Grade 4

Evan-Moor

SKILL SHARPENERS

STEAM

Grade 4

Connecting School and Home

Downloadable Teaching Guide

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How to Use This Guide

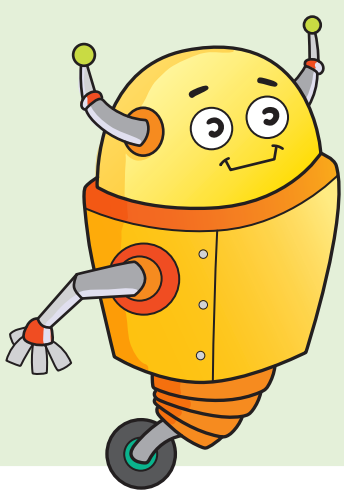
This guide provides suggestions and support to help you use *Skill Sharpeners: STEAM* as part of your core curriculum. The information and practice in *Skill Sharpeners: STEAM* introduce students to real-world problems in relatable contexts. The activities and projects focus on Science, Technology, Engineering, Art, and Math and provide hands-on experiences as well as connections to real-world scenarios and careers. The discussion questions and field trip suggestions provided in this guide will help you extend learning through additional conversations and real-world experiences.

How to Use the STEAM Approach to Education

STEAM is an approach to education that focuses on using Science, Technology, Engineering, Art, and Math to solve real-world problems. Empathy is at the core of STEAM education. Understanding how people, animals, or things are affected by a problem is an important part of the problem-solving and solution-seeking process. Teaching children how to think creatively prepares them for new unknown technologies, industries, and careers.

With STEAM activities and tasks, the final product is not as important as the process. Through the process of experimenting and exploring, your child is using creative and critical thinking skills. Scientists, mathematicians, engineers, and artists use the same critical thinking skills to find new and innovative solutions.

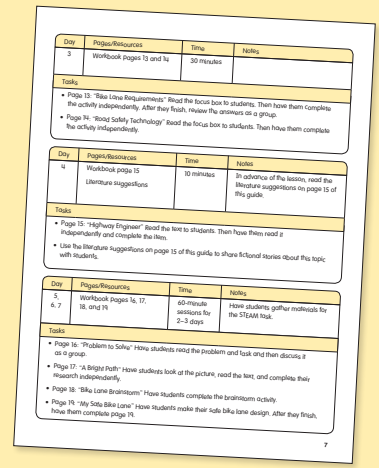




How to Use the Sample Pacing Plan and Template

The number of days you spend on each unit will depend on how you are using this resource. You may be using it to supplement your core curriculum or as part of a hybrid learning model.

The sample pacing plan is based on a 7-day lesson plan. Each day includes the *Skill Sharpeners: STEAM* workbook page numbers and suggested resources, the duration of the practice, relevant notes, and the tasks for that day. Refer to the sample plan to see examples of how and when to incorporate discussion questions, literature references, and field trips into your lesson plans.



Day	Pages/Resources	Time	Notes
3	Workbook pages 13 and 14	30 minutes	

Tasks

- Page 13: "Bike Lane Requirements" Read the focus box to students. Then have them complete the activity independently. After they finish, review the answers as a group.
- Page 14: "Road Safety Technology" Read the focus box to students. Then have them complete the activity independently.

Day	Pages/Resources	Time	Notes
4	Workbook page 15 Literature suggestions	10 minutes	In advance of the lesson, read the literature suggestions on page 15 of this guide.

Tasks

- Page 15: "Highway Engineer" Read the text to students. Then have them read it independently and complete the item.
- Use the literature suggestions on page 15 of this guide to share fictional stories about this topic with students.

Day	Pages/Resources	Time	Notes
5, 6, 7	Workbook pages 16, 17, 18, and 19	60-minute sessions for 2–3 days	Have students gather materials for the STEAM task.

Tasks

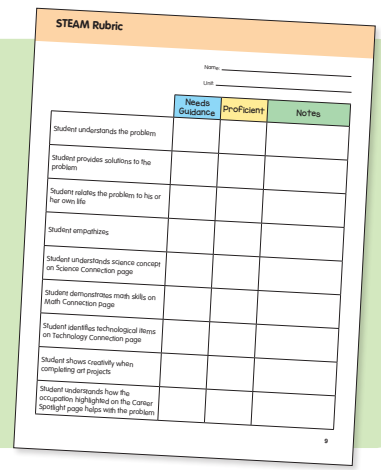
- Page 16: "Problem to Solve" Have students read the problem and task and then discuss it as a group.
- Page 17: "A Bright Path" Have students look at the picture, read the text, and complete their research independently.
- Page 18: "Bike Lane Brainstorm" Have students complete the brainstorm activity.
- Page 19: "My Safe Bike Lane" Have students make their safe bike lane design. After they finish, have them complete page 19.

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How to Use the STEAM Rubric and the Graphic Organizers

The STEAM Rubric can be used to measure and summarize students' understandings and competencies after they complete each unit.

The graphic organizers are intended to be used for field trips and virtual field trips. They provide a structure for students to record information as well as their observations and feelings.



STEAM Rubric

Name: _____

Unit: _____

	Needs Guidance	Proficient	Notes
Student understands the problem			
Student provides solutions to the problem			
Student relates the problem to his or her own life			
Student empathizes			
Student understands science concept on Science Connection page			
Student demonstrates math skills on Math Connection page			
Student identifies technological items on Technology Connection page			
Student shows creativity when completing art projects			
Student understands how the occupation highlighted on the Career Spotlight page helps with the problem			

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How to Use the Discussion Questions

This guide includes discussion questions for each Learn About the Problem nonfiction text. The discussion questions are intended to help students connect the topic to their own lives and deepen their understanding of how a problem can affect people, animals, a community, or a whole city—a problem can even affect an entire region. After students read the Learn About the Problem text, engage them in discussion about the topic. Explain to students that there are no right answers, and encourage them to share their experiences and opinions.



How to Use the Literature Suggestions

The literature suggestions in this guide focus on different aspects of a topic. You may choose to read the fiction and nonfiction books to students before beginning the unit, during the unit, or after the unit. Encourage students to think about how they would feel if they were the person in the story or they were experiencing the situation the story describes.

When to Do the Field Trips

The field trips may be most valuable after students complete the Connections activities and have read and completed the Career Spotlight.

The field trips and virtual field trips are intended to deepen students' understanding of the topic and extend their learning by having authentic or virtual experiences. As students participate in the field trips, encourage them to share their observations and ideas. At the end of the field trip, you may wish to have students share any solutions they come up with and have them think about how they can apply what they have experienced to their STEAM task.



Sample Pacing Plan

Unit: Safe Bike Lanes

Day	Pages/Resources	Time	Notes
1	Workbook pages 6 and 7 Workbook pages 8 and 9 Discussion questions, page 15 of this guide	60 minutes	Assign students partners for shared reading. Preview discussion questions on page 15 of this guide before the lesson.

Tasks

- Page 6: "On the Way to Soccer" Discuss the title and photos and have students share what they think the story is about.
- Assign students partners and have them read "On the Way to Soccer" together.
- Page 7: "Problems on the Way to Soccer" Have students complete the activity independently.
- After students complete the activity, have them share their responses with the class.
- Pages 8 and 9: "Safer Bike Rides" Preview the photos with students and have them share how they feel about what they see. Then read aloud the text to students.
- Next, have students read the text silently to themselves.
- Use the discussion questions or some of your own questions to engage students in discussing the topic and sharing their thoughts, opinions, and experiences.

Day	Pages/Resources	Time	Notes
2	Workbook pages 10, 11, and 12	90–120 minutes	Gather the materials students may potentially use for the project.

Tasks

- Page 10: "Safety Vest" Read the focus box and the directions to students.
- Pages 10 and 11: Next, guide students through steps 1 and 2.
- Page 12: Lastly, have students work independently to complete steps 3 and 4 and come together as a group to share their creations.

Day	Pages/Resources	Time	Notes
3	Workbook pages 13 and 14	30 minutes	

Tasks

- Page 13: "Bike Lane Requirements" Read the focus box to students. Then have them complete the activity independently. After they finish, review the answers as a group.
- Page 14: "Road Safety Technology" Read the focus box to students. Then have them complete the activity independently.

Day	Pages/Resources	Time	Notes
4	Workbook page 15 Literature suggestions	10 minutes	In advance of the lesson, read the literature suggestions on page 15 of this guide.

Tasks

- Page 15: "Highway Engineer" Read the text to students. Then have them read it independently and complete the item.
- Use the literature suggestions on page 15 of this guide to share fictional stories about this topic with students.

Day	Pages/Resources	Time	Notes
5, 6, 7	Workbook pages 16, 17, 18, and 19	60-minute sessions for 2–3 days	Have students gather materials for the STEAM task.

Tasks

- Page 16: "Problem to Solve" Have students read the problem and task and then discuss it as a group.
- Page 17: "A Bright Path" Have students look at the picture, read the text, and complete their research independently.
- Page 18: "Bike Lane Brainstorm" Have students complete the brainstorm activity.
- Page 19: "My Safe Bike Lane" Have students make their safe bike lane design. After they finish, have them complete page 19.

Pacing Template

Unit: _____

Day	Pages/Resources	Time	Notes

Tasks

Day	Pages/Resources	Time	Notes

Tasks

Day	Pages/Resources	Time	Notes

Tasks

STEAM Rubric

Name: _____

Unit: _____

	Needs Guidance	Proficient	Notes
Student understands the problem			
Student provides solutions to the problem			
Student relates the problem to his or her own life			
Student empathizes			
Student understands science concept on Science Connection page			
Student demonstrates math skills on Math Connection page			
Student identifies technological items on Technology Connection page			
Student shows creativity when completing art projects			
Student understands how the occupation highlighted on the Career Spotlight page helps with the problem			

KWLF Graphic Organizer

Name: _____

Topic: _____

K What I know

W What I want to know

L What I learned

F How I feel

What I Saw, What I Think It Means Graphic Organizer

Name: _____



What I saw:



What I think it means:

Same and Different Graphic Organizer

Name: _____

Same

Different

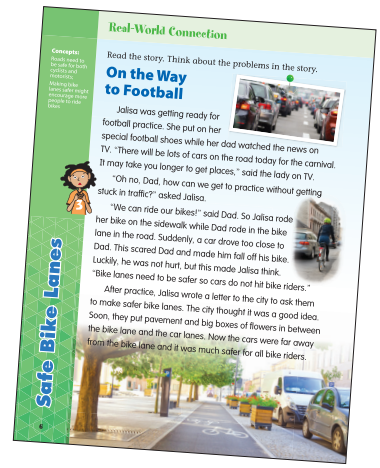
Why it's important

Organization of Each Unit

Each unit in *Skill Sharpeners: STEAM* focuses on a real-world problem and features a realistic fiction text, a nonfiction text, an art project, and a variety of activities that focus on science, technology, engineering, and math. In addition, each unit includes a career connection that features real-world jobs. Following is a description of each component of the unit and the role it plays and its value for students.

Real-World Connection

Each unit begins with a Real-World Connection text that focuses on the topic through a one-page realistic fiction story. The story provides context for students to understand the problem and possibly empathize with the people or animals that this problem affects. The story often includes multiple problems connected to the topic. Some problems are First World, such as inclusive playgrounds, and some are Third World, such as clean drinking water.


Real-World Connection

Read the story. Think about the problems in the story.

On the Way to Football

Jalisa was getting ready for football practice. She put on her special football shoes while her dad watched the news on TV. "There will be lots of cars on the road today for the carnival. It may take you longer to get places," said the lady on TV.

"Oh no, Dad, how can we get to practice without getting stuck in traffic?" asked Jalisa.

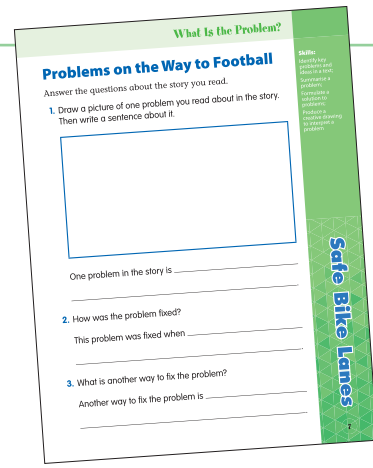
"We can ride our bikes!" said Dad. So Jalisa rode her bike on the sidewalk while Dad rode in the bike lane in the road. Suddenly, a car drove too close to Dad. This scared Dad and made him fall off his bike. Luckily, he was not hurt, but this made Jalisa think, "Bike lanes need to be safer so cars do not hit bike riders."

After practice, Jalisa wrote a letter to the city to ask them to make safer bike lanes. The city thought it was a good idea. Soon, they put pavement and big boxes of flowers in between the bike lane and the car lanes. Now the cars were far away from the bike lane and it was much safer for all bike riders.

Safe Bike Lanes

What Is the Problem?

The What Is the Problem? page follows the Real-World Connection story, and it focuses on having students identify one or more problems in the story. The items in this activity will help students think about the problem or problems that were presented and identify possible solutions from the story or from his or her own thoughts.


What Is the Problem?

Problems on the Way to Football

Answer the questions about the story you read.

1. Draw a picture of one problem you read about in the story. Then write a sentence about it.

One problem in the story is _____

2. How was the problem fixed?

This problem was fixed when _____

3. What is another way to fix the problem?

Another way to fix the problem is _____

Safe Bike Lanes

Learn About the Problem

Each unit includes a nonfiction text that provides students with more detailed information about the problem in the real world. Meaningful photos and illustrations provide context and enrich students' understanding of the problem.


Learn About the Problem

Safer Bike Rides

Bike riding is fun. It is a great way to exercise. It is also good for the environment. But sadly, some people get hurt riding bikes.

Bike Lanes

More and more people are choosing to ride their bikes to get places. So towns have bike lanes. A bike lane is a path in the road that is only for bike riders. A thick line is painted in between the bike and car lanes. Bike lanes also have a picture of a bike or the words **Bike Lane** painted in the lane to let people know where they can ride safely. People 10 years of age or older can ride in the bike lane.

Why Bike Lanes Are Important

Bike lanes are important because they keep bike riders and all other people safe. Before bike lanes, people rode on the sidewalk or in the same lanes as the cars on the street. Riding a bike on the sidewalk can cause you to crash into someone who is walking by. And riding a bike in the same lanes as cars can be unsafe, too. Bikes move more slowly than cars, so people driving behind bikes will try to go around them. These cars could hit the bike riders or other cars.

Safer Bike Lanes

Even though bike lanes are helpful, people on bikes are still getting hurt. This is mostly because cars travel too close to bike riders. This is why towns are making new bike lanes. Some towns paint the bike lanes bright blue, green, or red to help drivers see the bike path more easily. Some people believe there are even more ways to make bike lanes safer.

Safe Bike Lanes

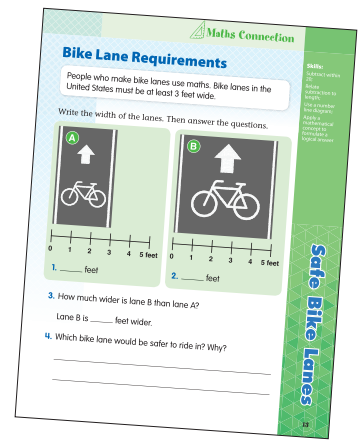
Art Connection

Each unit includes an art connection that incorporates creativity into finding solutions. These activities provide an opportunity to be creative and to learn about how to relate topics to art and present information in an engaging way.



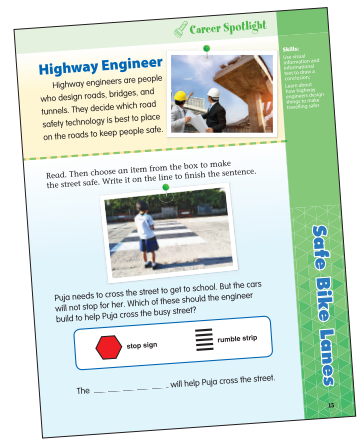
Science, Technology, Engineering, and Math Connections

The science, technology, and engineering connections present additional information about how these emphases are used to solve problems. The math connection activities relate the problems to a variety of real-world situations in which math concepts can be used to figure out solutions.



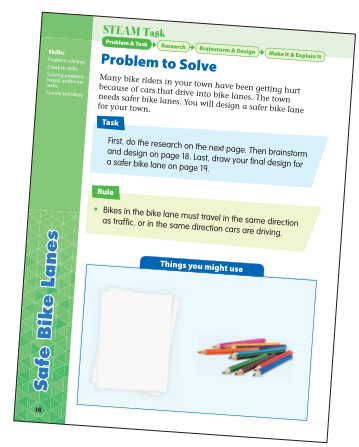
Career Spotlight

The career spotlight activities present a variety of careers related to the problems or solutions in the unit. These activities provide students with a real-world view of science, technology, engineering, arts, and math jobs and careers.



STEAM Task

Each unit culminates with a STEAM task. The STEAM task gives students a real-world scenario and a problem to solve using the following design process: Problem & Task, Research, Brainstorm & Design, Make It & Explain It. Students present their finished project, product, video, or other creation to an authentic audience.



Safe Bike Lanes

Discussion Questions

Discussion questions for "Safer Bike Rides," pages 8 and 9

After students read "Safer Bike Rides," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Do you ride a bike? Where do you ride it?

Have you or someone you know used bike lanes? Tell who and where.

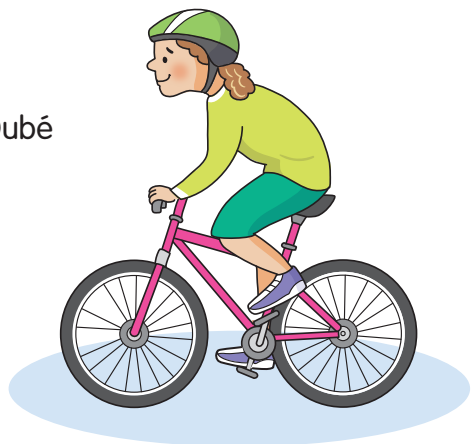
Do you think there should be bike lanes in every city? Explain your opinion.

Literature Suggestions

Consider reading students these stories about bike riding.

The Little Pig, the Bicycle, and the Moon, written by Pierrette Dubé

The Bike Lesson, written by Stan and Jan Berenstain



Discussion Questions

Discussion questions for "Shoes," pages 22 and 23

After students read "Shoes," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Have you ever hurt your feet when you were walking without shoes? Tell about what happened and how it felt.

Before you read "Shoes," did you know that some children do not have shoes to wear? If so, where did you learn that information?

Do you think the problem of not having shoes can be solved? Explain your thinking.

Literature Suggestions

Consider reading students these stories about shoes.

Those Shoes, written by Maribeth Boelts

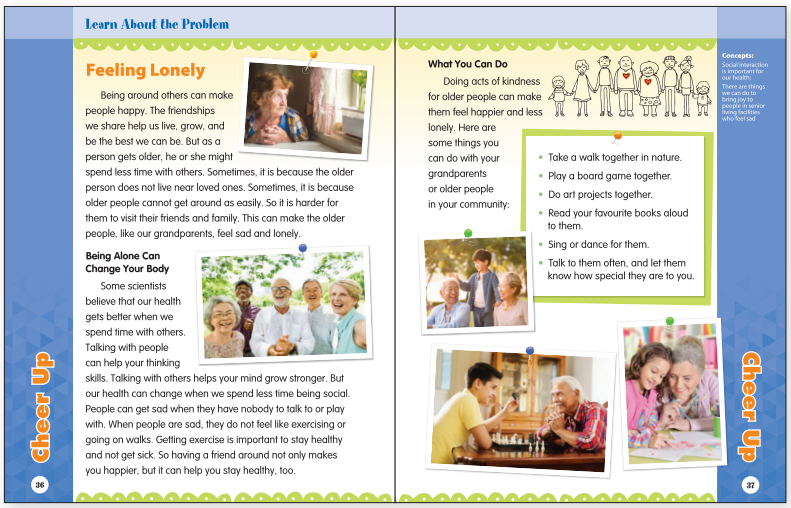
The Elephant's New Shoe, written by Laurel Neme, Wildlife Alliance, and Ariel Landy



Discussion Questions

Discussion questions for "Feeling Lonely," pages 36 and 37

After students read "Feeling Lonely," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Do you have an older person whom you and your family spend time with? Who is he or she?

Can you understand how people might feel sad or lonely if they are not around other people?

How do you think you would feel if you did not see your family or friends?

Do you know someone who shows acts of kindness to an older person? What does he or she do?

Field Trip Suggestion

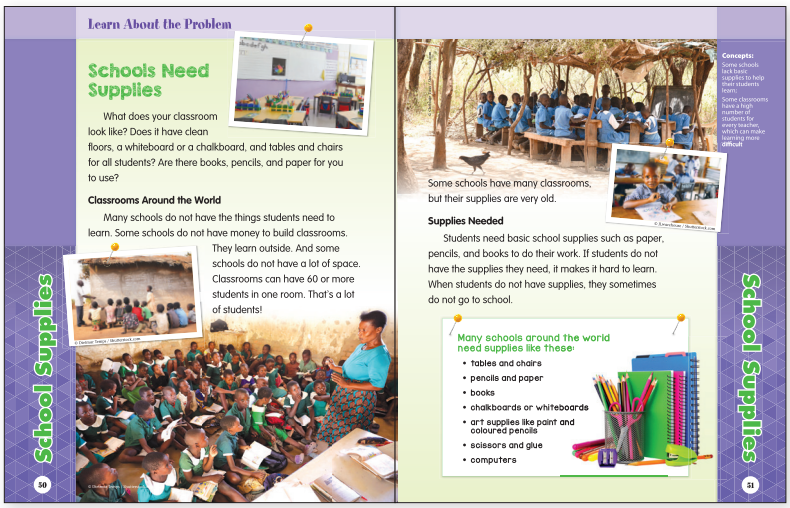
If you live near an elderly community or an elder care facility, you might consider organizing a field trip to visit it. Before you make the visit, have students make cards or draw pictures to give to the residents and choose a song to have students sing to them.

School Supplies

Discussion Questions

Discussion questions for "Schools Need Supplies," pages 50 and 51

After students read "Schools Need Supplies," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



The text said that some schools have 60 or more students in one room. How many students are in your class?

What do you think it would be like to have 60 students and only one teacher? Do you think having that many students changes the way you learn? Explain your opinion.

Was there ever a time when you did not have paper or pencils or something you needed to do your schoolwork? What did you do?

Do you think the problem of not having school supplies can be solved? Explain your thinking.

Literature Suggestions

Consider reading students this story about schools around the world.

School Days Around the World, written by Margriet Ruurs

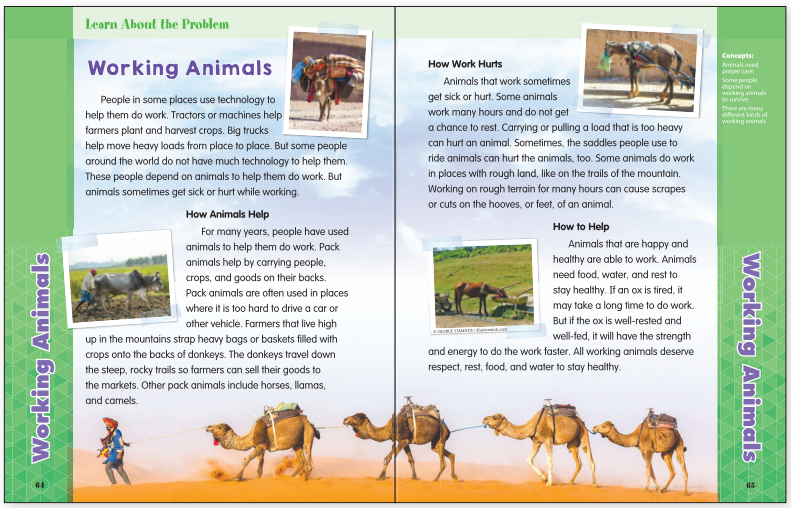


Working Animals

Discussion Questions

Discussion questions for "Working Animals," pages 64 and 65

After students read "Working Animals," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.


Learn About the Problem

Working Animals

People in some places use technology to help them do work. Tractors or machines help farmers plant and harvest crops. Big trucks help move heavy loads from place to place. But some people around the world do not have much technology to help them. These people depend on animals to help them do work. But animals sometimes get sick or hurt while working.

How Animals Help

For many years, people have used animals to help them do work. Pack animals help by carrying people, crops, and goods on their backs. Pack animals are often used in places where it is too hard to drive a car or other vehicle. Farmers that live high up in the mountains strap heavy bags or baskets filled with crops onto the backs of donkeys. The donkeys travel down the steep, rocky trails so farmers can sell their goods to the markets. Other pack animals include horses, llamas, and camels.

How Work Hurts

Animals that work sometimes get sick or hurt. Some animals work many hours and do not get a chance to rest. Carrying or pulling a load that is too heavy can hurt an animal. Sometimes, the saddles people use to ride animals can hurt the animals, too. Some animals do work in places with rough land, like on the trails of the mountain. Working on rough terrain for many hours can cause scrapes or cuts on the hooves, or feet, of an animal.

How to Help

Animals that are happy and healthy are able to work. Animals need food, water, and rest to stay healthy. If an ox is tired, it may take a long time to do work. But if the ox is well-rested and well-fed, it will have the strength and energy to do the work faster. All working animals deserve respect, rest, food, and water to stay healthy.

Concepts:
Animals need proper care.
Some people depend on working animals to survive.
There are many different kinds of working animals.

Working Animals

64

Working Animals

65

Do you have any animals? Tell what kind of animal and how you feel about it.

Do you know anyone who has animals that help them work? What kind of animals? What kind of work do the animals do?

According to the text, if animals are well-fed and well-rested, they will have strength and energy to help people do the jobs that need to be done. Does this thinking make sense to you? Why or why not?

Field Trip Suggestions

If you live near a working farm, you might consider organizing a field trip to visit it. While there, have students notice what kind of work the animals are doing and draw pictures of it to document their visit.

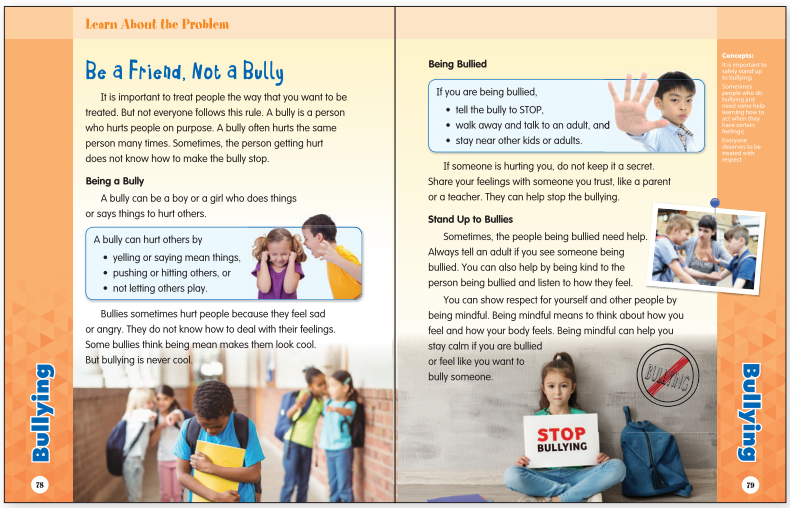
If you do not live near a working farm, consider taking a virtual field trip to one. Have students notice what kind of work the animals are doing and draw pictures of it to document their visit.



Discussion Questions

Discussion questions for "Be a Friend, Not a Bully," pages 78 and 79

After students read "Be a Friend, Not a Bully," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Have you ever been bullied? If you feel comfortable talking about it, share what happened.

Have you ever seen someone being bullied? What happened? How did you feel about what you saw or heard?

According to the text, some bullies are people who feel sad or angry inside. What can people do to help them?

Do you think the problem of bullying can be solved? Explain your opinion.

Literature Suggestions

Consider reading students these stories about bullying.

What Is Empathy?: A Bullying Storybook for Kids, written by Amanda Morin

Bully B.E.A.N.S., written by Julia Cook

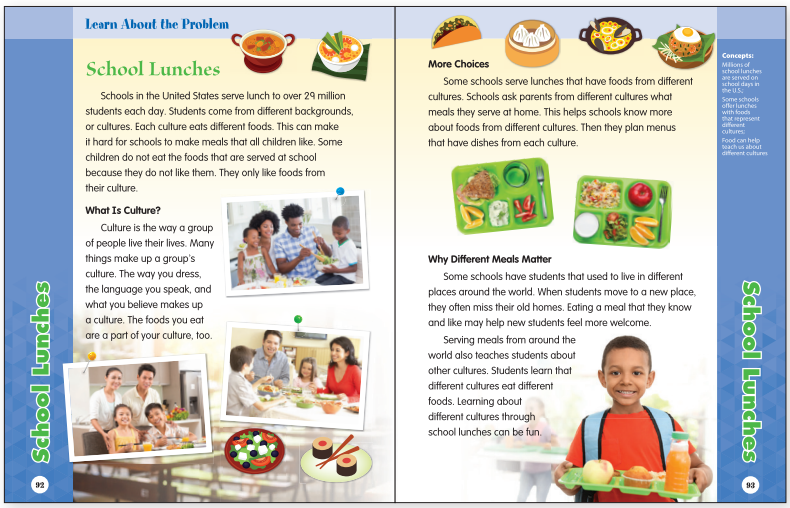


School Lunches

Discussion Questions

Discussion questions for "School Lunches," pages 92 and 93

After students read "School Lunches," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Does your school serve lunches? Tell about the different meals and which ones are your favorites.

Do the students at your school come from a variety of cultures? Which cultures?

Do you see kids at school eating meals from different cultures, such as Indian or Vietnamese meals?

Do you think that schools should serve meals from different cultures? Explain your opinion.

Literature Suggestions

Consider reading students these stories and recipes about what kids from around the world eat.

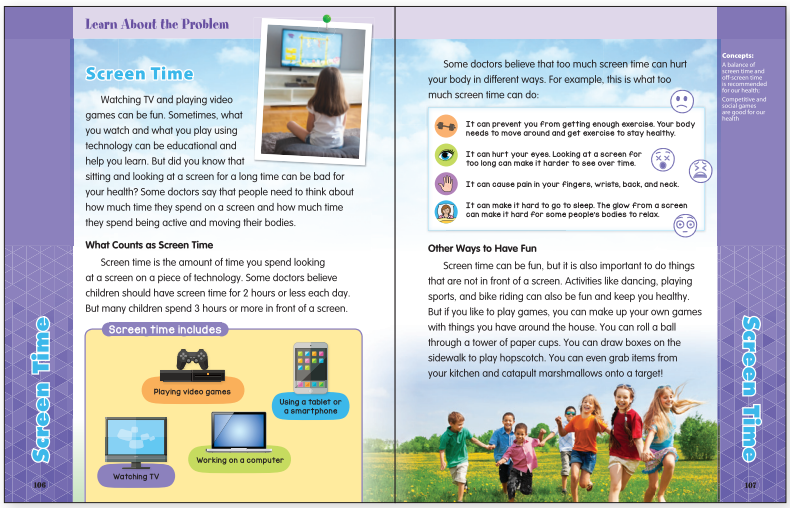
This Is How We Do It: One Day in the Lives of Seven Kids from Around the World, written by Matt Lamothe

Cooking Class Global Feast!: 44 Recipes That Celebrate the World's Cultures, written by Deanna F. Cook

Discussion Questions

Discussion questions for "Screen Time," pages 106 and 107

After students read "Screen Time," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Do you have screen time? If so, tell where—for example, watching TV, playing video games, etc.

Do your parents put a limit on how much screen time you can have? Tell about it.

Do you believe too much screen time can be harmful to people? Explain your opinion.

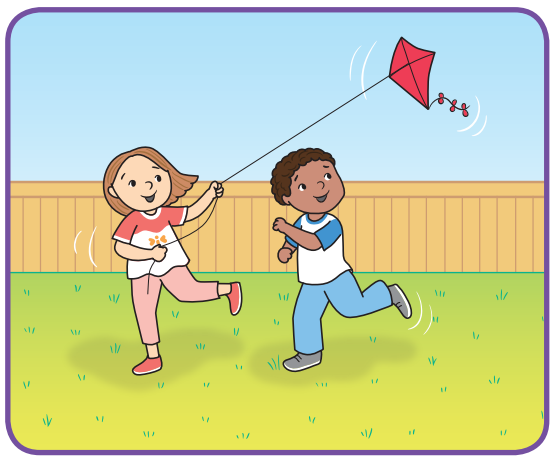
Do you think the problem of too much screen time can be solved? Explain your opinion.

Literature Suggestions

Consider reading students these stories about screen time.

Cami and Wyatt Have Too Much Screen Time! written by Stacy C. Bauer

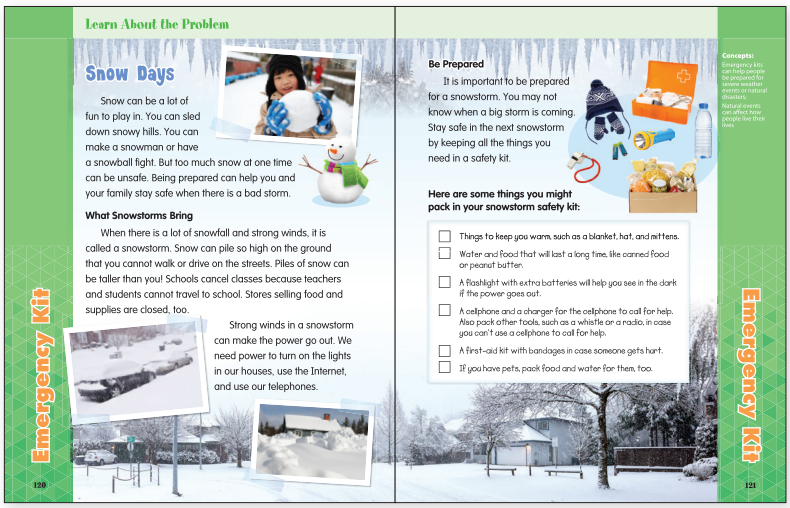
Ollie Outside: Screen-Free Fun, written by Michael Oberschneider, Psy.D.



Discussion Questions

Discussion questions for "Snow Days," pages 120 and 121

After students read "Snow Days," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Do you live in an area where it snows? Have you ever been in a snowstorm and lost electricity? Tell about it.

Does your family have an emergency kit for snowstorms? What is in it?

Are there good things about a snowstorm? Name them. Are there bad things about a snowstorm? Name them.

Literature Suggestions

Consider reading students these stories about snowstorms.

Snow Day! written by Lester L. Laminack

A Snowstorm Shows Off: Blizzards, written by Belinda Jensen





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