot of time balancing forces.
- (B) Forces rarely act alone.
- (C) When sandpaper and wood are rubbed together, it creates friction.
- (D) Contact forces only act when two objects touch.

3 What is the effect of air resistance on an airplane?

- (A) It pushes the plane up.
- (B) It drags the plane backward.
- (C) It pulls the plane down.
- (D) It pushes the plane forward.

4 What does gravity affect?

- (A) land
- (B) space
- (C) any object that has mass
- (D) the moon and stars

5 How is electricity created?

- (A) Electrons jump from one atom to another.
- (B) Earth's rotation charges atoms.
- (C) Force fields create electricity.
- (D) Electricity powers homes and schools.

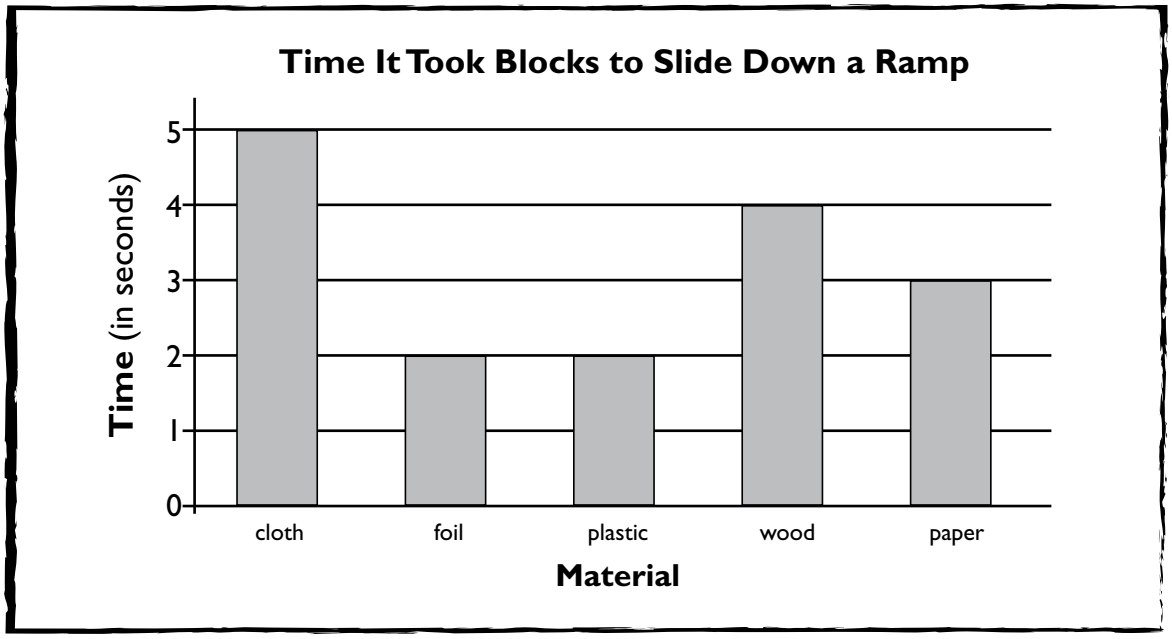
6 Friction causes objects to _____.

- (A) slow down
- (B) speed up
- (C) fall
- (D) spin

Name: _____ **Date:** _____

Sliding Data STEM

Directions: Malia and Cameron wrapped blocks in different materials. Then, they timed how long it took the blocks to slide down a large ramp. Use their data below to answer the questions.



1. Which block took the longest to slide down the ramp? _____

_____

2. Which blocks took the same amount of time to slide down the ramp?

_____

3. What force do you think caused the blocks to slide at different rates? How does the data support this?

_____

_____

Food Webs

Learning Objectives

Students will:

- use the images and the words in the text to better understand food webs.
- sort notes on food webs into the provided categories.
- understand the roles of producers and consumers in food webs.

Standards

- **Reading:** Use information gained from illustrations and the words in a text to demonstrate understanding of the text.
- **Writing:** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
- **Content:** Know the organization of simple food chains and food webs.
- **Language:** Communicate information, ideas, and concepts necessary for academic success in the content area of Science.

Lesson Timeline

Day 1

Task

Introductory and **Lab Activities** (page 51)

Summary of Student Learning Activities

Create a model to represent interdependence in a food web.

Day 2

Task

Before Reading (page 52)

Summary of Student Learning Activities

Use the text features in the book to make predictions.

Day 3

Task

During Reading (page 53)

Summary of Student Learning Activities

Closely observe text features in the book, and categorize notes about the book.

Day 4

Task

After Reading (page 54)

Summary of Student Learning Activities

Identify information provided by the text and information provided by the text features.

Day 5

Task

Activity from the Book (page 54) and **Assessments** (pages 59–60)

Summary of Student Learning Activities

Create a personal food web, and take the assessments.

Materials

- *Food Webs* books
- copies of the *Understanding Food Webs* activity sheet (page 55)
- shoeboxes, trays, or other small boxes
- craft sticks
- glue

Day 1

Create a model to represent interdependence in a food web.

Introductory Activity — Engage

1. Show students pictures of producers and consumers in the *Food Webs* books. Write the names of the producers on one side of the board and the names of the consumers on the other. Label the groups *producers* and *consumers*.
2. Invite students to draw arrows on the board to show the relationships between the two groups. Explain that producers produce, or make, their own food, while consumers consume, or eat, their food. Tell students that they will learn more about producers and consumers.

Lab Activity — Explore & Explain

1. Place students in small groups. Distribute shoeboxes, trays, or other small boxes, craft sticks, and glue to groups.
2. Have students glue three craft sticks together end-to-end to represent producers. Then, have them glue two sticks together end-to-end to represent primary consumers. Have students make six sets of producers and seven sets of primary consumers.
3. Once the glue is dry, have students place the producers across the top of the box. Then, have them place the primary consumers on top of the producers at a slight angle. Have students carefully place individual sticks on top of the primary consumers at an angle to represent secondary consumers.
4. Distribute copies of the *Understanding Food Webs* activity sheet (page 55) to students. Have students use the sheet to record what happens as they remove one producer at a time. Have them continue removing producers until several sticks fall into the box.
5. Ask questions to guide students to the idea that food webs are interdependent.
   - ➢ *What happens when you removed the producers?*
   - ➢ *What do you notice about the relationship between producers and consumers?*
   - ➢ *What conclusions can you draw about what living things in a food web depend on?*
6. As a class, discuss how food webs are interdependent. Clarify misconceptions by having students explain their understandings using logic and evidence to support their ideas.

Food Webs *(cont.)*

Materials

- *Food Webs* books
- copies of the *Text Feature Preview* activity sheet (page 56)
- drawing paper

Day 2

Use the text features in the book to make predictions.

Vocabulary Word Bank

- decomposers
- ecosystems
- energy
- primary consumers
- producers
- secondary consumer

Before Reading — Elaborate

1. Distribute drawing paper to students. Lead students in drawing and labeling a diagram of an ecosystem as an introduction to the vocabulary words. Have students complete individual drawings while you narrate each part. **Note:** You may wish to use the diagram on page 14 of the *Food Webs* book.
   - ➢ *The sun provides energy.* (Draw the sun and label it *energy*.)
   - ➢ *Producers use this energy to make their food.* (Draw a plant and label it *producer*. Draw an arrow from the sun to the plant.)
   - ➢ *Primary consumers eat plants.* (Draw an herbivore and label it *primary consumer*. Draw an arrow from the plant to the herbivore.)
   - ➢ *Secondary consumers eat primary consumers.* (Draw a carnivore and label it *secondary consumer*. Draw an arrow from the herbivore to the carnivore.)
   - ➢ *Decomposers break down dead things and give nutrients to producers.* (Draw mushrooms and label them *decomposers*. Draw an arrow from the consumers to the mushrooms and from the mushrooms to the plant.)
   - ➢ *All of these things make up an ecosystem.* (Draw a circle around the diagram and label it *ecosystem*.)
2. Explain to students that good readers use words and text features to understand the text. Explain that sidebars, captions, photographs, and diagrams are all examples of helpful text features in nonfiction texts.
3. As a group, preview the diagram on pages 4–5 of the book. Read the captions aloud and identify each plant and animal. Discuss the arrows on the diagram and how they represent energy being transferred among the living things in the food web. Discuss how the diagram helps the reader understand the content (food webs).
4. Distribute copies of the *Text Feature Preview* activity sheet (page 56) to students. Have them preview text features in the book and choose one to complete the activity sheet.

Materials

- *Food Webs* books
- copies of the *Sorting Notes* activity sheet (page 57)
- sticky notes

Day 3

Closely observe text features in the book, and categorize notes about the book.

During Reading — Elaborate

1. Distribute the *Food Webs* books to students. For the first reading, read the book aloud as students follow along. Pause periodically to point out how the text features support the text. For example, after reading pages 6–7, explain that by looking at the diagrams and captions, you can learn about plants and animals that are in two different food webs. Challenge students to consider why the author chose to use particular text features for different purposes.
   - ➢ You may choose to display the Interactiv-eBook for a more digitally enhanced reading experience.
2. Have students read in pairs for the second reading. Distribute sticky notes to each pair. In pairs, have students take turns reading pages aloud. Tell them to closely read the text and observe the images. Have them use sticky notes to code the text. Have students mark *!* for interesting facts, *?* for questions they have, and *C* for connections they make.
   - ➢ You may wish to have students digitally annotate the PDF of the text.
   - ➢ For **below-level learners** and **English language learners**, you may choose to play the audio recording as students follow along to serve as a model of fluent reading. This may be done in small groups or at a listening station. The recording will help struggling readers practice fluency and aid in comprehension.
3. Ask students to describe additional information they learned by closely reading the text and observing the text features. Record student responses on the board.
4. Explain to students that good readers take notes and categorize them to organize their thoughts. Distribute copies of the *Sorting Notes* activity sheet (page 57) to students. Instruct students to review the text they coded. Have students sort their notes into three categories: interesting facts, questions, and connections.
   - ➢ Challenge **above-level learners** to create two other ways to sort their notes.

Materials

- *Food Webs* books
- copies of the *Learning from Text Features, Food Webs Quiz,* and *Who Consumes What?* activity sheets (pages 58–60)

Days 4 & 5

Identify information provided by the text and information provided by text features. Create a personal food web, and take the assessments.

After Reading — Elaborate & Evaluate

1. Review the definitions of the vocabulary words. Then, have students complete the sentence stems below. Students' sentences should demonstrate an understanding of the words' meanings.
   - ➢ *Primary producers, such as grass and algae, provide* _____.
   - ➢ *Decomposers are important because* _____.
   - ➢ *Parts of an ecosystem work together by* _____.
   - ➢ *Primary consumers eat* _____.
   - ➢ *Living things need energy because* _____.
   - ➢ *A hawk is a secondary consumer because* _____.
2. Distribute the *Food Webs* books and copies of the *Learning from Text Features* activity sheet (page 58) to students. Model for students how to identify text features that give additional information besides what is provided in the text. Then, have students complete the activity sheet.

Activity from the Book

Read the Your Turn! prompt aloud from page 32 of the *Food Webs* book. Have students make a list of the foods they eat most often and then break those foods down into their raw ingredients. Have students draw arrows from each ingredient to show all the plants and animals that play a part in that ingredient getting to their plate.

1. A short posttest, *Food Webs Quiz* (page 59), is provided to assess student learning from the book.
2. A data analysis activity, *Who Consumes What?* (page 60), is provided to assess students' understanding of how to analyze scientific data. Explain to students that the graph shows the type and the quantity of food each animal ate. STEM
3. The Interactiv-eBook activities may be used as a form of assessment (optional).

Name: _____ **Date:** _____

Understanding Food Webs

Directions: Write what happens as you remove producers from an ecosystem. Then, use what you have learned about food webs to answer the questions.

What happens when you…	
remove one producer?	
remove two producers?	
remove three or more producers?	

1. What patterns do you see as more producers are removed from an ecosystem?

_____

_____

_____

2. Based on your answer above, what conclusions can you draw about ecosystems or food webs?

_____

_____

_____

Name: _____ **Date:** _____

Text Feature Preview

Directions: Chose a text feature from the book and study it closely. Then, complete the chart below.

Page	Type of Text Feature
The text feature shows…	**I predict the text will be about…**
I think this because…	

Name: _____ **Date:** _____

Sorting Notes

Directions: Sort your notes into the categories below.

Interesting Facts	
Questions	**Connections**

Name: _____ **Date:** _____

Learning from Text Features

Directions: Choose a text feature from the book. Then, complete the chart below.

Page	Type of Text Feature

What I Learned from the Text Feature

How the Text Feature Supports the Text

Name: _____ **Date:** _____

Food Webs Quiz

Directions: Read each question. Choose the best answer. Fill in the bubble for the answer you have chosen.

1 How does the green sidebar on page 11 support the text?

- (A) It explains what herbivores and carnivores are.
- (B) It shows which animals are secondary consumers.
- (C) It explains what cheetahs normally eat.
- (D) It explains what predators are.

2 How does the diagram on pages 4–5 support the text?

- (A) It shows that birds eat plants.
- (B) It explains why living things need energy.
- (C) It shows how energy flows through a food web.
- (D) It shows what students eat.

3 How do plants get energy?

- (A) They use light, air, water, and soil to make their food.
- (B) Their stems hold up the plant.
- (C) They are the first link in a food web.
- (D) They eat it.

4 According to the text, what is one way humans can affect a food web?

- (A) They eat dolphins and tigers.
- (B) Humans are on the bottom of the food chain.
- (C) Farmers kill bugs that birds eat.
- (D) Humans don't affect the food web.

5 Why did the author use diagrams on page 15?

- (A) There are two food chains.
- (B) To compare and contrast the food chains.
- (C) The pictures look nice.
- (D) There is a lot of text.

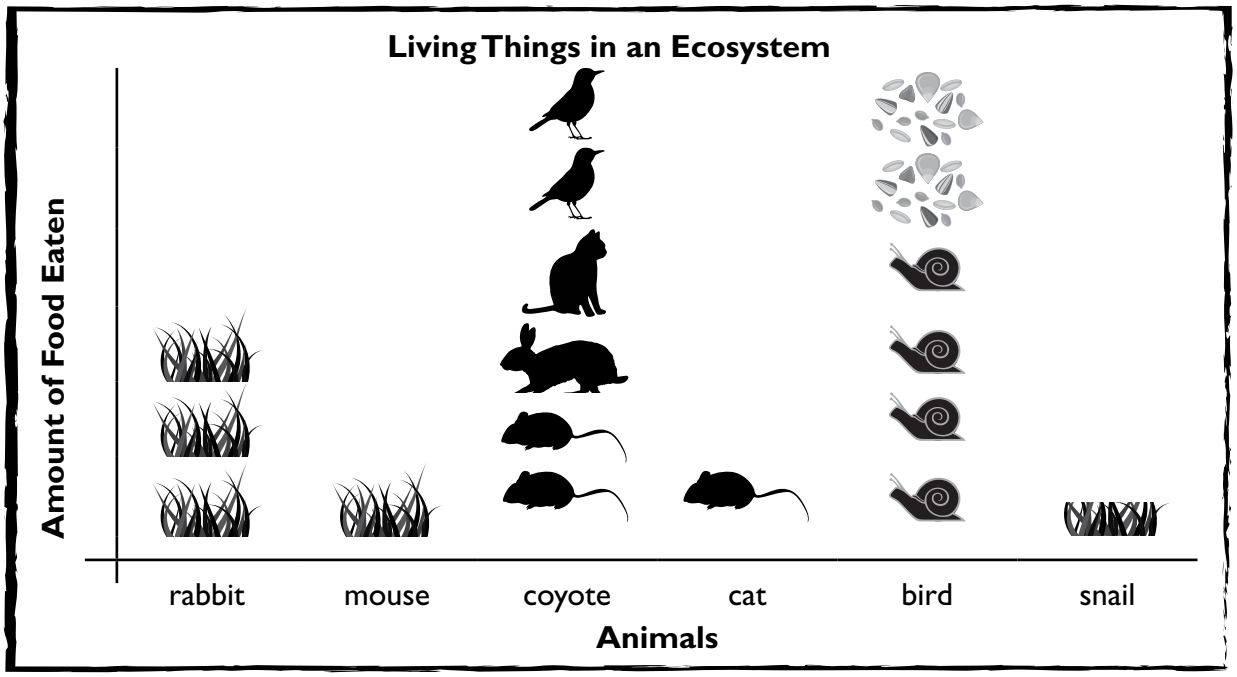
6 Food webs show the relationships between _____.

- (A) species
- (B) rocks
- (C) air and water
- (D) continents

Name: _____ **Date:** _____

Who Consumes What? STEM

Directions: Mrs. Stevin's class researched how much food different animals in a local ecosystem ate each day. Use their graph to answer the questions below.



1. Which animals are primary consumers? How can you tell?

_____

_____

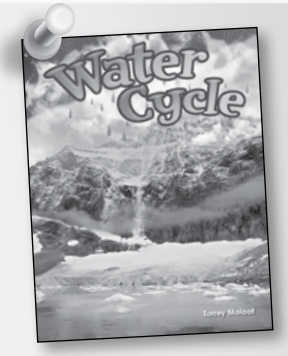
2. What type of food do the birds eat? Are these birds producers or consumers?

_____

3. Is a coyote a primary or secondary consumer? How can you tell?

_____

_____



Learning Objectives

Students will:

- use diagrams and images to better understand the water cycle.
- write an opinion about saving water.
- investigate and understand the water cycle.

Standards

- **Reading:** Explain how specific images contribute to and clarify a text.
- **Writing:** Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words to connect opinion and reasons, and provide a concluding statement or section.
- **Content:** Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- **Language:** Communicate information, ideas, and concepts necessary for academic success in the content area of Science.

Lesson Timeline

Day 1

Task

Introductory and **Lab Activities** (page 194)

Summary of Student Learning Activities

Observe evaporation by comparing the water levels of an open and a lidded jar.

Day 2

Task

Before Reading (page 195)

Summary of Student Learning Activities

Predict how diagrams will help the reader better understand the text.

Day 3

Task

During Reading (page 196)

Summary of Student Learning Activities

Use diagrams to understand the water cycle, and write an opinion piece about saving water.

Day 4

Task

After Reading (page 197)

Summary of Student Learning Activities

Explain how specific images help a reader understand the water cycle.

Day 5

Task

Activity from the Book (page 197) and **Assessments** (pages 202–203)

Summary of Student Learning Activities

List ways to save water and keep it clean, and take the assessments.

Water Cycle *(cont.)*

Materials

- copies of the *Water Watchers* activity sheet (page 198)
- glass or bottle of water
- mason jars and lids
- masking tape
- markers
- water

Day 1

Observe evaporation by comparing the water levels of an open and a lidded jar.

Introductory Activity — Engage

1. Ahead of time, chill a sealed bottle of water in the refrigerator. Pull it out and allow it to sit at room temperature until condensation appears.
2. Show students the bottle and point out the condensation. Ask them if they have ever seen this happen before. Tell students that the condensation appeared because of the water cycle. Tell them that they will learn more about this cycle.

Lab Activity — Explore & Explain

1. Divide the class into small groups. Distribute two jars, one lid, masking tape, and markers to each group. Show students how to place a strip of tape vertically on the side of each jar.
2. Have students fill both jars halfway with water. Then, help them mark the water level on the tape for both jars. Distribute copies of the *Water Watchers* activity sheet (page 198) to students. On the sheet, have students draw the water levels of the jars. Have students seal one jar with a lid and leave the other jar open. Place the jars in a sunny location.
3. After two weeks, have students observe their jars again. Ask questions to guide students to the idea that the water evaporated out of the jar without a lid.
   - ➢ *How do the water levels of the two jars compare?*
   - ➢ *What do you think happened to the water?*
   - ➢ *Why do you think the jar with a lid has more water?*
   - ➢ *What might happen if one jar were covered in plastic wrap and secured with a rubber band? Would the results be more like the lidded or open jar? Why do you think this?*
4. Have students mark the final water levels of their jars and answer the questions on the *Water Watchers* activity sheet.
5. Explain to students that they observed evaporation. Explain that evaporation is the process of changing from a liquid to a gas and that it is part of the water cycle.

Materials

- *Water Cycle* books
- copies of the *Helpful Diagrams* activity sheet (page 199)

Day 2

Predict how diagrams will help the reader better understand the text.

Vocabulary Word Bank

- condensation
- evaporation
- liquid
- precipitation
- solid
- vapor

Before Reading — Elaborate

1. Display the vocabulary words on the board. Read each word aloud and explain its meaning. Help students create a water cycle dance to represent the vocabulary words. Explain the dance, using all the vocabulary words, and use *evaporation, condensation,* and *precipitation* for the dance itself. Then, have students put the movements together to show the water cycle.

2. Explain to students that authors often use diagrams to help the reader understand what he or she is reading. Tell students that a diagram is an image that helps explain what the author is writing about. Explain how it is different from other text features.

3. Distribute the *Water Cycle* books to students. In pairs, have students flip through the book looking for diagrams. Discuss what each diagram shows and how it might help students understand the text.

4. As a class, observe the diagram on pages 10–11. Distribute copies of the *Helpful Diagrams* activity sheet (page 199) to students. Read the directions aloud. Then, complete the activity sheet as a class. **Note:** You may wish to redistribute this activity sheet after students read the book. Have them add additional drawings and labels to the diagram to show more of the water cycle.

Materials

- *Water Cycle* books
- copies of the *Save Our Water!* activity sheet (page 200)
- drawing paper
- coloring supplies

Day 3

Use diagrams to understand the water cycle, and write an opinion piece about saving water.

During Reading — Elaborate

1. Distribute the *Water Cycle* books to students. Conduct a choral reading for the first reading of the book. Pause periodically to point out how diagrams in the book help students better understand the concepts. When you come to the lab activity, remind students about the activity that they completed earlier. Discuss how the diagrams help students understand the steps to follow.
   - ➢ You may choose to display the Interactiv-eBook for a more digitally enhanced experience.
2. For the second reading, have students read in small groups. Have them take turns reading pages aloud with their group members. Ask students to pay close attention to diagrams in the book.
   - ➢ For **below-level learners** and **English language learners**, you may choose to play the audio recording as students follow along to serve as a model of fluent reading. This may be done in small groups or at a listening station. The recording will help struggling readers practice fluency and aid in comprehension.
   - ➢ You may wish to have students use the pen functionality of the Interactiv-eBook to circle the diagrams in the book.
3. Ask students to think about why it is important to save water. Record student responses on the board.
4. Distribute copies of the *Save Our Water!* activity sheet (page 200) to students. Read the directions aloud. Have students complete the activity sheet. Then, have students use their activity sheet to make a poster that persuades people to conserve water and keep it clean. If time permits, have students present their posters to the class.
   - ➢ Have **below-level learners** and **English language learners** use the book to find reasons to save water.
   - ➢ Challenge **above-level learners** to use vocabulary words in their posters.

Materials

- *Water Cycle* books
- copies of the *Look Over Here*, *Water Cycle Quiz*, and *Will It Snow?* activity sheets (pages 201–203)

Days 4&5

Explain how specific images help a reader understand the water cycle. List ways to save water and keep it clean, and take the assessments.

After Reading — Elaborate & Evaluate

1. Play a game of Hangman to review the vocabulary words. Divide the class into two teams. Have one team suggest letters to complete the word. If they complete the word correctly, award them one point. Have the second team define the word. If they provide a correct definition, award them one point. Then, have teams switch roles. Continue play until all vocabulary words have been used.

2. Distribute the *Water Cycle* books to students. As a class, review how the diagrams helped students understand the text. Have students point out diagrams in the book and explain how each helped them.
   - ➢ Challenge **above-level learners** to look in other books to find examples of diagrams. Have them share what they find with the class.

3. Tell students that individual images can help readers understand a concept as well. Have students identify images in the book that helped them understand the water cycle. Distribute copies of the *Look Over Here* activity sheet (page 201) to students. Read the directions aloud. Allow time for students to complete the activity sheet. Have students refer to the book as needed.

Activity from the Book

Read the Your Turn! prompt aloud from page 32 of the *Water Cycle* book. Have students list ways they can save water and keep it clean.

1. A short posttest, *Water Cycle Quiz* (page 202), is provided to assess student learning from the book.

2. A data analysis activity, *Will It Snow?* (page 203), is provided to assess students' understanding of how to analyze scientific data. Read the directions aloud. Explain to students that the chart shows how much snow both states received in each season. **Note:** You may need to preteach the skill of reading charts before giving this assessment. STEM

3. The Interactiv-eBook activities may be used as a form of assessment (optional).

Name: _____ **Date:** _____

Water Watchers

Directions: Draw a line to show the water level of each jar. After two weeks, draw a line to show the water level again. Then, answer the questions below.

Lid **No Lid**

1. Which jar lost the most water?

_____

2. Where do you think the water went?

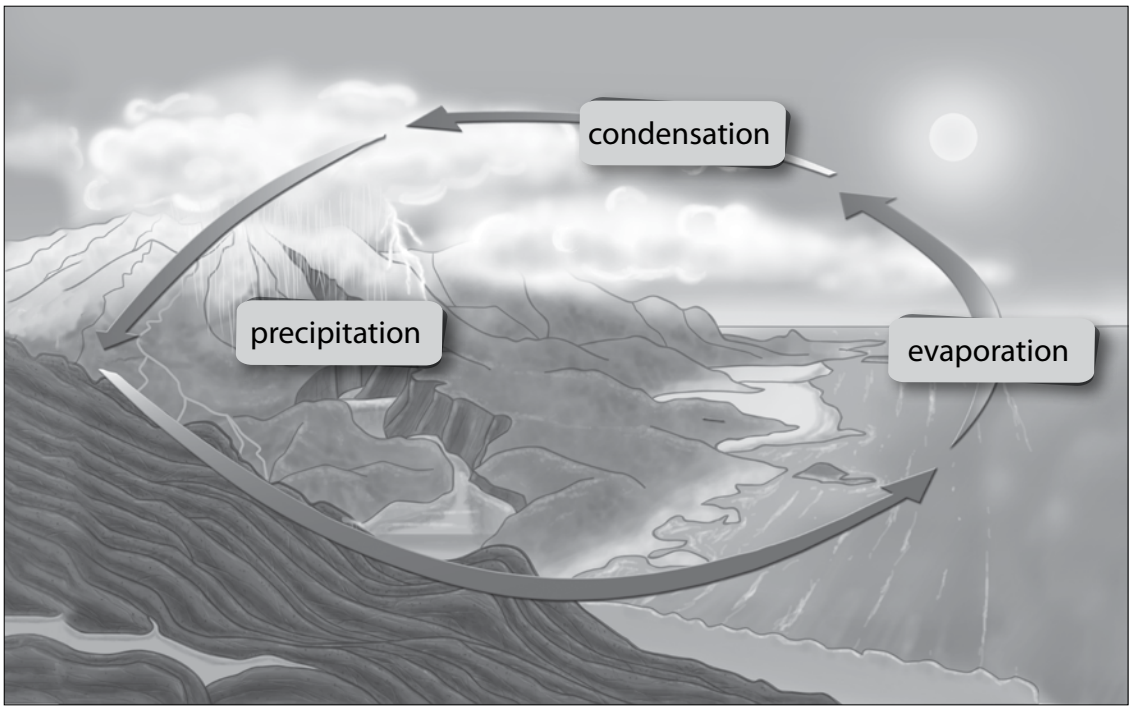
_____

_____

Name: _____ **Date:** _____

Helpful Diagrams

Directions: Look at the diagram below. Then, answer the questions.



1. What do you think this diagram is showing?

_____

2. How does this diagram help the reader?

_____

_____

3. What do you predict the text on this page will say?

_____

_____

Name: _____ **Date:** _____

Save Our Water!

Directions: In the boxes below, write why people should save water and keep it clean.

_____

_____

_____

_____

_____

_____

Save our water!

_____

_____

_____

_____

_____

_____

Name: _____ **Date:** _____

Look Over Here

Directions: Explain how each picture helps the reader understand the water cycle.

1

_____

_____

_____

3

_____

_____

_____

2

_____

_____

_____

4

_____

_____

_____

Name: _____ **Date:** _____

Water Cycle Quiz

Directions: Read each question. Choose the best answer. Fill in the bubble for the answer you have chosen.

1 What is one reason water is important to people?

- (A) They use it to fuel cars.
- (B) They waste it.
- (C) They use it to grow plants.
- (D) They pollute it.

2 How does water in clouds get back to the ground?

- (A) animals carry it
- (B) it falls as rain, snow, or hail
- (C) it falls as rocks, rivers, or cliffs
- (D) it falls as clouds, birds, or mountains

3 How does water change from a liquid to a gas?

- (A) evaporation
- (B) condensation
- (C) precipitation
- (D) pooling

4 What is one way people can save water?

- (A) stop drinking water
- (B) play in the sprinklers
- (C) take longer showers
- (D) fix leaky pipes

5 What does the diagram on page 15 help you understand?

- (A) How water enters and leaves a plant.
- (B) The plant has flowers.
- (C) The sun is shining.
- (D) The roots are deep beneath the ground.

6 Water in the form of ice is a _____.

- (A) solid
- (B) liquid
- (C) vapor
- (D) cloud

Name: _____ **Date:** _____

Will It Snow? STEM

Directions: Frank recorded the amount of snowfall in North and South Dakota. Use his data to answer the questions below.

Snowfall (inches)		
Season	**North Dakota**	**South Dakota**
Spring	14	10
Summer	0	0
Fall	11	6
Winter	26	15

1. In which season did North Dakota have the most snowfall?

_____

2. In which season did South Dakota have the least snowfall?

_____

3. How much more snow did North Dakota have than South Dakota in winter?

_____

4. In what season are North and South Dakota unlikely to have snow? Use data from the chart to support your answer.

_____

_____

_____