

Unit 2

Animal Intelligence

Unit at a Glance

- ▶ **Language Focus:** Express Ideas, Engage in Conversation
- ▶ **Reading Strategy:** Make Connections
- ▶ **Topic:** Animal Behavior

? BIG Question

Just how
smart are
animals?

ECKERNFÖRDE, GERMANY
A service dog walking beside her diabetic owner,
carrying a basket of sugary drinks

Share What You Know

- 1 **Think** about a pet you know or a favorite animal from TV. Draw the animal.
- 2 **Tell** the class about your drawing. What makes the animal special?
- 3 **Listen** to your classmates tell about their drawings. Ask questions about the animals they drew.



Do It!

My Kitten is
tiny and soft.



Express Ideas

Listen to the dialogue between Gina and Nazario. Then use **Language Frames** to express ideas about an animal you have seen.

Language Frames

- I think _____.
- I know _____.

Dialogue

1. Look! A wild animal.

I think it's a cat.

2. I know it's a raccoon. It has a black mask and a ringed tail.

It has sharp teeth, too.

3. I think raccoons are very smart.

I think they are very scary.

4. Let's take a closer look.

Let's not!

Science Vocabulary

Key Words

Look at the photos. Use **Key Words** and other words to talk about why animals look and act as they do.

Key Words

adaptation
defend
predator
prey
trait



A bobcat is a **predator**. Bobcats have many **adaptations** for hunting, such as powerful jaws. A bobcat's **prey** includes rabbits, squirrels, and other small mammals.



Raccoons have many **traits** that help them survive. They are intelligent, and they have sharp teeth to **defend** themselves.

Talk Together

Just how smart are bobcats and raccoons? How can you tell? Try to use **Language Frames** from page 74 and **Key Words** to express ideas to a partner.

Analyze Characters

Writers describe **characters**. You can also tell what characters are like by:

- what they say or do.
- how they act with each other.

Read the picture story. Find out more about Nazario and Gina.



Map and Talk

You can make a character chart to analyze characters. Write each name. Then fill in what the character does and says. Tell what these details show about the character.

Character Chart

Character	What the Character Does	What the Character Says	What It Shows
Gina	watches a raccoon	Raccoons are interesting.	She is curious. She is brave.
Nazario	screams, runs away	Raccoons are scary.	He is shy. He is scared.

Talk Together

Tell your partner about another character you have read about. Describe the character's traits. Make a character chart with your partner.

More Key Words

Use these words to talk about "Kitchen Caper" and "Mouse Deer and Farmer."

behavior

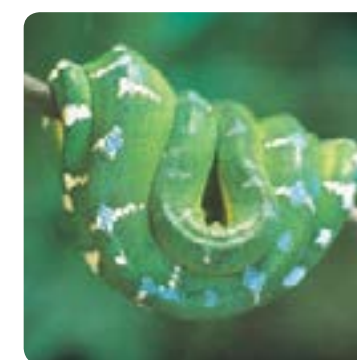
noun



Behavior is how a living thing acts. You can train an animal to learn a new **behavior**.

characteristic

noun



A **characteristic** is a feature. White marks are a **characteristic** of this snake.

response

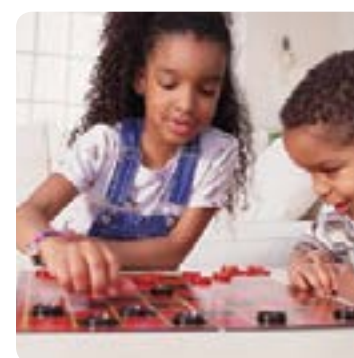
noun



A **response** is an answer. These students want to give a **response** to a question.

strategy

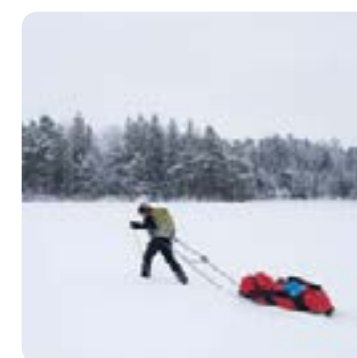
noun



A **strategy** is a careful plan. This girl has a **strategy** for winning the game.

survival

noun



Survival means living in spite of obstacles. **Survival** is difficult in very cold places.

Talk Together

Work with a partner. Write a sentence for each **Key Word** showing what the word means.

My **strategy** for school is to work hard.

Learn to Make Connections

Look at the picture. If it reminds you of something, you have **made a connection** to it.



You **make connections** when you read, too.

How to Make Connections



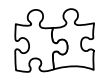
1. Think about what the text is about.

It's about ____.



2. As you read, connect the text to yourself. Think about what you know and have seen in the world.

____ reminds me of ____.



3. Decide how these connections help you understand the text.

Now I understand ____.

Language Frames

It's about ____.

____ reminds me of ____.

Now I understand ____.

Talk Together

Read Nazario's story, "Three City Raccoons." Read the sample connection. Then use **Language Frames** as you make connections to the story. Tell your partner about them.

Story

Three City Raccoons

A raccoon family lived in the country. They were Trini, Goyo, and their son Chucho.

"I'm hungry," said Chucho.

Actually, they were all hungry because there was no food. Trini knew their **survival** was in danger. Luckily, she had a good plan. Being smart is a **characteristic** of many raccoons.

"Let's move to the city," she said. "We'll find food there."

"No way," said Goyo. "I like the country."

Chucho's **response** was more positive. "Let's go, Dad," he said. "It will be an adventure!"

Trini and Chucho started walking to the city. Goyo didn't want to go, but he followed them. Why? He didn't want to be alone.

In the city, the family found exciting new food—garbage!

Trini's **strategy** worked. The raccoons changed their **behavior** in the city. In the country, they were **predators**. They ate bugs and worms. In the city, they looked for garbage at night. Even Goyo was happy.

"People throw away such tasty food," he said, licking some jelly off a paper plate.

The raccoons laughed and went to look for more garbage.

Sample Connection

"It's about raccoons being hungry."

This story reminds me of a TV show I watched about how animals survive.

Now I understand why raccoons have to be smart to survive."

◀ = A good place to make a connection

Read a Story

Genre

A **trickster tale** is a story in which the main character tries to outwit, or outsmart, the other characters. The main character is almost always a clever animal.

Characters

Characters are the people or animals in a story.



Marcille the Mouse



Cleo the Cat



The Cheese Chef



KITCHEN CAPER

A Trickster Tale



by
Robyn Montana Turner

► **Set a Purpose**

A clever mouse meets a hungry cat.
Find out how she **defends** herself.

ONE DAY

on board an oceanic cruise ship, Marcille the Mouse was happily nibbling on scraps she found on the floor. She didn't see Cleo the Cat slinking around the corner.



Mmmmm. Mouse. My favorite snack! thought the cat, as she stared at Marcille from the corner of her eye.

Marcille suddenly spotted Cleo. *Yikes!* Marcille quickly thought of a **strategy** to save herself from the cat. She flattened her back against the wall.

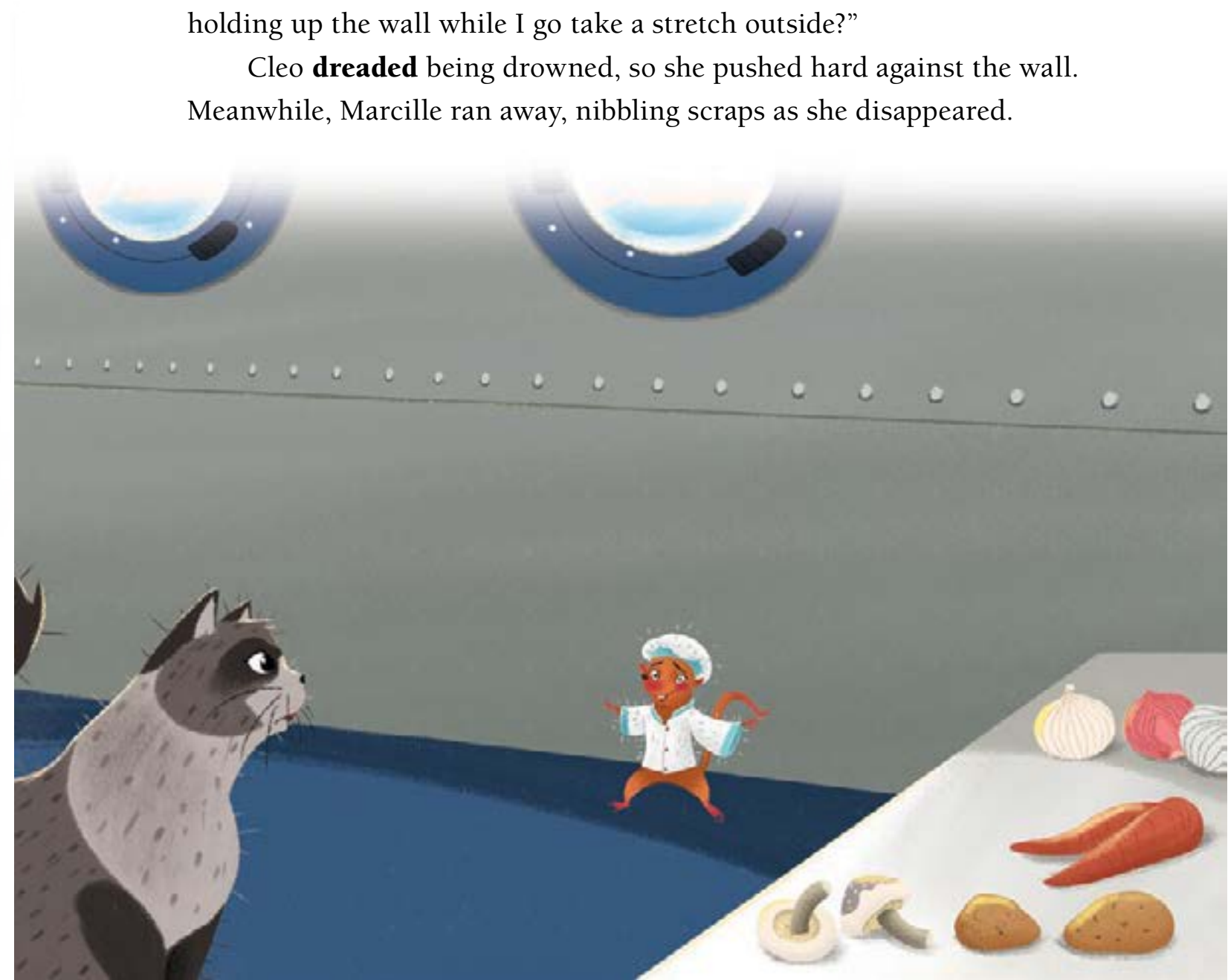
"Cleo!" cried Marcille. "I heard that the ocean will burst through this wall. I am holding it up to save us!"

strategy plan

Cleo growled, "Ha! That's ridiculous." But Cleo still **craned** her neck around to see. "The wall is firmly in place!"

"Yes! It's in place because I am pushing away the ocean with all my might," said Marcille. "If I move, we'll drown. Would you mind holding up the wall while I go take a stretch outside?"

Cleo **dreaded** being drowned, so she pushed hard against the wall. Meanwhile, Marcille ran away, nibbling scraps as she disappeared.



craned stretched
dreaded was afraid of

► **Before You Continue**

1. **Plot** How does Marcille **protect** herself from Cleo?
2. **Character** Which character is a **predator**, and which is **prey**? How do you know?

► **Predict**

What will Cleo do?

Cleo struggled to push against the ocean but couldn't hold her paws up any longer. "I have to let go, even if the wall breaks!" she moaned, and then she **sprang away**.

To her surprise, no water **came rushing** in. The wall still kept the ocean out of the ship.

"I'll get that mouse!" roared Cleo, **bounding** out of the kitchen.

Marcille was hiding behind the door. Now that Cleo had gone, she ran back into the kitchen. And she had a new plan.



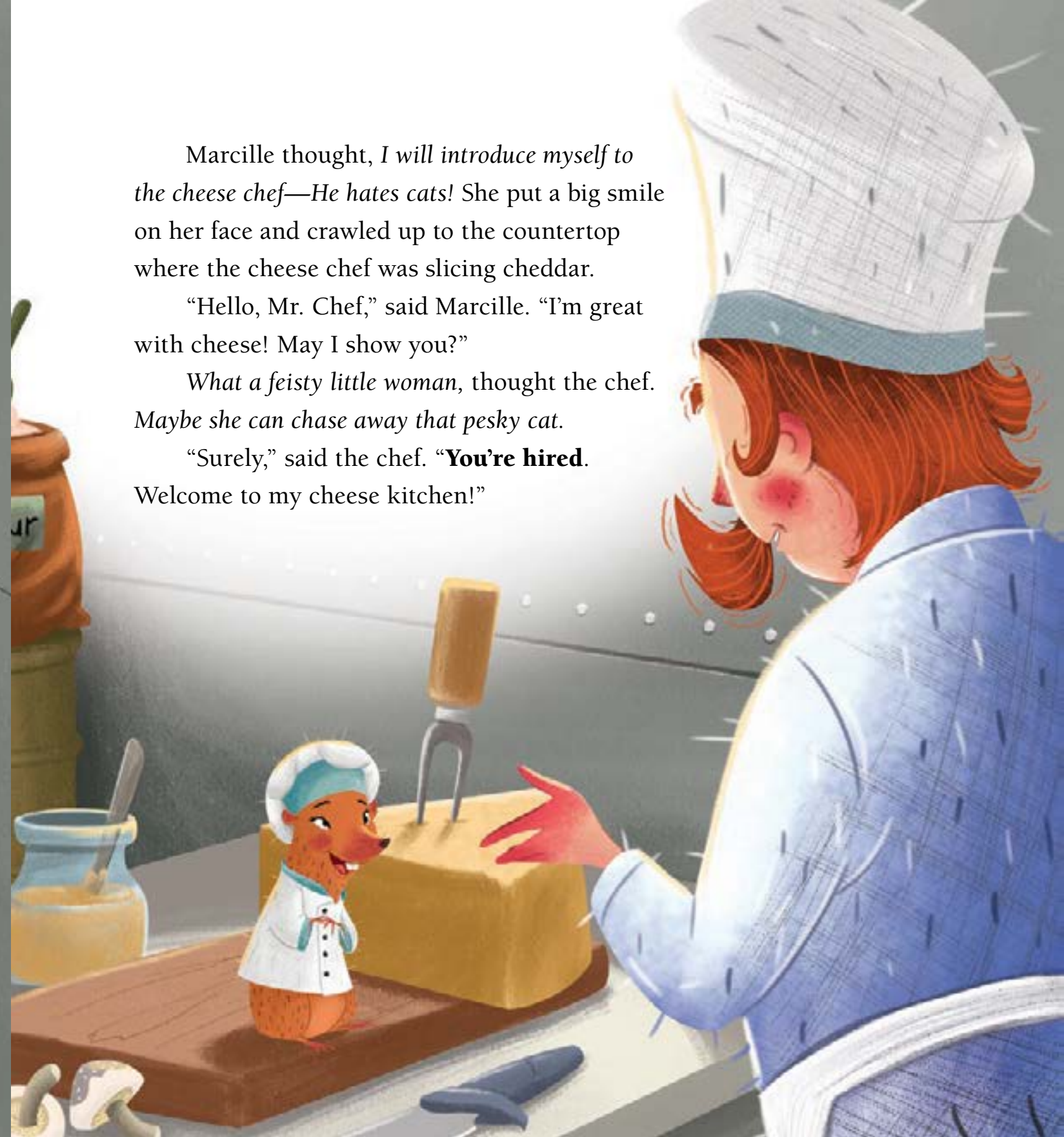
sprang away jumped back
came rushing poured
bounding sprinting

Marcille thought, *I will introduce myself to the cheese chef—He hates cats!* She put a big smile on her face and crawled up to the countertop where the cheese chef was slicing cheddar.

"Hello, Mr. Chef," said Marcille. "I'm great with cheese! May I show you?"

What a feisty little woman, thought the chef. *Maybe she can chase away that pesky cat.*

"Surely," said the chef. "**You're hired.** Welcome to my cheese kitchen!"



You're hired You have the job

► **Before You Continue**

1. **Confirm Prediction** What does Cleo do? Was your prediction correct?
2. **Make Connections** How would you feel if you were Cleo?

► Predict

What will happen to Marcille?

Marcille helped the cheese chef chop cheddar all day. But at night when the chef left, she feasted on the cheese. Meanwhile, Cleo the Cat dreamed of mouse stew **garnished** with cheese.

Marcille was **beaming**. *I get to eat cheese all day long! I will work for the cheese chef for **the rest of my life**! And **no cat in sight**!*

Soon, however, the chef counted his chunks of cheddar and found that some were missing.



garnished decorated
beaming smiling brightly
the rest of my life forever
no cat in sight the cat is not here to stop me

I'll bet that pesky cat is stealing my cheese, thought the cheese chef. He **came up with** a plan to catch the thief.

From the dessert chef, he borrowed some dough and molasses. The cheese chef formed a cat **decoy** to **prop up** on the counter. He poured the bottle of sticky molasses all over the decoy and then went to join his friends for dinner.



came up with thought of
decoy fake
prop up stand

Marcille awoke **hungry as a bear** before the sun rose. She crept into the kitchen for a cheddar **appetizer** and saw the decoy. She gasped, “Oh my! Do you, too, work for the cheese chef?”

The decoy, who looked a lot like a big, fat, funny **feline**, said nothing. Marcille slowly decided to shake the cat’s paw. Alas! Her own paw stuck to it and made her sleeve sticky!



hungry as a bear very hungry
appetizer a small dish eaten before the main meal
feline cat



Marcille panicked. *How will I get loose?* she thought. She tried to push away with her other paw but that one stuck too!

The decoy **remained silent**. When Marcille tried to kick with her feet, they both stuck like glue. “Help! Help!” she screamed, and the cheese chef ran into the kitchen just in time to see Marcille’s hat fall off her head.

remained silent stayed quiet

► Before You Continue

1. **Confirm Prediction** Was your prediction correct about what happens to Marcille? Explain.
2. **Make Connections** Does Marcille remind you of anyone you know? Explain.

► Predict

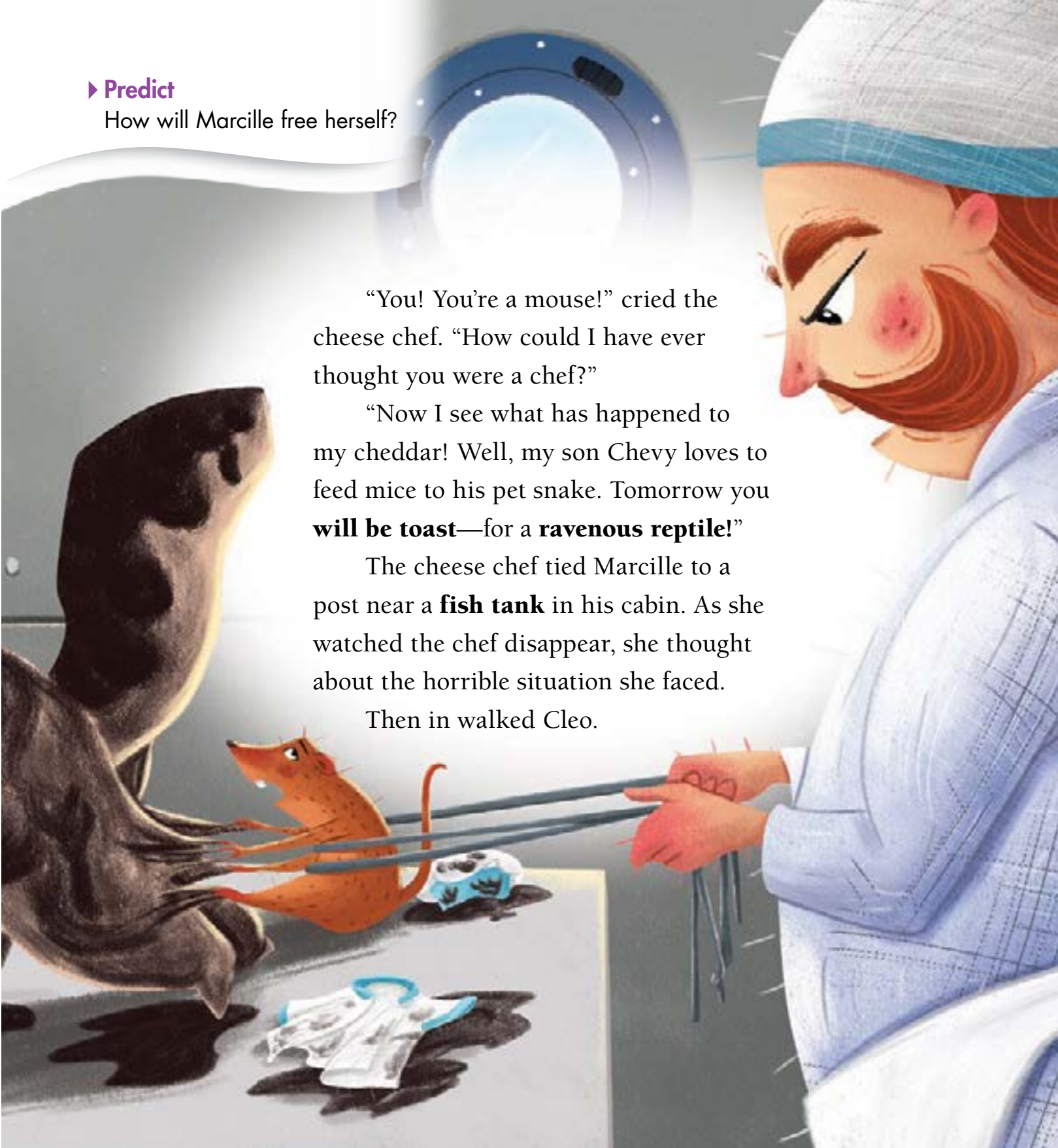
How will Marcille free herself?

“You! You’re a mouse!” cried the cheese chef. “How could I have ever thought you were a chef?”

“Now I see what has happened to my cheddar! Well, my son Chevy loves to feed mice to his pet snake. Tomorrow you **will be toast**—for a **ravenous reptile**!”

The cheese chef tied Marcille to a post near a **fish tank** in his cabin. As she watched the chef disappear, she thought about the horrible situation she faced.

Then in walked Cleo.



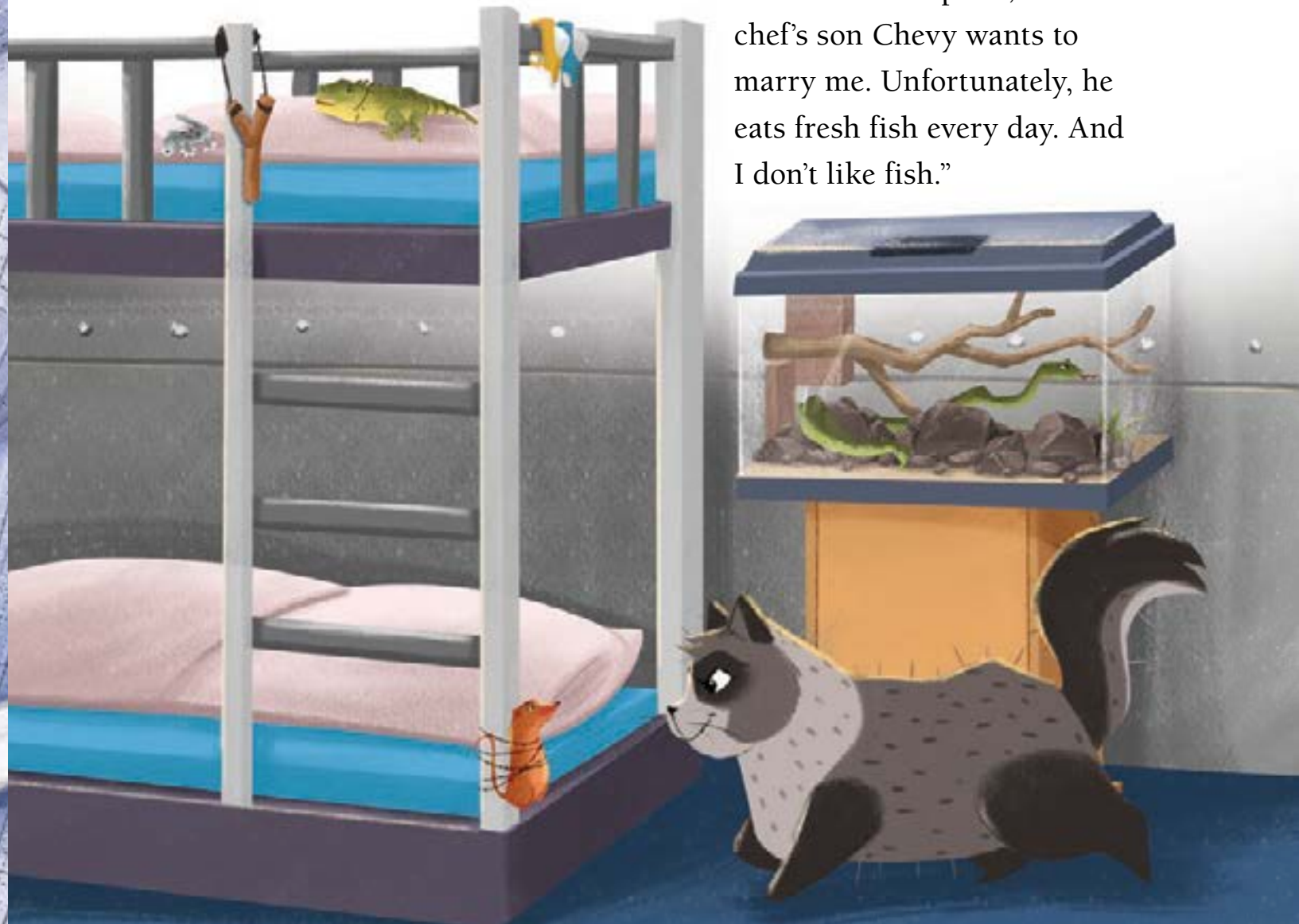
will be toast will be fed to
ravenous reptile hungry
snake
fish tank container that
holds fish

“I had planned to go fishing for my midnight snack,” laughed Cleo, “but my meal is tied up right here in front of me!” Cleo’s teeth **glistened** and she asked Marcille why she was tied to the post.

“Cleo!” cried Marcille, coming up with yet another emergency plan. “It’s all because of, um, well—boys and fresh fish!”

Cleo **perked up her ears**. “My favorite subjects!”

Marcille replied, “The chef’s son Chevy wants to marry me. Unfortunately, he eats fresh fish every day. And I don’t like fish.”

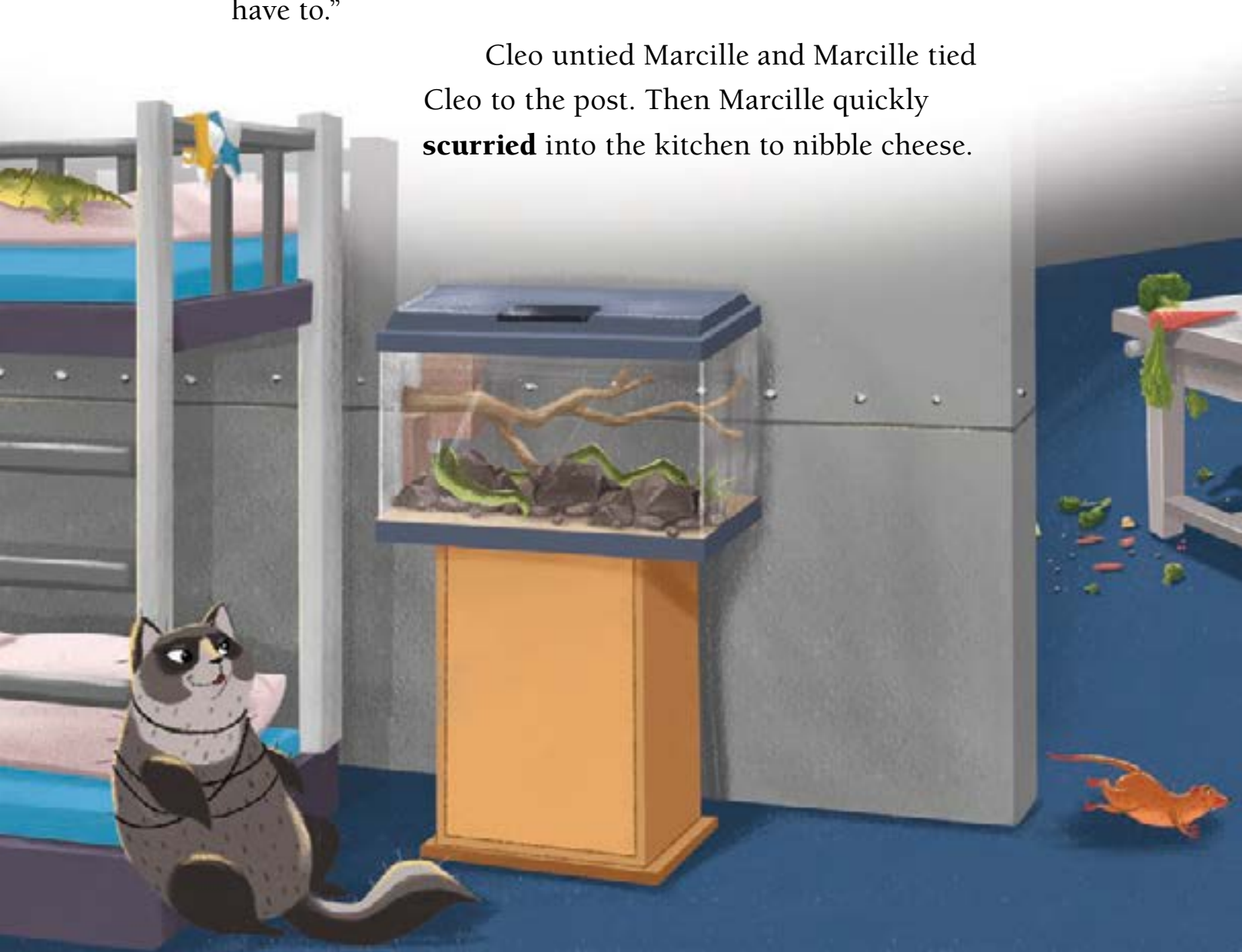


glistened shined
perked up her ears became interested

“They’ve tied me up until I promise to marry Chevy and eat fish every day. Yuck!”

Cleo licked her lips and said, “**Sweet Marcy**, you must suffer no longer. **Count on me** to take your place. I will marry Chevy and eat those horrible fish so you don’t have to.”

Cleo untied Marcille and Marcille tied Cleo to the post. Then Marcille quickly **scurried** into the kitchen to nibble cheese.



Sweet Marcy Dear Marcille
Count on me Depend on me
scurried ran fast

The cheese chef returned to untie the mouse and serve her to his son’s snake for breakfast. **His eyes opened wide** when he saw the cat tied to the post.

The cheese chef thought that the mouse had **assumed a disguise** as a cat. He hated cats, so he picked up a stick and raised it over Cleo's head.

“Wait!” begged Cleo. “I will eat your fish **daily**, and I’ll even marry your son, Chevy.”

“Excuse me?” asked the **stunned** cheese chef.

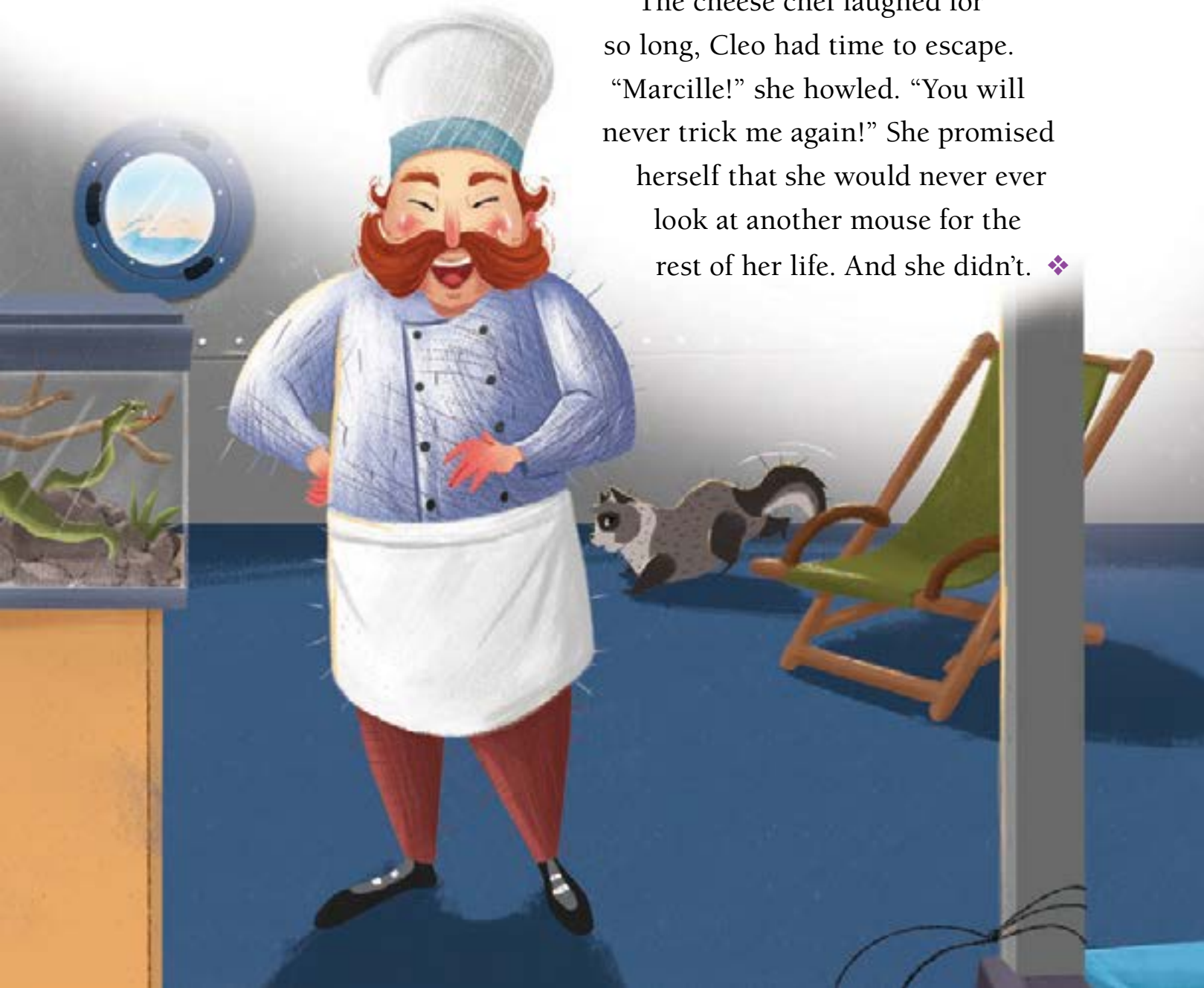


His eyes opened wide He was very surprised
assumed a disguise changed her appearance to look like
daily every day
stunned shocked

Cleo told the cheese chef everything that Marcille had told her about marrying Chevy and eating fresh fish.

“What a foolish cat you are to have believed such silliness!” The cheese chef **laughed until tears ran down his cheeks**.

The cheese chef laughed for so long, Cleo had time to escape. “Marcille!” she howled. “You will never trick me again!” She promised herself that she would never ever look at another mouse for the rest of her life. And she didn’t. ❖



laughed until tears ran down his cheeks he laughed so hard he cried

► Before You Continue

1. **Confirm Prediction** How does Marcille free herself? Was your prediction correct? Explain.
2. **Character** Why is the cheese chef laughing?

Meet The Author

ROBYN MONTANA TURNER

When Robyn Montana Turner was in elementary school, one of her favorite days of the year was April Fools’ Day because she and her friends liked to play tricks on each other. Is it any surprise, then, that this trickster story was especially fun for her to write? Marcille the Mouse’s capers as she tricks Cleo the Cat may remind you of a trickster moment you have shared with your friends.



Writing Tip

Find places in the story where the author gives human qualities to the animals. Then write a few sentences of your own. Describe what your favorite animal would say and do if it was a character in a story.

Talk About It

1. What tricks do the characters play in this **trickster tale**?

One trick that Marcille plays is _____.

Another trick that Marcille plays is _____.

One trick that the chef plays is _____.

2. Who do you think is smarter, Cleo or the chef? **Express** your **ideas** about this.


I think _____ is smarter because _____.

3. Describe the relationship between Marcille and Cleo.
How do these characters interact with each other?

Write About It

What **traits** do you most admire in Marcille? Why?

Write an e-mail to Marcille to tell her. Use **Key Words**.



Marcille's traits

To: Marcille@ngreach.com

From: Ileana@ngreach.com

Subject: Marcille's traits

Hi Marcille,

You have some great traits, like _____ and _____. I like these things about you because _____.

Key Words

adaptation	prey
behavior	response
characteristic	strategy
defend	survival
predator	trait

Analyze Characters

Make a character chart for "Kitchen Caper."

Character Chart

Character	What the Character Does	What the Character Says	What It Shows
Marcille	sees Cleo the cat	"The ocean will burst through this wall!"	
Cleo			

In this column, name each character.

Write important things that the character does.

Write important things that the character says.

Explain what the clues tell you about the character.

Now use your chart as you analyze the characters in the story. Work with a partner. Use as many **Key Words** as you can.

Marcille is _____.
I know because _____.

Fluency

Practice reading with expression. Rate your reading.

Talk Together

Just how smart are the animals in "Kitchen Caper?" Choose one character and use **Key Words** to describe to a partner how the character is or isn't smart.

Homophones

Homophones are words that sound the same but have different spellings and meanings. When reading, you can use context clues to decide which meaning fits the word. When writing, choose the correct spelling to match the meaning of the word.

Tale and **tail** are homophones. Read these examples.



She read us a **ta**le from long ago that is set in China.

Meaning: a story



The feather is from a peacock's **ta**il.

Meaning: the part that sticks out at the back of an animal's body

Try It Together

Read each sentence. Choose the pair of words that makes the sentence correct.

1. Please _____ a tale about how _____ got its spots.

- A write, dear
- B right, deer
- C right, dear
- D write, deer

2. Did you _____ the _____ in the woods last night?

- A here, bare
- B hear, bear
- C here, bear
- D hear, bare

Making Connections You read about a mouse who outwits a cat. Now read another trickster tale and compare **survival** skills.

Genre **Trickster tales** often reflect the culture or place they come from.

Mouse Deer and Farmer

A Trickster Tale from Southeast Asia

adapted from a story told by Aaron Shepard • illustrations by Meilo So

Mouse Deer loved to eat the fruits, roots, and **shoots** of the forest, but he loved the vegetables in Farmer's garden even more. One day, he stepped into the garden and sniffed a **juicy cucumber**.

shoots young, soft plants
juicy cucumber tasty green vegetable ▶



Before You Continue

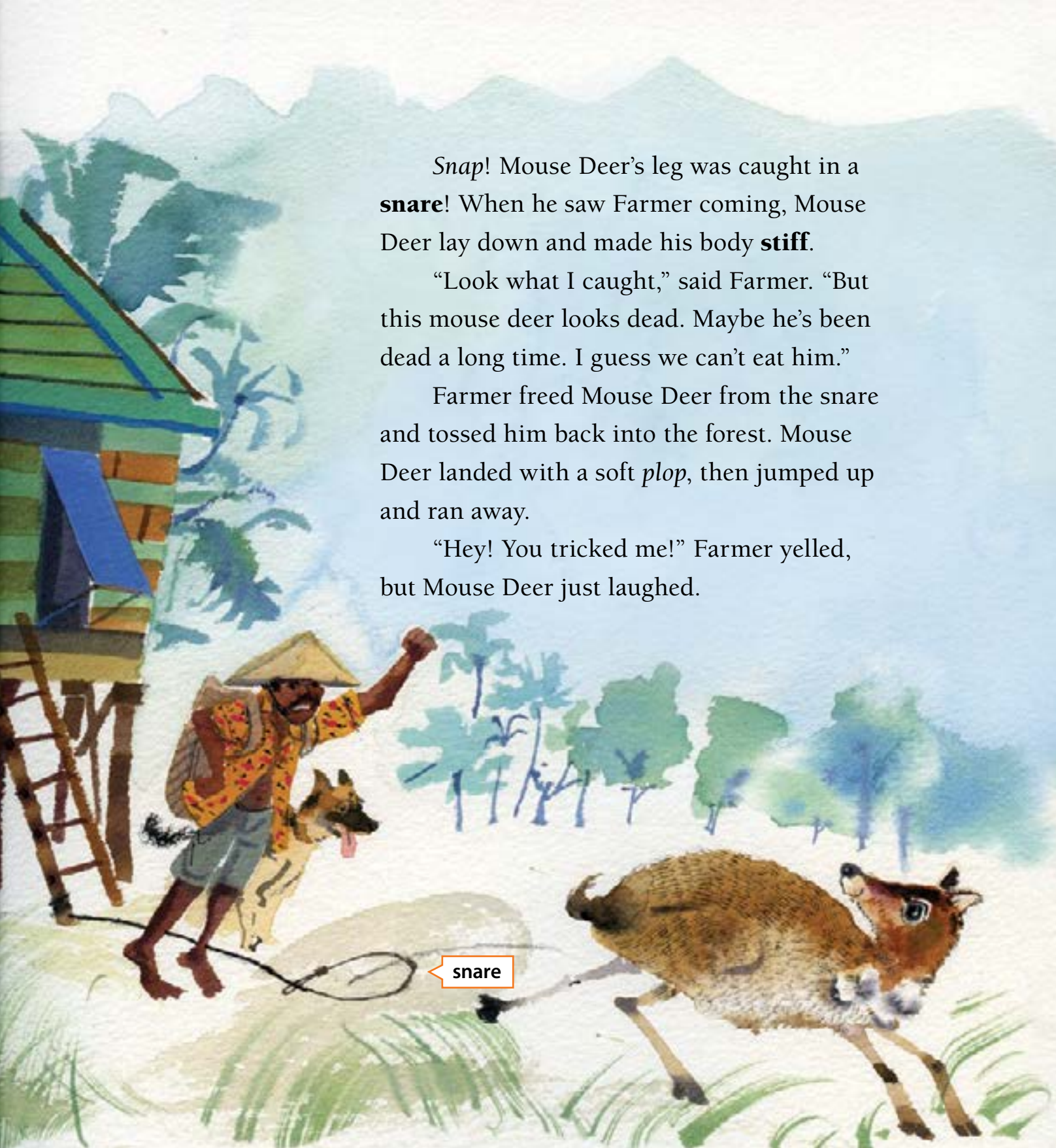
- Character's Motive** Why does Mouse Deer step into the vegetable garden?
- Setting** Describe Farmer's garden. Use the pictures and text to help you.

Snap! Mouse Deer's leg was caught in a **snare**! When he saw Farmer coming, Mouse Deer lay down and made his body **stiff**.

"Look what I caught," said Farmer. "But this mouse deer looks dead. Maybe he's been dead a long time. I guess we can't eat him."

Farmer freed Mouse Deer from the snare and tossed him back into the forest. Mouse Deer landed with a soft *plop*, then jumped up and ran away.

"Hey! You tricked me!" Farmer yelled, but Mouse Deer just laughed.



snare

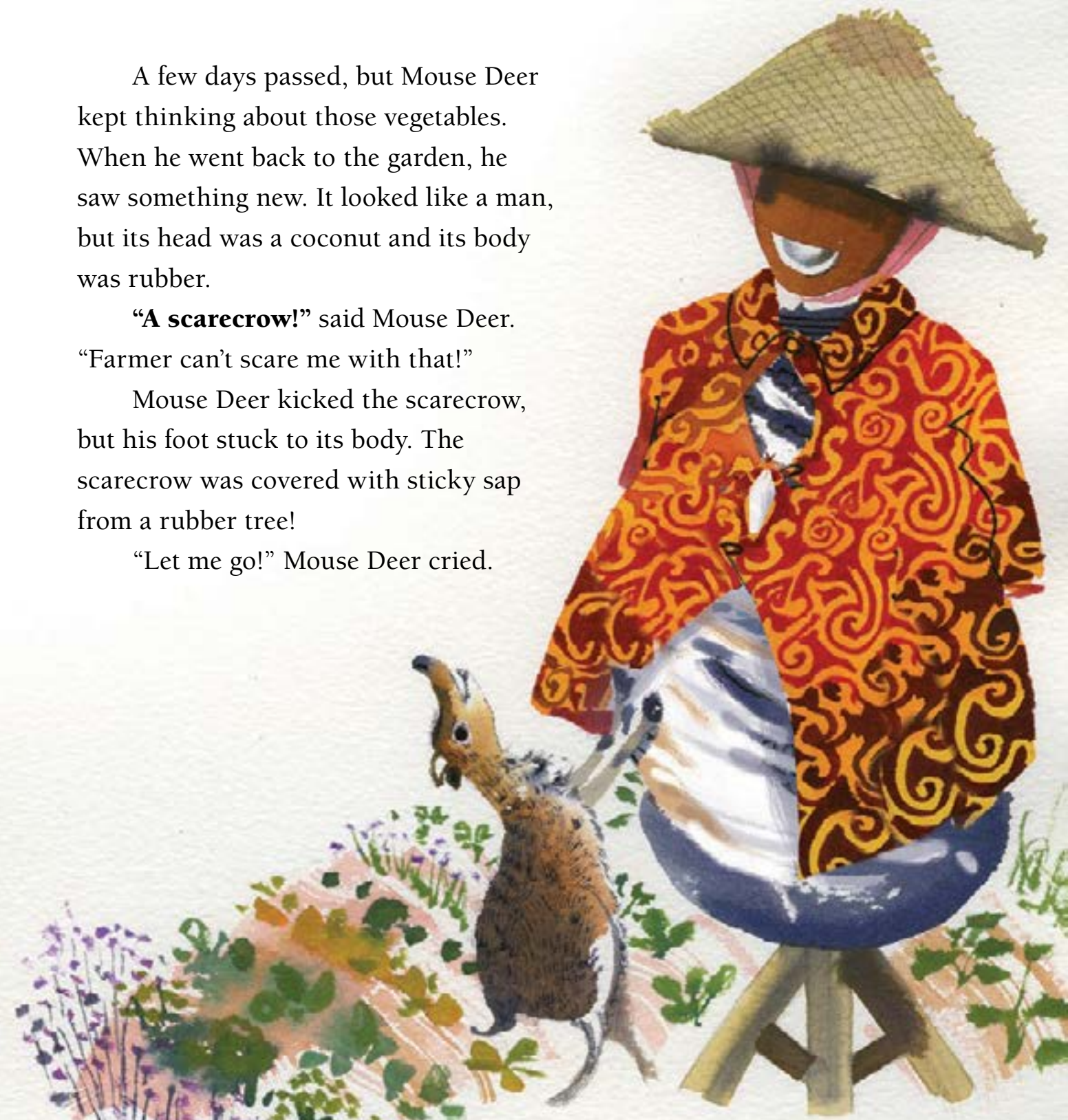
snare trap
stiff not move

A few days passed, but Mouse Deer kept thinking about those vegetables. When he went back to the garden, he saw something new. It looked like a man, but its head was a coconut and its body was rubber.

"**A scarecrow!**" said Mouse Deer. "Farmer can't scare me with that!"

Mouse Deer kicked the scarecrow, but his foot stuck to its body. The scarecrow was covered with sticky sap from a rubber tree!

"Let me go!" Mouse Deer cried.



"**A scarecrow!**" That isn't a real person!

► Before You Continue

1. **Character's Motive** Why does Farmer make a scarecrow?
2. **Make Connections** Compare how the farmer in this story and the cheese chef in "Kitchen Caper" outsmart the main characters.



Then Farmer appeared. “Welcome back,” he said. Then he pulled Mouse Deer off the scarecrow and locked him in a chicken coop.

“You’ll stay here tonight,” said Farmer, “and tomorrow you’ll be our dinner.”

That night Mouse Deer couldn’t sleep. When the sun **rose**, he just lay there sadly. Then he heard a voice.

“So Farmer finally caught you,” said Farmer’s dog.

Mouse Deer thought fast. “What do you mean, Dog? Farmer didn’t catch me.”

rose came up in the morning



“Then why are you in the coop?” asked Dog.

“Because there aren’t enough beds in the house. You see, tomorrow Farmer is holding a **feast**, and I’m the **guest of honor**.”

“That’s not fair!” said Dog. “I’ve been his loyal friend for years, so I should be the guest of honor!”

“You’re right. Why don’t you take my place?”

So Dog lifted the latch and opened the door. Mouse Deer ran toward the forest, laughing.

“Farmer will have to find a different dinner now, because he can’t catch me!” ♦



feast big, special meal

guest of honor most important guest there

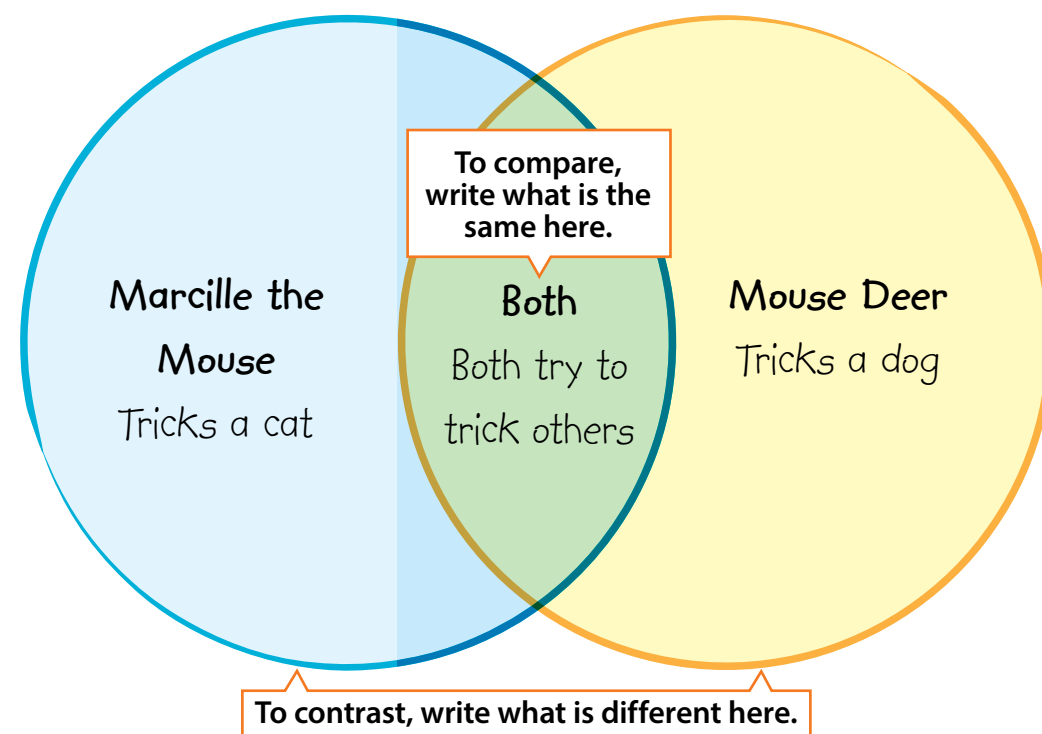
► Before You Continue

1. **Make Connections** How is Mouse Deer like Marcille?
2. **Connect Characters** Why does Dog think he should be the guest of honor?

Compare Characters' Adventures

A trickster tale tells the adventures of the main character. How are the adventures of Marcille and Mouse Deer similar? How are they different? Work with a partner to complete the Venn diagram.

Venn Diagram



Talk Together

Just how smart are Marcille and Mouse Deer? Think about the two trickster tales. Use **Key Words** to talk about your ideas.

Key Words

adaptation	prey
behavior	response
characteristic	strategy
defend	survival
predator	trait

Grammar and Spelling

Kinds of Sentences

There are four different kinds of sentences.

Grammar Rules Kinds of Sentences

• A statement tells something.	I am hungry.
• An exclamation shows strong feeling.	He can't wait to eat!
• A command tells you to do something.	Stop eating that.
• A question asks something. You can answer some questions with yes or no. Other questions ask for more information. They begin with question words.	Aren't you hungry? Doesn't soup smell good? When? What? Why? Who? Where? How?

Read Different Kinds of Sentences

Read these sentences from "Kitchen Caper." Find a question. What information does it ask for?

Marcille panicked. *How will I get loose?* she thought.
She tried to push away with her other paw but that one stuck too!

Write Different Kinds of Sentences

What would you say to Marcille if you could meet her? Write a short paragraph. Include at least one question. Read your paragraph to a partner.

Engage in Conversation

Listen to the dialogue between Abu, Kirsten, and James. Then use **Language Frames** to have a conversation about pets.

Language Frames

- I think _____.
- You said _____.

Dialogue

1.

I think dogs are smarter than cats.

I don't agree. My cat is really smart.

I taught my dog to sit and roll over.

2.

Sit!

3.

Roll over!

4.

You said you taught her to sit and roll over.

I did. But she hasn't learned the difference yet.

Science Vocabulary

Key Words

Look at the photos. Use **Key Words** and other words to talk about dog training.

Key Words

- command
- imitate
- memory
- pattern
- skill
- tool



A dog uses its **memory** to learn new **skills**.



A whistle is a special **tool** that a trainer uses to call a dog.



A dog jumps over bars of different heights. The dog learns how to follow the **pattern**.



Dogs learn to follow **commands**. Some commands are spoken, and others are signals. Some dogs learn tricks. In some tricks, the dog seems to **imitate**, or copy, its trainer's actions.

Talk Together

Just how smart are dogs? Try to use **Language Frames** from page 106 and **Key Words** to engage in conversation with a partner.

Main Idea and Details

When you want to tell about something, you may start with the **main idea**, or the most important idea. Then you give **details** to share more information.

Look at the pictures of James teaching his dog a new trick.



I taught my dog how to shake hands. She is two years old.



We practiced every day for three weeks. At first, I took her paw.



Later, she learned to give me her paw. I gave her a treat when she got it right.

Map and Talk

You can use a main idea diagram to show important ideas and details. Here's how you make one.

Main Idea Diagram

Main Idea: James taught his dog how to shake hands.

Detail: They practiced for weeks.

Detail: He gave her a treat when she got it right.

Write the main idea here.

Write details here. Include only the details that support the main idea.

Talk Together

Think of details that support this main idea: Dogs can follow many different commands. Make a main idea diagram. Tell your partner about it.

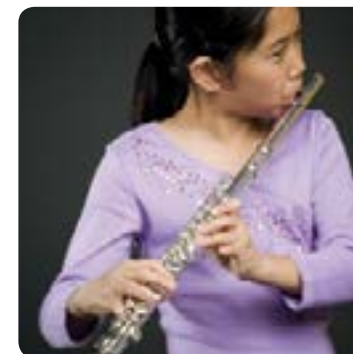
Academic Vocabulary

More Key Words

Use these words to talk about "Animal Smarts" and "The Clever Chimps of Fongoli."

ability

noun



An **ability** is a skill. This girl has the **ability** to play the flute.

communication

noun



Communication is the sharing of information.

inherit

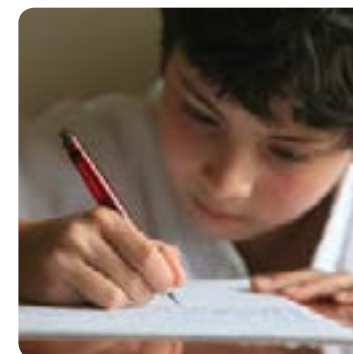
verb



To **inherit** means to get things, usually from parents. A skunk **inherits** its stripes.

language

noun



Language is a way of sharing ideas. Writing is a form of **language**.

learn

verb

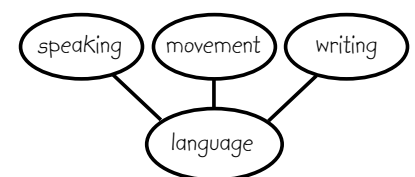


To **learn** is to gain new skills and information. This calf must **learn** to walk.

Talk Together

Work with a partner. Make a Word Web for each **Key Word**. Write the **Key Word** in the center. Then write examples for that word.

Word Web of Examples



Learn to Make Connections

Look at the picture. Does it remind you of something you have seen or read about? As you think of this, you **make a connection**.



You **make connections** when you read, too.

How to Make Connections



1. Think about what the text is about.

It's about ____.



2. As you read, think about what you know that connects to the topic.

____ reminds me of ____.



3. Decide how the connection helps you understand the text.

Now I understand ____.

Language Frames

It's about ____.

____ reminds me of ____.

Now I understand ____.

Talk Together

Read James's report. Read the sample connection. Then use **Language Frames** as you make connections of your own. Tell a partner about them.

Report

Train Your Dog to Be Terrific

by James Harvin

Do you have an uncontrollable dog? Don't give up! Your dog isn't really bad. It just needs to be trained. Every dog has the **ability** to **learn**. Training a dog isn't hard, but you need to follow some rules.

Here's the first rule: Use clear **communication**. Dogs can't speak your **language**. But they can understand **commands**. Use the same words every time you train your dog. Dogs will learn the sounds of the words. To teach your dog to fetch, say "Fetch" every time. If you sometimes say, "Get it" and sometimes say "Bring me the ball," your dog will get confused.

Here's the second rule: Be patient. Dog training takes time. Your dog might take a long time to learn a new **skill**. Remember, your dog did not **inherit** any tricks from its parents. You will need to repeat things over and over.

Training your dog can be fun. Your dog will enjoy it, too. But the best part is the result. Your uncontrollable dog will be terrific!

Sample Connection

"It's about training dogs to have better **behavior**."

The report reminds me of an article I read about pets.

Now I understand you can help a dog with training."



◀ = A good place to make a connection

Read a Science Article

Genre

A **science article** is nonfiction. It gives facts about a science topic such as animal behavior.

Text Features

Look at **photographs** and **captions** in science articles. They help you understand the text better.

photograph

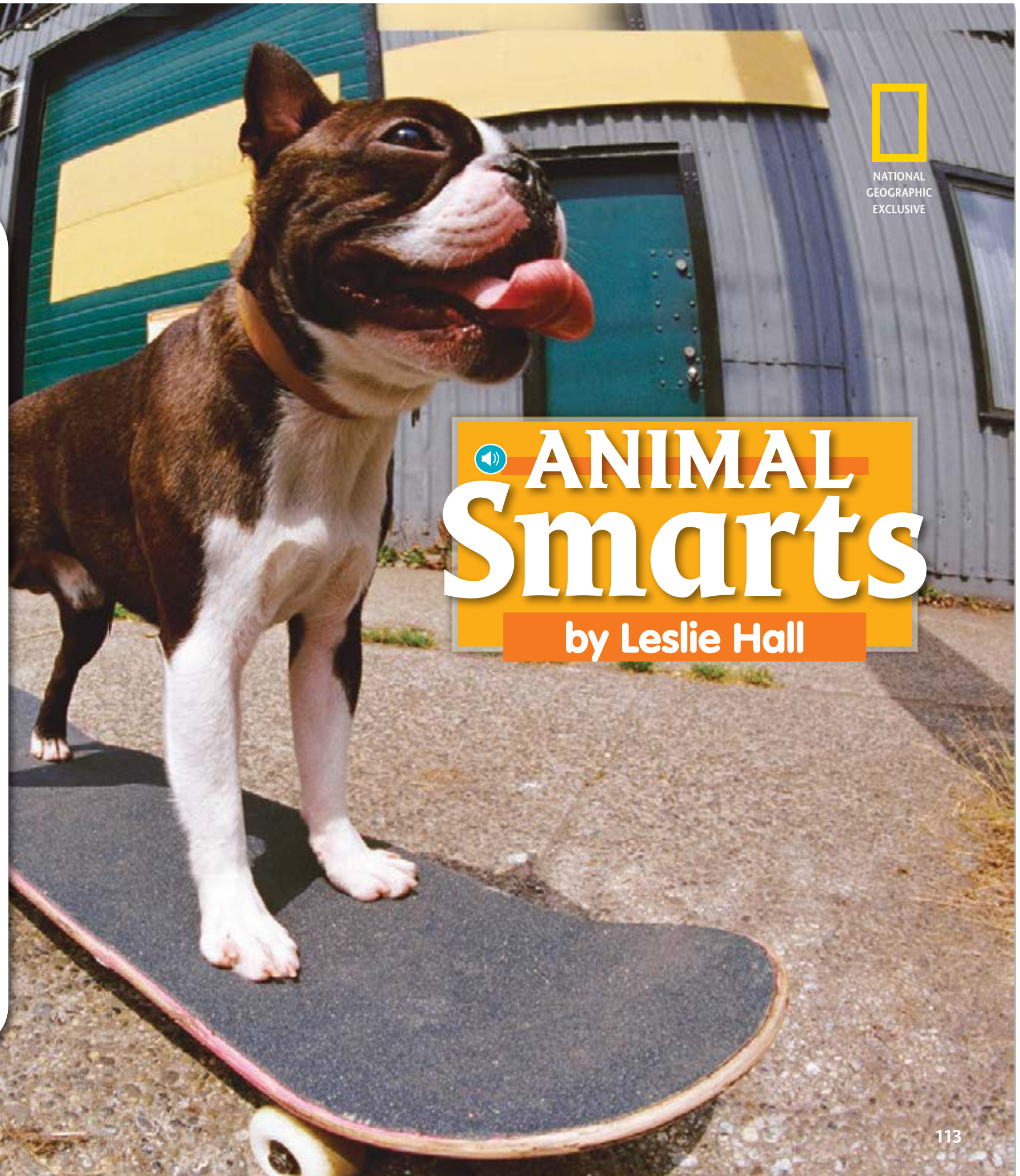


◀ Koko uses sign language to communicate. Here, she uses the sign for eat.

caption

ANIMAL Smarts

by Leslie Hall



► Set a Purpose

Find out how animals demonstrate their intelligence.

What can animals do? From sharing information to using **tools** and even playing tricks on people, **it turns out** that animals are smarter than we thought.

Cool Tools

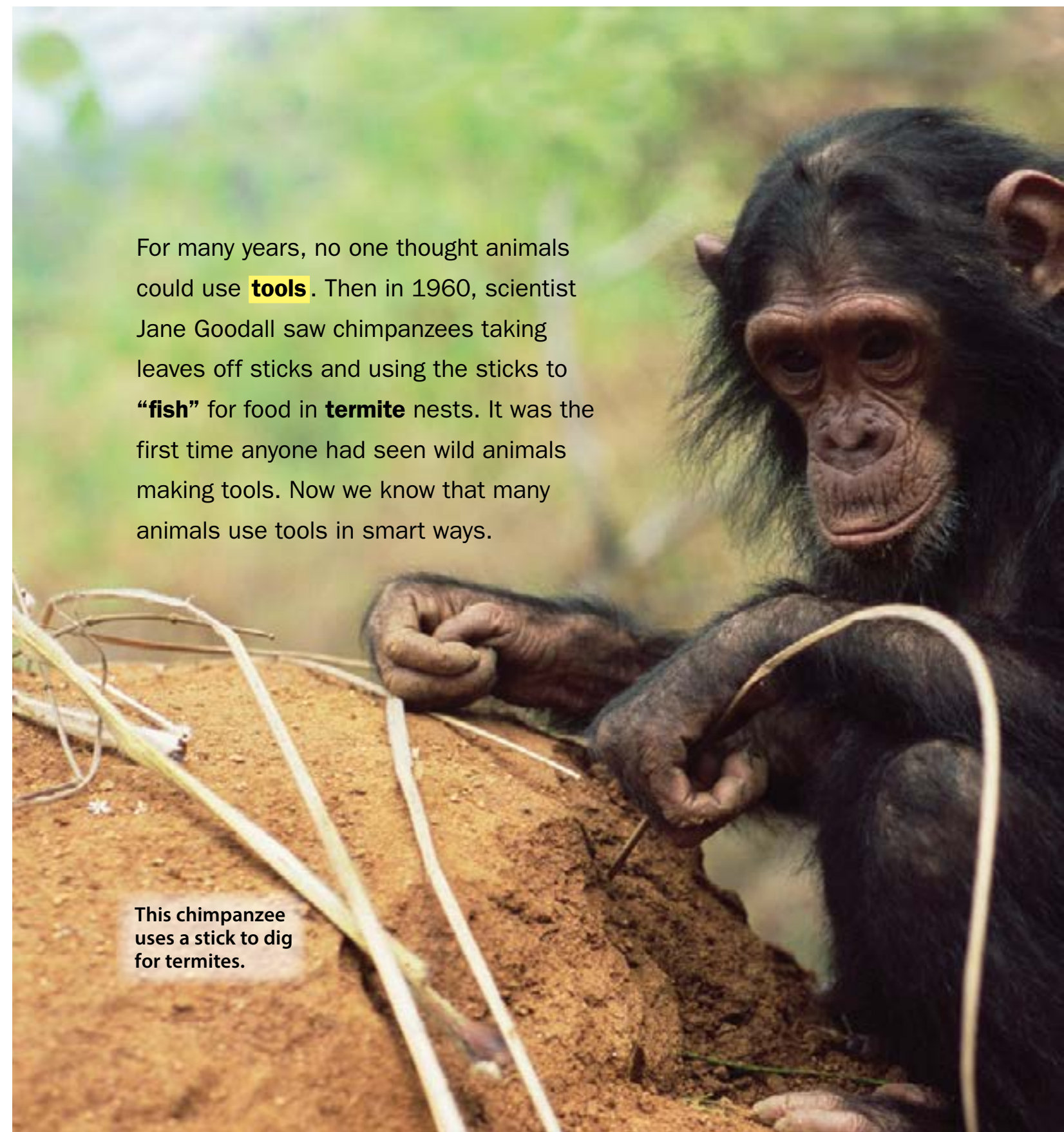
Using tools **takes smarts**. When you need to **sort out** a problem, you have to figure out why it is a problem.

Then you find or make a tool to help you solve it. Think of the tools you use every day: a fork, a pair of scissors, even a cell phone.

A fork is a useful tool. You can use it in many different ways. ►



it turns out we know
takes smarts requires intelligence
sort out solve



This chimpanzee uses a stick to dig for termites.

“fish” dig; hunt
termite insect ►



► Before You Continue

1. **Main Idea** What was Jane Goodall’s discovery?
2. **Make Connections** Compare how you use a fork to how chimpanzees use sticks.

How Animals Learn

Animals already know how to do some things when they are born. For example, a baby orangutan can **grasp** a leaf with its hands. It doesn't need to **learn** how. It **inherits** the **ability**.

Orangutans also learn things from their parents. A young orangutan may see its mother use a leaf as a napkin or a rain hat. It may then copy her actions. The ability to learn shows intelligence.

▼ Young orangutans sometimes copy the actions of their parents.



▼ Orangutans may learn from their parents how to use a leaf as a hat.



◀ **grasp** hold

Memory and Smarts

To remember something also takes smarts. Female poison dart frogs have **incredible memories**. After a frog's eggs hatch, the female carries each tadpole to its own leafy **spot** somewhere in the rainforest.

She returns every few days to bring food to each tadpole. That means the frog has to remember **the location of** as many as 30 tiny tadpoles!

▼ **tadpole**



A female poison dart frog can remember the location of many tadpoles. ▼



incredible very good

spot place

the location of where she put

► Before You Continue

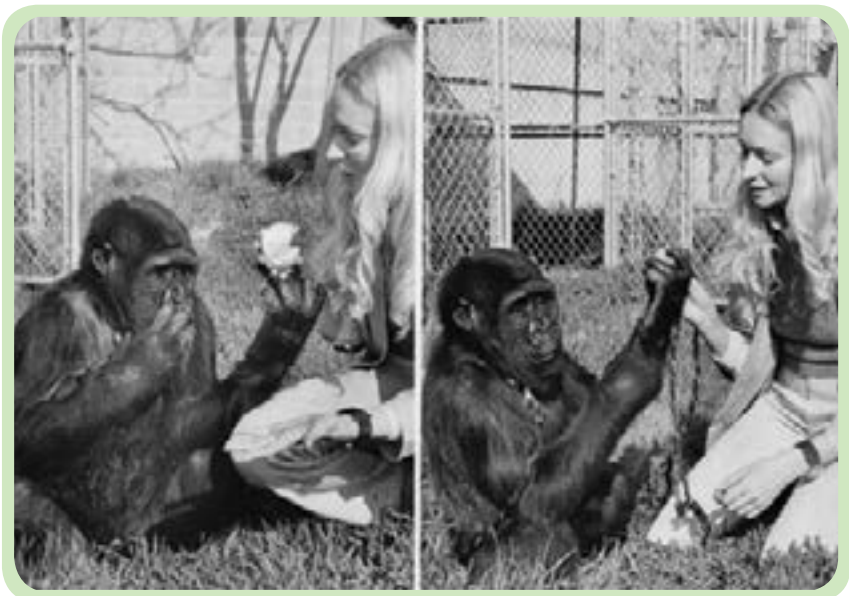
1. **Use Text Features** How do the two orangutan photos show **learned** behavior? Explain.
2. **Details** How does the poison dart frog show intelligence?

A Way with Words

It takes brains to talk. Scientists have found ways to talk with some of Earth’s smartest animals. Koko the gorilla was one of the first animals to **learn** to communicate with human beings.

Scientists taught Koko sign **language**. That is a way to talk with your hands. When people talk, Koko answers in sign language. She can **sign** more than 1,000 words.

Sometimes Koko makes up a new sign. This tells us that Koko can **think on her own**. It also shows that she wants to communicate.



◀ Koko uses sign language to communicate. Here, she uses the sign for *eat*.

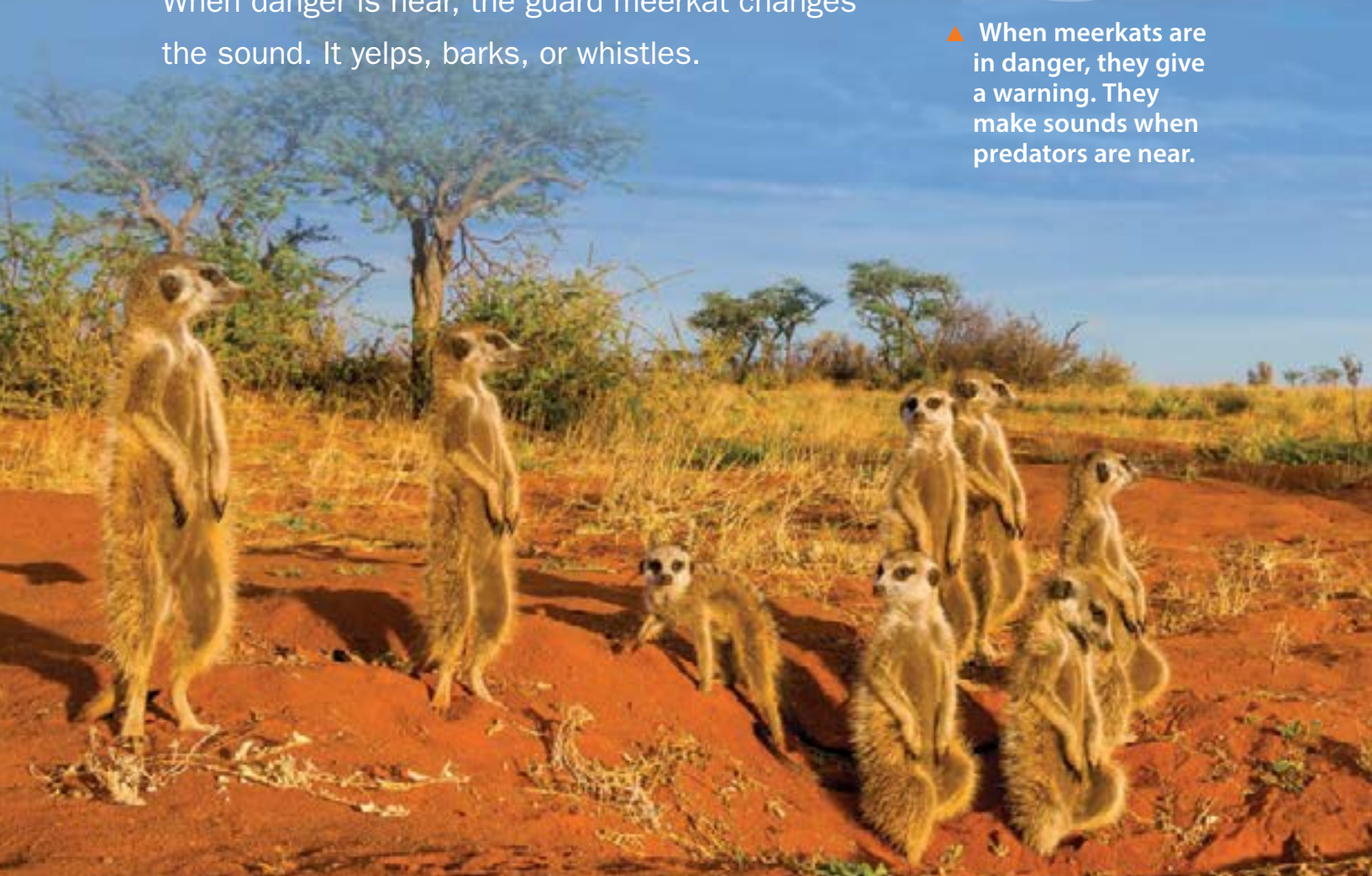
sign use sign **language** to say
think on her own create new signs by herself

Sound Signals

Meerkats don’t communicate with people. Yet they do communicate with each other. These **chattering** animals make sounds that mean different things. Meerkats live in groups. While the group looks for food, one meerkat **stands guard**. It makes little peeps to tell the others that everything is safe. When danger is near, the guard meerkat changes the sound. It yelps, barks, or whistles.



▲ When meerkats are in danger, they give a warning. They make sounds when predators are near.



chattering noisy
stands guard watches for danger

► Before You Continue

1. **Make Connections** Compare and contrast Koko with another animal you know or have read about. How does each one communicate?
2. **Details** How do meerkats communicate with each other?

Look and Fetch

What can a dog do? It can stay, sit, roll over, and maybe a few other things. A pet dog may seem pretty smart to its owner. Yet some dogs have shown amazing **skill** at understanding **language** and pictures.



▲ Many dogs can follow commands.

Betsy is a clever border collie. She understands 340 **spoken words**. Many dogs can follow **commands**, but Betsy **takes it a step further**. When someone shows her a picture of an object, she goes and **fetches** that object. Betsy can fetch hundreds of different things.



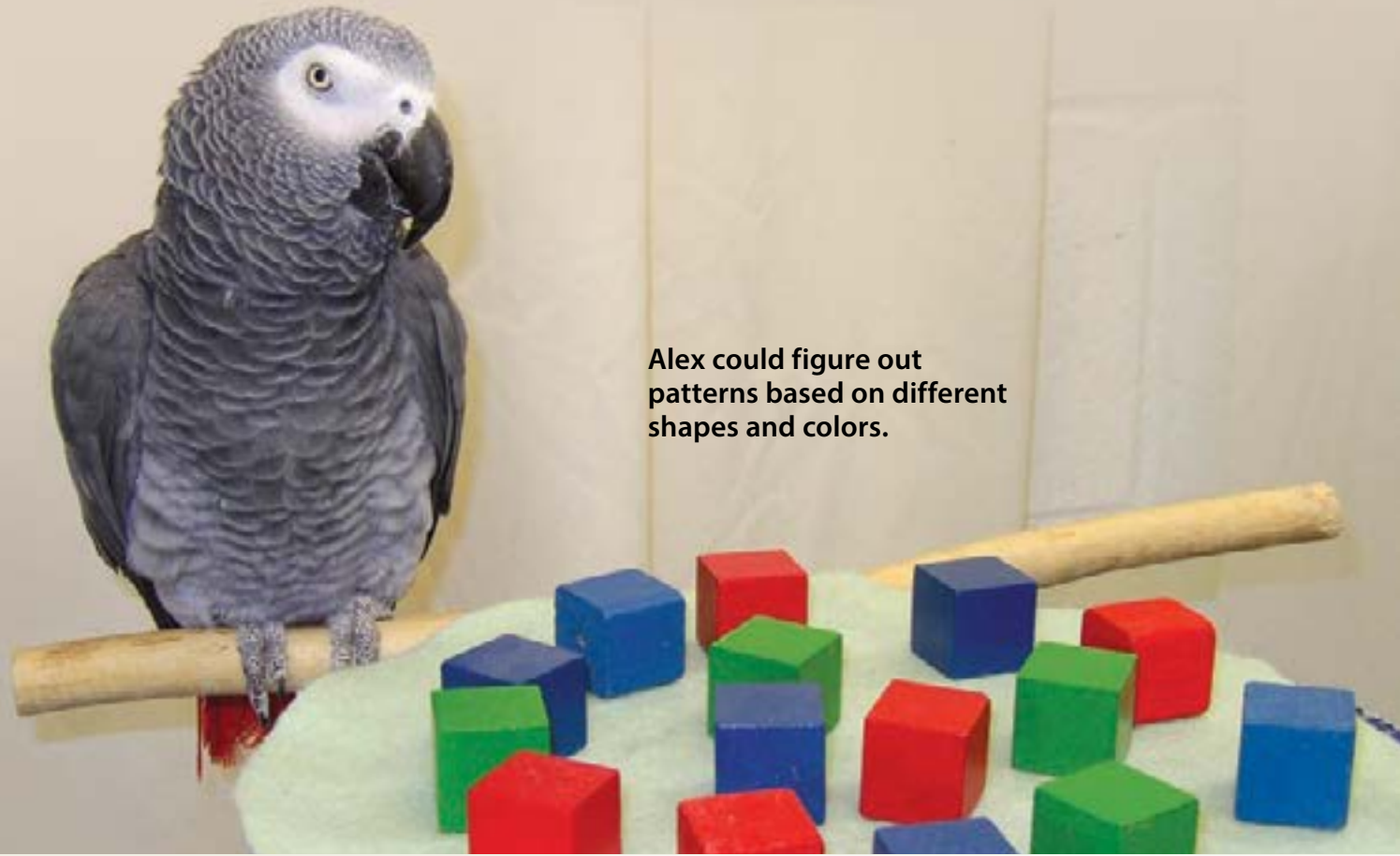
Betsy can understand hundreds of spoken words. ▶

spoken words words that people say to her
takes it a step further does more
fetches gets

A Brainy Bird

Do you think a bird can **recognize patterns**? An African gray parrot named Alex could. He amazed scientists by figuring out patterns and then talking about them.

A scientist showed Alex a green cup and a green key. Then she asked the parrot what was the same about the objects. Alex said, “Color.” Then the scientist asked what was different. Alex said, “Shape.” Now that’s a **brainy** bird!



Alex could figure out patterns based on different shapes and colors.

recognize find; notice
brainy smart

► Before You Continue

1. **Make Connections** Compare another animal you know to Betsy. How does each animal show its intelligence?
2. **Main Idea** How do Alex’s actions demonstrate intelligence?

Outsmarting Humans

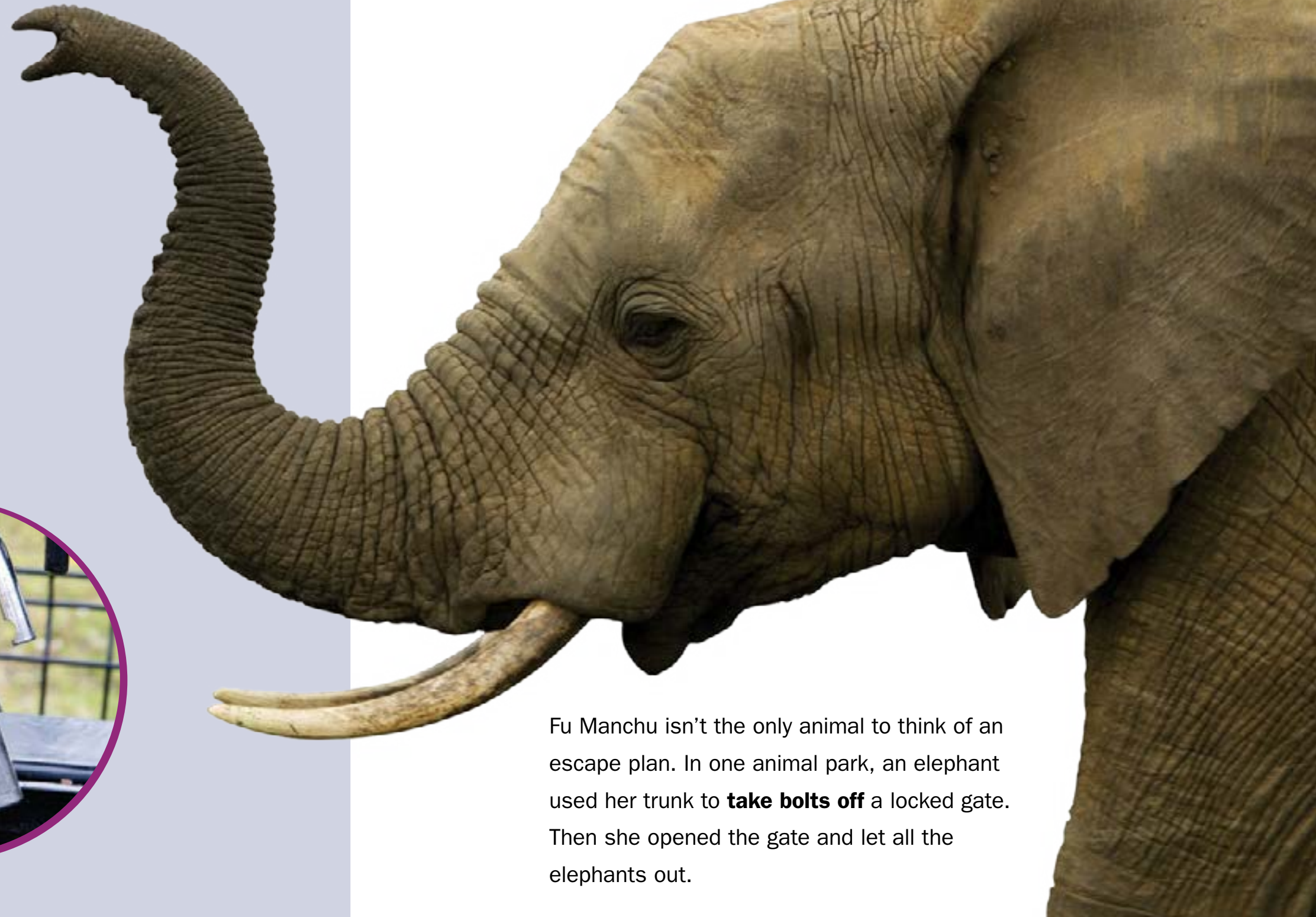
To play a trick on someone may take some intelligence, too. You have to guess how the person will act. Then you have to find a way to trick the person. Some animals have been terrific tricksters.

An orangutan named Fu Manchu tricked the **zookeepers** at the Omaha Zoo. He escaped from his home by tricking his zookeepers three times. First, he traded food with another orangutan for a piece of wire. Then he hid the wire in his mouth. Finally, he used the wire to **pick the lock** and set himself free!

An orangutan named Fu Manchu used a piece of wire to unlock his cage. ►



zookeepers people who work with animals
pick the lock unlock the door



Fu Manchu isn't the only animal to think of an escape plan. In one animal park, an elephant used her trunk to **take bolts off** a locked gate. Then she opened the gate and let all the elephants out.

take bolts off unlock

► Before You Continue

1. **Details** How did Fu Manchu outsmart zookeepers?
2. **Use Text Features** Look at the photo. Explain how an elephant might use its trunk to take a bolt off a locked gate.



Dolphins are smart and playful animals. They can also **learn** tricks.

Tricking the Trainers

A clever dolphin named Kelly knows how to get what she wants. Her trainers taught her to collect the trash that fell into her pool. When she gave it to a **keeper**, she got **a treat**. In this way, her pool stayed clean. Yet the tricky dolphin figured out how to trick her trainers.

Now when paper drops into her pool, she hides it. When the trainers come, she swims down and tears off a piece of the paper. She gives it to the trainers **in exchange for** a fish treat. Then she goes back and tears off another piece. She gets the same treat for small pieces as she gets for big pieces. So she tears off small pieces to make the paper last longer. That way, **the treats keep coming!**



keeper zookeeper; trainer

a treat food as a reward

in exchange for and gets

the treats keep coming she gets more treats

► Before You Continue

1. **Details** How does Kelly outsmart her trainers?
2. **Make Connections** Which of Kelly's actions are **learned** behaviors?

Learning About Animals

When scientists **observe** animals, they **learn** more about their behavior. They learn more about how the animals think and what they think about.

You may be amazed by the **memory** of a mother poison dart frog. You may be surprised that a parrot can talk about shapes, or that an elephant can plan a clever escape. Yet in the future, these **feats** may seem simple when we know even more about animals. Whether you **chat** with gorillas or **tidy** up with dolphins, it's clear that we have a lot more to learn about animals. ❖

Scientists learn about animals by observing their behavior. ►



observe study
feats actions
chat talk
tidy clean

► Before You Continue

1. **Main Idea** What do scientists **learn** by studying animal behavior?
2. **Use Text Features** Describe what is happening in the photo on pages 126–127. Use the caption to help you.

Talk About It

1. What facts did you **learn** from this science article?

I learned that _____. I also learned that _____.

2. Think of an animal you read about in this article. **Engage in conversation** with a partner about what you found out.

3. How is animal **communication** like human communication? How is it different?

Animals and humans both _____.
Some animals _____, but humans _____.

Key Words

ability	learn
command	memory
communication	pattern
inherit	skill
language	tool

Reread and Explain

Main Idea and Details

Make a main idea diagram for "Animal Smarts."

Main Idea Diagram

Main Idea: Animals are _____.	Write the main idea as a complete sentence. Add details that support the main idea.
Detail: _____	
Detail: _____	

Now use your diagram as you explain the ideas in "Animal Smarts" to a partner. Use as many **Key Words** as you can.

_____ is a smart animal.
It can _____.

Write About It

What are some amazing ways animals use **tools**? Make a list. Give examples from the article. Try to use **Key Words**.

Animals use tools to:

1.

2.



Fluency

Practice reading with intonation. Rate your reading.



Talk Together

Just how smart are chimpanzees, gorillas, meerkats, parrots, elephants, and dolphins? Choose one animal. Use **Key Words** to explain why you think that animal is so smart.

Use a Dictionary

A **dictionary** is a book with information about words. You might use a dictionary to find out the meaning of a word or to see how a word is spelled or pronounced. Look at these dictionary entries.



This shows how to say the word.

imitate /'imitet/ verb To copy someone or something

inherit /in'herit/ verb **1** To receive money or other property from a person who has died **2** To get a particular characteristic passed down from your parents *You inherit eye color from your parents.*

This word has two different meanings.

Try It Together

Read the dictionary entry. Then answer the questions.

train /trein/ noun **1** Railroad cars hooked together **2** A long piece of fabric behind a bride's dress verb **3** To teach a person or animal how to do something **4** to make a plant grow in a certain way

1. Which meaning fits this sentence? *Her white train was made of lace.*

- A meaning 1
- B meaning 2
- C meaning 3
- D meaning 4

2. Which meaning fits this sentence? *I want to train my cat to jump through a hoop.*

- A meaning 1
- B meaning 2
- C meaning 3
- D meaning 4



NATIONAL
GEOGRAPHIC
EXCLUSIVE



THE CLEVER CHIMPS OF Fongoli

by Elizabeth Sengel

Making Connections

Read this article to **learn** what one scientist discovered while studying chimpanzees.

Genre A **science article** may tell about a new discovery in the field of science.

It's hard to get a meal in Fongoli. The **harsh** landscape offers only **patches of greenery**. The sun burns like a 200-watt bulb. By eight o'clock in the morning, the rocky, treeless ground **bakes** in 90-degree heat.



▲ Chimps walk across dry ground in Fongoli.

harsh dry and hot

patches of greenery a few places with trees and plants

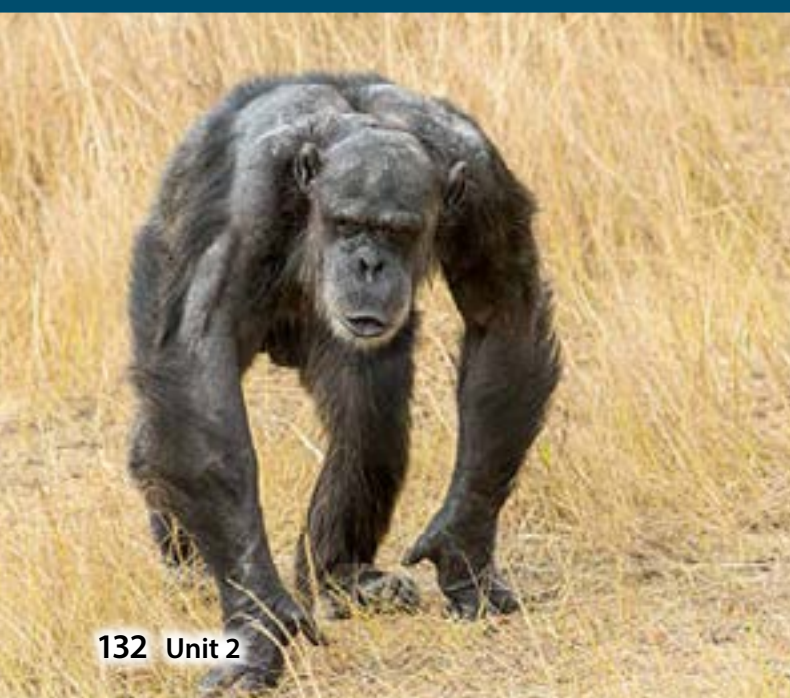
bakes gets really hot

Before You Continue

1. **Make Connections** What does Fongoli remind you of? Explain.
2. **Use Text Features** What can you tell about this article from the title, the photo, and the caption?



▼ Rainforest chimps live in trees.



Home on the Range

Fongoli is located in the African country of Senegal. It is the home of a community of savanna-woodland chimpanzees. These animals are different from rainforest chimps, which live among leafy trees. Fongoli chimps spend most of their lives on the ground. At night, they sleep in low trees that surround the open spaces. During the day, they **wander** across the **vast range** looking for food.

◀ In Fongoli, chimps live on the savanna, or dry grassland.

wander walk
vast range open land



▲ Jill Pruetz, an anthropologist at Iowa State University, studies the skull of a savanna-woodland chimp.

A Champion Chimp-Watcher

Jill Pruetz knows all about these chimps. She visits Fongoli often to study them. It's hot, **exhausting** work. Six days a week, she **rises at dawn** and steps out of her mud hut. She follows the chimps all day long, observing their behavior and **jotting down** notes. In 2007, Pruetz made big news in the scientific world. She reported something **astounding**. Some Fongoli chimps had invented a new way to find food!

exhausting tiring
rises at dawn wakes when the sun comes up
jotting down writing
astounding very surprising

► Before You Continue

1. **Compare/Contrast** What is the main difference between the Fongoli chimps and rainforest chimps?
2. **Make Connections** The author says Pruetz's work is "exhausting." What sounds exhausting about it?



▲ A chimp pushes a sharpened stick into a tree hole.



▲ Pruetz holds the sharp tool made by a Fongoli chimp.

Whittling Weapons

The clever chimps had figured out how to make a spear-like **tool**. First, they break a branch off a tree and rip away the leaves. Then they **sharpen** one end of the stick with their teeth. They use the spears to hunt bush babies. These are small animals that sleep in **hollow** tree trunks during the day. The chimps look for an opening in a hollow tree **limb**. Then they **jab** the weapon through the opening to try to kill their prey.



▲ A bush baby in a hollow tree trunk

sharpen make a point at
hollow holes in
limb branch
jab push

Getting Creative

In Fongoli, the chimps **compete** for limited amounts of food. When big males find food, they have very bad manners! Like greedy children, they **refuse to** share. Females and young males have to find their own food. Pruetz believes that this situation has forced them to become creative. That's what led to their **tool**-making.

Teva is a young chimp in Fongoli. Her mother is one of the best hunters. Will Teva's mother teach her how to make spears? "It will be interesting to see if Teva **picks it up**," Pruetz says.

If Teva **learns** this **skill**, she will find it easier to eat in Fongoli. ❖

A young chimp learns from her mother. ►



► Before You Continue

1. **Problem/Solution** How have the Fongoli chimps solved the problem of finding food? Explain.
2. **Draw Conclusions** Why do the chimps of Fongoli have to be creative?

Compare Facts

“Animal Smarts” and “The Clever Chimps of Fongoli” both give facts about chimps. Compare the articles. Work with a partner to complete the comparison chart. Look for more facts in the articles. Add them to your chart.

Comparison Chart

Fact	“Animal Smarts”	“The Clever Chimps of Fongoli”
Chimps walk on the ground.	✓	✓
Rainforest chimps live in trees.		✓
Chimps eat insects.		
Some chimps eat bush babies.		
In 1960, Jane Goodall made an important discovery about chimps.		
Chimps use tools.		

Talk Together

Think about the two articles you read. What are some ways that chimps are smart? What are some of the reasons they need to be smart? Ask questions to find out what others believe. Use **Key Words** to talk about your ideas.

Key Words	
ability	learn
command	memory
communication	pattern
inherit	skill
language	tool

Compound Sentences

A **compound sentence** is made up of two complete sentences. The sentences are joined by *and*, *but*, or *or* with a comma before the word.

I like plants. + I really love animals.

I like plants, but I really love animals.

Grammar Rules Compound Sentences

• Use and to put together two ideas that are alike.	Some animals can solve problems, and they use tools to help them.
• Use but to show a difference between two ideas.	Animals know some things at birth, but they must learn other things from their parents.
• Use or to show a choice between two ideas.	Animals might communicate with sounds, or they might use signs.

Read Compound Sentences

Read this passage from “Animal Smarts.” Find the compound sentence. What word is used to join the sentences?

Betsy is a clever border collie. She understands 340 spoken words. Many dogs can follow commands, but Betsy takes it a step further.

Write Compound Sentences

Write two compound sentences about the chimps of Fongoli. Use different connecting words. Read your sentences to a partner.

Writing Project

Write as a Researcher

Write a Business Letter

You want to find out just how smart a certain animal is and how much it can learn. Write a letter to a scientist who studies animal behavior.

Study a Model


A business letter is written to someone you don't know. Read the business letter Mike wrote to ask for information about squirrels.

The **heading**, at the top, shows Mike's address and the date.

A **greeting** starts the letter.

A **formal closing** and **signature** end the letter.

134 Oak Street
Stafford, Virginia 22556
October 7, 20—



Dr. Anne Velardi
Andrews University
5549 Darian Ave.
Cincinnati, OH 45324

Dear Dr. Velardi,

My friends and I want to make a funny video about a squirrel that causes trouble. Could you please answer some questions?

First, how smart are squirrels? Can squirrels do tricks, such as jump onto someone's head? How fast can they learn? Thank you very much for your help.

Sincerely,

Mike Wheeler

The **inside address** shows the name and address of the person Mike is writing to.

In the **body**, Mike asks for information and then says "thank you."

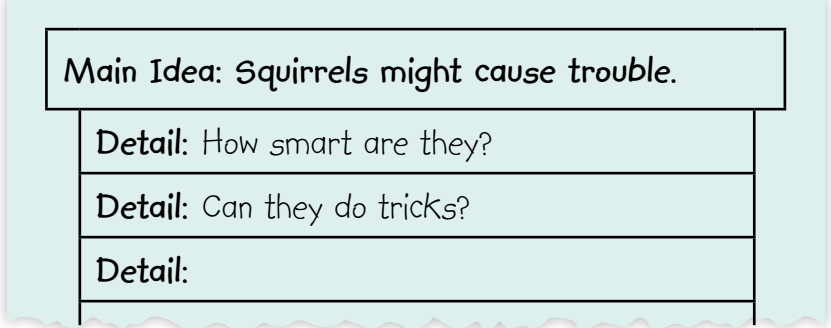
Prewrite

1. **Choose a Topic** What animal do you want to learn about? Talk with a partner to choose an interesting one.

Language Frames	
Tell Your Ideas <ul style="list-style-type: none">• I don't know much about _____.• I've heard that a _____ is smart. I'd like to know just how smart.• Are _____ smart enough to _____?	Respond to Ideas <ul style="list-style-type: none">• What do you already know about _____?• We all know how smart a _____ is. Could you choose a different animal?• I am curious about _____, too! Great idea!

2. **Gather Information** Brainstorm questions that will help you find out how smart your animal is. Use question words such as *how*, *why*, and *what*.
3. **Get Organized** Use a main idea diagram to help you organize your questions.

Main Idea Diagram



Draft

Use your main idea diagram to write your draft. Include all of the important parts of the letter in the correct order. Remember to be clear about the information you need.

Writing Project, continued

Revise

1. Read, Retell, Respond Read your draft aloud to a partner. Your partner listens, and then restates the important information. Next, talk about ways to improve your letter.

Language Frames

Retell

- You want to know about _____.
- You want to know if _____ can _____ and _____.
- You'll use the information to _____.

Make Suggestions

- The _____ is missing from your letter.
- I don't understand the question about _____. Can you ask it in a different way?
- The _____ seems out of order.

2. Make Changes Think about your draft and your partner's suggestions. Check that you've included all the parts of a business letter. Use revision marks to make any changes.

- Is your purpose for writing the letter clear?

My friends and I want to make a funny video about a squirrel that causes trouble.

^ Could you please answer some questions?

- Make sure all of your questions are worded clearly.

to do tricks, such as jump on someone's head?

Can squirrels learn stuff?

Edit and Proofread

Work with a partner to edit and proofread your business letter. Try using sentences of different lengths and types. This will make your writing more interesting.

Present

On Your Own Make a clean copy of your letter. Read it aloud to others. See if any of your listeners can answer your questions.

Presentation Tips

If you are the speaker . . .	If you are the listener . . .
Read as if you were speaking to the person that the letter is for.	Listen carefully. Is it clear what information the speaker wants?
When you read a question, make your voice go up slightly at the end.	Jot down notes about the information the speaker is looking for.

In a Group Work together to find the answers to all of the questions in your letters. Post the questions and answers on the bulletin board, or create a website that you can add to.

ReachAnswers.com

Ask How smart are animals?

- ▼ cats
- ▼ chickens
- ▼ horses
- ▼ pigs

Answer

Punctuation Tip

✓ In compound sentences, put a **comma** before the conjunction *and*, *or*, or *but*.

End every question with a **question mark**.

Share Your Ideas

Choose one of these ways to share your ideas about the **Big Question**.

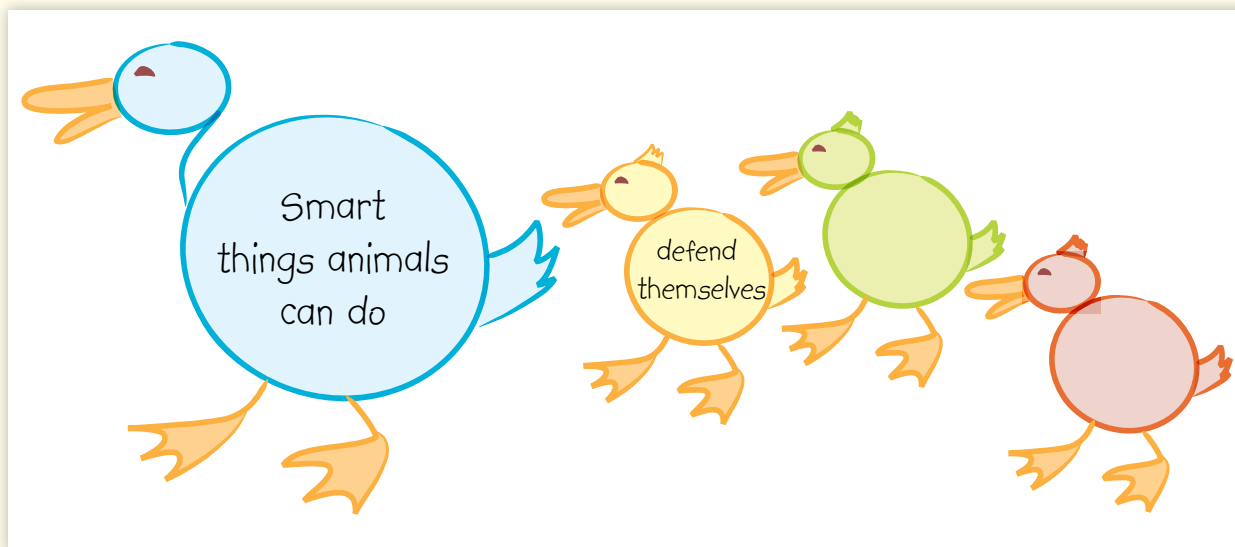
?
BIG
Question

Just how smart
are animals?

Talk Together

In this unit, you found lots of answers to the **Big Question**. Now use your concept map to discuss the **Big Question** with the class.

Concept Map



Write an E-Mail

Choose an animal from the unit. Think about how intelligent this animal is. Write an e-mail to a friend to describe how smart this animal is.

Do It!



Design a Maze

Use art materials to design a maze for a mouse. Then display your design for the class. Tell a partner how the maze might be used to test the animal's intelligence.

Write It!



Write a Comic

Write a comic strip that tells a trickster tale. Include a main character that plays tricks on others. Draw pictures to go with your story. Share your comic with the class.



Talk About It!



Discuss Animal Smarts

What is the smartest animal you can think of? Find facts to support your choice. You can use your experiences, too. Which animals do other members in your group choose? See if the group can agree on the smartest animal.

Do It!



Put on a Puppet Show

Make puppets for the characters in "Kitchen Caper." Then perform a puppet show to retell the story.

