Grade 7



SKILL SHARPENERS

STEAM

Grade 7

Connecting School and Home

Downloadable Teaching Guide

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How to Use This Guide

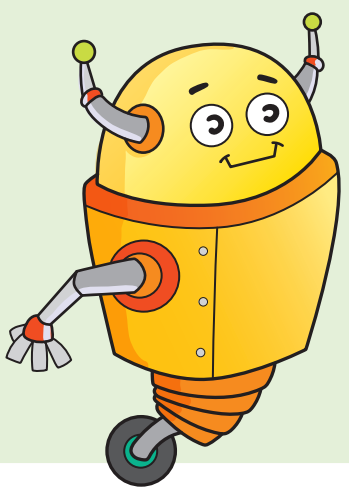
This guide provides suggestions and support to help you use *Skill Sharpeners: STEAM* as part of your core curriculum. The information and practice in *Skill Sharpeners: STEAM* introduce students to real-world problems in relatable contexts. The activities and projects focus on Science, Technology, Engineering,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

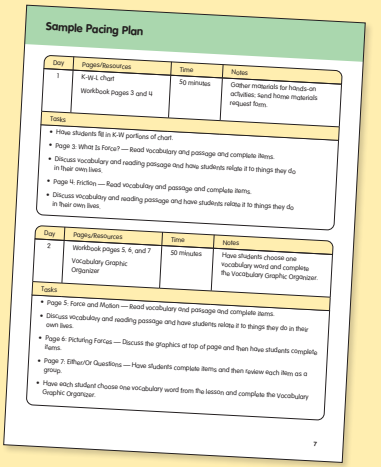




How to Use the Sample Pacing Plan and Template

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.


Sample Pacing Plan

Day	Pages/Resources	Time	Notes
1	K-W-L Chart Workbook pages 3 and 4	50 minutes	Gather materials for hands-on activities; send home materials request form.

Tasks

- Have students fill in K-W portions of chart.
- Page 3: What Is Force? — Read vocabulary and passage and complete items.
- Discuss vocabulary and reading passage and have students relate it to things they do in their own lives.
- Page 4: Friction — Read vocabulary and passage and complete items.
- Discuss vocabulary and reading passage and have students relate it to things they do in their own lives.

Day	Pages/Resources	Time	Notes
2	Workbook pages 5, 6, and 7 Vocabulary Graphic Organizer	50 minutes	Have students choose one vocabulary word and complete the Vocabulary Graphic Organizer.

Tasks

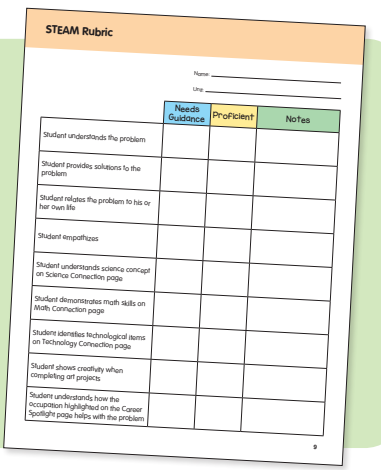
- Page 5: Force and Motion — Read vocabulary and passage and complete items.
- Discuss vocabulary and reading passage and have students relate it to things they do in their own lives.
- Page 6: Picturing Forces — Discuss the graphics at top of page and then have students complete items.
- Page 7: Either/Or Questions — Have students complete items and then review each item as a group.
- Have each student choose one vocabulary word from the lesson and complete the Vocabulary Graphic Organizer.

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: Too Much to Sell

Day	Pages/Resources	Time	Notes
1	Workbook pages 6 and 7 Workbook pages 8 and 9 Discussion questions, page 14 of this guide	60 minutes	Preview discussion questions on page 14 of this guide before the lesson.

Tasks

- Page 6: "Too Many Peaches to Sell" Discuss the title and photos and have students share what they think the story is about.
- Have students read "Too Many Peaches to Sell" silently to themselves.
- Page 7: "Choosing How to Use Extra Produce" Have students complete the activity independently.
- After students complete the activity, have them share their responses with the class.
- Pages 8 and 9: "When a Business Has Too Much to Sell" Preview the photos with students. Then 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 and 11	90–120 minutes	Gather the materials students need for the project.

Tasks

- Page 10: "Design a Gift Basket" Guide students through reading the focus box and the project requirements.
- Page 11: Have students work independently to sketch ideas for how to decorate their gift basket.
- Lastly, have students make their gift baskets and give them away.

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

Tasks

- Page 13: "Choosing and Using Materials" Read the focus box to students. Then have them re-read it silently on their own and complete the activity independently. After they finish, review the answers as a group.
- Page 14: "Shipping Fruits and Vegetables—Read the focus box to students. Then have them re-read it silently on their own and complete the activity independently. After they finish, review their responses as a group.

Day	Pages/Resources	Time	Notes
4	Workbook page 15 Field trip suggestions	10 minutes 2 hours	In advance of the lesson, read the field trip suggestions on page 14 of this guide.

Tasks

- Page 15: "Feeding the Community" Have students read the directions and complete the items independently.
- Use the suggestions on page 14 of this guide to take students on a field trip or a virtual field trip to a farm.

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: "Research Produce Packaging" Have students complete the items and conduct their research independently.
- Page 18: "Plan a Food Packaging Event" Have students complete the brainstorm and design activity independently.
- Page 19: "Thinking Ahead" Have students write instructions for the volunteers who will make the gift baskets. Then have students complete the items on 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

Design Process

Name: _____

What is the problem?

How can I help?

What I made.

What I will do next time.

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.

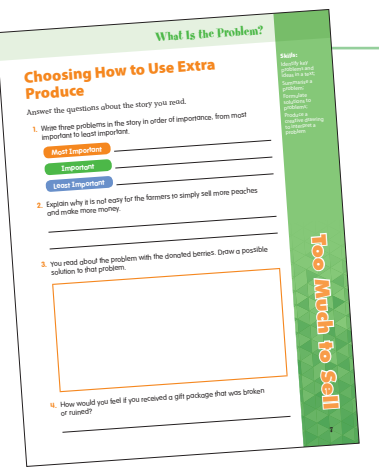
Real-World Connection

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.



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.



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.



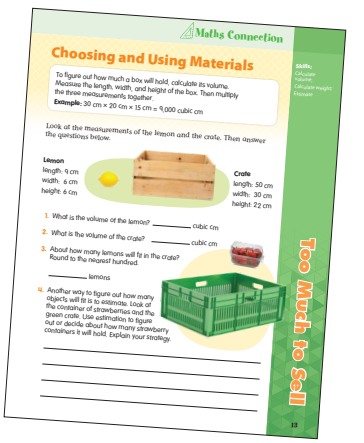
Art Connection

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.



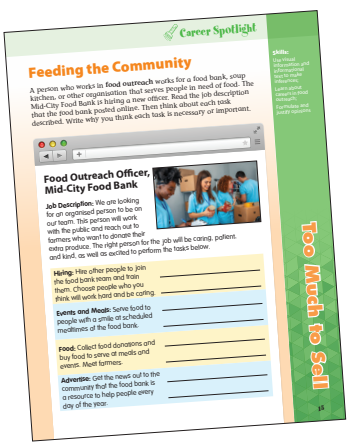
Science, Technology, Engineering, and Math Connections

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.



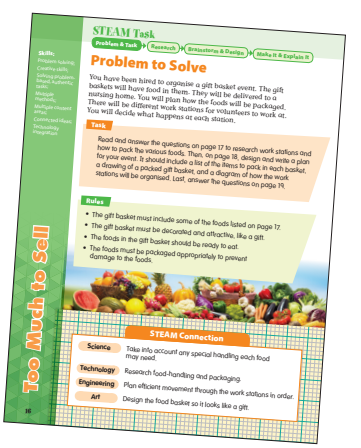
Career Spotlight

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.

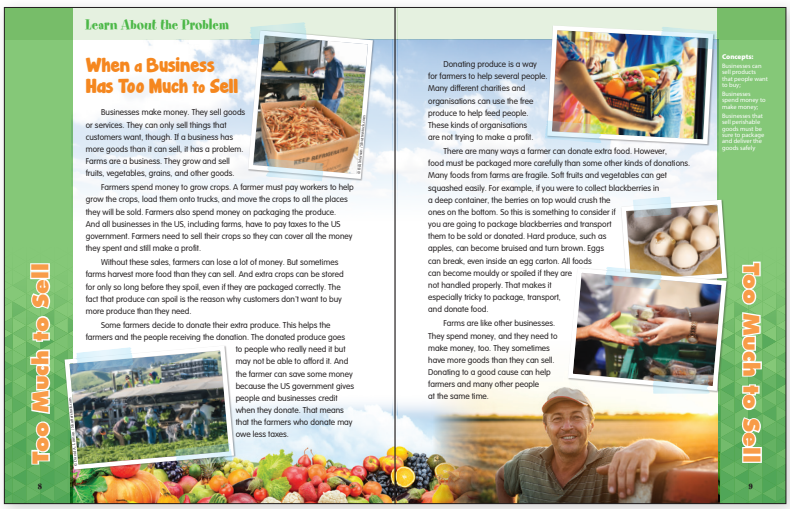


Too Much to Sell

Discussion Questions

Discussion questions for "When a Business Has Too Much to Sell," pages 8 and 9

After students read "When a Business Has Too Much to Sell," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic.



Do you live near any farms? What foods do the farms grow?

Have you donated anything? Tell about what you donated and to whom.

Do you think it is a good idea to donate produce that is not sold? Explain your opinion.

Can you empathize with the people who have to figure out how to safely package foods so they don't spoil? Why or why not?



Field Trip Suggestions

If you live near a farm, you might consider organizing a field trip to visit it. Have students notice the work they see being done, who is doing the work, and what is growing there. If they are able to interview the people who work on the farm, have them ask what the farmers do when they grow food that they cannot sell.

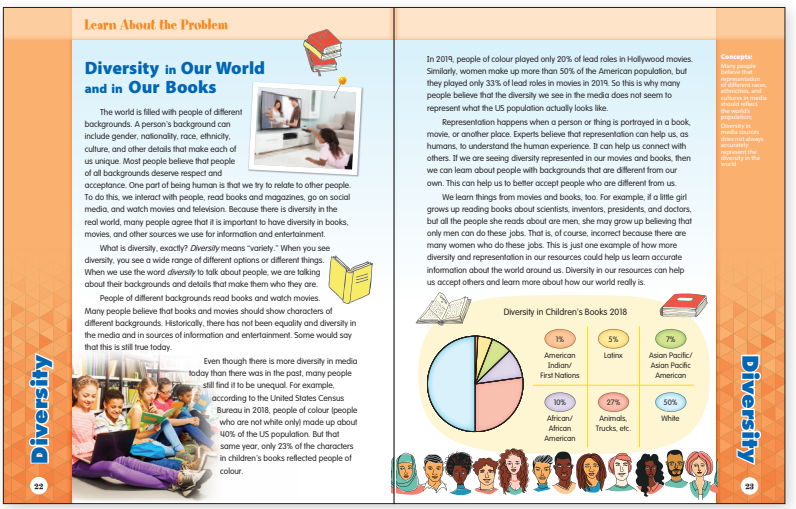
If you do not live near a farm, consider taking a virtual field trip to one. Have students notice what kind of work is being done, who is doing it, and what is growing there.



Discussion Questions

Discussion questions for "Diversity in Our World and in Our Books," pages 22 and 23

After students read "Diversity in Our World and in Our Books," 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

Diversity in Our World and in Our Books

The world is filled with people of different backgrounds. A person's background can include gender, nationality, race, ethnicity, culture, and other details that make each of us unique. Most people believe that people of all backgrounds deserve respect and acceptance. One part of being human is that we try to relate to other people. To do this, we interact with people, read books and magazines, go on social media, and watch movies and television. Because there is diversity in the real world, many people agree that it is important to have diversity in books, movies, and other sources we use for information and entertainment.

What is diversity, exactly? *Diversity* means "variety." When you see diversity, you see a wide range of different options or different things. When we use the word *diversity* to talk about people, we are talking about their backgrounds and details that make them who they are.

People of different backgrounds read books and watch movies. Many people believe that books and movies should show characters of different backgrounds. Historically, there has not been equality and diversity in the media and in sources of information and entertainment. Some would say that this is still true today.

Even though there is more diversity in media today than there was in the past, many people still find it to be unequal. For example, according to the United States Census Bureau in 2018, people of colour (people who are not white only) made up about 40% of the US population. But that same year, only 23% of the characters in children's books reflected people of colour.

Diversity

22

In 2019, people of colour played only 20% of lead roles in Hollywood movies. Similarly, women make up more than 50% of the American population, but they played only 33% of lead roles in movies in 2019. So this is why many people believe that the diversity we see in the media does not seem to represent what the US population actually looks like.

Representation happens when a person or thing is portrayed in a book, movie, or another place. Experts believe that representation can help us, as humans, to understand the human experience. It can help us connect with others. If we are seeing diversity represented in our movies and books, then we can learn about people with backgrounds that are different from our own. This can help us to better accept people who are different from us.

We learn things from movies and books, too. For example, if a little girl grows up reading books about scientists, inventors, presidents, and doctors, but all the people she reads about are men, she may grow up believing that only men can do these jobs. That is, of course, incorrect because there are many women who do these jobs. This is just one example of how more diversity and representation in our resources could help us learn accurate information about the world around us. Diversity in our resources can help us accept others and learn more about how our world really is.

Diversity in Children's Books 2018

1% American Indian/ First Nations
5% Latinx
7% Asian Pacific/ Asian Pacific American
10% African/ African American
27% Animals, Trucks, etc.
50% White

Concepts:
Many people believe that representation of different races, ethnicities, and cultures in media should reflect the world's population.
Diversity in media sources does not always accurately represent the diversity in the world.

Diversity

23

In what parts of your life is there diversity?

Is there diversity in the characters or illustrations in the books you read? Tell about them.

Do you think it is important for books, shows, games, and advertisements to show a diverse group of people? Whom do you think this is important to, and why do you think it is important to them?

Literature Suggestions

Consider reading students these stories about diversity and discuss how diversity is represented in the illustrations in these books.

Skin Like Mine, written by LaTashia M. Perry

We're More Alike Than Different, written by Sophia Day and Megan Johnson

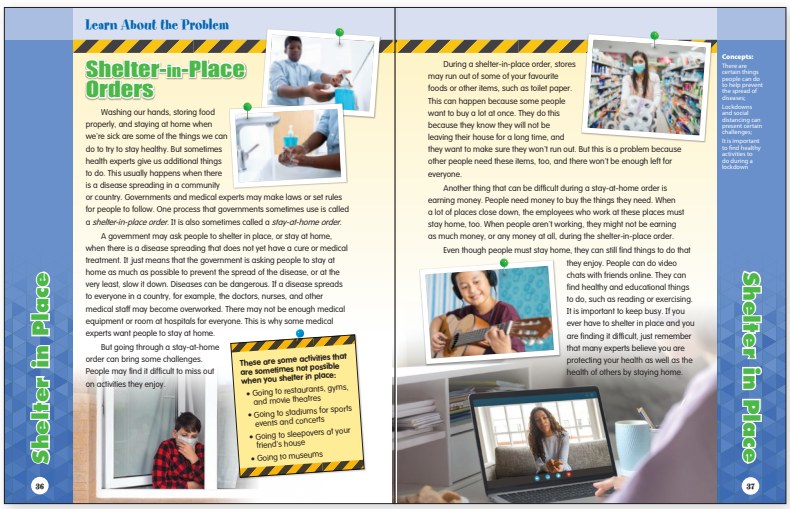


Shelter in Place

Discussion Questions

Discussion questions for "Shelter-in-Place Orders," pages 36 and 37

After students read "Shelter-in-Place Orders," use the following questions along with some of your own to encourage discussion and to deepen students' understanding of the topic. Please keep in mind, because of the 2020 pandemic, this may be a sensitive topic for some students, and they may not wish to share their stories.



Do you believe that sheltering in place can stop or slow the spread of a disease? Explain your opinion.

Have you or your family been affected by a shelter-in-place order? Tell about your experience.

Do you empathize with businesses that may suffer because of a shelter-in-place order, such as restaurants that cannot allow customers to come in and eat? Explain your answer.

Literature Suggestions

Consider reading students these stories about sheltering in place and discuss if they can relate to the stories.

Shelter-in-Place: a child's perspective, written by Andrea Blaine

Wade Through the Pandemic, written by Wade and Joshua Williams



Refugee Camp

Discussion Questions

Discussion questions for "Building a New Life," pages 50 and 51

After students read "Building a New Life," 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

Building a New Life

Have you ever moved to a new place? When families move, children may have to go to a new school and get used to a new neighbourhood. Some people find it difficult to leave behind friends and other things at their old home. Moving and getting used to a new life can pose challenges. When families leave their homes as refugees, it is different from simply moving from one place to another. Refugees often leave because they feel they have to, they don't necessarily want to. They leave their homes because their homes are no longer safe, possibly due to war or environmental conditions.

Refugees carrying their belongings

Because of this, many refugees leave in a rush, and they can bring very few of their belongings with them.

Thousands of refugees cross borders each day. Where do refugees go when they leave their homes so abruptly? Some refugees are able to immigrate to a new country. Many immigrants start an entirely new life and get an education or a job in their new country. Immigrants often learn a new language and learn the culture of the new country they live in. Refugees are sometimes able to return to their home country after it becomes safe again. But many refugees cannot become immigrants, and they go to live in refugee camps.

Refugee camps are living areas with shelters that are designed for people to stay in temporarily. Some refugee camps have large tents for people to live in. Many refugee camps have buildings, trailers, or other types of shelters. Even though they are meant to be temporary, a refugee may live in a camp for months or even years.

Refugee Camp

50

Concepts:

Negative conditions can force people to flee their home country;

Many countries try to help refugees;

Refugees often have limited access to resources

Classroom in a refugee camp

Camps provide shelter, food, security, and medical attention. Some camps have schools. There are some benefits to being in a camp. Still, there are things refugees don't get at the camps that they would if they had their own homes. Physical activity and entertainment are some examples of things that not all refugee camps can provide.

In a safe home situation, adults typically have jobs, and children typically have school and can join sports teams and clubs. Families walk to the park or to the market. People have picnics or family outings. These things are usually not possible in a refugee camp. So being in a refugee camp may affect some people's physical fitness and social experiences.

Some refugee camps organise football games and other activities for children. Some refugees are in camps for years after all, so activities like these can help people stay physically active.

Children playing in a refugee camp

Refugee Camp

51

Do you know anyone who is a refugee from another country? How are they similar to or different from you?

What do you think the most difficult part of living in a refugee camp would be? Why do you think so?

Do you empathize with families who have to leave their homes because of war? Why or why not? What would you say to a family whom this has happened to?

Virtual Field Trip Suggestion

Consider taking a virtual field trip to see a refugee camp. An organization such as the UN Refugee Agency has virtual tours on their website. Before the field trip, carefully preview any videos or pictures to make sure they are appropriate for students. After the field trip, have students discuss what they saw, what they think it means, and how they feel.

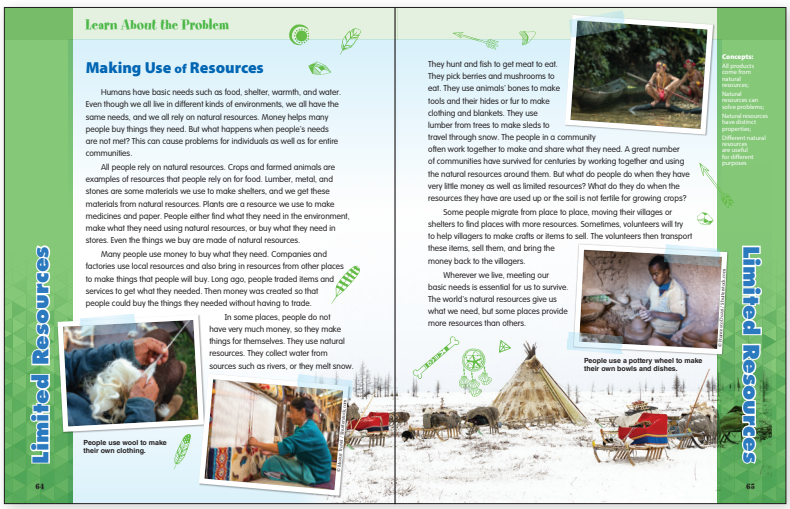


Limited Resources

Discussion Questions

Discussion questions for "Making Use of Resources," pages 64 and 65

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



What natural resources do you and your family rely on?

What natural resources are there in your environment?

Do you know people who hunt and fish to provide food for their family? Tell about them.

Literature Suggestion

Consider reading students this story about a boy who uses natural resources to survive.

My Side of the Mountain, written by Jean Craighead George

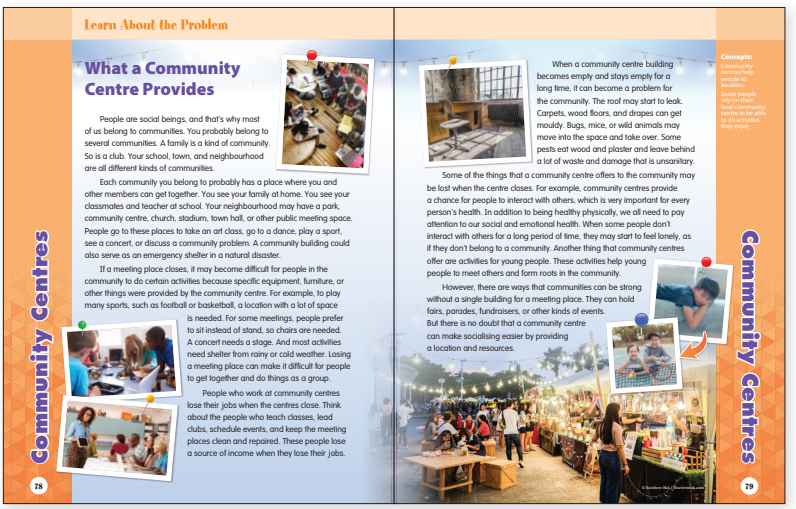


Community Centers

Discussion Questions

Discussion questions for "What a Community Center Provides," pages 78 and 79

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



Does your town have a community center? What do you know about it?

Do you agree that people need a place to gather and socialize? Explain your opinion.

Do you think it is a big problem or a small problem if a community center closes and is abandoned? Explain your opinion.

Field Trip Suggestions

If you live near a community center, you might consider organizing a field trip to visit it. Have students notice the schedule of classes or activities that is posted and think about who may attend those classes or activities. If there are people at the center, students may want to ask them questions about the center.



If you do not live near a community center, consider taking a virtual field trip to one. Visit a center's website and view the photos and videos they have posted. Have students notice who is participating in the activities and the kinds of activities that are being offered.

Disposing of Trash

Discussion Questions

Discussion questions for "What We Do with Garbage," pages 92 and 93

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



How often do you use items that are made of materials that do not easily biodegrade?

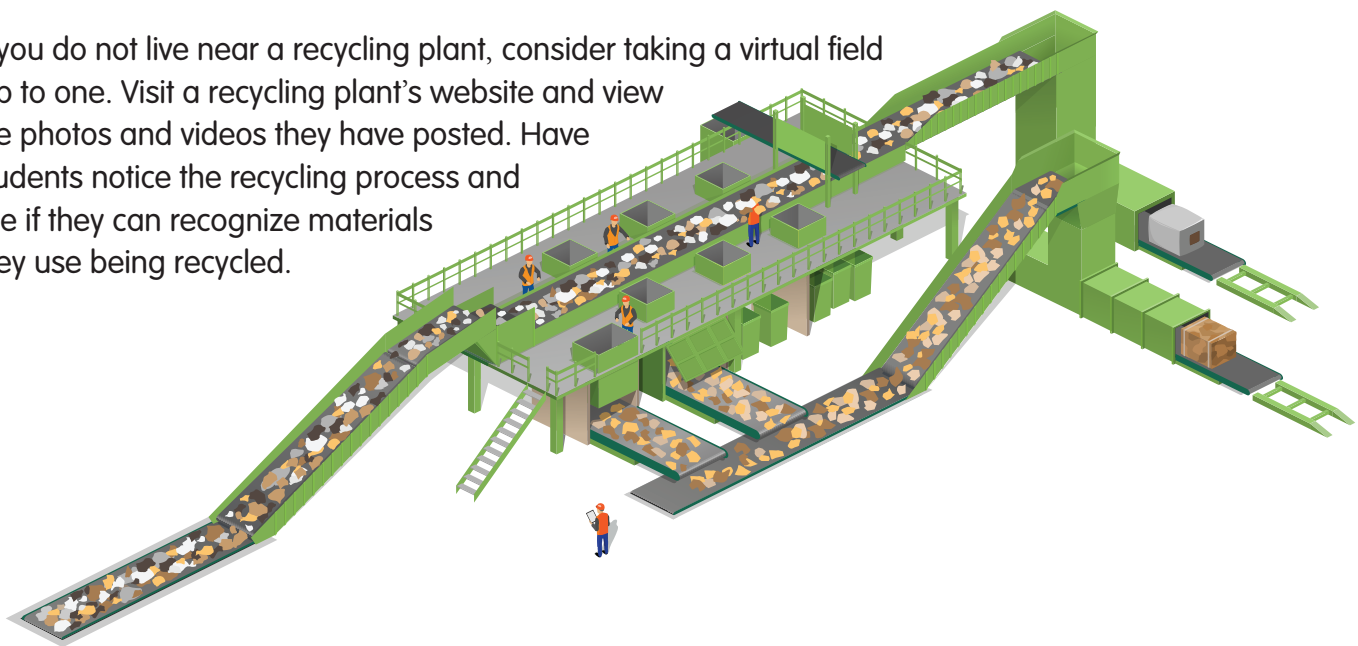
Did the information in the text change how you think about trash? Why or why not?

Does your school recycle? Does your family recycle? If so, describe the bins they have for recycling (glass, plastic, etc.).

Field Trip Suggestions

If you live near a recycling plant, you might consider organizing a field trip to visit it. Have students notice the processes that are taking place and how the items are being separated. Have them see if they can recognize materials they use being recycled. If there are staff members available for questions, have students ask them questions about the recycling process.

If you do not live near a recycling plant, consider taking a virtual field trip to one. Visit a recycling plant's website and view the photos and videos they have posted. Have students notice the recycling process and see if they can recognize materials they use being recycled.



Tiny Houses

Discussion Questions

Discussion questions for "Tiny Houses and Other Kinds of Homes," pages 106 and 107

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



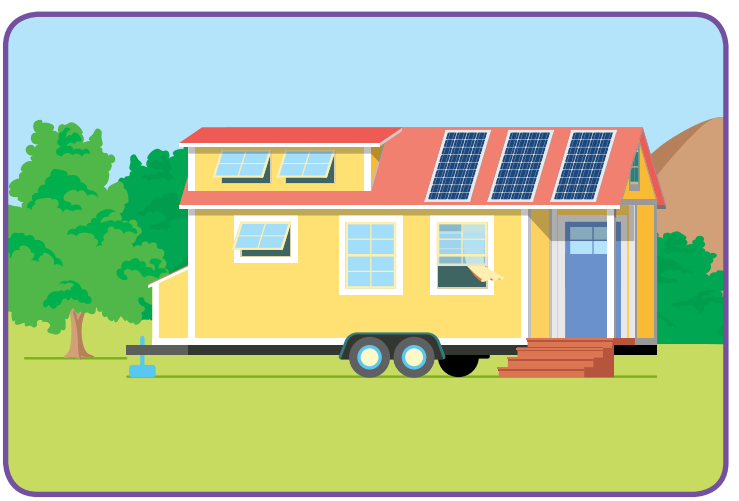
Do you think tiny houses are a good solution for some people? Explain your opinion.

Would you want to live in a tiny house? If so, would you want it to be mobile and have wheels so it could be moved? Explain your answer.

Many people have a limited amount of money to spend on shelter, or a place to live, so they have to make hard choices. Do you empathize with them? Why or why not?

Virtual Field Trip Suggestion

Consider taking a virtual field trip to see tiny houses. Many tiny house manufacturers offer virtual tours on their websites. Have students notice the different living areas and how they are organized. After the tour, have students discuss the pros and cons of tiny houses.

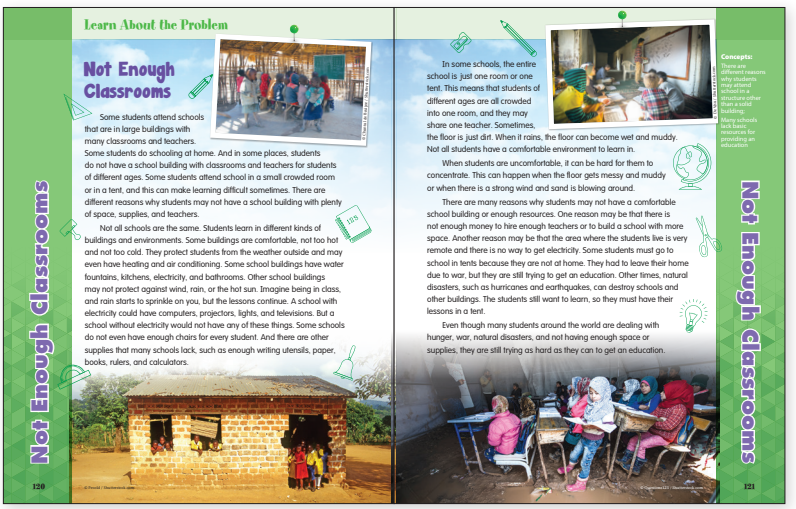


Not Enough Classrooms

Discussion Questions

Discussion questions for "Not Enough Classrooms," pages 120 and 121

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



Before reading the text, did you know that some students learn in outdoor classrooms because indoor classrooms are not available? Where did you learn this information?

Do you empathize with students who have difficult learning conditions? Why or why not?

Do you think that you would be able to learn in an outdoor classroom that has limited supplies and only one teacher for 60 students? Explain your answer.

Literature Suggestions

Consider reading students these stories about how children around the world live.

A Life Like Mine: How Children Live Around the World, written by UNICEF

A Long Walk to Water, written by Linda Sue Park





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