Grade 3

Evan-Moor

SKILL SHARPENERS

STEAM

Grade 3

Connecting School and Home

Downloadable Teaching Guide

Contents



How to Use This Guide 3
How to Use the STEAM Approach to Education 3
How to Use the Sample Pacing Plan and Template 4
How to Use the STEAM Rubric and the Graphic Organizers 4
How to Use the Discussion Questions 4
How to Use the Literature Suggestions 5
When to Do the Field Trips 5
Sample Pacing Plan and Template 6
STEAM Rubric 9
Graphic Organizers 10
Organization of Each Unit 13

Trash 15
Power of Pictures 16
Playground for All 17
Clean Water 18
Butterflies 19
Recess 20
Gardens 21
Moving to a New Place 22
Walk to School 23

How to Use This Guide

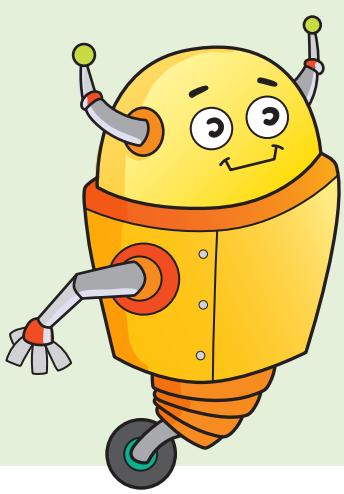
This guide provides suggestions and support to help you use *Skill Sharpeners: STEAM* as part of your core curriculum. The information and practice in *Skill Sharpeners: STEAM* introduce students to real-world problems in relatable contexts. The activities and projects focus on Science, Technology, Engineering, 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.

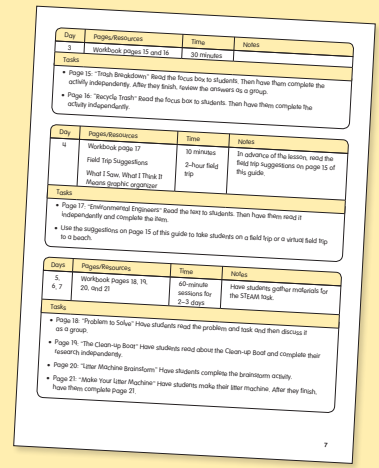




How to Use the Sample Pacing Plan and Template

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 15 and 16	30 minutes	

Tasks

- Page 15: "Trash Breakdown" Read the focus box to students. Then have them complete the activity independently. After they finish, review the answers as a group.
- Page 16: "Recycle Trash" Read the focus box to students. Then have them complete the activity independently.

Day	Pages/Resources	Time	Notes
4	Workbook page 17 Field Trip Suggestions What I Saw, What I Think It Means graphic organizer	30 minutes 2-hour field trip	In advance of the lesson, read the field trip suggestions on page 15 of this guide.

Tasks

- Page 17: "Environmental Engineers" Read the text to students. Then have them read it independently and complete the item.
- Use the suggestions on page 15 of this guide to take students on a field trip or a virtual field trip to a beach.

Days	Pages/Resources	Time	Notes
5, 6, 7	Workbook pages 18, 19, 20, and 21	60-minute sessions for 2–3 days	Have students gather materials for the STEAM task.

Tasks

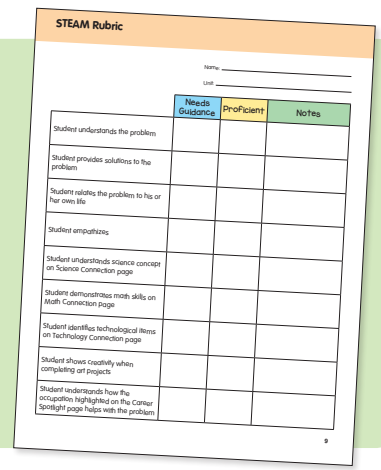
- Page 18: "Problem to Solve" Have students read the problem and task and then discuss it as a group.
- Page 19: "The Clean-up Boat" Have students read about the Clean-up Boat and complete their research independently.
- Page 20: "Litter Machine Brainstorm" Have students complete the brainstorm activity.
- Page 21: "Make Your Litter Machine" Have students make their litter machine. After they finish, have them complete page 21.

7

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			

9

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: Trash

Day	Pages/Resources	Time	Notes
1	Workbook pages 8 and 9 Workbook pages 10 and 11 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 8: "Dirty Beach" Discuss the title and photos and have students share what they think the story is about.
- Assign students partners and have them read "Dirty Beach" together.
- Page 9: "Problems at the Beach" Have students complete the activity independently.
- After students complete the activity, have them share their responses with the class.
- Pages 10 and 11: "Trash in Our Oceans" 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 12, 13, and 14	90–120 minutes	Have students bring recyclable materials for the project.

Tasks

- Page 12: "Recycled Art" Preview the photos with students and have them identify the materials that they see.
- Pages 12 and 13: Next, guide students through steps 1 and 2.
- Page 14: 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 15 and 16	30 minutes	

Tasks

- Page 15: "Trash Breakdown" Read the focus box to students. Then have them complete the activity independently. After they finish, review the answers as a group.
- Page 16: "Recycle Trash" Read the focus box to students. Then have them complete the activity independently.

Day	Pages/Resources	Time	Notes
4	Workbook page 17 Field Trip Suggestions What I Saw, What I Think It Means graphic organizer	10 minutes 2–hour field trip	In advance of the lesson, read the field trip suggestions on page 15 of this guide.

Tasks

- Page 17: "Environmental Engineers" Read the text to students. Then have them read it independently and complete the item.
- Use the suggestions on page 15 of this guide to take students on a field trip or a virtual field trip to a beach.

Days	Pages/Resources	Time	Notes
5, 6, 7	Workbook pages 18, 19, 20, and 21	60-minute sessions for 2–3 days	Have students gather materials for the STEAM task.

Tasks

- Page 18: "Problem to Solve" Have students read the problem and task and then discuss it as a group.
- Page 19: "The Clean-up Boat" Have students read about the Clean-up Boat and complete their research independently.
- Page 20: "Litter Machine Brainstorm" Have students complete the brainstorm activity.
- Page 21: "Make Your Litter Machine" Have students make their litter machine. After they finish, have them complete page 21.

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

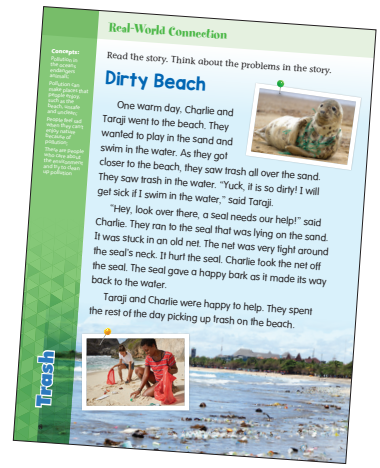
Why it's important

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.

Dirty Beach

One warm day, Charlie and Taraji went to the beach. They wanted to play in the sand and swim in the water. As they got closer to the beach, they saw trash all over the sand. They saw trash in the water. "Yuck, it is so dirty! I will get sick if I swim in the water," said Taraji.

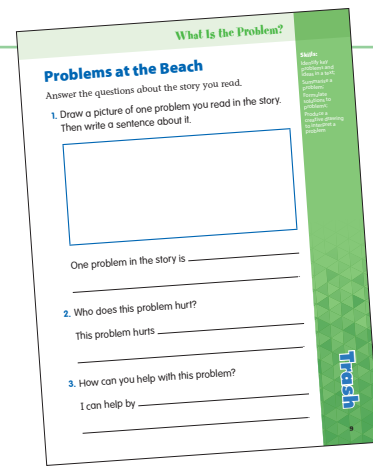
"Hey, look over there, a seal needs our help!" said Charlie. They ran to the seal that was lying on the sand. It was stuck in an old net. The net was very tight around the seal's neck. It hurt the seal. Charlie took the net off the seal. The seal gave a happy bark as it made its way back to the water.

Taraji and Charlie were happy to help. They spent the rest of the day picking up trash on the beach.

Trash

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 at the Beach

Answer the questions about the story you read.

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

One problem in the story is _____

2. Who does this problem hurt?

This problem hurts _____

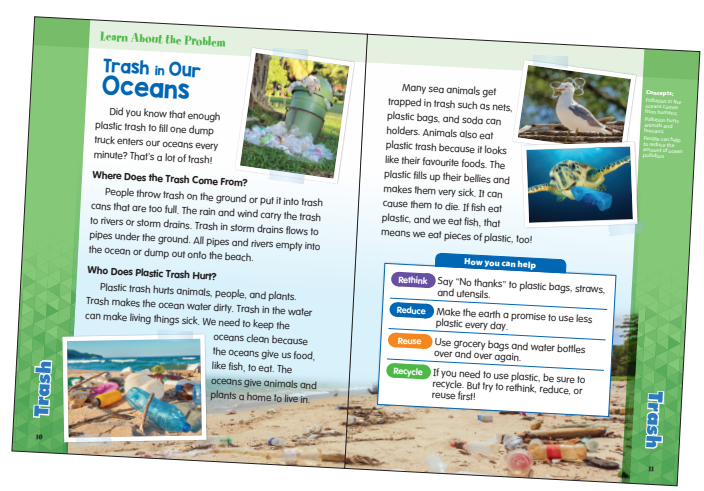
3. How can you help with this problem?

I can help by _____

Trash

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

Trash in Our Oceans

Did you know that enough plastic trash to fill one dump truck enters our oceans every minute? That's a lot of trash!

Where Does the Trash Come From?

People throw trash on the ground or put it into trash cans that are too full. The rain and wind carry the trash to rivers or storm drains. Trash in storm drains flows to pipes under the ground. All pipes and rivers empty into the ocean or dump out onto the beach.

Who Does Plastic Trash Hurt?

Plastic trash hurts animals, people, and plants. Trash makes the ocean water dirty. Trash in the water can make living things sick. We need to keep the oceans clean because the oceans give us food, like fish, to eat. The oceans give animals and plants a home to live in.

Many sea animals get trapped in trash such as nets, plastic bags, and soda can holders. Animals also eat plastic trash because it looks like their favourite foods. The plastic fills up their bellies and makes them very sick. It can cause them to die. If fish eat plastic, and we eat fish, that means we eat pieces of plastic, too!

How you can help

Rethink Say "No thanks" to plastic bags, straws, and utensils.

Reduce Make the earth a promise to use less plastic every day.

Reuse Use grocery bags and water bottles over and over again.

Recycle If you need to use plastic, be sure to recycle. But try to rethink, reduce, or reuse first!

Trash

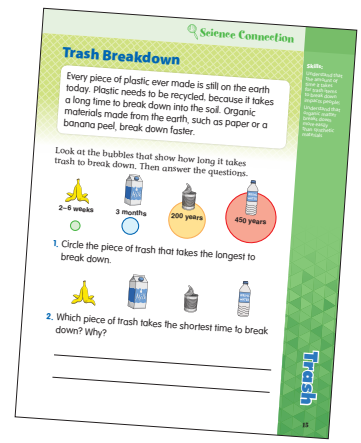
Art Connection

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.



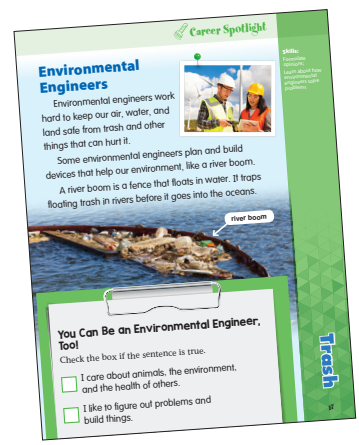
Science, Technology, Engineering, and Math Connections

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.



Discussion Questions

Discussion Questions for "Trash in Our Oceans," pages 10 and 11

After students read "Trash in Our Oceans," 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

Trash in Our Oceans

Did you know that enough plastic trash to fill one dump truck enters our oceans every minute? That's a lot of trash!

Where Does the Trash Come From?

People throw trash on the ground or put it into trash cans that are too full. The rain and wind carry the trash to rivers or storm drains. Trash in storm drains flows to pipes under the ground. All pipes and rivers empty into the ocean or dump out onto the beach.

Who Does Plastic Trash Hurt?

Plastic trash hurts animals, people, and plants. Trash makes the ocean water dirty. Trash in the water can make living things sick. We need to keep the oceans clean because the oceans give us food, like fish, to eat. The oceans give animals and plants a home to live in.

Trash

10

Many sea animals get trapped in trash such as nets, plastic bags, and soda can holders. Animals also eat plastic trash because it looks like their favourite foods. The plastic fills up their bellies and makes them very sick. It can cause them to die. If fish eat plastic, and we eat fish, that means we eat pieces of plastic, too!

Concepts:
Pollution in the oceans comes from humans.
Pollution hurts animals and humans.
People can help to reduce the amount of ocean pollution

How you can help

Rethink — Say "No thanks" to plastic bags, straws, and utensils.

Reduce — Make the earth a promise to use less plastic every day.

Reuse — Use grocery bags and water bottles over and over again.

Recycle — If you need to use plastic, be sure to recycle. But try to rethink, reduce, or reuse first!

Trash

11

What can you do if you have trash, but there isn't a place to throw it away?

Is there a beach or shore near where you live? If so, have you ever seen trash on that beach or shore? What kinds of trash did you see?

What would you do if you were at a beach and you saw a bird with trash caught around its neck?

Should all the people in a community care about trash in the oceans? Why or why not?

Do you think the problem of trash in rivers and oceans can be solved? Explain your thinking.

Field Trip Suggestions

If you live near an ocean, a lake, or a river, you might consider organizing a field trip to visit it. While there, have students record natural materials they see near the water's edge as well as manufactured materials such as trash.

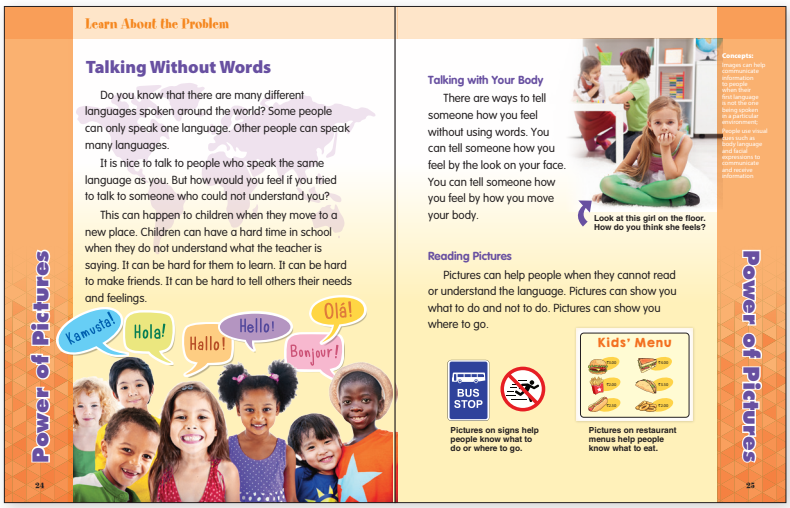
If you do not live near a beach, consider taking a virtual field trip to one. There are many resources online that will take your students on a virtual tour. Have students compare the beach in the virtual tour to the beach in the story "Dirty Beach," which is on page 8.



Discussion Questions

Discussion Questions for "Talking Without Words," pages 24 and 25

After students read "Talking Without Words," 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 to a place where you did not speak the same language that everyone else was speaking? Where was it? How did you feel?

Have you ever known how someone feels just by looking at his or her face? How did he or she look?

Have you ever used pictures to help you know what to do or where to go? Tell about it.

Do you think it would be hard if you had to learn in a language that was different from the one you speak at home? What do you think would be hard about it?

Field Trip Suggestions

If you live near an art museum that features paintings, you might consider organizing a field trip to visit it. While there, have students record which pictures they like and what they thought the artist was trying to show or say.

If you do not live near an art museum, consider taking a virtual field trip to one. There are many resources online that will take your students on a virtual tour. Have students record which pictures they like and what they thought the artist was trying to show or say.

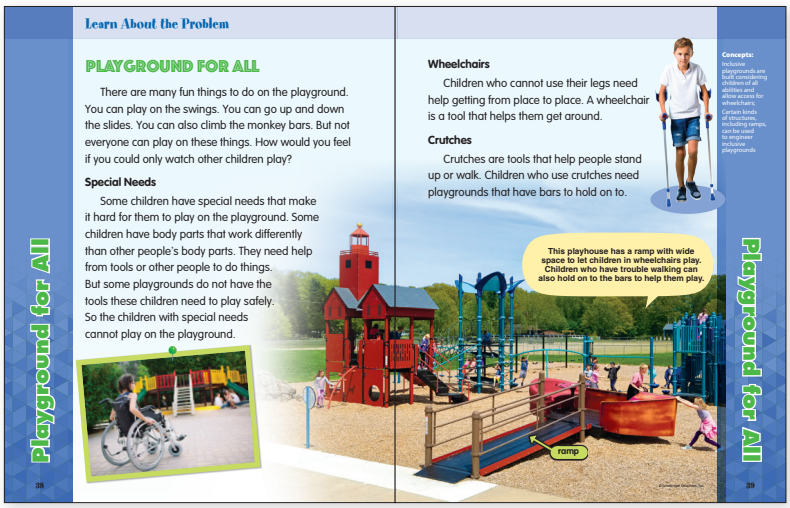


Playground for All

Discussion Questions

Discussion Questions for "Playground for All," pages 38 and 39

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



Do you know any people who have special needs? Do they use any tools to help them do the things they want to do?

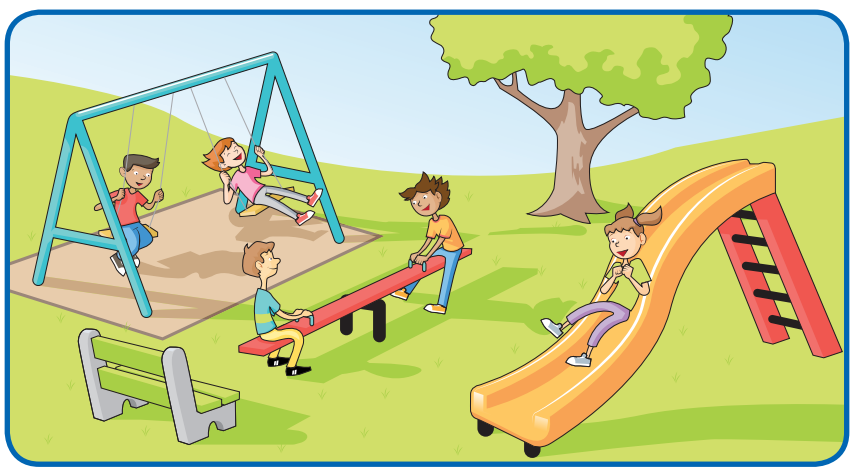
Have you ever been to a special-needs playground? If so, what was different about it?

Can you think of places other than a playground that can be made better for people who have special needs?

Field Trip Suggestions

If you live near an inclusive playground, you might consider organizing a field trip to visit it. While there, have students compare it with a playground that is not inclusive.

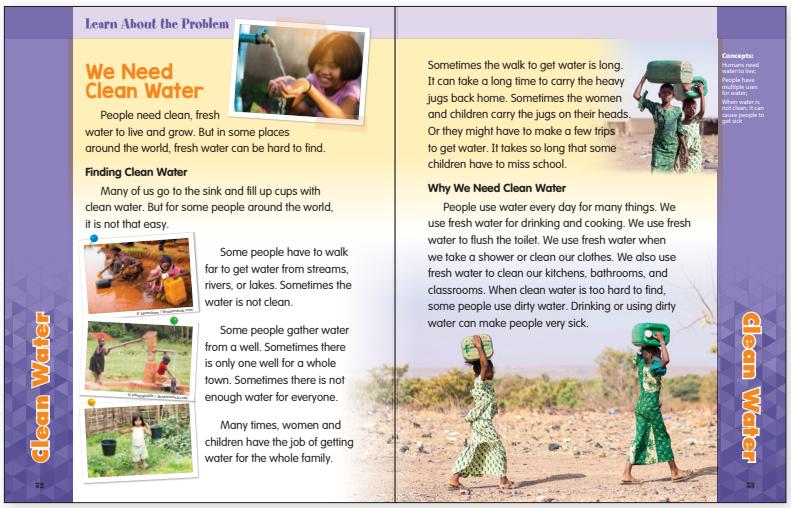
If you do not live near an inclusive playground, consider taking a virtual field trip to one or visiting a website that features photos of inclusive playgrounds. Have students compare it with a playground that is not inclusive.



Discussion Questions

Discussion Questions for "We Need Clean Water," pages 52 and 53

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



Before you read "We Need Clean Water," did you know that there are places in the world that do not have clean water? Where did you learn about them?

How do you think it would feel not to have clean water? How would it affect your daily life?

Do you think walking for miles with a big jug of water would be hard? What would be hard about it?

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

Field Trip Suggestions

Consider taking a virtual field trip to an organization's website such as Water for South Sudan where photos of how they bring clean water to people are featured. Have students share their comments about the work that clean-water organizations do.



Discussion Questions

Discussion Questions for "Helpful Insects," pages 66 and 67

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



Have you ever seen a live butterfly when you were outside? What did it look like? What was it doing?

Did you know before your read "Helpful Insects" that butterflies help plants grow? Where did you learn that?

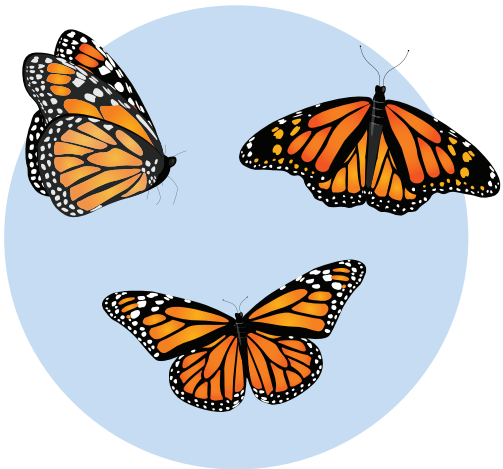
How do you feel about butterflies being food for other animals? Do you know of other animals in nature that are food for others?

Why do you think the author titled this text "Helpful Insects"?

Field Trip Suggestions

If you live near a butterfly sanctuary or conservatory, you might consider organizing a field trip to visit it. While there, have students notice butterflies landing on plants and flowers and observe what they are doing.

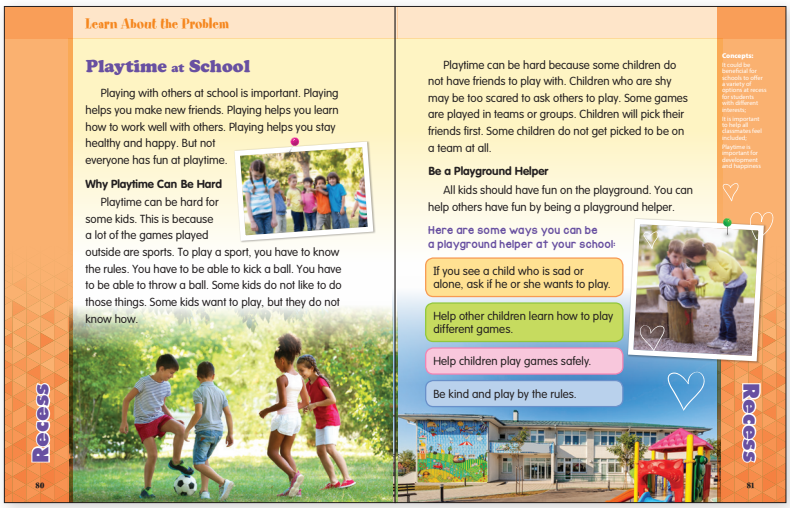
If you do not live near a butterfly sanctuary or conservatory, consider taking a virtual field trip to one or visiting a website that features photos of butterflies in their habitat. Have students notice butterflies landing on plants and flowers and observe what they are doing.



Discussion Questions

Discussion Questions for "Playtime at School," pages 80 and 81

After students read "Playtime at School," 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

Playtime at School

Playing with others at school is important. Playing helps you make new friends. Playing helps you learn how to work well with others. Playing helps you stay healthy and happy. But not everyone has fun at playtime.

Why Playtime Can Be Hard

Playtime can be hard for some kids. This is because a lot of the games played outside are sports. To play a sport, you have to know the rules. You have to be able to kick a ball. You have to be able to throw a ball. Some kids do not like to do those things. Some kids want to play, but they do not know how.

Playtime can be hard because some children do not have friends to play with. Children who are shy may be too scared to ask others to play. Some games are played in teams or groups. Children will pick their friends first. Some children do not get picked to be on a team at all.

Be a Playground Helper

All kids should have fun on the playground. You can help others have fun by being a playground helper.

Here are some ways you can be a playground helper at your school:

- If you see a child who is sad or alone, ask if he or she wants to play.
- Help other children learn how to play different games.
- Help children play games safely.
- Be kind and play by the rules.

Recess 80

Recess 81

Was there a time when you did not have friends to play with at recess? Tell about it.

Do you know someone who does not like to play sports at recess? What does he or she do instead?

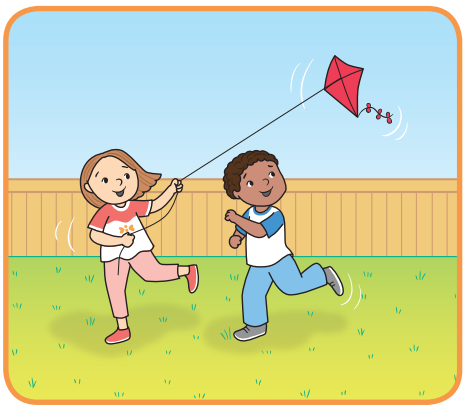
Have you ever helped someone who did not have friends to play with? What did you do?

Literature Suggestions

Consider reading students these stories about people who have a difficult time making friends.

Teach Your Dragon to Make Friends, written by Steve Herman

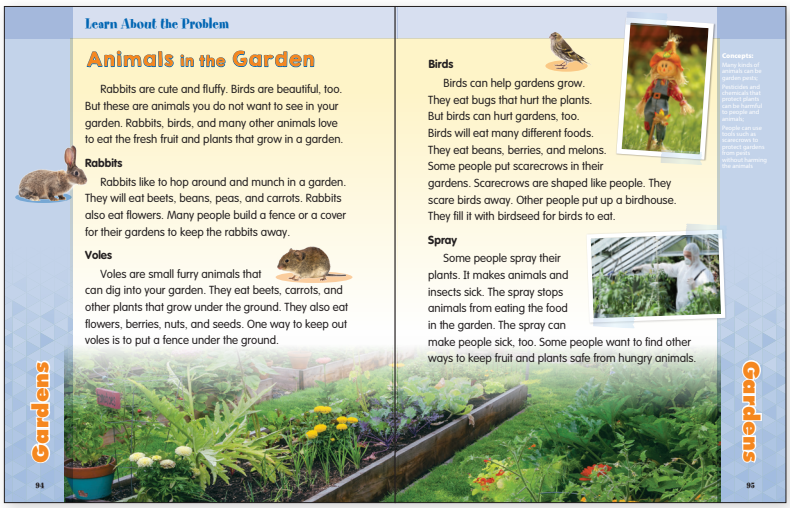
How to Be a Friend: A Guide to Making Friends and Keeping Them, written by Laurie Krasny Brown



Discussion Questions

Discussion Questions for "Animals in the Garden," pages 94 and 95

After students read "Animals in the Garden," 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

Animals in the Garden

Rabbits are cute and fluffy. Birds are beautiful, too. But these are animals you do not want to see in your garden. Rabbits, birds, and many other animals love to eat the fresh fruit and plants that grow in a garden.

Rabbits

Rabbits like to hop around and munch in a garden. They will eat beets, beans, peas, and carrots. Rabbits also eat flowers. Many people build a fence or a cover for their gardens to keep the rabbits away.

Voles

Voles are small furry animals that can dig into your garden. They eat beets, carrots, and other plants that grow under the ground. They also eat flowers, berries, nuts, and seeds. One way to keep out voles is to put a fence under the ground.

Birds

Birds can help gardens grow. They eat bugs that hurt the plants. But birds can hurt gardens, too. Birds will eat many different foods. They eat beans, berries, and melons. Some people put scarecrows in their gardens. Scarecrows are shaped like people. They scare birds away. Other people put up a birdhouse. They fill it with birdseed for birds to eat.

Spray

Some people spray their plants. It makes animals and insects sick. The spray stops animals from eating the food in the garden. The spray can make people sick, too. Some people want to find other ways to keep fruit and plants safe from hungry animals.

Gardens

94

95

Do you have a vegetable garden at your home? What is growing?

Have you ever seen wild animals such as rabbits and birds in your yard?

How would you feel if you planted a vegetable garden and rabbits and voles ate the vegetables that grew before you could pick them?

Do you think the problem of animals in gardens can be solved in a safe way? Explain your thinking.

Field Trip Suggestions

If you have access to a vegetable garden, you might consider organizing a field trip to visit it. While there, have students notice where the vegetables are located and discuss how animals are or are not able to eat them.

Literature Suggestions

Consider reading students these stories about animals and gardens.

In the Garden: Who's Been Here? written by Lindsay Barrett George

In a Garden, written by Tim McCanna

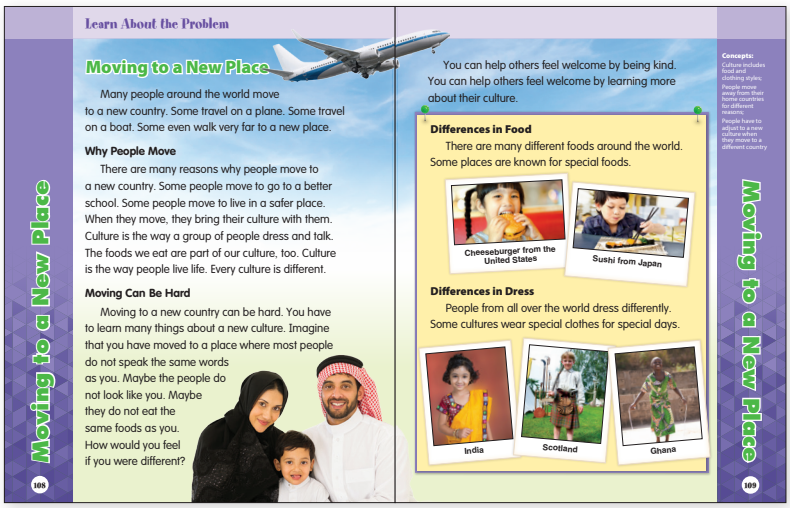


Moving to a New Place

Discussion Questions

Discussion Questions for "Moving to a New Place," pages 108 and 109

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



Have you ever moved to a different country? Tell about what it was like for you.

Have you had a new classmate that came from a different country? Was that new classmate different from you in some ways? Was that new classmate the same as you in some ways?

Do you think it would be hard to move to a country where people spoke a different language and ate different foods?

What is your culture? Are there special clothes or foods that are part of your culture? Tell about them.

Literature Suggestions

Consider reading students these stories about people from different cultures living in the same place.

Where Are You From? written by Yamile Saied Méndez

All Are Welcome, written by Alexandra Penfold

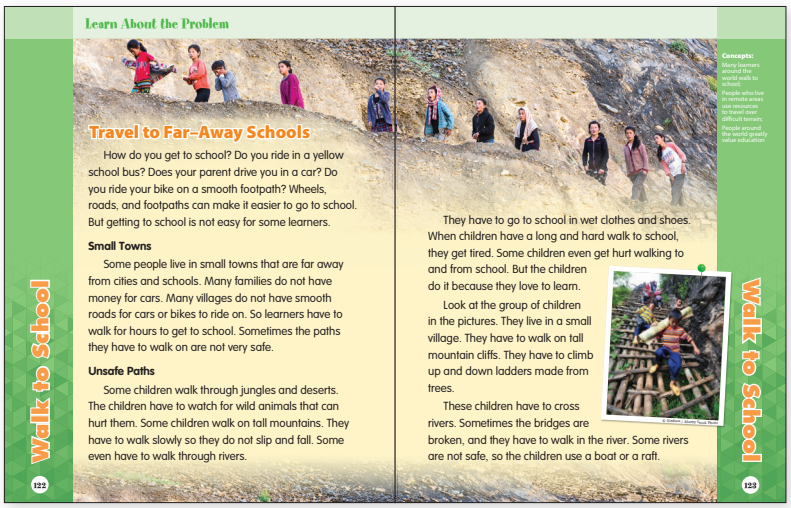


Walk to School

Discussion Questions

Discussion Questions for "Travel to Far-Away Schools," pages 122 and 123

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



How do you get to school every day? Are there things about it that are hard? Tell about them.

How would you feel if you had to worry about meeting wild animals on your way to school?

Do you think school is important to the children who walk miles to get there? Why do you think so?

Literature Suggestions

Consider reading students these stories about how people around the world get what they need and how they get to where they are going.

Nya's Long Walk written by Linda Sue Park

Schools Around the World written by Clare Lewis

Adventures to School: Real-Life Journeys of Students from Around the World written by Miranda and Baptiste Paul





saar EDUCATION (I) PVT LTD

Mumbai (Head Office)
4940/1B, Dhobiwadi, Dr. Jayakar Marg,
Opp. Datta Mandir, Thakurdwar, Mumbai-400002, India
+918291852631 / +918291972352

Noida (Corporate Office)
B-66, Sector-80, Noida, U.P.-201306 India
+91-120-4201396/97 +918368901114
Email: info@saareducation.com
Website: www.saareducation.com

Evan-Moor®
Helping Children Learn