

TEACHER'S GUIDE



Voyager (Grade 1)
Vol. 17 No. 7

In This Guide

In this guide, you will find language arts, science, and social studies lessons for the articles in this issue of YOUNG EXPLORER VOYAGER.

Young Explorer Magazine

YOUNG EXPLORER classroom magazines for kindergarten and grade 1 develop young readers' literacy skills through engaging informational text. Great storytelling and stunning photographs teach students about our planet and the people, plants, and animals that live on it. Encourage your students to read and explore our world with YOUNG EXPLORER magazines.

Voyager

The Voyager edition is written for first grade readers. All articles in the Voyager edition have been measured using the Lexile® Framework for Reading. Some articles will be easier to read than others, though all articles will be within the 190-400L range.

Visit YOUNG EXPLORER's website, NatGeo.org/explorermag, to find additional resources for extending your students' learning.

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National Geographic Learning Framework

INTRODUCTION

BACKGROUND

Since 1888, the National Geographic Society has funded scientists and explorers and shared their findings with the world. To support educators who use our resources, we have created a Learning Framework, which lays out what we believe students should learn from their experiences with the Society.

PURPOSE

The Learning Framework was designed to convey the Society's core beliefs and values. It is built around a set of attitudes, skills, and knowledge that embody the explorer mindset.

To determine the learning outcomes within the Learning Framework, we dug deep into national standards in key subject areas. We also sought advice from subject matter and child development experts, along with the combined expertise of NG instructional designers, researchers, and content developers. To learn more, go to: <https://www.nationalgeographic.org/education/learningframework/>

IMPLEMENTATION

Each article in this magazine has a knowledge-based link to the Learning Framework. Students will use the skills and attitudes as they do the activity on the back cover. The activity relates to the article "Solve It!."

MINDSET OF AN EXPLORER

KEY FOCUS AREAS



Attitudes

National Geographic kids are:

CURIIOUS about how the world works, seeking out new and challenging experiences throughout their lives.

RESPONSIBLE, with concern for the welfare of other people, cultural resources, and the natural world. NG kids are respectful, considering multiple perspectives, and honoring others regardless of differences.

EMPOWERED to make a difference. NG kids act on curiosity, respect, and responsibility. They are adventurous and persist in the face of challenges.



Skills

National Geographic kids can:

OBSERVE and document the world around them and make sense of those observations.

COMMUNICATE experiences and ideas effectively through language and media. They are storytellers!

COLLABORATE with others to achieve goals.

SOLVE PROBLEMS by generating, evaluating, and implementing solutions after identifying alternatives, weighing trade-offs, and making well-reasoned decisions.



Knowledge

National Geographic kids understand:

THE HUMAN JOURNEY is all about where we have been, where we live now (and why), and where we are going.

OUR CHANGING PLANET encompasses all that coexists on our planet—interconnected through systems that generate and nurture each other.

WILDLIFE AND WILD PLACES inhabit our planet—from the butterflies in our back yards to the lions in Africa.

LANGUAGE ARTS

Objective

- Students will identify the main topic and retell key details.

Standard Supported

- **CCSS Reading Informational Text:** Identify the main topic and retell key details of a text. (1-2)

Resources

- Language Arts Master (page 5)

Summary

Honey bees live in many places, including cities such as Washington, D.C. Bees get pollen and nectar from flowers they find in the city. They bring nectar and pollen back to a hive. Bees live in hives, and some hives are made and cared for by beekeepers. In the hive, bees make honey from nectar. They store the honey in honeycombs. The honey is the bees' food.

WORD WORK

Sight Words: *live, let, some, fly, take, of, from, again*

BUILD VOCABULARY AND CONCEPTS

- city/cities
- honey bee
- pollen
- hive
- beekeeper
- honey/honeycomb

The words above are used in the article. Post the words on a word wall. Use the pictures in "City Bees" to point out examples of each word. After reading the article, you may want to search for more pictures to add to the word wall or have students draw pictures to add to the wall. Let students know there are many different cities and many different kinds of bees and hives. Encourage students to find different examples of each of these and to turn and talk with others about them.

READ AND DISCUSS

Read the article "City Bees" aloud to students as they follow along. You may want to read the entire article first, and then reread the article, taking time to stop and discuss each two-page spread.

Pages 2–3 Read the title and text. Ask: **What did we find out about bees?** (*They live in many places, including cities like Washington, D.C.*) Guide students to understand that this is the main topic of the article: Honey bees live in many places, including cities like Washington, D.C. Invite students to turn and talk about what they see in the picture. Let students know that the city pictured on these pages is Washington, D.C. You may want to find the city on a map to show students where it is. Also show students where they live, so they can see how close or far away Washington, D.C. is from where they live.

Pages 4–5 Read the text. Ask: **What do bees look for as they fly around the city?** (*flowers*) **What do they do when they find flowers?** (*They find pollen and nectar in the flowers and bring them back to their home. They sip the nectar, and the pollen sticks to them.*) Be sure students see the pollen sticking to the bee. Take time to let students turn and talk about what they see and ask any questions they may have.

Pages 6–7 Read the text. Ask: **What did we find out about Mark, the beekeeper?** (*He built a home called a hive for the bees.*) Let students know that bees can make their own hives, too. Have students look at the pictures of Mark and describe what they see. Ask them why they think Mark has to wear special clothing. (*to help protect him from getting stung by the bees*) **What happens in the hive?** (*The bees make honey, their food, and store it in honeycombs.*) Have students look at the pictures on pages 6 and 7 and describe what they see. Ask students if they have ever seen or tasted honeycomb.

Pages 8–9 Read the text. Ask: **Where do bees find flowers in the city?** (*in parks and gardens and even on busy streets*)

TALK AND WRITE

Students can respond to the article by talking and writing. Use the following prompts to guide them. You might also want to use the Language Arts Master for this article.

- **Talk about what you learned about city bees.**
- **Write something you learned about where bees live.**

Objective

- Students will learn that all animals need food to live and grow, and some animals obtain food from plants.

Standard Supported

- **NGSS Crosscutting Concepts: Patterns:** Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2)

Resources

- Insects poster (Teacher's Edition)
- Science Master (page 6)

Science Background

There are three member-types of a honey bee colony: the queen, the workers, and the drones. One queen runs the hive and lays the eggs that will become the next generation of bees. The workers are the females who fly outside the hive in search of food. They also protect and clean the hive and build the honeycombs. Drones are male bees whose purpose is to mate with the new queen. They live in the hive during spring and summer, when food is plentiful. The drones are kicked out when winter comes and the hive goes into lean survival mode.

ENGAGE

Most students will have encountered bees at one time or another. Initiate a discussion about bees and invite students to talk about what they know or have learned about bees. Have pictures of different types of bees available in the classroom for students to look at.

EXPLORE

Spend time exploring different types of bees. Have pictures of the different bees available for students to see. Some examples include the following:

- honey bees
- bumblebees
- carpenter bees
- sweat bees

Invite students to turn and talk about the similarities and differences they see in the various types of bees.

EXPLAIN

After reading, have students discuss what they found out about honey bees that live in the city. You might ask the following questions and allow students time to talk with one another about what they learned, using the pictures in the article to guide them.

- **Why do bees fly around looking for flowers?**
- **What do bees bring back to the hive?**
- **What is a beekeeper?**
- **What is a hive?**
- **What do honey bees make in the hive for food?**
- **Where do bees find flowers in the city?**

ELABORATE

Let students know that bees are insects and that there are many different kinds of insects. Read through the Insects poster with students, so they can learn more about what an insect is. An insect is a small animal that has six legs and a body made up of three parts. Some insects also have wings. Have students look closely at the insects on the poster to find and count the number of legs on each insect (those that are visible) and the number of body parts. Ask them to also point out the insects that have visible wings. Let students know that besides the honey bee, this issue of Young Explorer magazine also has an article about another type of insect, the leaf cutter ant.

EVALUATE

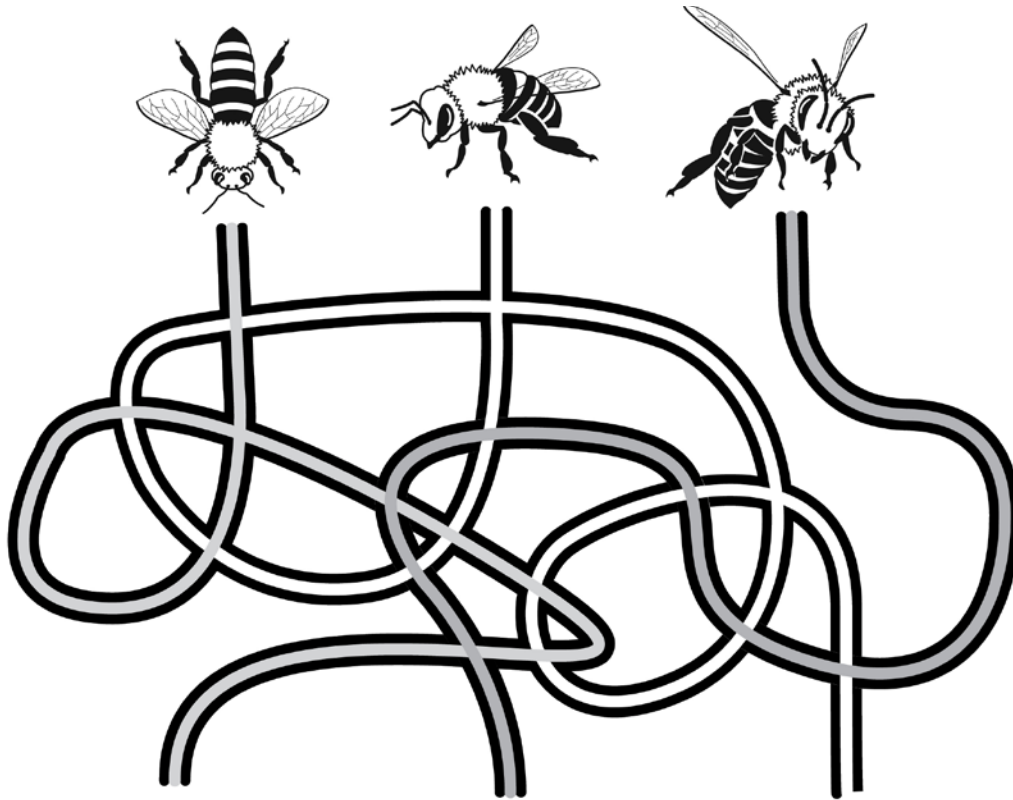
Assess students' understanding with the Science Master for this article. You might also use the following prompts.

- **Where does a honey bee live?**
- **Describe what a beekeeper does.**

LANGUAGE ARTS: Help to the Hives

Color each path a different color to help each bee find its hive.

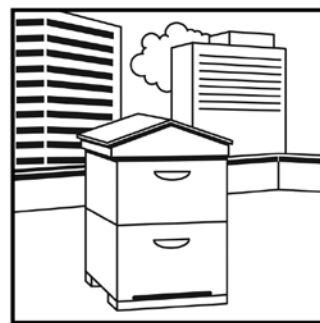
Write about what bees do in their hives.



hive in a tree



hive on a farm



hive in a city

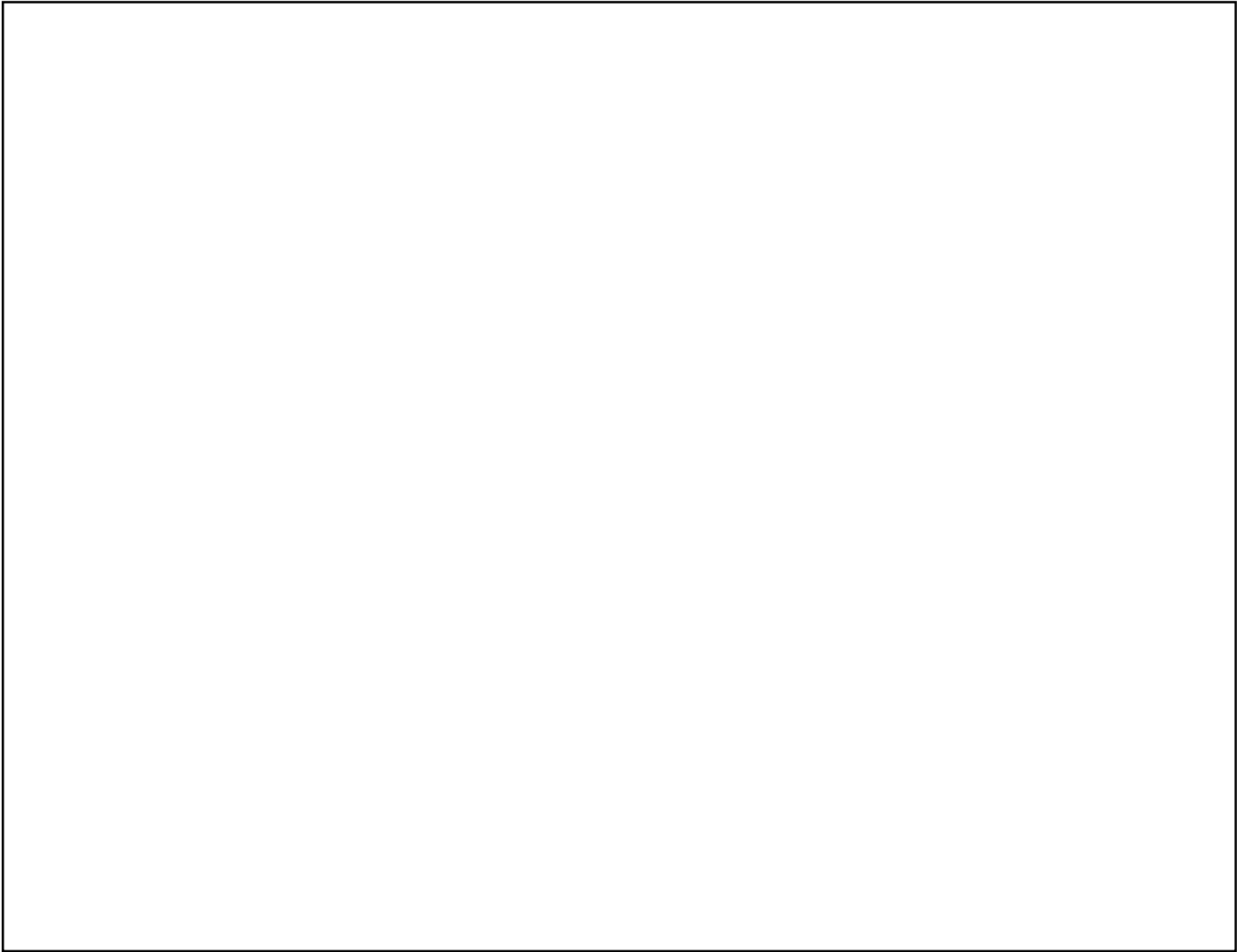
Name _____

Date _____

SCIENCE: Bees Need Flowers

Draw a place in the city where bees find flowers.

Write about why flowers are important for bees.



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LANGUAGE ARTS

Objective

- Students will describe details from the text, expressing their thoughts and ideas clearly.

Standard Supported

- **CCSS Speaking and Listening:** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly. (1-4)

Resources

- Language Arts Master (page 9)

Summary

Leaf cutter ants live in rain forests. The ants cut the leaves with their jaw and bring back the pieces of leaves to their underground nest. They grow a fungus on the leaves and eat it for food. The nest is the ants' home, and different ants have different jobs within the nest.

WORD WORK

Sight Words: *them, live, from, put, over*

BUILD VOCABULARY AND CONCEPTS

- leaf cutter ants
- rain forest
- leaf/leaves
- nest
- fungus

Introduce the vocabulary to students. Display the words and terms. Pronounce them for students. Together, talk about what each means. Use the article to point out examples. Elicit information that students may already know about some of the words, such as leaf, nest, and ants. Talk with students about some of the terms, such as leaf cutter ants and rain forest. They may already know what an ant or a forest is, but let students know that the terms on this list are about specific kinds of ants and a particular type of forest. Allow time for students to ask and answer questions about the vocabulary and provide pictures and information from the article that can help students better understand. Also allow time for students to use the words and terms. Encourage them to use the words as they speak about the article.

READ AND DISCUSS

Read the article "Leaf Cutter Ants" aloud to students as they follow along. You may want to read the entire article first, and then reread the article, taking time to stop and discuss each two-page spread.

Pages 10–11 Read the title and text on pages 10 and 11. Then say: **In your own words, tell what you see in the photo.** Invite students to turn and talk about what they see and then share with the whole class. Ask: **What clues do you see in the picture that let us know why these ants might be called "leaf cutter" ants?** (*Students might mention that the ants are carrying pieces of leaves that look like they've been cut up.*)

Pages 12–13 Read the text. Ask: **What do we find out about the ants?** (*They live in rain forests; they have strong jaws to cut leaves. They carry the pieces of leaves back to their nest to grow food on them. The food is called fungus.*) Invite students to turn and talk about what the ants do with the leaves. Allow students time to express their thoughts and ideas about what the ants do.

Pages 14–15 Read the text. Ask: **Where is the ants' nest located?** (*It is under the ground.*) Say: **Let's look closely at the nest. Find a partner and talk about what you see in the nest.** When student pairs have had time to look closely at the nest and discuss what they see, ask each pair to share with the whole class something they noticed about the nest or a question they have about the ants or the nest.

TALK AND WRITE

Students can respond to the article by talking and writing. Use the following prompts to guide them. You might also want to use the Language Arts Master for this article.

- **Talk about what you learned about leaf cutter ants.**
- **Write something you learned about the leaf cutter ants' nest.**

SCIENCE

Objective

- Students will learn that leaf cutter ants use their body parts for different purposes.

Standard Supported

- **NGSS LS1.A: Structure and Function:** All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. (1-LS1-1)

Resources

- Science Master (page 10)

Science Background

“Leaf cutter ant” is a name that refers to many different ant species that fall into this category of ants that are “leaf cutters.” The ants that cut the leaves have jaws, or mandibles, that are serrated like a steak knife. The ant’s jaw moves very fast—about 1,000 times per second—as it cuts a leaf or plant. These ants can also carry many times their weight. Some sources say around 20 times the ant’s own body weight.

Leaf cutter ants not only provide food for their own colonies but also affect their surroundings. The pruning they do to the plants helps stimulate new growth. And, the fungus they grow for their food also enriches the soil.

ENGAGE

Most students will have encountered ants. Ask them to share what they know about ants and where they have seen them. You might have them describe the ants they know or draw pictures of them. They should be sure to include in their descriptions or drawings things such as the following:

- size
- shape
- color

EXPLORE

With students, explore leaf cutter ants. There are many pictures and videos online that show leaf cutter ants in action.

EXPLAIN

Ask students to explain what they learned about the step-by-step process that happens with the leaves and the leaf cutter ants. Use these questions to guide the discussion.

1. How do the ants get the leaves? (*The ants cut pieces of leaves from plants, using their jaws, and then carry the leaf pieces to the nest.*)

2. Once the leaves are in the nest, what happens next? (*Small ants cut the leaves into tiny pieces.*)

3. What happens next? (*Other ants chew the leaves into a mush and put that mush in the garden in another part of the nest.*)

4. What happens in the garden? (*Fungus grows on the mush, and the ants eat the fungus.*)

Ask students to look at page 15 (red captions) and turn and talk about what jobs the different ants have in the nest.

ELABORATE

Work with students to find out what else they would like to learn or explore about leaf cutter ants. You might suggest some ideas, such as finding out more about the different ants’ jobs within the colony, finding out more about the rain forest where these ants live, or finding out more about the anatomy of the leaf cutter ants and getting a closer look at the jaw that allows the ants to cut the leaves into pieces.

EVALUATE

Assess students’ understanding with the Science Master for this article. You might also use the following prompts.

- **Why do leaf cutter ants need leaves?**
- **Describe what the leaf cutter ants’ nest looks like.**

LANGUAGE ARTS: Figure It Out

Use the numbered letters to answer the question.

Leaf cutter ants need leaves.

1

2

3

A nest is their home.

4

5

6

Fungus is their food.

7

8

9

Where do the ants live?

8 3 5 4 1 9 8 6 7 2

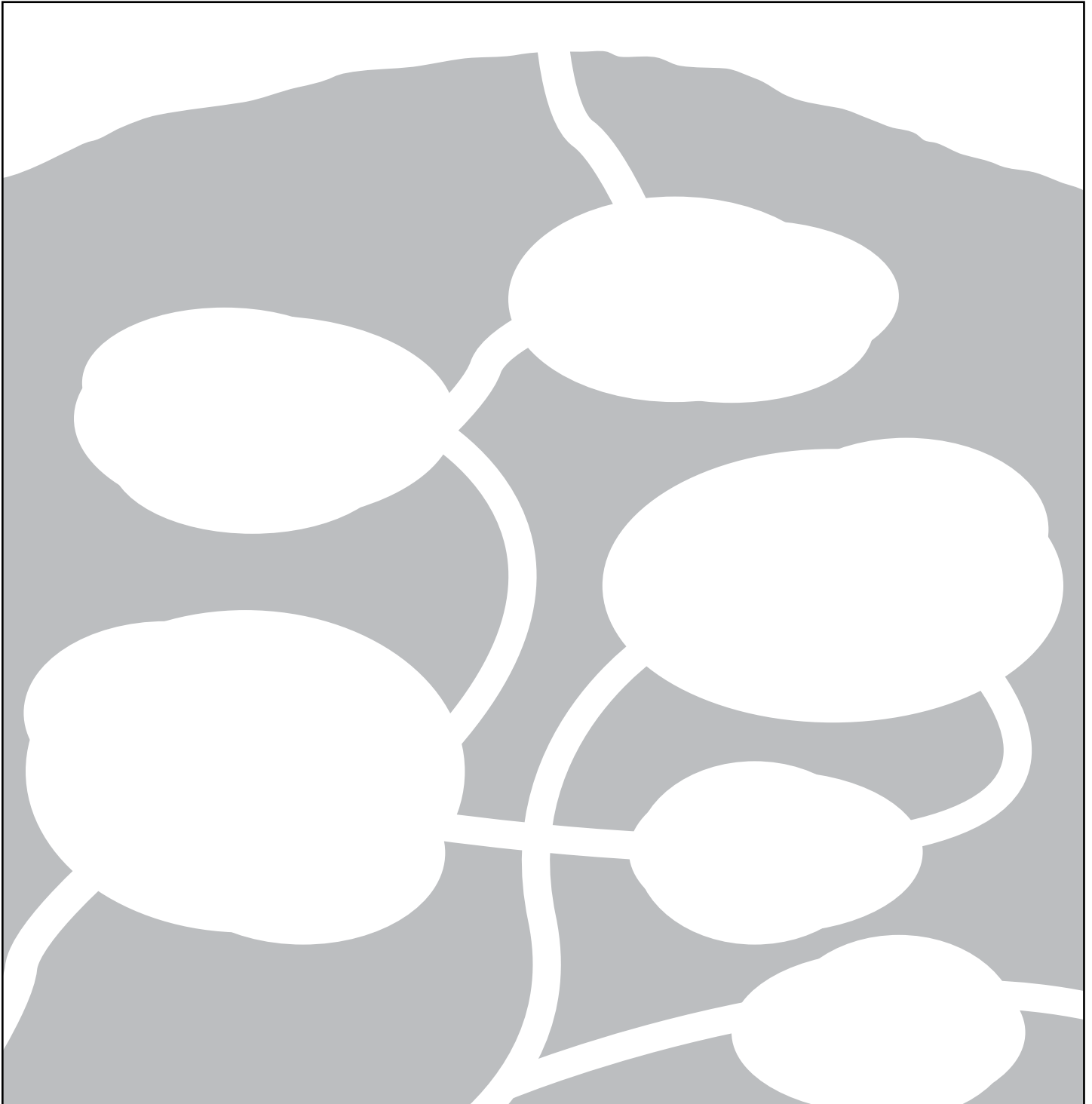
Create your own code and leaf cutter ant question. Use different letters in the sentences above.

Ask someone else to solve the code to answer the question.

SCIENCE: In the Nest

Draw what happens in the ant nest.

Label parts of your drawing.



LANGUAGE ARTS

Objective

- Students will use the pictures and details to describe the key ideas in a text.

Standard Supported

- **CCSS Reading Informational Text:** Use the illustrations and details in a text to describe its key ideas. (1-7)

Resources

- Language Arts Master (page 13)

Summary

Some animals solve problems by using tools. An orangutan stays dry in the rain using a large leaf. An otter uses a rock to open a clam shell, so he can eat the clam inside. An octopus uses a coconut shell to hide from sharks that want to eat it. A crow uses a stick to pull grubs out of a log. The crow wants to eat the grubs.

WORD WORK

Sight Words: *some, has, going, as, over, open, from, them*

BUILD VOCABULARY AND CONCEPTS

- **problem**
- **otter**
- **solution**
- **octopus**
- **tools**
- **crow**
- **orangutan**

The words above are used in the article “Solve It!” Make sure students understand how problem and solution are connected to each other. Use familiar examples, or ask students to give examples of simple problems they have had and how they have solved them. Let students know that in this article, tools are an important part of the solution for the animals’ problems. Use the pictures in the article to show students what each of the animals in the article looks like. Be sure to pronounce each animal’s name as you point to its picture. Also post the words on a word wall.

READ AND DISCUSS

Read the article “Solve It!” aloud to students as they follow along. You may want to read the entire article first, and then reread the article, taking time to stop and discuss each two-page spread.

Pages 16–17 Read the title and the text. Ask: **What problem does the orangutan have?** (*It is going to rain, and the orangutan wants to stay dry.*) Let students know that the tools animals use are different from the tools we are familiar with. Animals have to find things that are in their habitat and then use them as tools to help them get what they need. In the orangutan’s case, it needs to look around to find something that will help keep it dry.

Pages 18–19 Ask: **What did the orangutan find to solve its problem?** (*The orangutan found a large leaf to put over its head to stay dry.*) Ask students to describe how the picture shows what the text tells us. Then have students look at page 19 and ask them: **What problem does the otter have?** (*It wants to eat a clam, but the shell is hard to open.*)

Pages 20–21 Ask: **What did the otter find to solve its problem?** (*The otter found a rock it can use to crack open the shell to eat the clam.*) Ask students to describe how the picture shows what the text tells us. Then have students look at page 21 and ask them: **What problem does the octopus have?** (*It wants a place to hide so sharks and other big fish won’t eat it.*)

Pages 22–23 Ask: **What did the octopus find to solve its problem?** (*The octopus found a coconut shell it can use to hide in and stay safe.*) Ask students to describe how the picture shows what the text tells us. Then have students look at page 23 and ask them: **What problem does the crow have?** (*It wants to eat the grubs that are deep in a hole.*) The answer to the question is not given in the article, but there are clues in the picture. Ask students to use the picture to try to figure out the answer. (*The crow uses a stick to pull grubs out of the hole in the log.*)

TALK AND WRITE

Students can respond to the article by talking and writing. Use the following prompts to guide them. You might also want to use the Language Arts Master for this article.

- **Talk about problems and solutions.**
- **Write about how one animal solves a problem.**

Objective

- Students will learn that animals use their body parts in different ways.
- Students will understand that asking questions, making observations, and gathering information are helpful in thinking about problems.

Standard Supported

- **NGSS LS1.A: Structure and Function:** All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. (1-LS1-1)

Learning Framework Key Focus Area

- **Skills:** *National Geographic kids can:* SOLVE PROBLEMS by generating, evaluating, and implementing solutions after identifying alternatives, weighing trade-offs, and making well-reasoned decisions.

Resources

- I am an Explorer! poster (Teacher's Edition)
- Science Master (page 14)

Science Background

In addition to the animals featured in "Solve It!," there are other animals that use tools. Some others include chimpanzees, elephants, dolphins, gorillas, and rodents. You can check out some interesting infographics about the tools animals use at www.nationalgeographic.com/magazine/2017/03/animal-tools/.

ENGAGE

Engage students in a discussion about problems and solutions. Ask students to think about what happens when you have a problem. Ask if it's always easy to solve a problem. Lead students to understand that sometimes it takes many different ideas and trial and error to solve some problems.

EXPLORE

Perhaps you can think of a problem the class is struggling with now. Elicit information and ideas from students

about how you might work together to define what the problem is, make observations about the problem, and then gather information and ideas about how you might solve that problem together.

EXPLAIN

Ask students to explain what they learned about how different animals use tools to solve problems. Ask them to name the problem, the tool, and the solution for each animal.

Orangutan

- Problem: wants to stay dry when it rains
- Tool: leaf
- Solution: uses leaf to hold over its head to stay dry

Otter

- Problem: wants to eat a clam, but the shell is hard to open
- Tool: rock
- Solution: uses the rock to open the shell

Octopus

- Problem: wants to hide from sharks
- Tool: coconut shell
- Solution: hides in the coconut shell

Crow

- Problem: wants to eat grubs in a log
- Tool: stick
- Solution: uses a stick to pull the grubs from the log

ELABORATE

Extend Your Thinking

Display the activity on the back cover of the student magazine. Ask students to examine the image while a volunteer reads aloud the text. Point out to the class that this problem, like all others, has more than one solution. As a class, identify different things the boy and girl could do to solve their problem. Discuss the merits of each decision. Then give each student a piece of plain white paper. Invite students to draw a picture that shows what they would do to solve the problem.

EVALUATE

Assess students' understanding with the Science Master for this article. You might also use the following prompts.

- **How do tools help animals solve problems?**
- **What animal in your opinion is the best problem-solver? Explain why you chose that animal.**

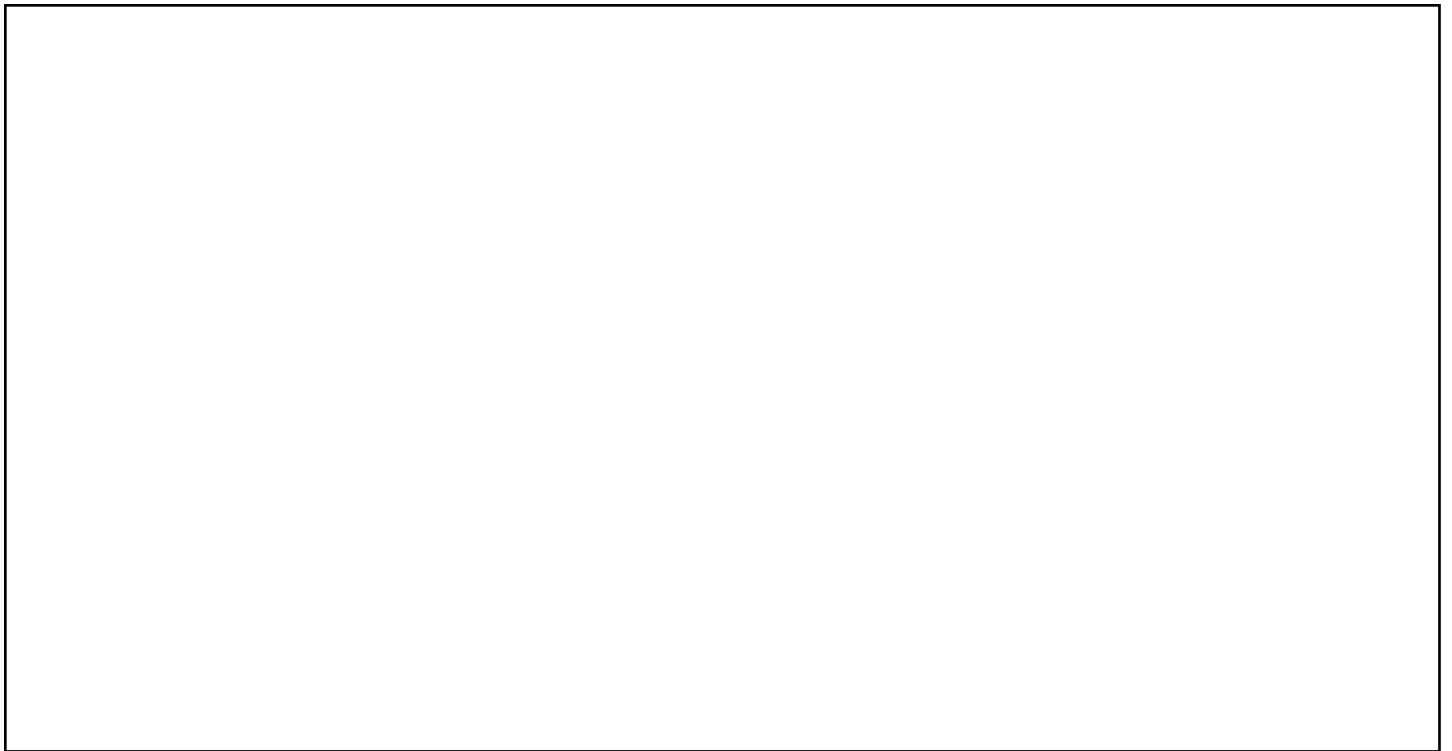
Name _____

Date _____

LANGUAGE ARTS: Problem-Tool-Solution

Write a problem.

Draw and label a tool that will help solve the problem.



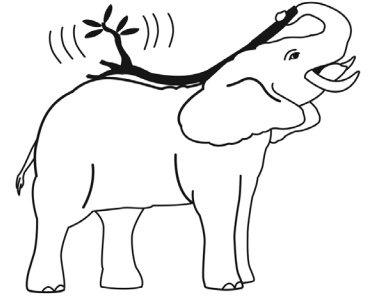
Write about the solution.

SCIENCE: Solve It!

Each animal is solving a problem with a tool. Use the words in the Word Bank to help you write the solution for each picture.

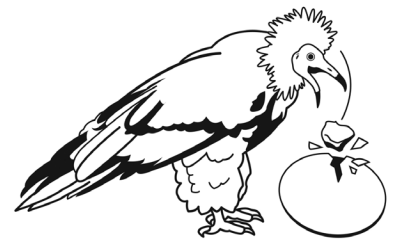
rock egg elephant bird scratches breaks stick

Problem: The elephant has an itch.



Solution:

Problem: The bird is hungry.



Solution:

What tools do you use to solve problems? Write about it.

ANSWER KEY

City Bees

Language Arts: Help to the Hives, page 5

Students should follow the paths and color each path a different color to connect each bee to its hive. Then students should write about what bees do in their hives.

Science: Bees Need Flowers, page 6

Students should draw a city scene that includes flowers for the bees. Students should write about why flowers are important for bees.

Leaf Cutter Ants

Language Arts: Figure It Out, page 9

Students should use the lettered numbers to figure out and write the answer to the question “**Where do the ants live?**” (*rain forest*) Then students should create a new code using different letters in the sentences and write a new leaf cutter ant question for someone else to solve.

Science: In the Nest, page 10

Students should draw the leaf cutter ants in their nest and label what the ants are doing.

Solve It!

Language Arts: Problem-Tool-Solution, page 13

Students should write a problem, draw and label a tool that will help them solve their problem, and then write about the solution to their problem.

Science: Solve It!, page 14

Students should use the words in the Word Bank to write solutions to the problems. (*The elephant scratches its back with a stick. The bird breaks the egg with a rock.*)