



Young Explorer



P is for Park 8

Making Crayons 2

Along Came a Polar Bear 16

TEACHER'S GUIDE Scout and Voyager Vol. 19 No. 3

IN THIS GUIDE:

About the Learning Framework2

Language Arts
Lesson and Think Sheet.....3-7

Making Crayons
Social Studies Lesson and BLM.....8-9

P is for Park
Science Lesson and BLM 10-11

Along Came a Polar Bear
Science Lesson and BLM 12-13

Answer Key 14

Educational consultant **Stephanie Harvey** has helped shape the instructional vision for this Teacher's Guide. Her goal is to ensure you have the tools you need to enhance student understanding and engagement with nonfiction text.

Lexile® Framework Levels

Scout

Some articles with characteristics of emergent text will be easier for students to read. You may find that other articles are better suited for teacher read-alouds.

Voyager

Making Crayons 320L
P is for Park 330L
Along Came a Polar Bear 350L

Standards Supported

- Common Core State Standards (CCSS)
- Next Generation Science Standards (NGSS)
- C3 Framework for Social Studies State Standards (C3)

See each lesson for the specific standard covered.

Log in at **ExplorerMag.org**
to access additional resources including:

- Interactive Digital Magazine with videos and activities
- Projectable PDF for one-to-one instruction

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.

MINDSET OF AN EXPLORER: KEY FOCUS AREAS

Attitudes



CURIOSITY An explorer remains curious about how the world works throughout his or her life. An explorer is adventurous, seeking out new and challenging experiences.

RESPONSIBILITY An explorer has concern for the welfare of other people, cultural resources, and the natural world. An explorer is respectful, considers multiple perspectives, and honors others regardless of differences.

EMPOWERMENT An explorer acts on curiosity, respect, responsibility, and adventurousness and persists in the face of challenges.

Skills



OBSERVATION An explorer notices and documents the world around her or him and is able to make sense of those observations.

COMMUNICATION An explorer is a storyteller, communicating experiences and ideas effectively through language and media. An explorer has literacy skills, interpreting and creating new understanding from spoken language, writing, and a wide variety of visual and audio media.

COLLABORATION An explorer works effectively with others to achieve goals.

PROBLEM SOLVING An explorer is able to generate, evaluate, and implement solutions to problems. An explorer is a capable decision maker—able to identify alternatives and weigh trade-offs to make a well-reasoned decision.

Knowledge



THE HUMAN JOURNEY An explorer understands where we came from, how we live today, and where we may find ourselves tomorrow.

OUR CHANGING PLANET An explorer understands the amazing, intricate, and interconnected systems of the changing planet we live on.

WILDLIFE AND WILD PLACES An explorer reveals, celebrates, and helps to protect the amazing and diverse creatures we share our world with.

Kindergarten Standard Supported

- **CCSS Reading Informational Text:** With prompting and support, describe the relationship between illustrations and the text in which they appear. (K-7)

First Grade Standard Supported

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

What You Will Need

- “Making Crayons” (*Young Explorer*, pages 3–8)
- Think Sheet (Teacher’s Guide, page 5)
- Clipboards
- Pencils

CONNECT & ENGAGE (5 minutes)

Kids are in a group on the floor in front of you. Sit on a low chair and hold up the cover of the magazine.

Let’s take a look at this cover. What familiar item is pictured on the cover? That’s right. These are crayons. Turn and talk about what you already know about crayons.

Kids turn and talk, and a few share out.

MODEL (10 minutes)

Kids sit in a group on the floor, with you in a low chair in front of them.

Now let’s look at pages 2–3. First, I’m going to read the title. A title can give us a lot of information before we start reading the article. The title of this article is “Making Crayons.” Have you ever thought about how crayons are made? That’s pretty interesting to think about, isn’t it? So before I even start to read on, I have a question in my mind that I’m hoping I’ll find out more about as I read the article. That question is “How are crayons made?”

I’m going to write that question at the top of my Think Sheet. I’m going to keep that question in mind as I read and jot down anything that I’m reading that helps me answer that question.

Now I’m going to start reading on page 3.

Read aloud page 3.

Oh my goodness! This article is starting out with the very question I had in mind when I read the title. It’s looking promising that I’ll find some answers to my question.

Does anyone know what else we can do as we read to give us more information? Let’s turn and talk about that.

Kids turn and talk and should mention that pictures and other types of text, such as labels or features, can provide more information.

I heard some of you mention that pictures on the pages can give us information. Other types of text can give us information, too. The pictures on pages 2–3 show some kind of machine. I’m guessing that is some kind of crayon-making machine. I also see there is some other text. It says that crayons come in many colors. I see lots of different colors in the machine, too. I can’t wait to find out more. The text is also asking about which color I like. Do you have a favorite crayon color? Turn and talk about that.

Kids turn and talk and share their favorite crayon color.

GUIDE (10 minutes)

Hand out the Think Sheets attached to clipboards. Kids remain grouped in front of you on the floor.

Now it’s your turn. I am going to read pages 4–5, and I want you to keep our question in mind. What is our question again?

Kids share out the question: How are crayons made? Then read aloud the text on pages 4–5.

I’d say this text gives us some information about our question. Let’s also look at the pictures on these pages to help us understand more. What do you think the man in the picture on page 4 is doing? How do you think that works together with the

text on that page to help us with our question? What about the pictures and text on page 5? Turn and talk about this.

Kids turn and talk about the text and the pictures.

Now, draw or write in one of your Think Sheet boxes how the information on pages 4–5 starts to answer our question about how crayons are made. Then share what you drew or wrote with a partner.

Kids share with a partner. They should draw or write that they learned that crayons are made of wax that is melted, and color is added to the melted wax. Then the melted wax is poured into tubes that give the crayons the shape we are familiar with. Then the wax hardens.

Before we read on, I want to see if anyone has any other questions. Does everyone know what wax is? Do you know of anything else that is made of wax?

Take some time to talk about wax. Kids may be familiar with candles and other items made of wax, and by sharing that information may have a better understanding of how wax can melt and harden. If kids don't understand the concept of adding color, you could see if they have ever used food coloring to make different colors of frosting.

COLLABORATE (25 minutes)

Turn to pages 6–7. This time, work with a partner. Before I read the text aloud, look at the pictures. They show the next steps in the crayon-making process. Take a few minutes to turn and talk with your partner about the pictures and what you think the next steps in the process of making crayons will need to be. Think about what we've learned so far and what you already know about crayons.

Give kids time to view the pictures and review what they have already learned about how crayons are made. Some may be aware that there are still a few steps to go to finish the crayon-making process. If they are thinking about the crayons they have used, they may realize that the crayons have paper wrapped around them with the names of the colors written on the paper. They may also note that crayons are packaged in boxes.

After kids turn and talk, read aloud pages 6–7.

Now, draw or write in your Think Sheet boxes how the information on pages 6–7 gives us more information to answer our question about how crayons are made.

Give kids time to draw or write on their Think Sheets. Move around the room, conferring with partners.

SHARE THE LEARNING (10 minutes)

Kids join a sharing circle.

Let's get together and talk about what we learned. I learned that having a question in mind as we read keeps us focused and helps us think as we read. Who else would like to share something they learned? You can share what you drew or wrote on your Think Sheet.

Allow time for kids to share their learning.

Does anyone want to share something they are still curious about or still wonder about making crayons? Remember that as we read, we might have questions that aren't answered in the text. We may need to find those answers somewhere else. We can write down your questions and decide if we'd like to research to find the answers later on.

If kids have questions they still wonder about how crayons are made, you might want to write them down and choose a few to research as a class.

I've always loved crayons, but I never really knew how much went into making them. Did you? It was fascinating and fun to find out. Great work today, class!

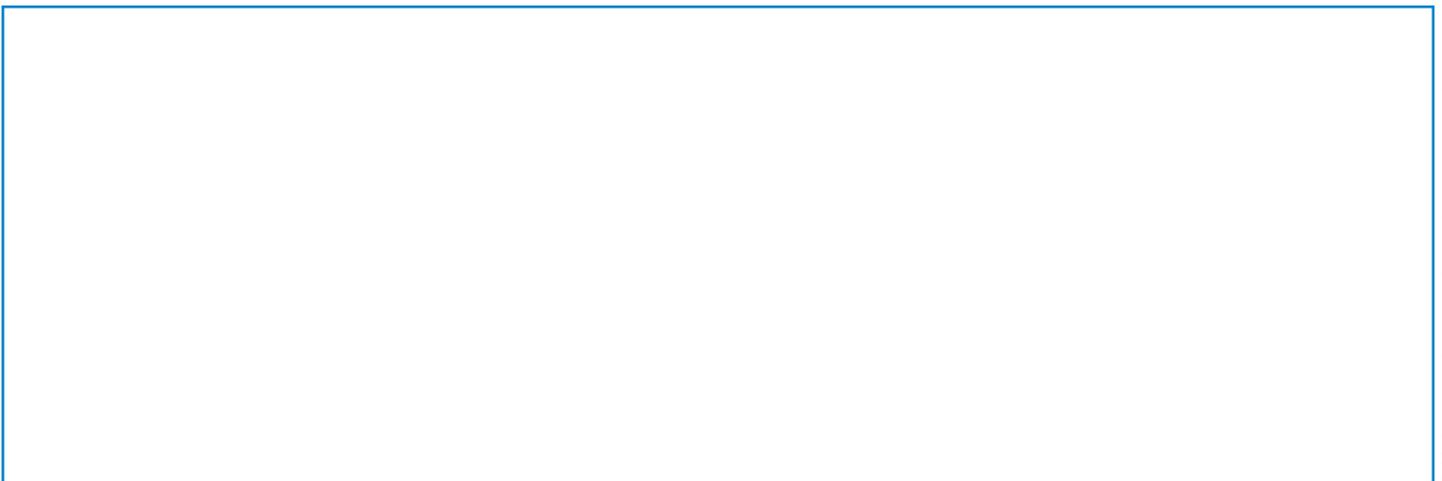
Name _____

Date _____

THINK SHEET

Question: _____

Use these boxes to draw or write about things you learned.



© 2019 National Geographic Society. All rights reserved. Teachers may copy this page to distribute to their students.

This frame is a template of the language arts lesson. It has the instructional moves and language of the lesson, but the specific content has been removed. This way you can use the Lesson Frame for the other articles in the issue or for any nonfiction text you might be teaching.

What You Will Need

- Nonfiction text
- Think Sheet template
- Clipboards
- Pencils

CONNECT & ENGAGE (5 minutes)

Kids are in a group on the floor in front of you. Sit on a low chair and hold up the first page of the article.

Let's take a look at this first page. What item is pictured? Turn and talk about what you already know about _____.

Kids turn and talk, and a few share out.

MODEL (10 minutes)

Kids sit in a group on the floor, with you in a low chair in front of them.

Now let's look at page(s) _____. First, I'm going to read the title. A title can give us a lot of information before we start reading the article. The title of this article is "_____." That's a pretty interesting title to think about, isn't it? So before I even start to read on, I have a question in my mind that I'm hoping I'll find out more about as I read. That question is "_____?"

I'm going to write that question at the top of my Think Sheet. I'm going to keep that question in mind as I read and jot down anything that I'm reading that helps me answer that question.

Now I'm going to start reading on page _____.

Read aloud page _____.

Does anyone know what else we can do as we read to give us more information? Let's turn and talk about that.

Kids turn and talk and should mention that photos and other types of text, such as labels or features, can provide more information.

I heard some of you mention that pictures on the pages can give us information. The picture(s) on page(s) _____ show _____. Turn and talk about that.

Kids turn and talk.

GUIDE (10 minutes)

*Hand out the Think Sheets attached to clipboards.
Kids remain grouped in front of you on the floor.*

Now it's your turn. I am going to read page(s) _____, and I want you to keep our question in mind. What is our question again?

*Kids share out the question: _____?
Then read aloud the text on page(s) _____.*

I'd say this text gives us some information about our question. Let's also look at the picture(s) to help us understand more. What does each picture show? How do you think that works together with the text to help us with our question? Turn and talk about this.

Kids turn and talk about the text and the picture(s).

**Now, draw or write in one of your Think Sheet boxes how the information on page(s) _____ starts to answer our question about _____.
Then share what you drew or wrote with a partner.**

Kids share with a partner. They should draw or write what they learned.

Before we read on, I want to see if anyone has any other questions.

*Take some time to talk about any questions kids have.
You can write them down to see if the text will answer those questions as you read on.*

COLLABORATE (25 Minutes)

Turn to page(s) _____. This time, work with a partner. Before I read the text aloud, look at the picture(s). Take a few minutes to turn and talk with your partner about the picture(s).

Give kids time to view the picture(s) and review what they have already learned.

After kids turn and talk, read aloud page(s) _____.

Now, draw or write in your Think Sheet boxes how the information on page(s) _____ gives us more information to answer our question.

*Give kids time to draw or write on their Think Sheets.
Move around the room, conferring with partners.*

SHARE THE LEARNING (10 minutes)

Kids join a sharing circle.

Let's get together and talk about what we learned. I learned that having a question in mind as we read keeps us focused and helps us think as we read. Who else would like to share something they learned? You can share what you drew or wrote on your Think Sheet.

Allow time for kids to share their learning.

Does anyone want to share something they are still curious about or still wonder about _____? Remember that as we read, we might have questions that aren't answered in the text. We may need to find those answers somewhere else. We can write down your questions and decide if we'd like to research to find the answers later on.

If kids have questions they still wonder about, you might want to write them down and choose a few to research as a class.

It was fascinating and fun to read about _____. Great work today, class!

SOCIAL STUDIES

Kindergarten and First Grade Standard Supported

- **C3: Economics: Exchange and Markets:** Describe the skills and knowledge required to produce certain goods and services. (D2.Eco.3.K-2)

What You Will Need

- Projectable PDF or interactive digital magazine
- Social Studies Master (page 9)

Social Studies Background

Children have used crayons—simple colored wax sticks—for writing and drawing for more than 100 years. The first boxes of crayons had eight colors. Now, there are more than 400 different colors of crayons.

To make a crayon, the wax is melted into a liquid, colored with a pigment, poured into a mold, and then cooled until it is solid once again. Then it is double wrapped with a label that both identifies the color and turns the crayon into a sturdy writing tool.

A single mold can make 1,200 crayons in just three to nine minutes. Up to 6.4 million crayons can be made in a single day. Nearly 3 billion crayons are made each year.

ENGAGE

Display a large box of crayons. Hold up individual crayons and invite students to guess each color's name. Brainstorm ideas about why each name is a good fit for the color it represents.

EXPLORE

Display the "Making Crayons" article with the projectable PDF or the interactive digital magazine. Read aloud the headline and text. Based on what they see in the photo, have students brainstorm ideas about how crayons are made. Challenge them to identify the different colors of crayons they see in the photo. Then read aloud the article or have students read it in groups, with a partner, or on their own.

EXPLAIN

After reading, ask students if they had ever thought about how crayons were made. Encourage them to describe anything about the process that surprised them. Say: **Crayons seem like such simple things. But you have to know a lot before you can make them. For example, you have to know what the machines are and how they work. You have to know which type of wax to use and how much color to add. You also have to know how to count, measure, and spell.** Challenge students to explain why. (*You must be able to count crayons, measure ingredients, and spell color names.*) As a class, brainstorm a list of other things people must be able to do when they make crayons.

ELABORATE

Have students examine the open box of crayons shown in the photo on the last page of the article. On their own or as a class, have them count the crayons in the box. Then display a box of crayons or have students take out their own. How do those boxes compare with the one in the photo? Does it look like the same number of crayons? Have students count their crayons to find out. Then, as long as no crayons are missing, have them match the number they counted to the number printed on the box. Invite them to share their results with a partner.

EVALUATE

Have students complete the Social Studies Master for this lesson. Encourage them to share and compare their results in small groups or with a partner.

Name _____

Date _____

SOCIAL STUDIES: Making Crayons

Pick your favorite color of crayon.

Draw a picture with that crayon.

Write the name of the color on the line.

Color name: _____

Now tell how crayons are made.

Write the numbers 1-6 on the lines.

Put the steps in the correct order.

- _____ Each crayon gets a label.
- _____ The wax is poured.
- _____ Each crayon is put in a box.
- _____ The wax gets hard.
- _____ The wax is melted.
- _____ The color is added.



SCIENCE

Kindergarten Standard Supported

- **NGSS ESS3.A: Natural Resources:** Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)

First Grade Standard Supported

- **NGSS Crosscutting Concepts: Patterns:** Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS3-1)

What You Will Need

- Projectable PDF or interactive digital magazine
- Animals in Africa poster (Teacher's edition)
- Habitats poster (Teacher's edition)
- Science Master (page 11)

Science Background

Gorongosa National Park lies in central Mozambique, on the southeastern side of Africa. First established as a hunting reserve in 1920, the area became a 5,300 square kilometer (2,046 square mile) national park in 1960.

But just 15 years later, a civil war started and before it ended in 1992, the park was nearly destroyed. Since then, conservation efforts have helped the park undergo a remarkable rebirth.

Today, Gorongosa's habitats—savannas, woodlands, wetlands, and lakes—support such a variety of plant and animal life that the park is often called the "Serengeti of the South." Increasing numbers of lions, buffalo, wildebeests, and waterbuck roam the land. Hippos swim in the waters and birds fill the air. Elephants, though fewer than before, have made a promising comeback, too. Once again, plants and animals are getting everything they need to survive and thrive in this area.

ENGAGE

Have students imagine that they are in a park. As a class, brainstorm a list of all the different types of animals they might see. Discuss the types of things the animals would need to live here and where they would find those things in the park.

EXPLORE

Display the "P is for Park" article with the projectable PDF or the interactive digital magazine. Explain to students that there are different types of parks. The park they play in is a neighborhood park. The animals they see there are animals that live in your area. Point out that the park featured in this article is the Gorongosa National Park. It is in Africa. Invite students to look at the photos and identify some of the animals that live there. Then read the article aloud or have students read it in groups, with a partner, or on their own.

EXPLAIN

After reading, have students turn and talk with a partner to discuss what they learned about Gorongosa National Park. Prompt partners to note the different plants and animals that live in the park and how they get what they need to survive. Encourage students to identify reasons why the park is a good place for living things and how people might help protect the animals that live there. Then invite students to identify each item in the park that begins with the letter "p." Brainstorm a list of other things you might find in this park that begin with the letter "p."

ELABORATE

Display the Habitats poster and read aloud the definition of a habitat. Invite students to describe each habitat they see. Challenge them to explain how the animals shown would get what they need to survive in each place. Then display the Animals in Africa poster. Review the map key to identify types of habitats found in Africa. As a class, identify animals that live in each. Ask: **Which animal shown here was also in the article?** (*lion*) **What kind of habitat do lions live in?** (*grasslands*) As a class, identify animals that live in other types of habitats in Africa.

EVALUATE

Have students complete the Science Master for this lesson. Encourage them to share and compare their results in small groups or with a partner.

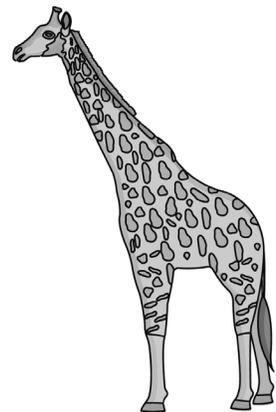
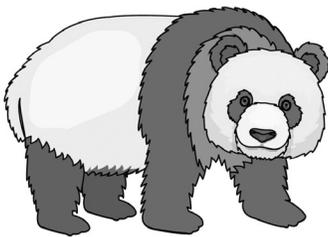
SCIENCE: P is for Park

Draw pictures of three animals that eat plants where you live.

Draw pictures of a plant each animal eats.

Plant Eater	Plant

Circle the plant eater whose name begins with the letter 'P.'



SCIENCE

Kindergarten and First Grade Standard Supported

• NGSS ETS1.A: Defining and Delimiting

Engineering Problems: A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)

What You Will Need

- Projectable PDF or interactive digital magazine
- Science Master (page 13)

Science Background

A picture may be worth a thousand words, but what if you lose the pictures that tell the story?

That's the problem Norwegian photographer Audun Rikardsen faced after the camera he had set up captured a great close-up photo of a polar bear hunting seals. Rikardsen had placed the camera next to a hole in the ice, but he forgot to anchor it in place. So when the polar bear came along and nudged the camera, it fell into the water. The camera sank 140 meters (459 feet) to the bottom of the sea.

A year later, Rikardsen returned to the place where he lost his camera. He brought an underwater drone and an expert at operating it with him.

The ice was thinner and there were polar bears all around, but the men refused to give up. It took a lot of work, but they managed to grab the camera with the drone and fish it out of the water. The camera was destroyed, but the pictures survived, and Rikardsen finally had a happy ending to his story.

ENGAGE

Have students imagine that they dropped their favorite toy behind a couch. They can't reach under the couch to get the toy. It's too far away. And they can't slide the couch away from the wall. The couch is too heavy for them to move all by themselves. How could they get their toy back? Invite students to share their ideas.

EXPLORE

Display the "Along Came a Polar Bear" article with the projectable PDF or the interactive digital magazine. Read aloud the headline and text on the opening pages. Point out the box that says "Solve Problems." Encourage students to brainstorm ideas about what kind of problem Audun might have had that involved a camera and a polar bear. Then read the article aloud or have students read it in groups, with a partner, or on their own to find out.

EXPLAIN

After reading, point out to students that this article presented a unique problem and solution: A polar bear pushed the man's camera into the water. He used a robot to grab it and get it back. Have students brainstorm ideas about other ways Audun could have solved his problem. Say: **Chances are you will never have to deal with this same situation. But, you will have to solve problems. And like Audun, you'll have to use whatever tools are on hand to find a solution.** Guide students to recognize that Audun's idea was actually a pretty smart solution. He got his camera back, he stayed safe and dry, and he got some pretty cool pictures, too!

ELABORATE

Point out to students that Audun's photos do a good job of showing what happened to his camera. The captions tell a simple story. But what if there were more photos? Have students brainstorm ideas for three more photos that add details to the story. As a class, write a short story that tells what happened, from beginning to end, on the day Audun saved his camera from a curious polar bear.

EVALUATE

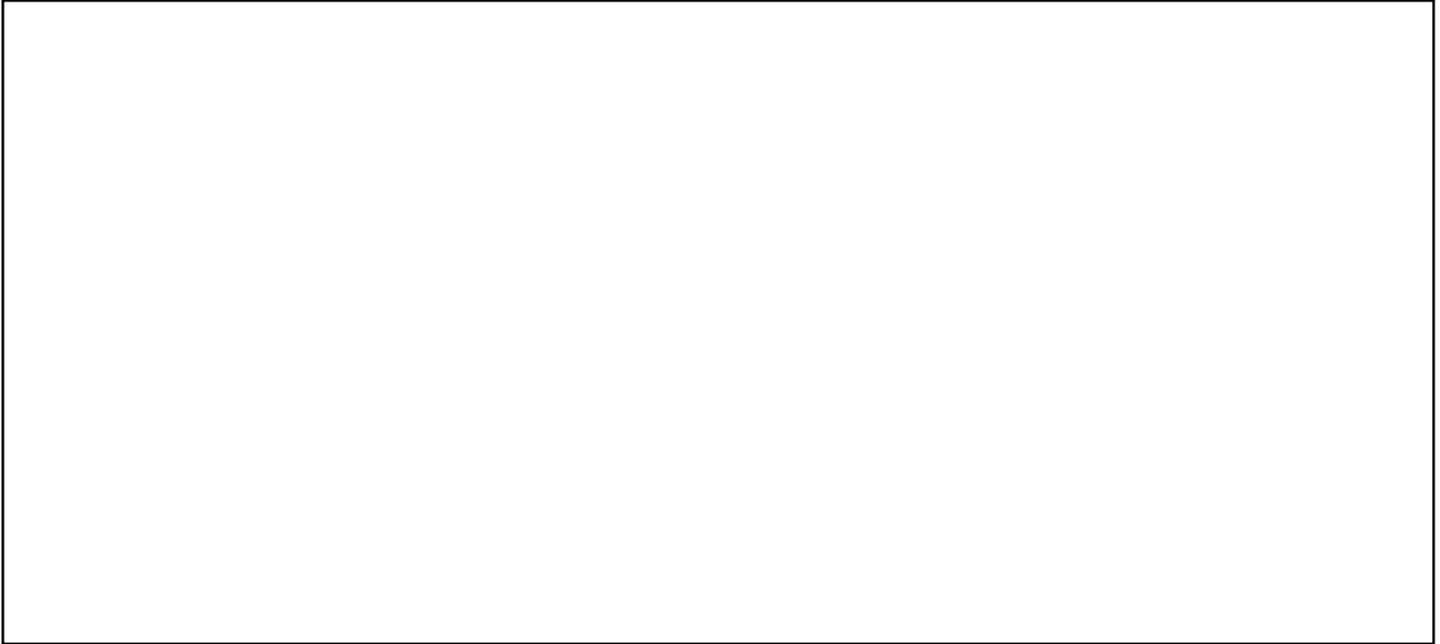
Have students complete the Science Master for this lesson. Encourage them to share and compare their results in small groups or with a partner.

Name _____

Date _____

SCIENCE: Along Came a Polar Bear

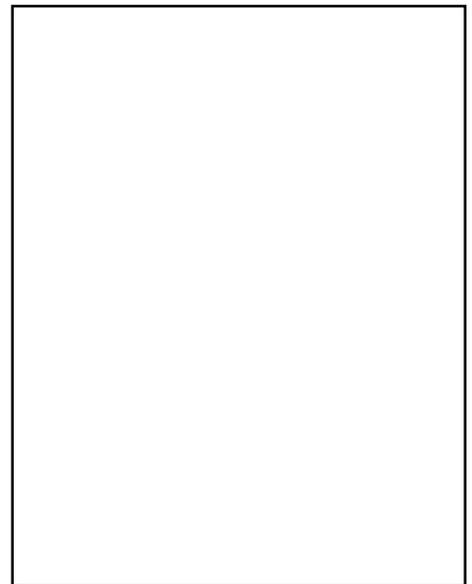
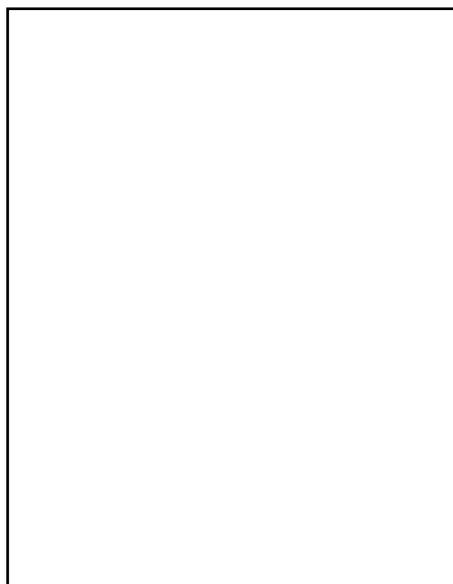
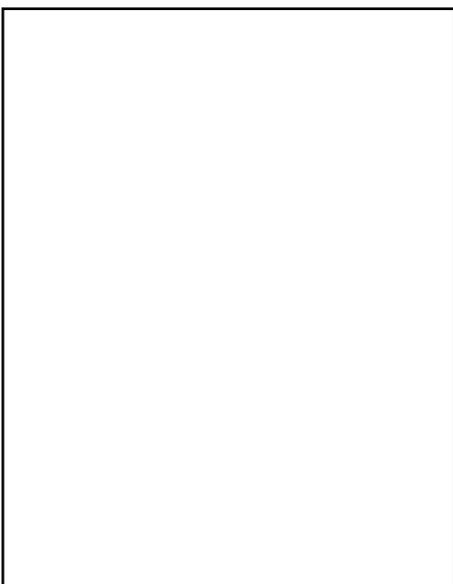
Draw a picture of a problem you want to solve.



Write or draw three solutions you could try.

Circle the solution you think works best.

Tell a friend why you think it is the best solution.



ANSWER KEY

Language Arts

Think Sheet, page 5

Students should draw or write what they learned about how crayons are made.

Making Crayons

Social Studies: page 9

Part 1: Students should select one color and draw a picture using that color. They should write the name of that color on the line.

Part 2: The correct order is 5, 3, 6, 4, 1, 2.

P is for Park

Science: page 11

Part 1: Students should draw pictures of three animals that eat plants and the plants they eat. Animals selected will vary, but they should live in your area and eat plants, and the plants drawn should be part of each animal's diet.

Part 2: Students should circle the panda.

Along Came a Polar Bear

Science: page 13

Students should draw a picture of one problem, draw or write about three possible solutions, and circle the solution they think would work best. They should discuss their problem/solution with a classmate.

Words to Explore

1. crayon
2. problem
3. protect
4. camera