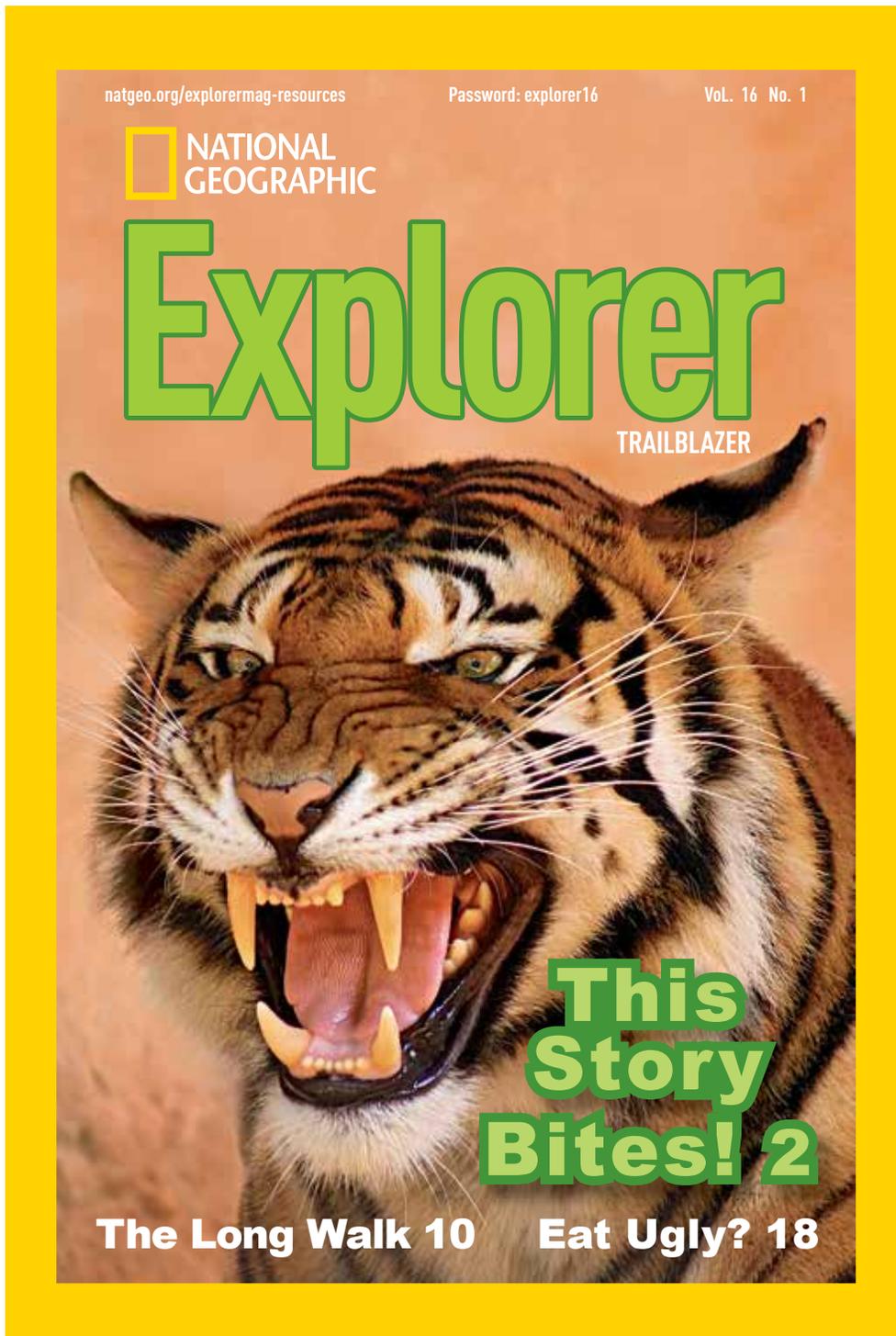


# TEACHER'S GUIDE

Trailblazer

September 2016



## In This Guide

This guide contains language arts and science lessons for articles in the September 2016 issue of EXPLORER TRAILBLAZER.

## Explorer Magazine

EXPLORER classroom magazines are specifically written for each grade, 2-5. Through great storytelling and stunning photographs, the EXPLORER magazines develop literacy skills and teach standards-based science content.

The EXPLORER magazines strive to offer a variety of reading experiences for students with different ability levels in the same class. Thus, all articles have been measured using the Lexile® Framework for Reading. Some articles will be easier to read than others, but all articles in EXPLORER TRAILBLAZER will be within the 350-750L range.

EXPLORER is part of NATIONAL GEOGRAPHIC EXPLORER'S Education program. For more resources, visit the "For Teachers" tab on EXPLORER'S website, [natgeo.org/explorermag-resources](http://natgeo.org/explorermag-resources).

## Your Subscription Includes:

- Magazines
- Classroom Posters
- Projectable Magazine
- Interactive Whiteboard Lesson
- Teacher's Guide
- App (additional subscription required)

# This Story Bites!

## LANGUAGE ARTS 640L

### Objectives

- Students will use context clues to understand the meaning of unfamiliar words.
- Students will identify cause-and-effect relationships in a text.

### Resources

- Vocabulary Assessment Master (page 6)
- Language Arts Assessment Master (page 7)

### Summary

- The article “This Story Bites!” introduces students to animals that use their teeth as shovels, scalpels, spears, sensors, etc. and explains how different types of teeth help animals survive.

## BUILD VOCABULARY AND CONCEPTS

- **canine**
- **enamel**
- **incisor**
- **molar**
- **tusk**

Display the vocabulary words. Inform students that using context clues such as the sentences before and after an unknown word or photographs on the page is a good strategy for understanding unfamiliar words that they come across as they read.

Give each student a copy of the **Vocabulary Assessment Master**. Invite volunteers to read aloud each vocabulary word. Then have students scan the article to locate each bold word within the text.

As a class, find and record text and photo clues from the article that are related to each vocabulary word. Brainstorm ideas about what each word means. Have students write a definition in their own words.

Invite volunteers to read aloud the definitions in the Wordwise feature on page 7 of the article. Encourage students to compare the definitions they wrote with those in the text. Discuss how context clues helped them understand each word.

## READ

Inform students that the purpose of this article is to introduce them to animals with different kinds of teeth. After reading the article, they will understand how animals use their teeth and why different types of teeth are used in different ways .

Explain to students that writers use several different strategies to make logical connections in a text. Good readers always search for these connections when they read. One common strategy to look for is cause-and-effect.

Display pages 2-3 of the projectable magazine. Read aloud the headline and deck. Encourage students to describe the teeth they see. Then display pages 4-5. Read aloud the introduction. Model how to identify a cause-and-effect relationship. **Say:** *Sometimes when you read, the writer tells you what happened and why. The “what” is the effect, or result. The “why” is the cause, or the reason. In this introduction, the writer tells you that animals chase down prey. Why do they do this? So they can eat. This is an easy example of a cause-and-effect relationship.*

*Point out to the class that, as in this example, there can be just one cause and one effect in a cause-and-effect relationship. But often it’s more complicated than that. Several things may cause one thing to happen. Likewise, one cause can have many different effects.,*

Give each student a copy of the **Language Arts Assessment Master**. Have students read the article on their own. As they read, instruct students to record one example of a cause-and-effect relationship related to each animal in the article. Challenge them to find examples that have more than one cause or effect.

# This Story Bites!

## LANGUAGE ARTS

### TURN AND TALK

Have students turn and talk to discuss what they learned about teeth. **Ask:** *Why can't elephants chew with their tusks?* (Tusks are very large and stick out of their mouths.) *What happens when a green bush viper bites prey?* (It injects poison into the prey.) *Why are molars good at grinding and chewing?* (They're wide, flat teeth) Invite students to share what else they learned about teeth.

- **Understanding Unfamiliar Words** Inform students that it's essential for readers to understand unfamiliar words, especially when reading articles about science. Without that knowledge, it's very difficult to understand the text. **Say:** *Once you figure out what scientific terms mean, you can follow along with the text. You can also use the words correctly in new sentences of your own.* Challenge students to make accurate statements using each of the vocabulary words. Encourage them to use their **Vocabulary Assessment Masters** as resources. But remind them to be original. Students shouldn't restate sentences from the article. They should create new sentences of their own.

- **Identify Cause-and-Effect Relationships** After reading the article, remind students that making connections can help them understand what they've just read. One type of connection is the relationship between a cause and an effect. Invite students to turn and talk to share their **Language Arts Assessment Masters** in small groups. Instruct students to compare their results. Did they each identify the same cause-and-effect relationships? If not, do all of their examples make sense? Encourage students to review the article to see where any missed connections went astray. Rejoin as a class. Invite students to share examples of one-on-one relationships as well as connections with more than one cause or effect.

### WRITE AND ASSESS

You may want students to write about what they learned to assess understanding. Encourage students to reflect upon what they read and how it affected their ideas about the topic.

- *What happens when a crocodile catches prey?*
- *Why do Sloane's viperfish swallow their prey whole?*
- *What surprised you about what you read?*

# This Story Bites!

## SCIENCE

### Objectives

- Students will compare and contrast different types of teeth.
- Students will understand how animals' teeth help them survive in their environments.
- Students will recognize the unique characteristics of some animals' teeth.

### Resources

- Content Assessment Master (page 8)
- "Tooth Tales" poster (Teacher's Edition; pages 8-9 in Student Edition)
- Comprehension Check (page 9)
- "This Story Bites!" Interactive Whiteboard (optional)

### Science Background

Teeth are bone-like structures found in most animals' mouths. They form in the gums inside the jaws. Teeth are an important body part that help animals survive in their environment.

There are four different type of teeth:

- incisors: front teeth that can cut food;
- canines: sharp, pointed teeth that can stab;
- premolars: teeth behind the canines that may cut, crush, or grind; and)
- molars: large, wide, flat teeth in the back that grind and chew.

One important job of teeth is to help animals catch and eat food. Animals that eat different types of food have different types of teeth. Carnivores, or meat eaters, have sharp teeth. Herbivores, or plant eaters, have flat teeth. Omnivores, which eat both meat and plants, have sharp teeth in the front and flat teeth in the back. And insectivores, which are animals that eat insects, have square teeth with sharp points.

Teeth are important for eating, but they help animals survive in other ways, too. Animals may use their teeth to dig, lift, or carry. They can use their teeth when they fight. Teeth can even be an anchor. Walrus jab their large canine teeth into the ice when they sleep!

### ENGAGE

#### Tap Prior Knowledge

Instruct students to each think of an animal. Invite volunteers to describe their animal's teeth. Compare and contrast the results. As a class, discuss reasons why animals might have different types of teeth.

### EXPLORE

#### Preview the Lesson

Display pages 2-3 of the projectable magazine. Have students examine the photos. Then invite a volunteer to read aloud the headline and deck. **Ask:** *Based on the information here, what do you think this article is about? (teeth) Why? (The photos are all show the animals' teeth. The words in the headline and deck identify things teeth can do.)* Point out the ellipse at the end of the deck. Explain that this punctuation mark means that the list goes on. Teeth can do more than what's listed here. Inform students that they'll learn more about what teeth can do and how teeth help animals survive as they read the article.

#### Set a Purpose and Read

Have students read the article in order to compare and contrast different types of animal teeth, understand how teeth help animals survive, and recognize the unique characteristics of some animals' teeth.

### EXPLAIN

#### Compare and Contrast Animal Teeth

As a class, review the images in the article. Encourage students to offer brief descriptions of the different types of animal teeth. Tell them to think about what the teeth look like as well as what the teeth do. Then give each student a copy of the **Content Assessment Master**. Instruct students to select two animals from the article. Challenge them to record several ways that the animals' teeth are alike and different.

## SCIENCE

### EXPLAIN

(continued)

#### How Teeth Help Animals Survive

Display pages 4-5 of the projectable magazine. Point out the large purple word *tool*. Discuss what a tool is. (an instrument that helps you do work) Then discuss reasons why people use tools. (Tools make it easier to get jobs done.) **Say:** *Sometimes it's impossible to do a job if you don't have the right tools.* Remind students that teeth are an important tool for animals. Animals use their teeth to do many different things. **Say:** *The right kind of teeth helps animals do what they need to do so they can survive.* As a class, briefly review each section. Have students identify clues that explain how each animal's teeth help it survive. Encourage students to use information they collected on their **Language Arts Assessment Masters** and **Content Assessment Masters** as a guide.

#### Recognizing Unique Animal Teeth

Display "**Tooth Tales**" poster. Read aloud the headline and deck. Then invite volunteers to read aloud each fact. Discuss how each fact could help the animal in question survive where it lives.

### ELABORATE

#### Find Out More

Remind students that scientists think the narwhal uses its tooth to "taste" the water. Review the article to explore how this is possible. Then divide the class into small groups. Instruct groups to conduct research to learn how humans are able to taste. Challenge each group to write a summary explaining how the processes humans and narwhals use are alike and different.

#### Extend Your Thinking About Teeth

Point out to students that the article identified many different ways animals use teeth as tools. But these are just a few examples. Divide the class into small groups. Instruct groups to conduct research to discover other ways animals use teeth as tools. Challenge each group to find at least two new examples.

### EVALUATE

Have students record their answers to the assessment questions in their science notebooks or on a separate sheet of paper.

- *Which kind of tooth can cut?* (incisor)
- *Which animal uses its teeth to cut down trees?* (beaver)
- *Why are teeth important tools for most animals?* (Teeth help animals survive in their environments.)

If you wish, have students complete the **Comprehension Check** to assess their knowledge of concepts mentioned in the article. You may also wish to examine the optional **Interactive Whiteboard** lesson that accompanies this article.

Name \_\_\_\_\_

Date \_\_\_\_\_

**VOCABULARY ASSESSMENT: This Story Bites!**

Record information from the article about each vocabulary word.

Word					
Text Clues					
Photo Clues					
What I Think the Word Means					
Definition					

## LANGUAGE ARTS ASSESSMENT: This Story Bites!

Record a cause-and-effect relationship for each animal you read about in the article.

	Cause	Effect
elephant		
crocodile		
Sloane's viperfish		
green bush viper		
great white shark		
beaver		
naked mole rat		
narwhal		
wild pig		

Name \_\_\_\_\_

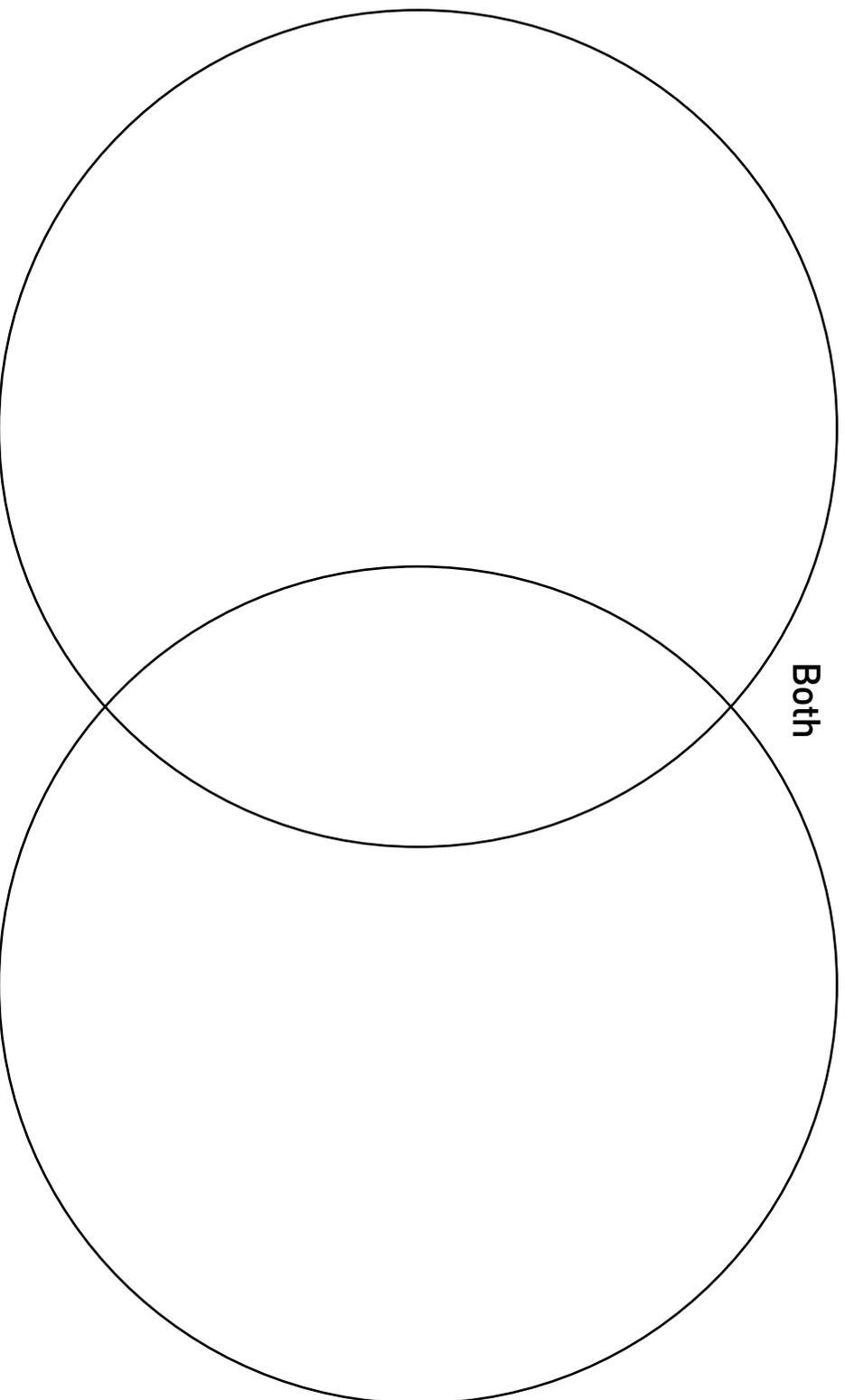
Date \_\_\_\_\_

**CONTENT ASSESSMENT: This Story Bites!**

Use this diagram to compare and contrast the teeth of two different animals from the article.

Animal: \_\_\_\_\_

Animal: \_\_\_\_\_



**COMPREHENSION CHECK: This Story Bites!**

Read each question. Fill in the circle next to the correct answer or write your response on the lines.

- Which animal has big teeth called "tusks"?  
 A crocodile  
 B shark  
 C elephant
- What do scientists think a narwhal can do with its tooth?  
 A smell  
 B taste  
 C touch
- What makes a beaver's teeth so hard?  
 A molar  
 B canine  
 C enamel
- Which animal uses its incisors like a shovel?  
 A naked mole rat  
 B wild pig  
 C green bush viper
- Pick one animal from the article. Describe its teeth. Explain how teeth help it survive.

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# The Long Walk

LANGUAGE ARTS  LEXILE 430L

## Objectives

- Students will identify and investigate the definitions of unfamiliar words.
- Students will ask and answer questions before, during, and after reading the article.
- Students will explain concepts based on information in the text.

## Resources

- Vocabulary Assessment Master (page 14)
- Language Arts Assessment Master (page 15)

## Summary

- The article “The Long Walk” takes students on a 16,000 kilometer walk with National Geographic explorer Sarah Marquis as she explores the landscape from Siberia to Australia.

## BUILD VOCABULARY AND CONCEPTS

Display pages 16-17 of the projectable magazine. Point out that there is no Wordwise feature in this article. **Say:** *That doesn't mean, however, that there will be no unfamiliar words in the article.*

Give each student a copy of the **Vocabulary Assessment Master**. Have students read the article with a partner. As they read, instruct pairs to record each word either partner finds difficult to understand. **Say:** *These may be words you've never seen before or they may be words you do know that are used in a new way.*

Instruct partners to circle three words on their lists. Have them predict and write a definition for each word. Next, have them write a sentence using each word, based on the definitions they wrote. Tell them to find each word in a dictionary and record its definition. If a word has multiple meanings, challenge students to use context clues in the article to select the correct definition. Have students write a new sentence based on the definition they found.

Invite volunteers to identify the words they defined and read aloud the before and after sentences they wrote. As a class, discuss how investigating definitions helped students understand each word.

## READ

Let students know that the purpose of this article is to introduce them to the work of National Geographic explorer Sarah Marquis. As she tells her tale, they will gain an understanding of the different habitats and the people she encountered on her journey.

Explain to students that good readers ask questions before, during, and after they read. They ask questions, in particular, when they encounter something they don't understand or something they want to learn more about. Usually, they can find the answer in the text.

Display pages 10-11 of the projectable magazine. Model how to ask and answer questions. **Say:** *When I look at these pages, the first things I notice are the photos. I wonder who this woman is. Where is she? What is she doing, and why is she all alone?* Read aloud the headline and deck. **Say:** *This information answered a few of my questions. The woman's name is Sarah Marquis. She's walking from Siberia to Australia. But I still don't know why she's walking alone. And, I have a new question, too. Why would she want to walk this far? To find answers to those questions, I'll have to read the article.*

Give each student a copy of the **Language Arts Assessment Master**. Explain to student how they can use the worksheet to record questions and answers they have before, during, and after they read the article.

As a class, brainstorm a list of questions about the article. Instruct students to record the questions in the appropriate section of their worksheets. Then have students read the article on their own. As they do, instruct them to record additional questions and any answers they find in the text. If students still have questions about Sarah Marquis and her journey after reading the article, instruct them to record those questions, too.

# The Long Walk

## LANGUAGE ARTS

### TURN AND TALK

Have students turn and talk to discuss what they learned about how Marquis' trip. **Ask:** *How long was her trip? (16,000 kilometers) How long did it take? (three years) Was this her first long trip? (No. She has also walked from Canada to Mexico, around Australia, and across the Andes Mountains in South America.)*

- **Ask and Answer Questions** Remind students that asking and answering questions is a strategy to help them understand what they read. **Say:** *Even the best readers come across words or ideas they don't understand. Asking questions is the first step toward figuring those things out. If you ask questions, you know which answers to search for as you read and re-read the text.* Have students share and compare their **Language Arts Assessment Masters** in small groups. Do they have the same questions? Did they find the same answers? If not, encourage them to identify where in the text they found the answer and make any corrections necessary.

- **Explain Concepts** After reading the article, **say:** *One way to see if you understand information is to try to tell someone else about the topic. If you can't explain the concept, you might need to read the article again.* Have students turn and talk to explain to a partner how Marquis prepared for her trip and how she stayed safe while on her journey. Prompt discussion with questions.

### WRITE AND ASSESS

You may want students to write about what they learned to assess understanding. Encourage students to reflect upon what they read and how it affected their ideas about the topic.

- *What did Marquis take on her trip?*
- *Why does she dress like a man when she travels?*
- *What surprised you about what you read?*

# The Long Walk

## SCIENCE

### Objectives

- Students will learn about the people and places Marquis visited.
- Students will understand how people adapt to the land where they live.

### Resources

- Content Assessment Master (page 16)
- Comprehension Check (page 17)

### Science Background

National Geographic explorer Sarah Marquis set out on her first venture when she was just eight years old. Accompanied by her dog, the Swiss native decided to spend the night in a cave she'd discovered—without telling her mother!

Since then, Marquis' treks have been both longer and more organized. In 2000, it took her four months and six days to walk across the U.S. from the Canadian border to Mexico. Two years later, she began a 17-month-long trek around the Australian continent. In 2006, she spent eight months walking through the Andes. And in 2010—on her 38th birthday—she departed Siberia en route to Australia.

Planning a trip like this can take years. Marquis studies topographic maps to outline her route and identify locations where she can replenish supplies. And she packs gear suitable for the variety of environments she'll encounter. Once she's on her way, she contacts people at home via a GPS device to let them know she's safe.

While extended ventures like these might not be for everyone, Marquis says the expeditions give her an "unbelievable connection with nature." And reporting on them makes her feel like "a little bridge between humans and nature."

## ENGAGE

### Tap Prior Knowledge

Instruct students to imagine that they could go anywhere in the world. Now tell them to imagine that they had to walk to get there. How long do they think it would take? What do they think they'd see along the way? Invite volunteers to share details about their adventures.

## EXPLORE

### Preview the Lesson

Display pages 10-11 of the projectable magazine. Read aloud the headline and deck. **Ask:** *What is this article about?* (a long walk) *Where did this walk start?* (Siberia) *Where did it end?* (Australia) Brainstorm a list of things the adventurer might have seen along the way.

### Set a Purpose and Read

Have students read the article in order to learn about the people and places Sarah Marquis visited and to understand how people adapt to the land where they live.

## EXPLAIN

### Recognizing Characteristics

Instruct students to examine the article's photos in their student magazines. Invite volunteers to describe some of the landscapes they see. Guide the class to recognize that writer went on an extremely long trip. Because of this, she encountered a wide variety of people and habitats along the way. Give each student a copy of the **Content Assessment Master**. Instruct students to select two places Marquis visited and describe the people and habitat Marquis found in each place.

## SCIENCE

### EXPLAIN

(continued)

#### Understanding How People Adapt

Display pages 10-11 of the projectable magazine. Point out that Marquis is wearing a warm coat, a scarf, a cap, and hiking boots. She also has sunglasses on her head and a backpack on her back. **Ask:** *Why do you think she's dressed like this?* Guide students to recognize that it's cold, rocky, and sunny here. Marquis needs this type of clothing to survive. And she has to carry her supplies because the ground is too rough to transport them any other way. **Say:** *As an experienced traveler, Marquis knows that she has to adapt to the environment she's in. But travelers aren't the only people who adapt. No matter where people live, they must adapt to survive in the habitat around them.* Assign each student a partner. Using their **Content Assessment Masters** as a guide, instruct pairs to summarize how people living in each location have adapted to survive where they live. When partners are finished summarizing their ideas, have them share and compare what they learned with the class.

### ELABORATE

#### Find Out More

Display pages 12-13 of the projectable magazine. Zoom in on the section "Step by Step." Point out to the class that this isn't Marquis' first long trip. She's also traveled from Canada to Mexico, around Australia, and across the Andes Mountains into South America. In small groups, have students conduct research to learn more about Marquis and her adventures. Invite groups to share what they learned with the class.

#### Extend Your Thinking About Venturing

Remind students that Marquis travels into remote parts of the world by herself for extended periods of time. As a class, list potential pros and cons of traveling like this. Discuss how sharing what she learns as she travels could impact the way people interact with the world around them.

### EVALUATE

Have students record their answers to the assessment questions in their science notebooks or on a separate sheet of paper.

- *What kinds of habitats did Marquis walk through on her trip?* (jungles, deserts, and mountains)
- *What does she use to transport her supplies?* (a backpack and a cart)
- *Why did Marquis follow animals on part of her trip?* (They might lead her to water.)

If you wish, have students complete the **Comprehension Check** to assess their knowledge of concepts mentioned in the article.

## VOCABULARY ASSESSMENT: The Long Walk

Record unfamiliar words from the article. Circle three words on the list.  
Use the organizer to investigate the meaning those words.

Unfamiliar Words			
Word			
Predicted Definition			
Sentence			
Dictionary Definition			
Sentence			

Name \_\_\_\_\_

Date \_\_\_\_\_

**LANGUAGE ARTS ASSESSMENT: The Long Walk**

Record questions you have about Sarah Marquis and her journey before, during, and after reading the article. Search for answers in the text.

	Questions	Answers
Before		
During		
After		

Name \_\_\_\_\_

Date \_\_\_\_\_

**CONTENT ASSESSMENT: The Long Walk**

Pick two places Marquis visited on her trip. Describe the people and habitat she found in each place.

Place	People	Habitat

**COMPREHENSION CHECK: The Long Walk**

Read each question. Fill in the circle next to the correct answer or write your response on the lines.

1. How did Sarah Marquis travel from Siberia to Australia?
  - Ⓐ She rode a bike.
  - Ⓑ She flew in a plane.
  - Ⓒ She walked.
  
2. How does Marquis know where to go?
  - Ⓐ She asks directions along the way.
  - Ⓑ She studies maps before she leaves.
  - Ⓒ She walks toward the sun.
  
3. Which word best describes Kunming, China?
  - Ⓐ quiet
  - Ⓑ peaceful
  - Ⓒ polluted
  
4. What do people call the habitat Marquis visited in Australia?
  - Ⓐ "the bush"
  - Ⓑ "the tree"
  - Ⓒ "the rock"

5. Explain why Marquis takes such long walks.

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# Eat Ugly?

## LANGUAGE ARTS 740L

### Objectives

- Students will record, define, and compare vocabulary words.
- Students will ask and answer questions to demonstrate an understanding of the text.

### Resources

- Vocabulary Assessment Master (page 22)
- Language Arts Assessment Master (page 23)

### Summary

- The article “Eat Ugly?” introduces students to the problem of worldwide food waste and explores possible solutions.

## BUILD VOCABULARY AND CONCEPTS

- **developed nation**
- **developing nation**

Display the Wordwise feature on page 22 of the projectable magazine. Invite volunteers to read aloud the words and their definitions. Encourage students to share what they know about each word.

Give each student a copy of the **Vocabulary Assessment Master**. Instruct students to record each word and its definition. Discuss how the vocabulary words are related. Then challenge students to create a diagram that illustrates how the words are alike and different. Invite students to share their ideas with the class.

## READ

Let students know in this article they will read about the problem of worldwide food waste. They will also explore potential solutions.

Tell students that the best way to learn more about a subject is to ask themselves questions as they read the article. **Say:** *Good readers always do this. It helps them learn more about the topic. And asking questions isn't as hard as you might think. Many questions begin with the same six question words: Who? What? Where? When? Why? and How?*

Display pages 18-19 of the projectable magazine. Read aloud the headline and text. Model how to ask and answer questions. **Say:** *When I look at this page, the first thing I notice is the vegetable on the fork. It's a pepper. Why does it look so strange? In fact, why do most of the fruits and vegetables in this photo look different from what I see in the store?* Read aloud the headline. **Say:** *This headline says these foods are ugly? They do look strange, but why would the writer call them ugly? Maybe I'll be able to figure that out as I read the article.* **Ask:** *What questions do you have after seeing these pages?* Encourage students to introduce new questions of their own.

Give each student a copy of the **Language Arts Assessment Master**. Have students read the article on their own. As they do, instruct them to write at least one question related to the article that begins with each question word. Challenge them to find the answers to their questions in the text. Instruct students to record the answers on their worksheets.

# Eat Ugly?

## LANGUAGE ARTS

### TURN AND TALK

Have students turn and talk to discuss what they learned about wasted food. **Ask:** *How much food is wasted each year?* (about 1.3 billion metric tons) *What causes food to be wasted?* (what it looks like; how its grown, processed, and shipped) Encourage students to share other interesting facts they learned about wasted food.

• **Ask and Answer Questions** Remind students that asking and answering questions is a strategy that will help them understand what they read. **Say:** *Even the best readers come across words and ideas they don't understand. Asking questions shows you which answers you need to search for as you reread the text.* Have students share and compare their **Language Arts Assessment Masters** with a partner. Did they have the same questions? Did they find the same answers? If not, encourage partners to compare where in the text they each found the answer to reevaluate the results.

### WRITE AND ASSESS

You may want students to write about what they learned to assess understanding. Encourage students to reflect upon what they read and how it affected their ideas about the topic.

- *Why do people waste so much food?*
- *What can people do to waste less food?*
- *What surprised you about what you read?*

## SCIENCE

### Objectives

- Students will understand why wasted food is a worldwide problem.
- Students will recognize that people can reduce food waste if they change their lifestyles and actively participate in solutions.

### Resources

- Content Assessment Master (page 24)
- "Reducing Waste" poster (Teacher's Edition; page 23 of Student Edition)
- Comprehension Check (page 25)

### Science Background

In many parts of the world, people don't think twice before they scrape the scraps from their dinner plate into the trash can. But according to the Food and Agricultural Organization (FAO) of the United Nations, this and other wasteful habits add up. In fact, people discard nearly 1.3 billion metric tons of food—or enough to feed three billion people—each year.

Food is discarded from the food chain in two distinct ways. It can be lost or wasted.

Lost food disappears when it is thrown away during harvesting, shipping, or processing. This is common in developing countries that lack the resources and infrastructure to keep food fresh. Food is wasted when retailers or consumers throw it away. This is common in developed countries, where food supplies are more abundant.

Some corporations are changing their practices to fix these problems in the food chain. But individuals can help, too. By changing their habits at the store, in restaurants, at home, and in the larger community, people can chip away at their food waste footprints.

### ENGAGE

#### Tap Prior Knowledge

Prior to conducting this activity, collect two samples of the same fruit or vegetable. One sample should be perfect. The other sample should be misshapen in some way. Display the produce for the class. Take a poll to see which sample students would rather eat. Discuss why.

### EXPLORE

#### Preview the Lesson

Instruct students to turn to page 19 of their student magazines. Invite a volunteer to read aloud the text above the introduction. Discuss reasons why this is a big problem.

#### Set a Purpose and Read

Have students read the article in order to understand why wasted food is a worldwide problem and to recognize that people can reduce food waste if they change their lifestyles and actively participate in solutions.

### EXPLAIN

#### Understanding the World Food Problem

Display page 19 of the projectable magazine. Have students scan the text to find the two sentences with numbers. (Each year, 1.3 billion metric tons of food gets wasted in this way; Nearly 800 million people in the world are hungry.) Highlight each of these sentences. As a class, discuss the irony of this situation. Then display page 20 of the projectable magazine. Invite volunteers to read aloud the section "Feeding the Hungry." Discuss reasons why simply growing more food isn't the best way to solve the world food crisis.

## SCIENCE

### EXPLAIN

(continued)

#### Solving the World Food Problem

Display page 21 of the projectable magazine. As a class, discuss the various ways fruits and vegetables are lost or wasted. Challenge students to find examples in the article that tell how companies are changing what they do so they can use foods that would otherwise have been lost or wasted. Then display the "**Reducing Waste**" poster. Have students follow along on page 23 of their student magazines as you examine how individuals can reduce the amount of food they waste, too. Give each student a copy of the **Content Assessment Master**. Based on what they've learned, instruct each student to create an advertisement that tells people how to reduce the size of their food waste footprint.

### ELABORATE

#### Find Out More

Inform students that the article identified many different ways businesses have changed their practices so they waste less food. As a class, conduct research on this topic. Challenge students to find more ways businesses have changed their ways so they waste less food.

#### Extend Your Thinking About Food

Remind students that the article stated that some U.S. schools have found that scheduling recess before lunch reduces the amount of food wasted at lunch. Other schools have sharing tables where students can swap food. Discuss whether or not these ideas would help students waste less food at your school. Brainstorm a list of other ideas your school could try to reduce its food waste footprint. Have students brainstorm ideas about how their families could waste less food at home.

### EVALUATE

Have students record their answers to the assessment questions in their science notebooks or on a separate sheet of paper.

- *In what kind of nation does a lot of food go bad after it has been harvested?* (developing nation)
- *Why is about a third of the planet's food wasted?* (how it looks; how it's grown, treated, shipped, and delivered)
- *What kinds of foods are wasted the most?* (fruits and vegetables)

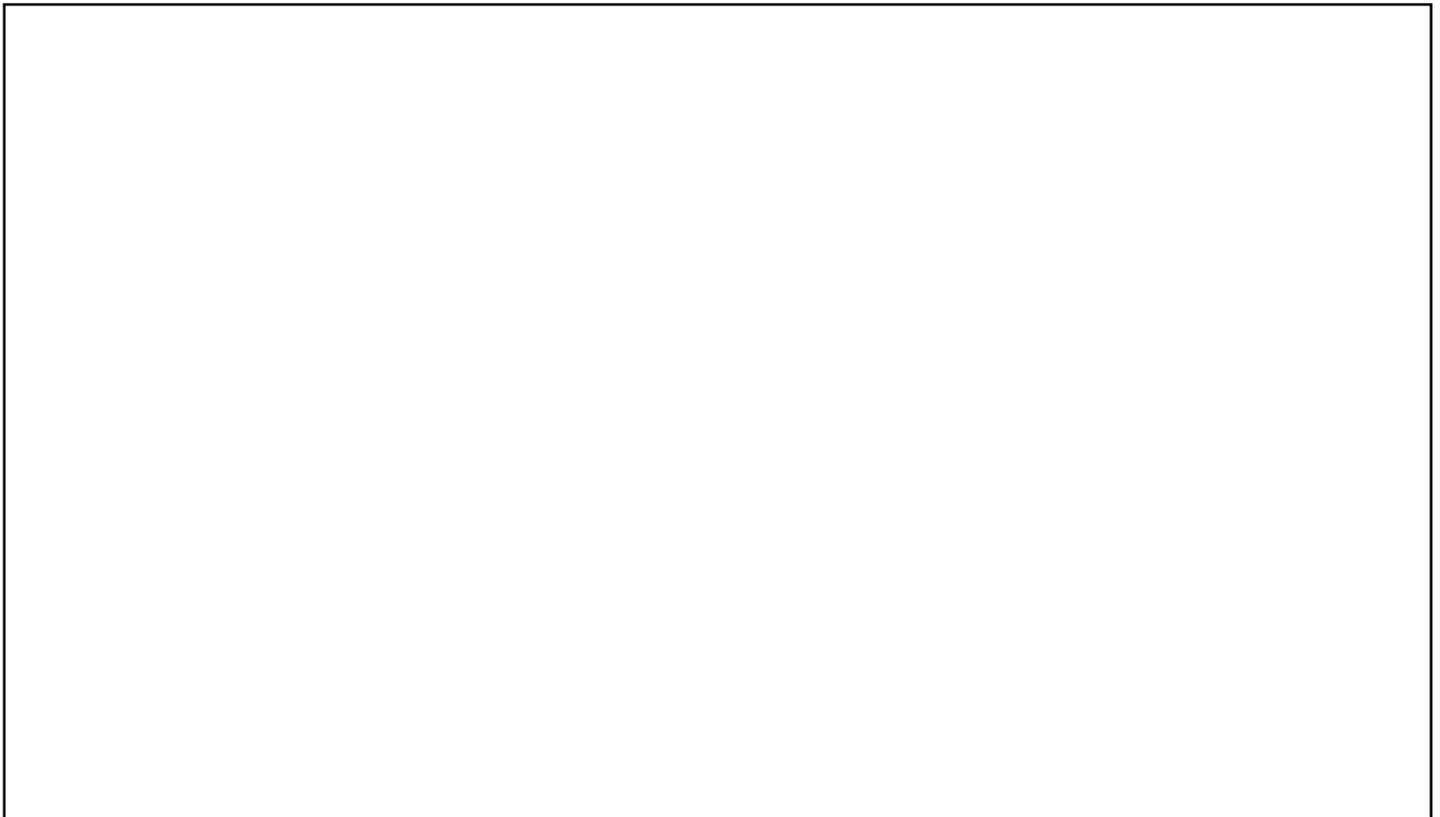
If you wish, have students complete the **Comprehension Check** to assess their knowledge of concepts mentioned in the article.

**VOCABULARY ASSESSMENT: Eat Ugly?**

Record each vocabulary word and its definition.

Word	Definition

Draw a diagram that shows how the two words are alike and different.



## LANGUAGE ARTS ASSESSMENT: Eat Ugly?

Write one question about the article that begins with each question word.

Find the answer in the text.

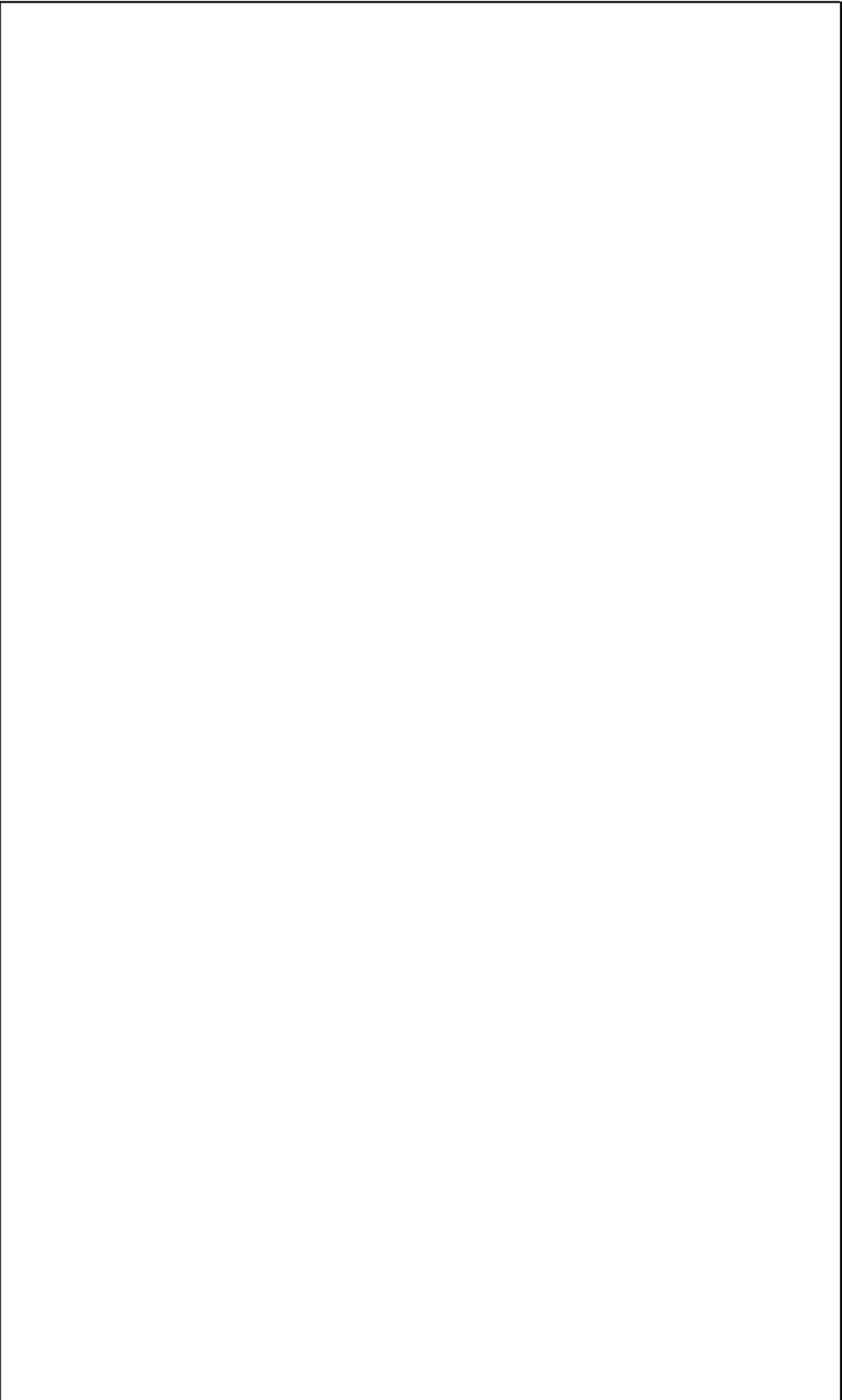
Question Word	My Question	My Answer
Who?		
What?		
Where?		
When?		
Why?		
How?		

Name \_\_\_\_\_

Date \_\_\_\_\_

**CONTENT ASSESSMENT: Eat Ugly?**

Create an advertisement that tells people how to reduce the size of their food waste footprint.



**COMPREHENSION CHECK: Eat Ugly?**

Read each question. Fill in the circle next to the correct answer or write your response on the lines.

1. About how much of the planet's food goes to waste?  
 Ⓐ half  
 Ⓑ a third  
 Ⓒ a quarter
2. When does a lot of food go bad in developing nations?  
 Ⓐ before it is planted  
 Ⓑ after it is harvested  
 Ⓒ while it is growing
3. Where is the most food wasted in developed nations?  
 Ⓐ restaurants  
 Ⓑ stores  
 Ⓒ homes
4. What kinds of fruits and vegetables do stores consider to be "ugly"?  
 Ⓐ rotten  
 Ⓑ dirty  
 Ⓒ imperfect
5. Name three things you can do to reduce the size of your food waste footprint.

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## ANSWER KEY

### This Story Bites!

#### Assess Vocabulary, page 6

Students should record the words and definitions from the Wordwise feature on page 7.

**canine:** a pointed tooth

**enamel:** the hard surface on a tooth

**incisor:** a type of tooth in the front of the mouth for cutting

**molar:** a wide, flat tooth used for grinding and chewing

**tusk:** a long, curved tooth that sticks out of the mouth

Text clues, photo clues, and what students think each word means will vary. Evaluate each response for accuracy.

#### Assess Language Arts, page 7

Answers will vary, but each cause and effect should come from the article and each identified relationship should make sense.

#### Assess Content, page 8

Answers will vary depending on which animals students select. However, information should come from the article and comparisons should make sense.

#### Comprehension Check, page 9

1. C; 2. B; 3. C; 4: A; 5: Answers will vary depending on which animal students select.

### The Long Walk

#### Assess Vocabulary, page 14

All unfamiliar words must appear in the article. Predicted definitions and sentences will vary. Students may use a printed or online dictionary to find each word's actual definition.

#### Assess Language Arts, page 15

Students' questions will vary, but all questions should relate to the article. All answers should come directly from the text.

#### Assess Content page, 16

Answers will vary depending upon which locations students select. Descriptions of people and places should be based on information in the article.

#### Comprehension Check, page 17

1. C; 2. B; 3. C; 4: A; 5: Students should note that Marquis takes long walks in order to better connect with nature. She walks in order to see, hear, feel, smell, and taste our world.

### Eat Ugly?

#### Assess Vocabulary, page 22

Students should record the words and definitions from the Wordwise feature on page 22.

**developed nation:** a nation with a highly developed economy and infrastructure; people living there are more educated, earn more money, live longer lives

**developing nation:** a nation with a less developed economy; people living there are less educated, earn less money, live shorter lives

Diagrams should show an accurate comparison of the two terms.

#### Assess Language Arts, page 23

Students should record one question that begins with each question word. Answers should come from the text.

#### Assess Content, page 24

Students should utilize information from the article. Advertisements should educate people on one way they can reduce the size of their food waste footprint.

#### Comprehension Check, page 25

1. C; 2. C; 3. B; 4: C; 5: Answers will vary but should come from the article. A likely source for answers is the "Reducing Waste" sidebar on page 23.