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Smithsonian STEAM Readers—Grade 2

This sample includes the following:

Management Guide Cover (1 page)

Table of Contents (1 pages)

How to Use This Product (6 pages)

Lesson Plan (20 pages)

Reader (17 pages)

To Create a World ⁱⁿ which
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Smithsonian

STEAM Readers

Science ■ Technology ■ Engineering ■ Arts ■ Mathematics

Management Guide

Teacher Created Materials

Grade
2

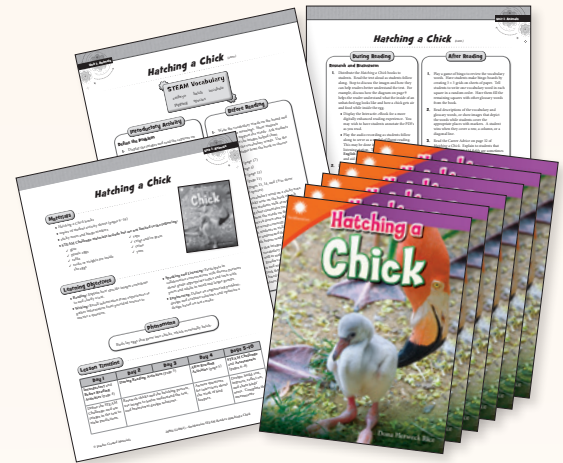


Table of Contents

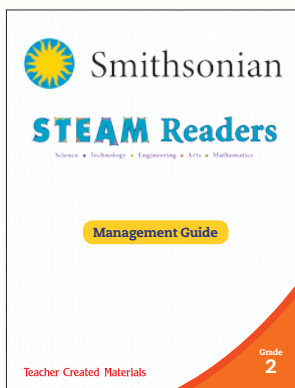
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Kit Components

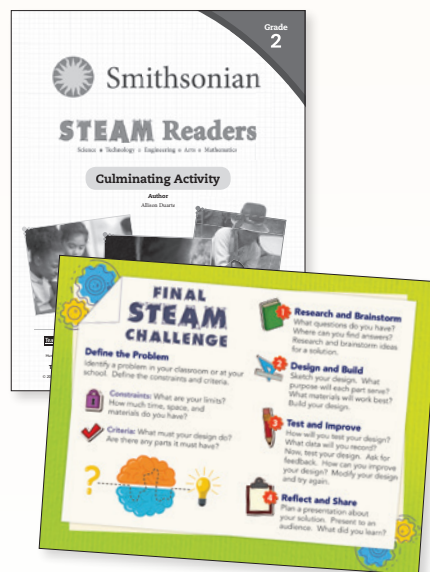
15 lesson plans with 6 copies of each book



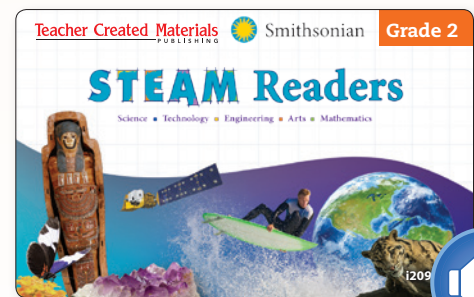
Management Guide



Culminating Activity



Digital and Audio Resources

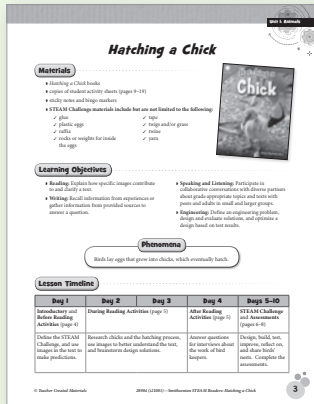


Lesson Plan Components

Each ten-day lesson sequence is organized in a consistent format for ease of use.

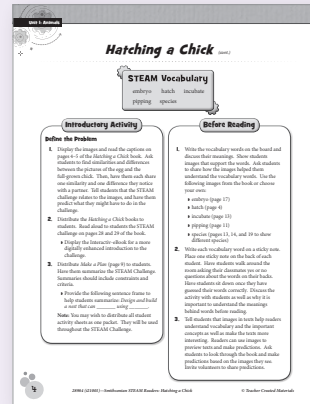
Overview

- The overview page includes learning objectives, a materials list, and a suggested timeline for lessons.



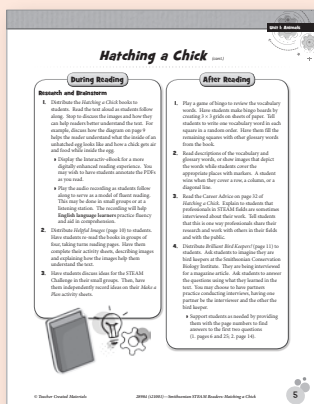
Day 1

- Students are introduced to the STEAM Challenge, vocabulary, and reading skill.



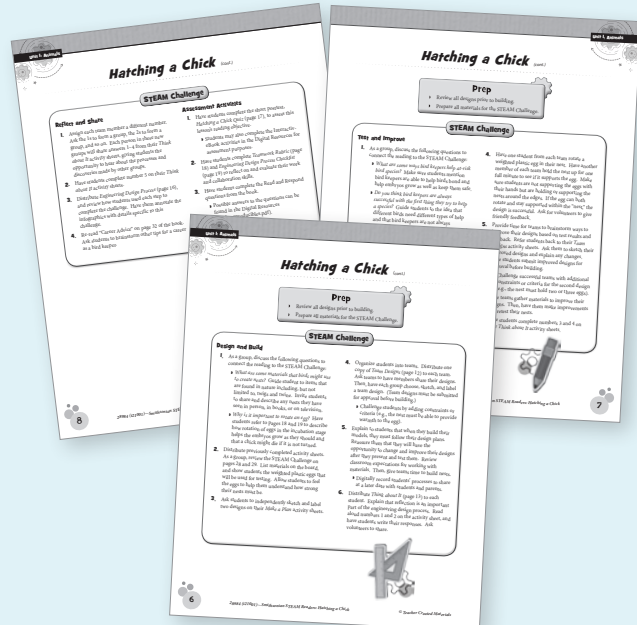
Days 2, 3, and 4

- Students complete reading and writing activities as they gain knowledge that will help them with the STEAM Challenge.



Days 5-10

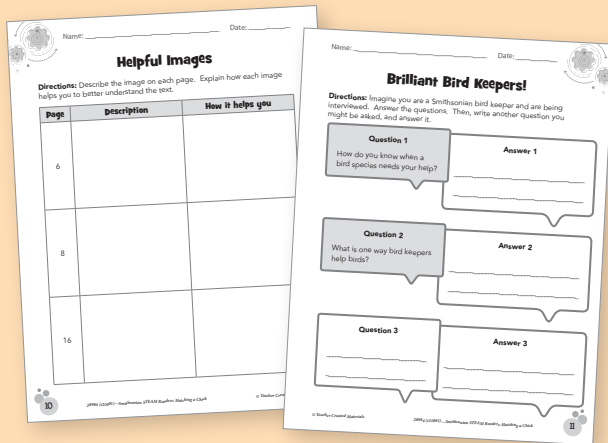
- Students take what they've learned and apply it to design, build, test, and improve a solution.
- Students reflect, share work, and take assessments.



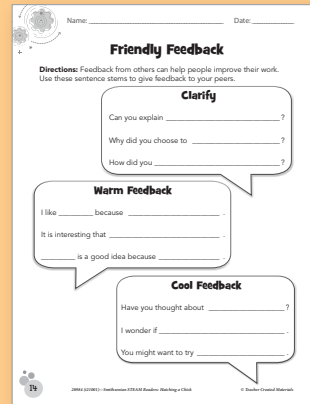
Lesson Plan Components *(cont.)*

Student Activity Sheets

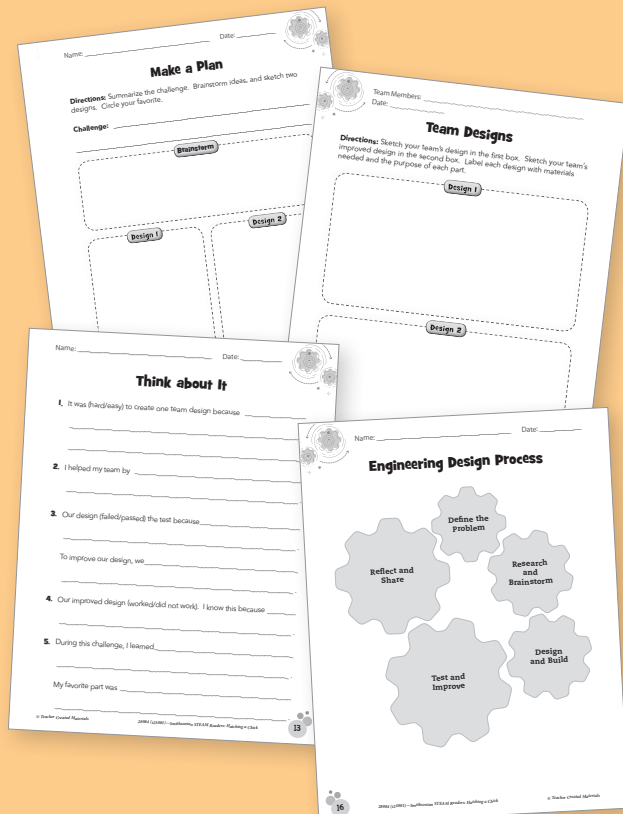
Literacy skills are supported with meaningful activities that **promote higher-order thinking skills.**



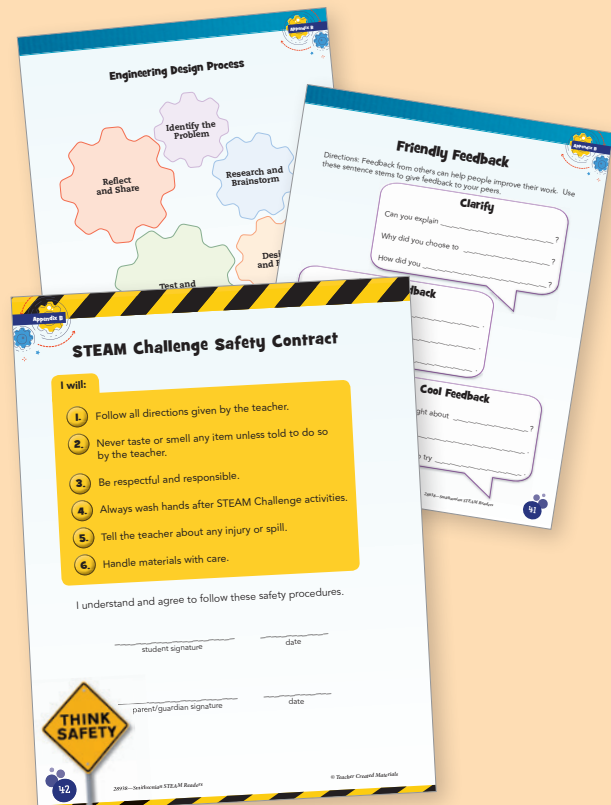
Effective feedback techniques are supported with **sentence frames** to help students provide feedback to peers and to facilitate productive classroom dialogue.



STEAM Challenge activity sheets support students throughout the **engineering design process.**



Appendix B includes quick reference sheets for students and teachers.



Assessments

Assessments guide teacher decisions and improve student learning. *Smithsonian STEAM Readers* offers balanced assessment opportunities. Assessments require students to demonstrate analytical thinking, comprehend informational texts, and write evidence-based responses.

Quizzes

Each lesson plan includes a quiz with multiple-choice questions and a short-answer question. These assessments include text-dependent questions and may be used as open-book evaluations. Answer keys are provided on page 2 of each lesson.

STEAM Challenge

STEAM Challenges include a *Teamwork Rubric* and an *Engineering Design Process Checklist*. These guide students to reflect on and evaluate their work and collaboration skills.


Name: _____ Date: _____

Hatching a Chick Quiz

Directions: Read each question. Fill in the bubble for the best answer. Answer the last question in complete sentences.

1. What does this image help readers understand?

- Ⓐ how an egg rotates
- Ⓑ what an egg tooth looks like
- Ⓒ how birds incubate eggs
- Ⓓ what an embryo looks like



2. What do eggs need to grow and hatch a healthy chick?

- Ⓐ the right temperature
- Ⓑ the right humidity
- Ⓒ rotation as they incubate
- Ⓓ all the above

3. A baby bird began _____ from inside its shell to crack it.

- Ⓐ candling
- Ⓑ pipping
- Ⓒ rotating
- Ⓓ breeding

4. How do bird keepers help eggs that are having trouble hatching?

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Name: _____ Date: _____

Teamwork Rubric

Directions: Think about how you worked in your team. Score each item on a scale of 4 to 1.

4 = Always 3 = Often 2 = Sometimes 1 = Never

I listened to people on my team.	4	3	2	1
I helped people on my team.	4	3	2	1
I shared ideas with people on my team.	4	3	2	1
We made choices as a team.	4	3	2	1
Total				

What is one thing your team did well? _____

What could your team _____

© Teacher Created Materials

Name: _____ Date: _____

Engineering Design Process Checklist

Directions: Check the boxes to show that you did each step.

Define the Problem

I understood and explained the problem in my own words.

Research and Brainstorm

I used research to help me brainstorm solutions.

Design and Build

I planned and made a model.

I thought like a mathematician or an engineer.

Test and Improve


I used criteria to evaluate designs.

I improved designs based on test results.

I thought like a mathematician or an engineer.

Reflect and Share

I shared my results and reflected on my work.



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Assessments (cont.)

Culminating Activity

The Culminating Activity asks students to apply what they have learned in an engaging and interactive way. Students use what they have learned to solve real-world problems in a final STEAM Challenge.

FINAL STEAM CHALLENGE

Define the Problem
Identify a problem in your classroom or at your school. Define the constraints and criteria.

Constraints: What are your limits? How much time, space, and materials do you have?

Criteria: What must your design do? Are there any parts it must have?

1 Research and Brainstorm
What questions do you have? Where can you find answers? Research and brainstorm ideas for a solution.

2 Design and Build
Sketch your design. What purpose will each part serve? What materials will work best? Build your design.

3 Test and Improve
How will you test your design? What data will you record? Now, test your design. Ask for feedback. How can you improve your design? Modify your design and try again.

4 Reflect and Share
Plan a presentation about your solution. Present to an audience. What did you learn?

Final STEAM Challenge Rubric

Directions: Evaluate each item on a scale of 4 to 1.
4 = Great 3 = Good 2 = Okay 1 = Needs Improvement

Categories	Scores			
Content Words and pictures explained all parts of the engineering design process.	4	3	2	1
Design Design and improvements adequately attempted to solve the problem.	4	3	2	1
Teamwork All team members helped prepare and present work.	4	3	2	1
Presentation Team members spoke in loud, clear voices.	4	3	2	1

Read and Respond

Read and Respond questions can be found on the inside back covers of the books. Questions require various levels of critical thinking and can be used for instruction or assessment. Answer keys are provided in the digital resources.

Progress Monitoring

There are several points throughout each lesson when useful evaluations can be made. These evaluations can be based on group, paired, and individual discussions and activities.

Read and Respond

1. What is a bird keeper?
2. What do bird keepers use incubators for?
3. Why might bird keepers use incubators if bird parents can raise young on their own?
4. Why can't bird keepers help all bird species?
5. Should bird keepers help bird species or just let nature take its course? Why?
6. Imagine if birds released into the wild could talk. What might they say to the bird keepers who helped raise them?

Pacing and Instructional Setting Options

Smithsonian STEAM Readers is flexibly designed and can be used in tandem with a core curriculum within a science block/STEAM/STEM block and/or literacy block. It can also be used in makerspaces to integrate literacy with the engineering design process. Teachers should customize pacing according to student need and the teacher’s preferred instructional framework, such as Balanced Literacy.

Smithsonian STEAM Readers within the Balanced Literacy Framework

Modeled and Shared Reading/Writing	The Before, During, and After Reading activities in each lesson of this series offer opportunities for teachers to activate students’ prior knowledge, as well as model fluency and metacognition as they read aloud from the text and guide students through reading and writing activities.
Small-Group Reading/Workshop	The During Reading, After Reading, and STEAM Challenge activities in each lesson of this series can be completed during small-group instruction, in centers, or at workstations, depending on students’ previous learning experiences and their need for teacher support.
Independent Reading	Professional audio recordings, PDFs of the books, and Interactiv-eBooks are provided to support independent reading at workstations and listening centers.
Assessment	This series offers multiple formative and summative assessment opportunities that can be used to guide instruction and assess learning (see pages 20–21 for details).

The following pacing and instructional setting options show suggestions for how to use this product. Two pacing options are provided.

Option 1 includes both literacy and STEAM Challenge activities. This option spans 10 instructional days and requires approximately 30–45 minutes a day, for a total of 75–112.5 hours over the course of 150 days.

Day 1	Day 2	Day 3	Day 4	Days 5–10
Introductory and Before Reading Activities	During Reading Activity		After Reading Activity	STEAM Challenge and Assessments

Option 2 includes only literacy activities. This option spans five instructional days and requires approximately 30–45 minutes a day, for a total of 37.5–56.25 hours over the course of 75 days.

Day 1	Day 2	Day 3	Day 4	Day 5
Before Reading Activity	During Reading Activity		After Reading Activity	Assessment Activities

Piecing Art Together



Unit 2
History &
Culture

Lesson Plan

Author

Jennifer Lawson



Smithsonian

STEAM Readers

Science ■ Technology ■ Engineering ■ Arts ■ Mathematics

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Smithsonian

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References to digital components are included for educators who purchased the full kit: *Smithsonian STEAM Readers: Grade 2*. Please disregard digital component references if this lesson was purchased in a different product configuration.

Answer Key: Piecing Art Together

page 10—Word Detective

Responses will vary. Here are some example answers:

- **word:** intact; **helpful clues:** sentences before or after the word; **picture:** will vary; **example or synonym:** not broken
- **word:** decompose; **helpful clues:** sentence with the word, sentences before or after the word; **picture:** will vary; **example or synonym:** break down

page 11—Art Appeal

Answers may vary, but make sure each student has written both an opening and a closing sentence. Students should provide facts to support their point (e.g., it will help our oceans to be cleaner, students will enjoy creating art, it is a good way to recycle, etc.).

page 17—Piecing Art Together Quiz

1. B
2. D
3. D
4. A
5. Artists use trash from the oceans to bring awareness to others about the growing problem of how much trash is ending up in our oceans. It shows people how much trash there is and that it is not okay to dump trash into our oceans.

Piecing Art Together

Materials

- ▶ *Piecing Art Together* books
- ▶ copies of student activity sheets (pages 9–19)
- ▶ chart paper (optional)
- ▶ drawing materials
- ▶ **STEAM Challenge materials include but are not limited to the following:**
 - ✓ glue (bottle caps, boxes, cans, jars, plastic bottles, string)
 - ✓ markers
 - ✓ paint
 - ✓ recycled or found objects
 - ✓ scissors
 - ✓ tape



Learning Objectives

- ▶ **Reading:** Determine the meaning of words and phrases in a text relevant to a grade level topic or subject area.
- ▶ **Writing:** Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words to connect opinion and reasons, and provide a concluding statement or section.
- ▶ **Speaking and Listening:** Participate in collaborative conversations with diverse partners about grade-appropriate topics and texts with peers and adults in small and larger groups.
- ▶ **Engineering:** Define an engineering problem, design and evaluate solutions, and optimize a design based on test results.

Phenomena

Small things combined to make bigger things.

Lesson Timeline

Day 1	Day 2	Day 3	Day 4	Days 5–10
Introductory and Before Reading Activities (page 4)	During Reading Activities (page 5)		After Reading Activities (page 5)	STEAM Challenge and Assessments (pages 6–8)
Define the STEAM Challenge, and practice determining the meaning of words and phrases within the text.	Research trash-to-treasure artwork, determine the meaning of words and phrases within texts, and brainstorm design solutions.		Write letters to a community center to express opinions.	Design, build, test, improve, reflect on, and share recycled art sculptures. Complete the assessments.

Piecing Art Together (cont.)

STEAM Vocabulary

decompose floats grout
 lint monks

Introductory Activity

Define the Problem

- Write “ART” on the board or a piece of chart paper. Ask students to turn and talk to partners about what they think the word *art* means in terms of how it is created or what makes something art. Ask students to share answers and record their answers on the chart. Explain to students that many artists create their art from things that wouldn’t normally be considered art.
- Distribute the *Piecing Art Together* books to students. Reveal the STEAM Challenge by reading aloud pages 28–29 of the book.
 - Display the Interactiv-eBook for a more digitally enhanced introduction to the challenge.
- Distribute *Make a Plan* (page 9) to students. Have students summarize the challenge. Summaries should include constraints and criteria.
 - Support** students with the following sentence frame to help them summarize:
Make a _____ from _____ that can _____.

Note: You may wish to distribute all student activity sheets as one packet. They will be used throughout the STEAM Challenge.

Before Reading

- Write the vocabulary words on the board, and read them aloud. Have students write the words on separate sheets of paper. Then, have them rank each word on a scale from 1 to 10 based on how well they know the word, 1 being very unfamiliar and 10 being very familiar. Have students share definitions or examples of words they know well. Tell students they will learn strategies to help them determine or confirm the meanings of these words as they read.
- Tell students that nonfiction authors often use bold print when they introduce new or interesting vocabulary to readers. Display page 4 of the book to show an example of a bold word. Explain to students that when good readers don’t know the meaning of a word, they look for clues in the text. Clues can be found in different places, including in the sentence with the word, in sentences before or after the word, and in images on the page.
- Display and read aloud pages 4 and 5 in the *Piecing Art Together* book. Reread the last two sentences of the paragraph to students. Ask student pairs to discuss what they think the word *bits* means. Ask students to look at the images for other clues. Invite volunteers to share what they think the word *bits* means. Then, model how to use the glossary to check the meaning of bold words.
 - Point out that students may come across new or interesting words that are not bold or in the glossary.

Piecing Art Together (cont.)

During Reading

Research and Brainstorm

1. Distribute the *Piecing Art Together* books to students. Read the book aloud as students follow along. Ask students to raise their hands whenever you read a bold word or a word that is unfamiliar or interesting. On page 6, stop after reading the first sentence containing the word *mediums*, and ask students if there are enough clues in the sentence to figure out what the word means (probably not). Then, read the next two sentences and discuss the clues in those sentences that help them understand the word. To check for understanding, ask students what mediums are shown in the images.
 - ▶ Display the Interactiv-eBook for a more digitally enhanced reading experience. You may wish to have students annotate the PDFs as you read.
 - ▶ Play the audio recording as students follow along to serve as a model of fluent reading. This may be done in small groups or at a listening station. The recording will help **English language learners** practice fluency and aid in comprehension.
2. Distribute *Word Detective* (page 10) to students. Have students read the book a second time, this time in pairs, and complete their activity sheets as they read.
3. Have students record ideas they have for their designs on their *Make a Plan* activity sheets.



After Reading

1. Place students into two teams for a short game. Choose one actor from each team. Show the actors one of the vocabulary words. Have the actors act out their own representations of the words in front of their teams. Have students guess the words for their teams. Award a point to the team that guesses each word first. Play until all the words have been used.
2. Tell students that people sometimes write letters to share their opinions and persuade others to do things. Ask them to imagine their local community center wants to offer a few art classes, and the staff at the center has asked for people to share their ideas. Explain to students that they will each write a letter to encourage the community center to add an art class that uses recycled items.
3. Distribute *Art Appeal* (page 11) to students. Have them use the graphic organizer to plan their writing. Then, allow students to peer conference with partners to discuss their ideas and reasons why their local community center should implement an after-school recycled art class.
 - ▶ **Support** students with the following sentence frames for their opening sentences: *Hello! My name is _____ and I am a student at _____. I think we need a _____ at the community center.*
4. Have students write their letters on separate sheets of paper. Remind each student to include an introduction, facts to support their opinion, and a closing for their letter.

Piecing Art Together (cont.)

Prep

- ▶ Cover students' desks/tables with butcher paper or plastic.
- ▶ Prepare all materials for the STEAM Challenge. Ask students to collect recyclable items that they will use for their sculptures. You may choose to send a letter home ahead of time to request materials.
- ▶ Review all designs prior to building.

STEAM Challenge

Design and Build

1. As a group, discuss the following questions to connect the reading to the STEAM Challenge:
 - ▶ *What are some examples of found materials that artists have used to create art?* Discuss that artists use all different types of things to create art, such as plastic bottles, soda cans, cardboard, and even lint.
 - ▶ *Why is it important to have patience when creating art?* Guide students to the idea that art is a process, and it takes time and planning. Pieces of art aren't always created in just one sitting. Artists must piece things together to create a masterpiece.
2. Distribute previously completed activity sheets. Review the STEAM Challenge on pages 28–29 together. Show students the items that they have gathered, and discuss how they might use them to create their sculptures. Remind students that they must use at least 10 pieces of “trash” to create their art pieces.
3. Ask students to independently sketch and label two designs on their *Make a Plan* activity sheets.
4. Organize students into teams. Distribute one copy of *Team Designs* (page 12) to each team.
5. Ask teams to have members share their designs. Then, have each team choose, sketch, and label a team design. (Team designs must be submitted for teacher approval before building.)
 - ▶ **Challenge** students with additional constraints or criteria (e.g., make the structure at least 60 centimeters (12 inches) tall, the sculpture must represent a certain theme).
6. Explain to students that when they build their sculptures, they must follow their design plans. Reassure them they will have the opportunity to change and improve their designs after they present them. Review classroom expectations for working with materials. Then, give teams time to gather materials and build sculptures.
 - ▶ Tell students that they may build their sculptures in multiple parts and place the parts together when they test stability.
7. Distribute *Think about It* (page 13) to each student. Explain that reflection is an important part of the engineering design process. Read aloud numbers 1 and 2 on the activity sheet, and have students write their responses. Ask volunteers to share.



Piecing Art Together (cont.)

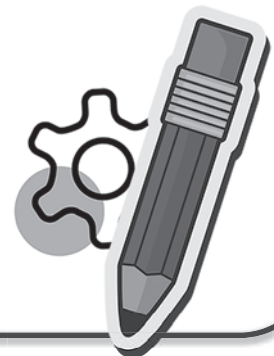
Prep

- ▶ Cover students' desks/tables with butcher paper or plastic.
- ▶ Review all improved designs prior to building.

STEAM Challenge

Test and Improve

1. As a group, discuss the following questions to connect the reading to the STEAM Challenge:
 - ▶ *What is one example from the book of people collaborating to create art?* Help students recall that creating floats takes hundreds of people each year. Every volunteer is important, just as every member of a team is important.
 - ▶ *How have artists helped to bring awareness to trash in the ocean?* Guide students to the idea that artists have used plastic found in the ocean to create works of art. The Washed Ashore Project is an organization of artists that come together to create art that raises awareness about the growing issue of plastic found in the oceans.
2. Gather teams for testing. Explain that teams will offer feedback after the test. Use *Friendly Feedback* (page 14) to review best practices for giving feedback.
3. Distribute *Recycled Sculptures Test Results* (page 15), and ask students to record results for each team.
4. Allow time for teams to present their art and test the stability of their sculptures. Ask one member from each team to point out the different materials they used and the total number of recycled items. (Students may be supporting their art at this time.) Then, ask another member of each team to see if the sculpture can stand on its own for 15 seconds. Ask volunteers to give friendly feedback.
5. Provide time for teams to brainstorm ways to improve their designs based on test results and feedback. Refer students back to their *Team Designs* activity sheets. Ask them to sketch their improved designs and explain any changes. Have students submit improved designs for approval before making changes.
 - ▶ **Challenge** successful teams with additional constraints or criteria for the second design (e.g., make the sculpture taller, add a moving part).
6. Have teams gather materials to improve their designs. Then, have them make improvements and retest their sculptures.
7. Have students complete numbers 3 and 4 on their *Think about It* activity sheets.



Piecing Art Together (cont.)

STEAM Challenge

Reflect and Share

1. Provide each student with paper and markers. Ask them to use words or drawings to represent their experiences during the STEAM Challenge. Explain to students that their work will become part of a team mosaic. Allow time for students to work individually. Then, have students join their teams to combine their papers into mosaics on larger pieces of paper. Invite groups to share their reflection murals.
 - ▶ You may choose to make one large mosaic with all the teams' posters.
2. Have students answer question 5 on their *Think about It* activity sheets.
3. Distribute *Engineering Design Process* (page 16), and review how students used each step to complete the challenge. Have them annotate the infographic with details specific to this challenge.
4. Read "Career Advice" on page 32 of the book. Ask students to brainstorm other tips for a career in art.

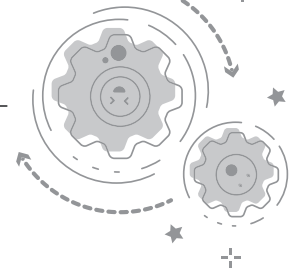
Assessment Activities

1. Have students complete a short posttest, *Piecing Art Together Quiz* (page 17) to assess this lesson's reading objective.
 - ▶ Students may use the Interactiv-eBook activities in the Digital Resources for assessment purposes (optional).
2. Have students complete *Teamwork Rubric* (page 18) and *Engineering Design Process Checklist* (page 19) to reflect on and evaluate their work and collaboration skills.
3. Have students complete the Read and Respond questions from the book.
 - ▶ Possible answers to the questions can be found in the Digital Resources (art_reproducibles.pdf).



Name: _____

Date: _____



Make a Plan

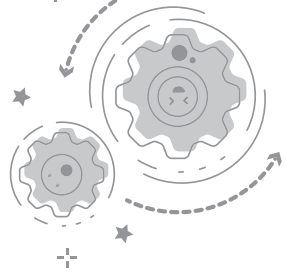
Directions: Summarize the challenge. Brainstorm ideas, and sketch two designs. Circle your favorite.

Challenge: _____

Brainstorm

Design 1

Design 2



Name: _____

Date: _____

Word Detective

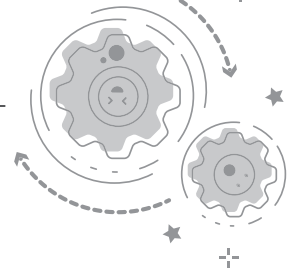
Directions: Find new or interesting words as you read. Mark where you found clues to make meaning. Then, complete each organizer to tell about your word.

Helpful Clues <input type="checkbox"/> sentence with word <input type="checkbox"/> sentences before or after word <input type="checkbox"/> images	Definition
Picture	Example or Synonym

Helpful Clues <input type="checkbox"/> sentence with word <input type="checkbox"/> sentences before or after word <input type="checkbox"/> images	Definition
Picture	Example or Synonym

Name: _____

Date: _____



Art Appeal

Directions: Plan a letter to your local community center. Tell them why they should offer a recycled art class.

Dear Community Center,

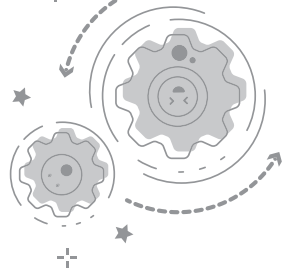
Introduction: _____

Reason 1: _____

Reason 2: _____

Closing: _____

Sincerely,



Team Members: _____

Date: _____

Team Designs

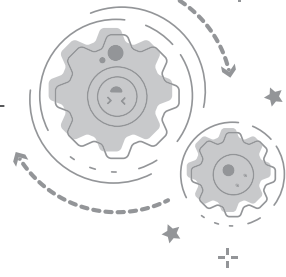
Directions: Sketch your team's design in the first box. Sketch your team's improved design in the second box. Label each design with materials needed and the purpose of each part.

Design 1

Design 2

Name: _____

Date: _____



Think about It

1. It was (hard/easy) to create one team design because _____

2. I helped my team by _____

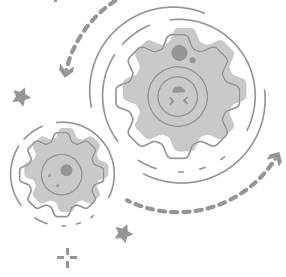
3. Our design (failed/passed) the test because _____

To improve our design, we _____

4. Our improved design (worked/did not work). I know this because _____

5. During this challenge, I learned _____

My favorite part was _____



Name: _____

Date: _____

Friendly Feedback

Directions: Feedback from others can help people improve their work. Use these sentence stems to give feedback to your peers.

Clarify

Can you explain _____ ?

Why did you choose to _____ ?

How did you _____ ?

Warm Feedback

I like _____ because _____ .

It is interesting that _____ .

_____ is a good idea because _____ .

Cool Feedback

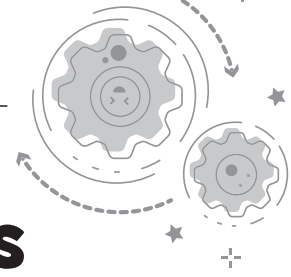
Have you thought about _____ ?

I wonder if _____ .

You might want to try _____ .

Name: _____

Date: _____



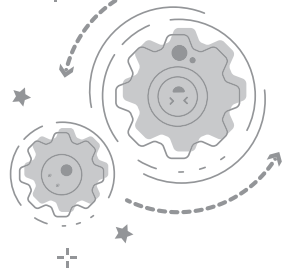
Recycled Sculptures Test Results

Directions: Write the number of items each team used. Circle numbers that are 10 or greater to show that the team followed the constraints. Circle *yes* or *no* to tell whether each sculpture meets the design criteria. Then, answer the question.

Team	Number of items	Did the sculpture stand on its own for at least 15 seconds?
		yes/no
		yes/no
		yes/no
		yes/no
		yes/no
		yes/no

Sketch the sculpture that you found most interesting.

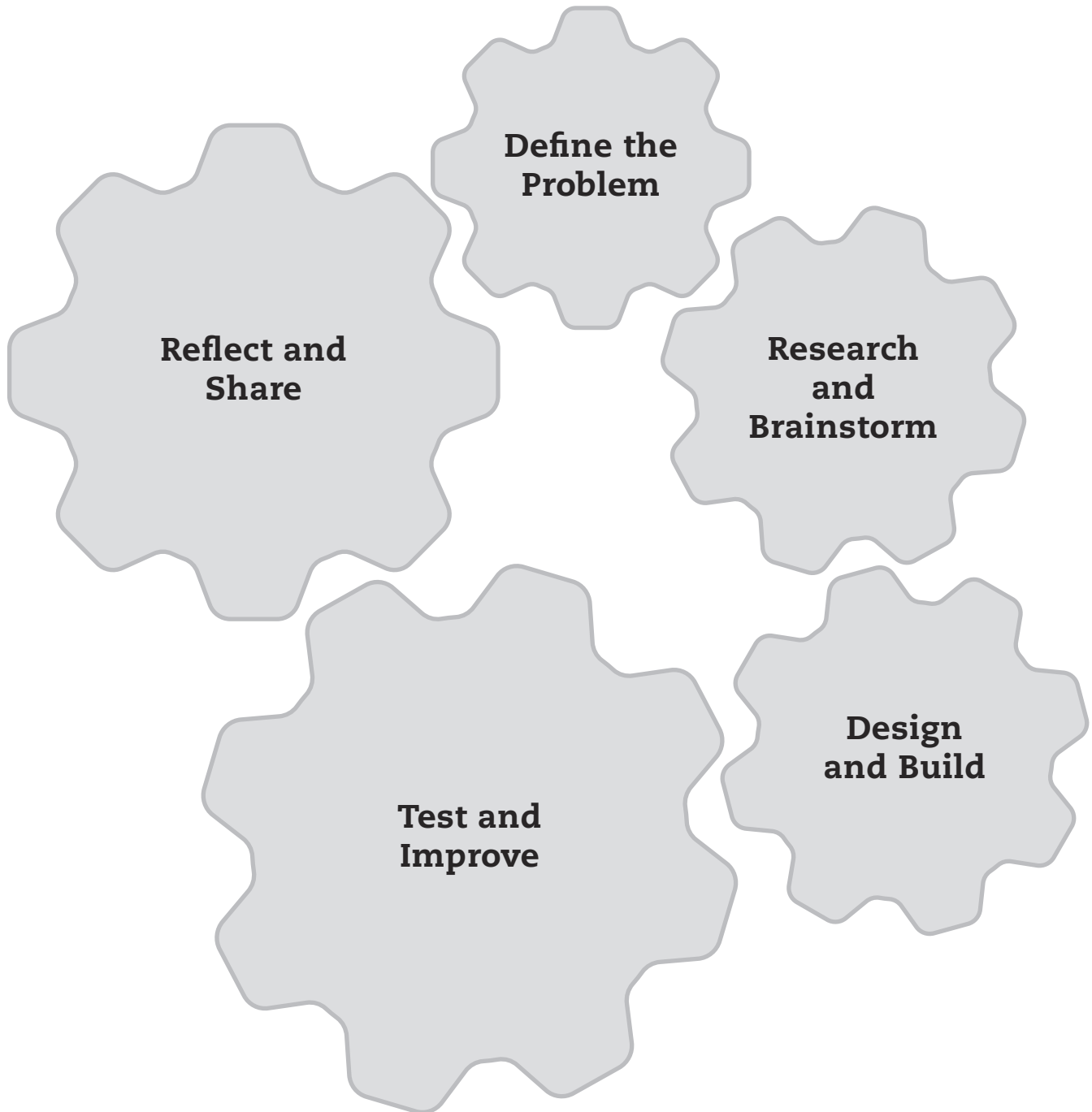
What made this sculpture interesting?



Name: _____

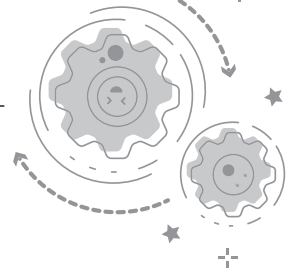
Date: _____

Engineering Design Process



Name: _____

Date: _____



Piecing Art Together Quiz

Directions: Read each question. Fill in the bubble for the best answer. Answer the last question in complete sentences.

1. What are nonfiction authors pointing out when they make words bold?

- (A) people's names
- (B) new vocabulary
- (C) famous places
- (D) questions

3. Which art medium can be found in your dryer?

- (A) tiles
- (B) paint
- (C) clay
- (D) lint

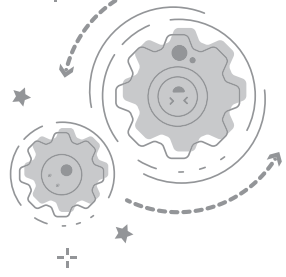
2. What does the word *ancient* mean?

- (A) made of clay
- (B) not broken
- (C) found in museums
- (D) from long ago

4. Scientists want to find a way to make plastic _____ faster.

- (A) decompose
- (B) form
- (C) melt
- (D) grout

5. Why do artists use plastic from the ocean to create art?



Name: _____

Date: _____

Teamwork Rubric

Directions: Think about how you worked in your team. Score each item on a scale of 4 to 1.

4 = Always 3 = Often 2 = Sometimes 1 = Never

I listened to people on my team.	4	3	2	1
I helped people on my team.	4	3	2	1
I shared ideas with people on my team.	4	3	2	1
We made choices as a team.	4	3	2	1
Total				

What is one thing your team did well? _____

What could your team do better next time? _____

Name: _____

Date: _____



Engineering Design Process Checklist

Directions: Check the boxes to show that you did each step.

Define the Problem

- I understood and explained the problem in my own words.

Research and Brainstorm

- I used research to help me brainstorm solutions.

Design and Build

- I planned and made a model.
- I thought like a mathematician or an engineer.

Test and Improve

- I used criteria to evaluate designs.
- I improved designs based on test results.
- I thought like a mathematician or an engineer.

Reflect and Share

- I shared my results and reflected on my work.



STEAM CHALLENGE

Research and Brainstorm

Why should you have patience when creating art? What types of items might be considered trash? How can you make your sculpture stand?



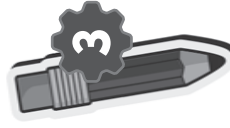
Design and Build

Collect at least 10 pieces of trash for your artwork. What purpose will each part serve? What materials will work best? Create your sculpture.



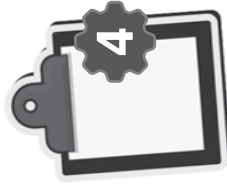
Test and Improve

Show your design to your friends. Did your sculpture use 10 items of trash? Did it stand for 15 seconds? How can you improve it? Improve your design, and try again.



Reflect and Share

Why should people make art with items from the trash? How else can people turn trash into something new?



Define the Problem

Your town is having a Trash-to-Treasure day. People have asked you to design a sculpture.



Constraints: You must use at least 10 items to make your sculpture. You must use items that most people would put in the trash. You may use tape or glue to hold the parts together.



Criteria: Your sculpture must be able to stand on its own for at least 15 seconds.





Smithsonian

Piecing Art Together



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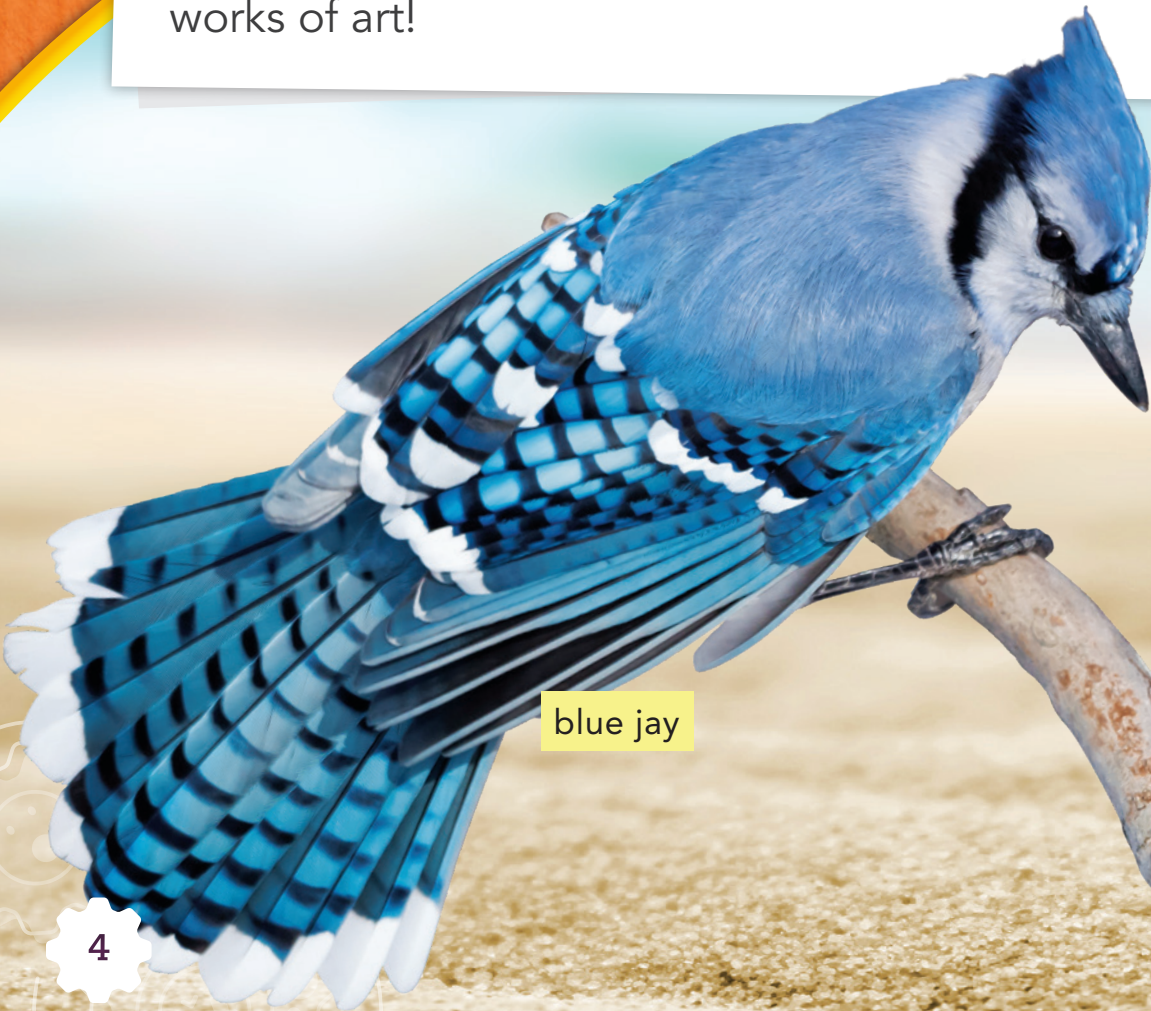
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Look Around

Hundreds of feathers cover a blue jay. Thousands of leaves cover a tree. Millions of grains of sand cover a beach.

Look around. The world is filled with small things that combine to make big and beautiful things. Art can be like that too. In fact, some artists only work with little **bits** to create big works of art!



blue jay



maple tree



grains of sand

From Found to Fab

Most artists make art in common **mediums**. They use things such as paint and clay. Other artists use different mediums. They might make art from things they find. They look for beauty in found objects. For example, some art is made from dryer **lint**! Bits and pieces of nature are also used.



An artist makes jars out of clay.



An artist uses paint on a canvas.

6

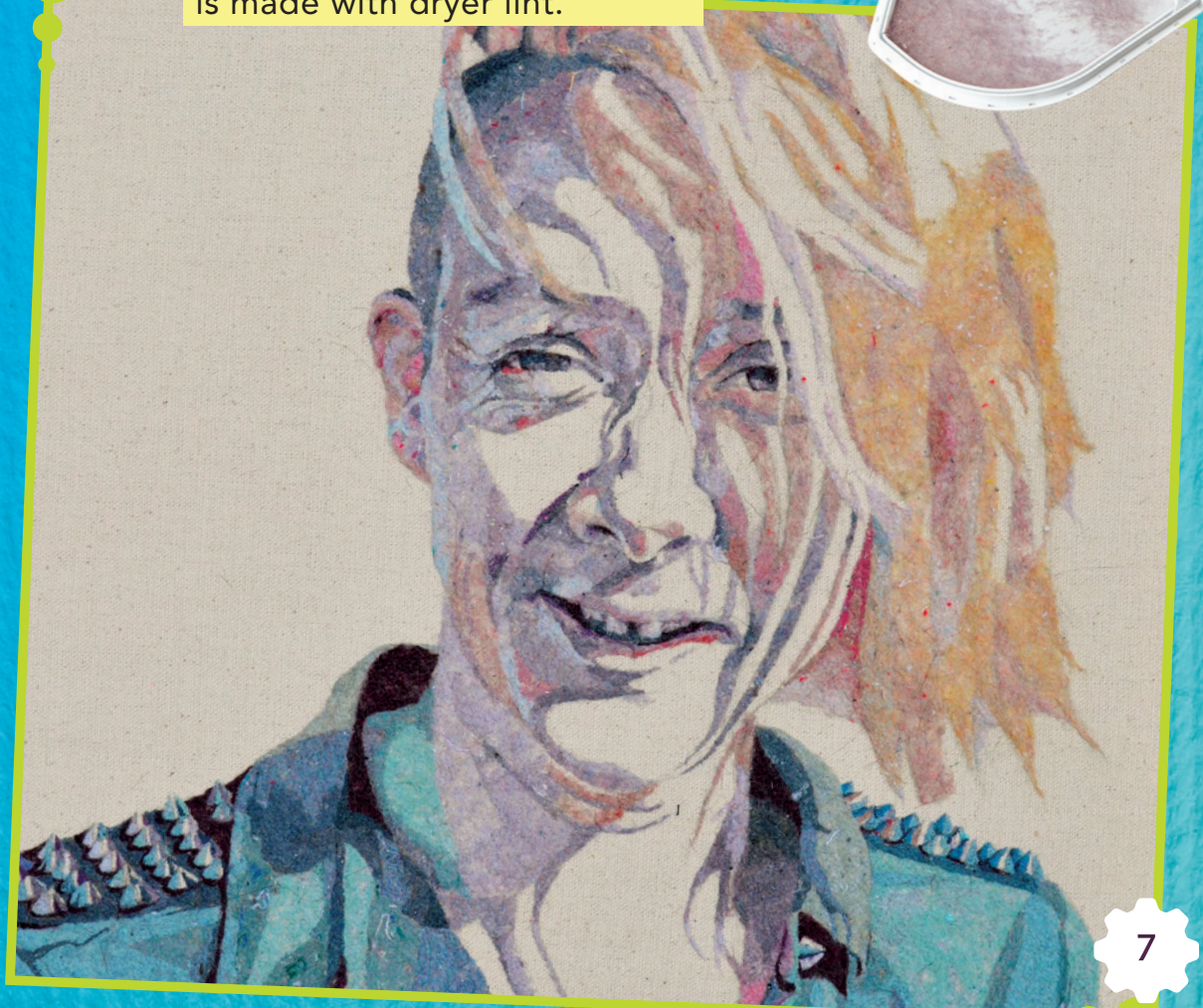
Arts

Lint

Lint comes off in clothes dryers. The color of lint depends on the color of fabrics being dried. Each color of lint can be used as it is or mixed to create works of art.



This art piece by Tonya Corkey is made with dryer lint.



7

Artists can find art everywhere they look. They might find trash or broken pieces of glass and turn them into art. They might shape the pieces into things you know. Or, they might form patterns.

What artists make can be silly or serious. Art can serve a purpose or just be fun to look at. But no matter what, it is still art!

These pieces of trash and recycled materials can be turned into works of art.



This work of art by HA Schult is called *Trash People*.



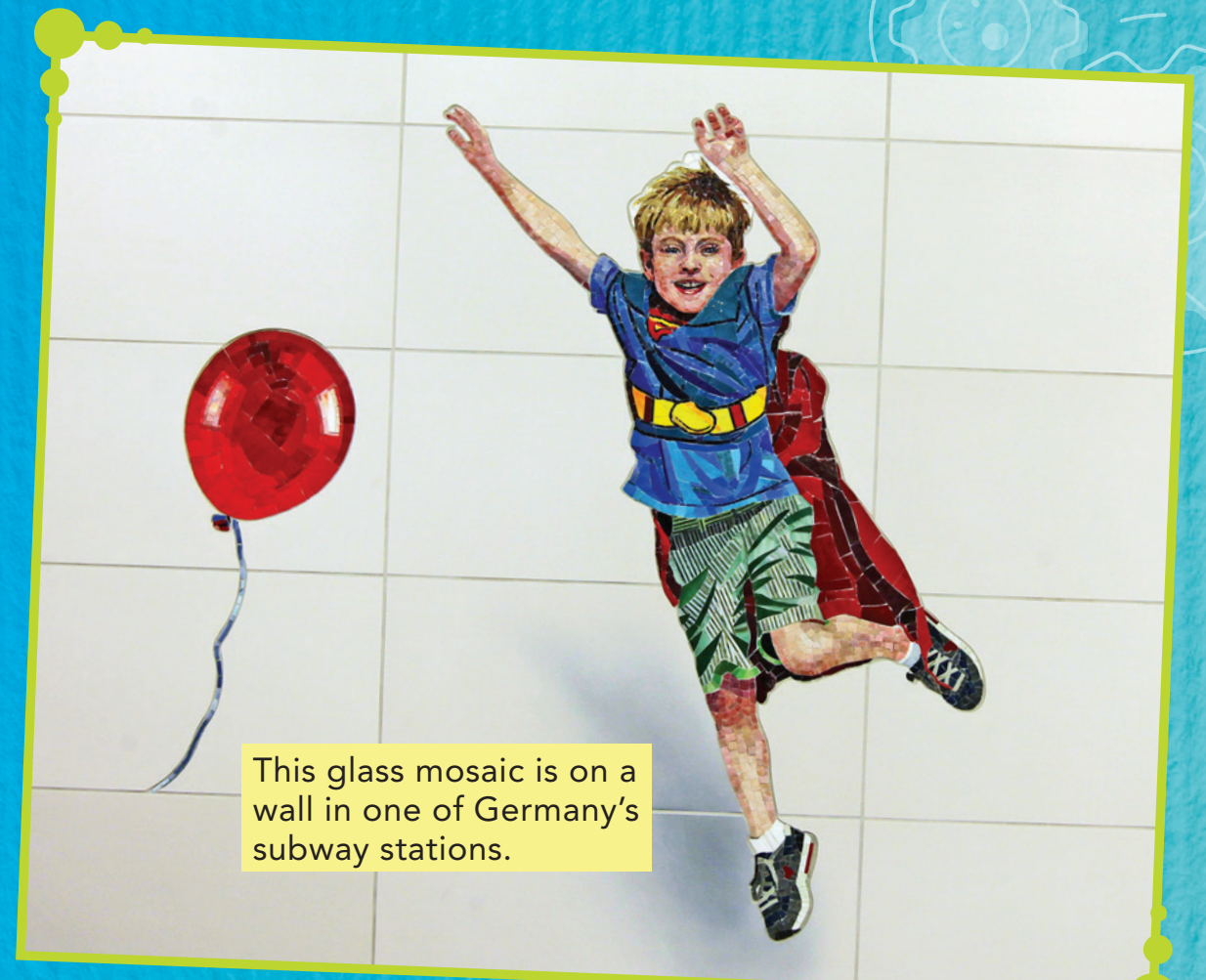
Marvelous Mosaics

Mosaics are works of art made from many small tiles, rocks, glass pieces, shells, or beads. Artists use these bits and pieces to form pictures or patterns.

Mosaics may be used to make things, such as floors or walls. They may also be used just as art. They can be any size, shape, or color.



An artist adds tiles to a mosaic.



This glass mosaic is on a wall in one of Germany's subway stations.

Mathematics

Making Mosaics

Artists first measure how big a mosaic can be based on its location. That helps them know how many pieces they need. Then, they compare the shapes of pieces they have. That helps them fit shapes together. Lastly, artists add **grout** between pieces to keep them in place.

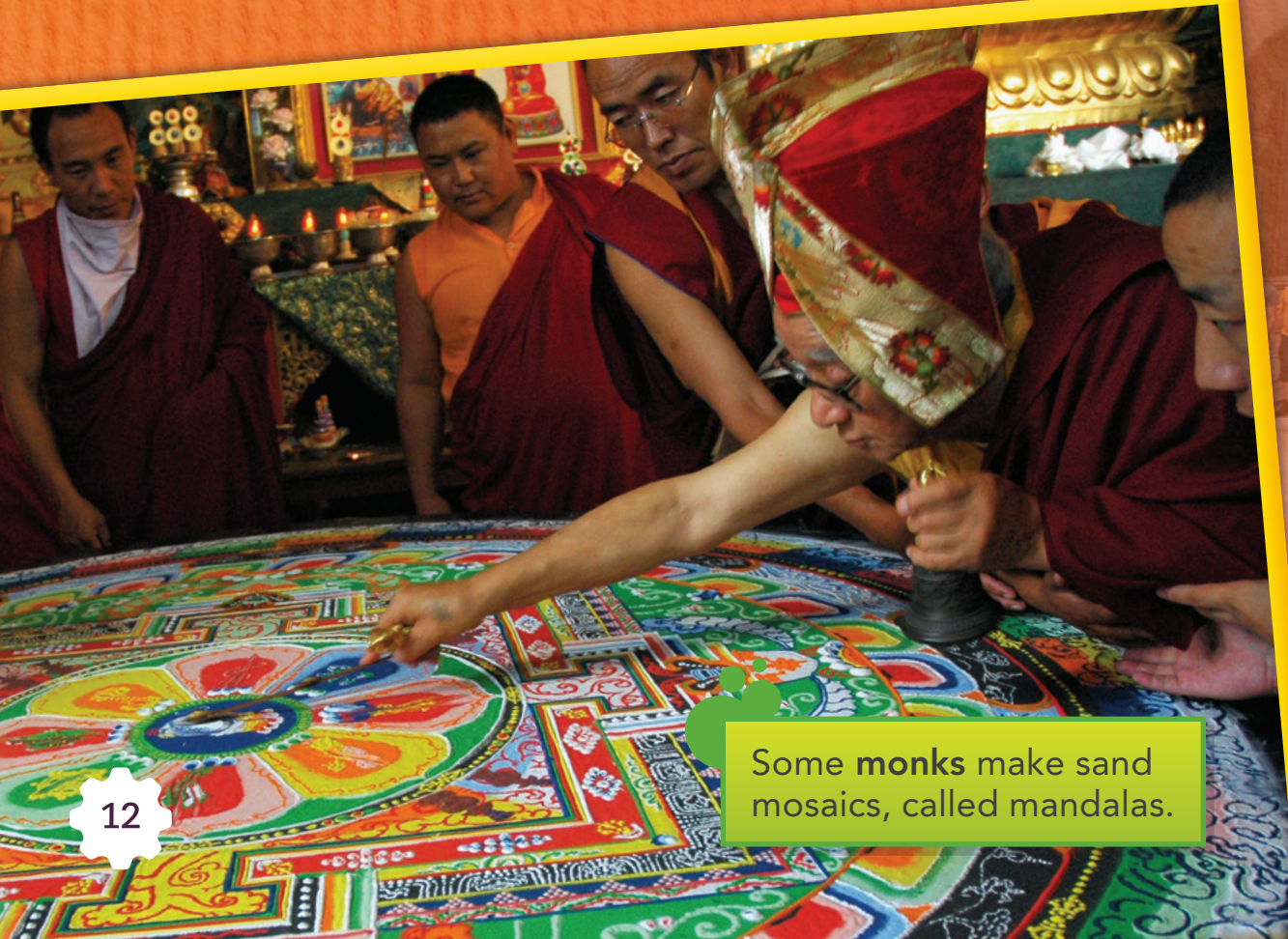


Made to Last

People have made mosaics since **ancient** times. Some very old ones can be found in museums. Some still exist in old buildings. Many of them are **intact**. The pieces have stayed in place all these years.

Mosaics today are often made as they were long ago. Techniques have not changed much. Hopefully today's mosaics will last just as long!

Museum guests learn about the Ishtar Gate, a mosaic built around 575 BC.



Some **monks** make sand mosaics, called mandalas.



Patience

Artists who make mosaics must be patient. Each piece has to be the right size and shape. It also must be placed in just the right way. One piece out of place can affect the whole design. It is best for artists to make a good plan before setting any piece in place. They take the time to get it right.

An artist places the last piece of rock in her lion mosaic.

An artist carefully places a tile in his mosaic.

Ocean Trash to Treasure

There is a lot of trash floating in oceans around the world. Most of that trash is plastic. People are concerned about what this trash does to ocean life. It can be deadly. Some artists want to bring attention to the problem. So, what do they do? They make art!



This elephant statue is made of plastic water bottles.



Ocean currents move plastic into clumps called garbage patches.



A sea turtle eats a plastic bag.

The Washed Ashore Project makes art from plastic found in oceans. One of its sculptures is a parrot fish. Its name is Priscilla. The artist matched all the colors and shapes to make a huge fish. The fish is bright and fun. But it also has a story to tell. It does not say a word. But it lets people know it is not okay to dump trash in the oceans!

A Washed Ashore artist starts building a sculpture.



Priscilla the Parrot Fish



Science

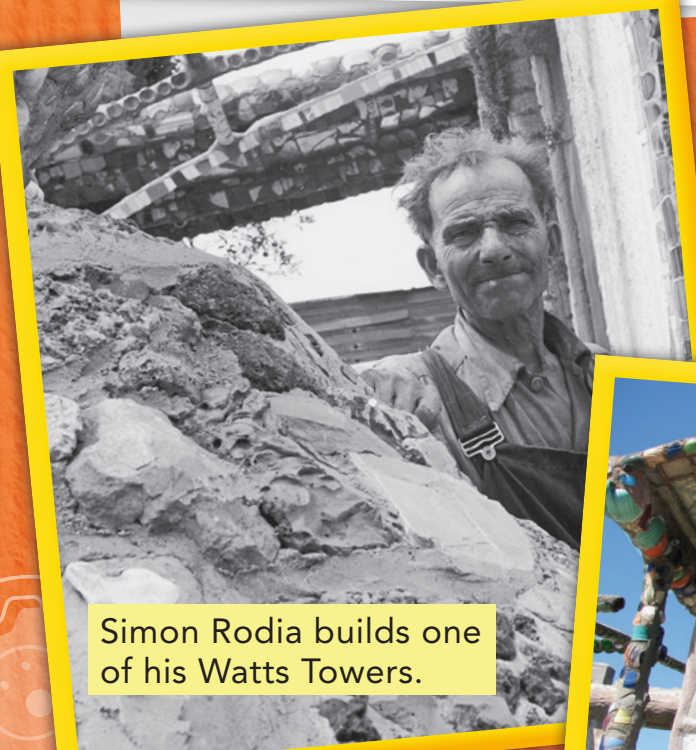
Getting Rid of Plastic

Plastic takes hundreds of years to **decompose**. Scientists are working to make a new kind of plastic. They hope to find a way to make it break down faster.

Piece by Piece

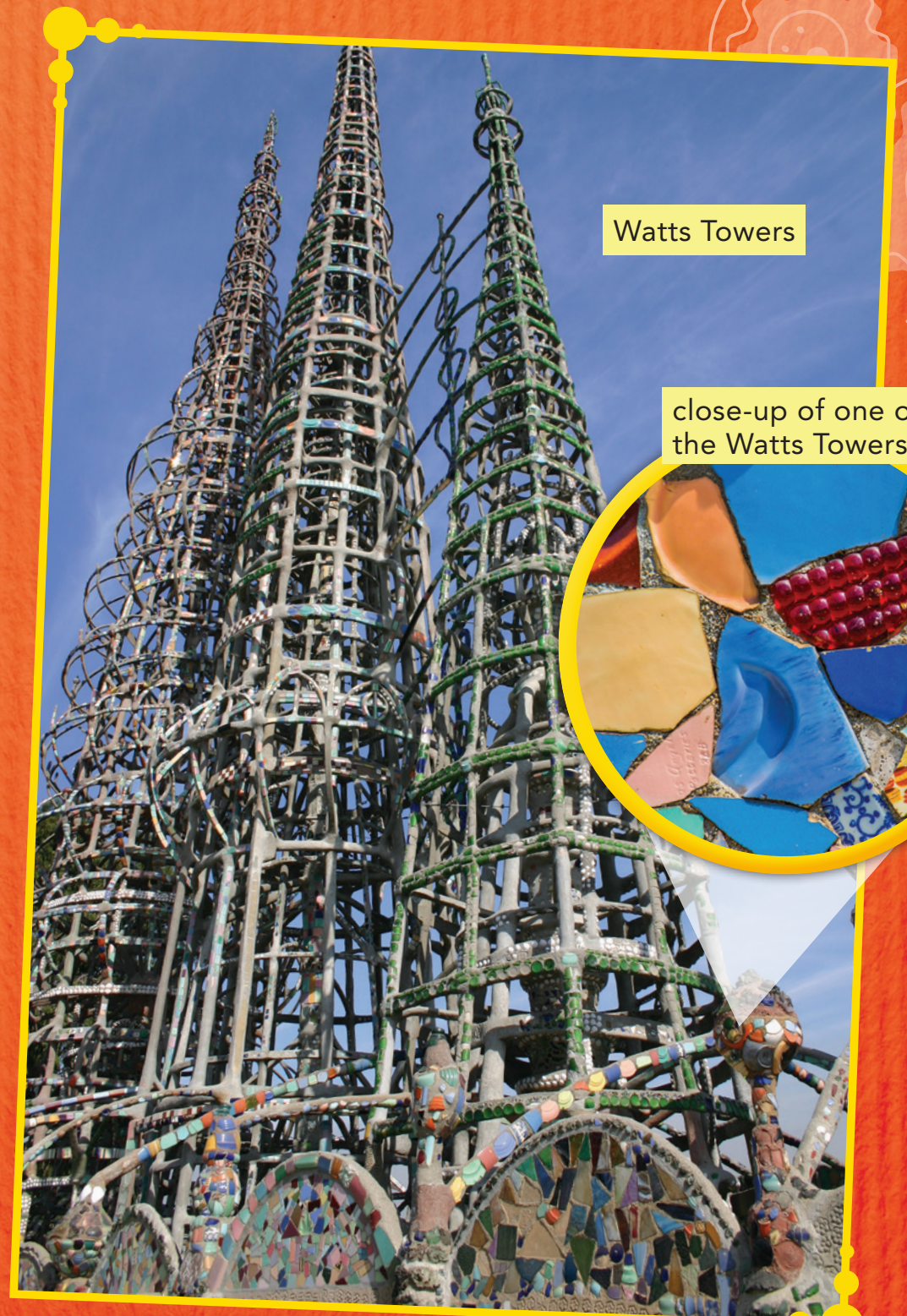
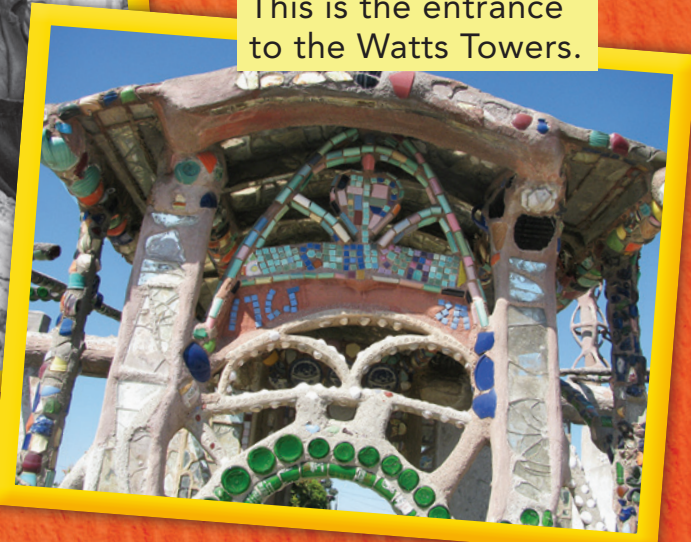
Some artists make huge works of art by doing it one piece at a time. Simon Rodia did that. He built giant metal towers in his yard. They are covered with bits of glass, tile, and other things. Rodia found the objects near his home. He used cement to make the pieces stick.

Rodia made 17 towers. It took him 33 years! The towers are in California. They are now known as the Watts Towers.



Simon Rodia builds one of his Watts Towers.

This is the entrance to the Watts Towers.



Watts Towers

close-up of one of the Watts Towers



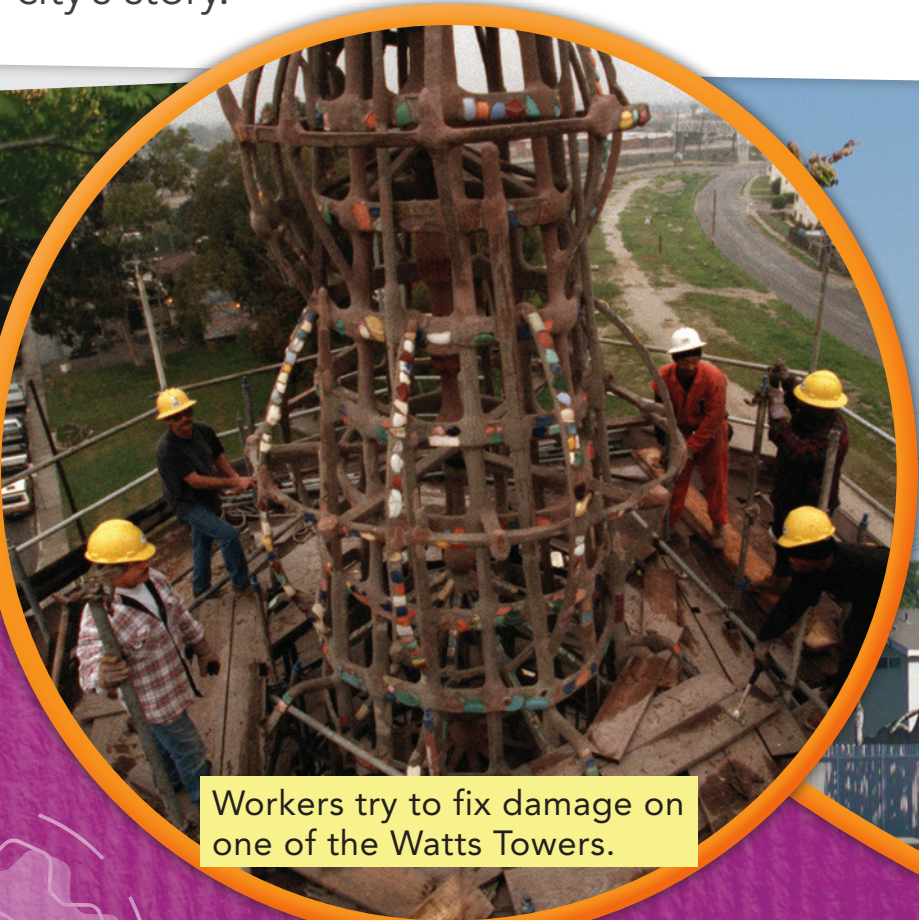
Technology & Engineering

Saving the Towers

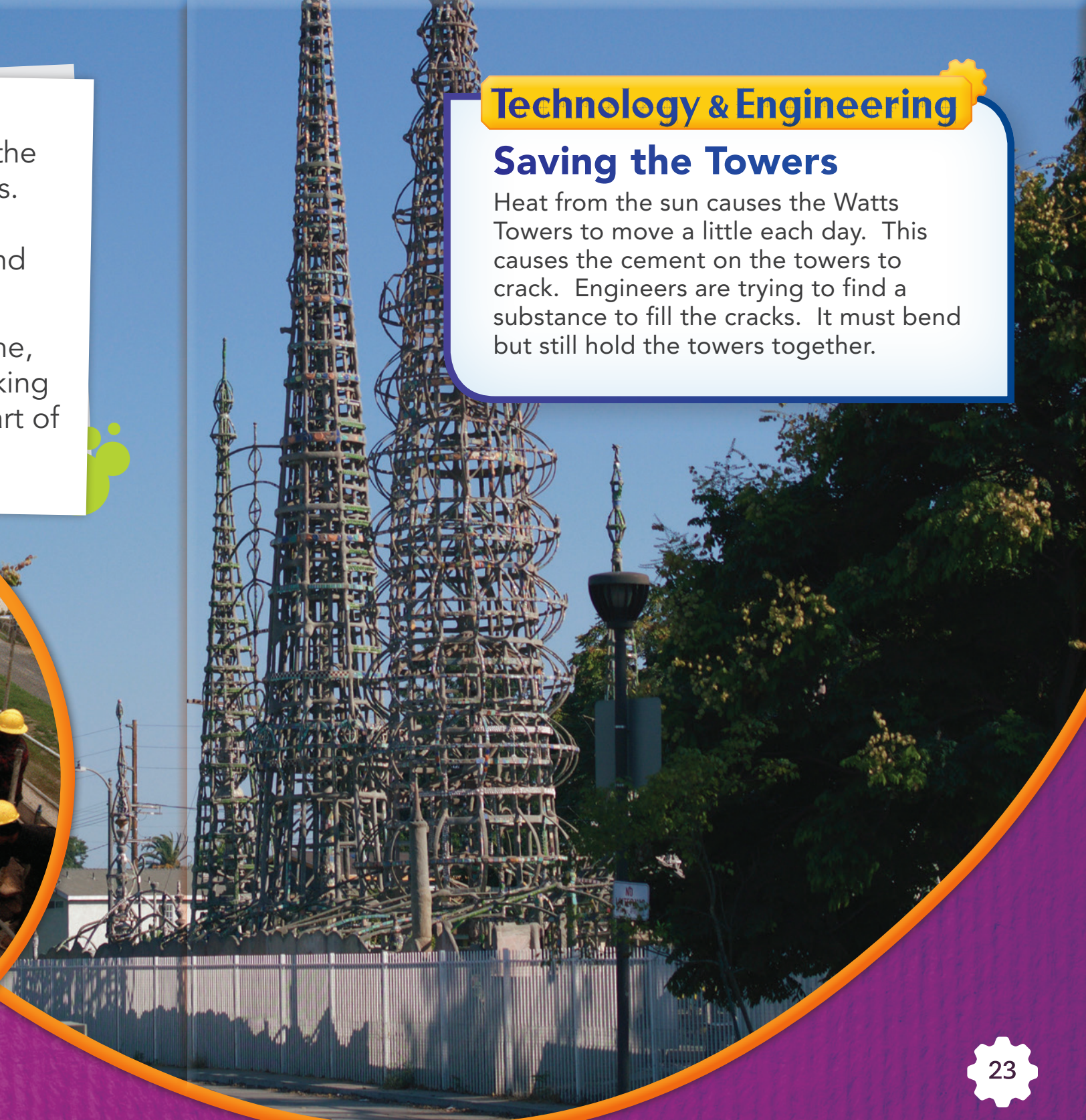
Heat from the sun causes the Watts Towers to move a little each day. This causes the cement on the towers to crack. Engineers are trying to find a substance to fill the cracks. It must bend but still hold the towers together.

Rodia called his art *Nuestro Pueblo*. This means "our town" in Spanish. Rodia built the towers in a part of Los Angeles called Watts. *Los Angeles* is Spanish too. It means "the angels." He made art both *from* the city and *for* the City of Angels.

The Watts Towers still stand. But over time, the sun has harmed them. People are working to keep the towers safe. The towers are part of the city's story.



Workers try to fix damage on one of the Watts Towers.

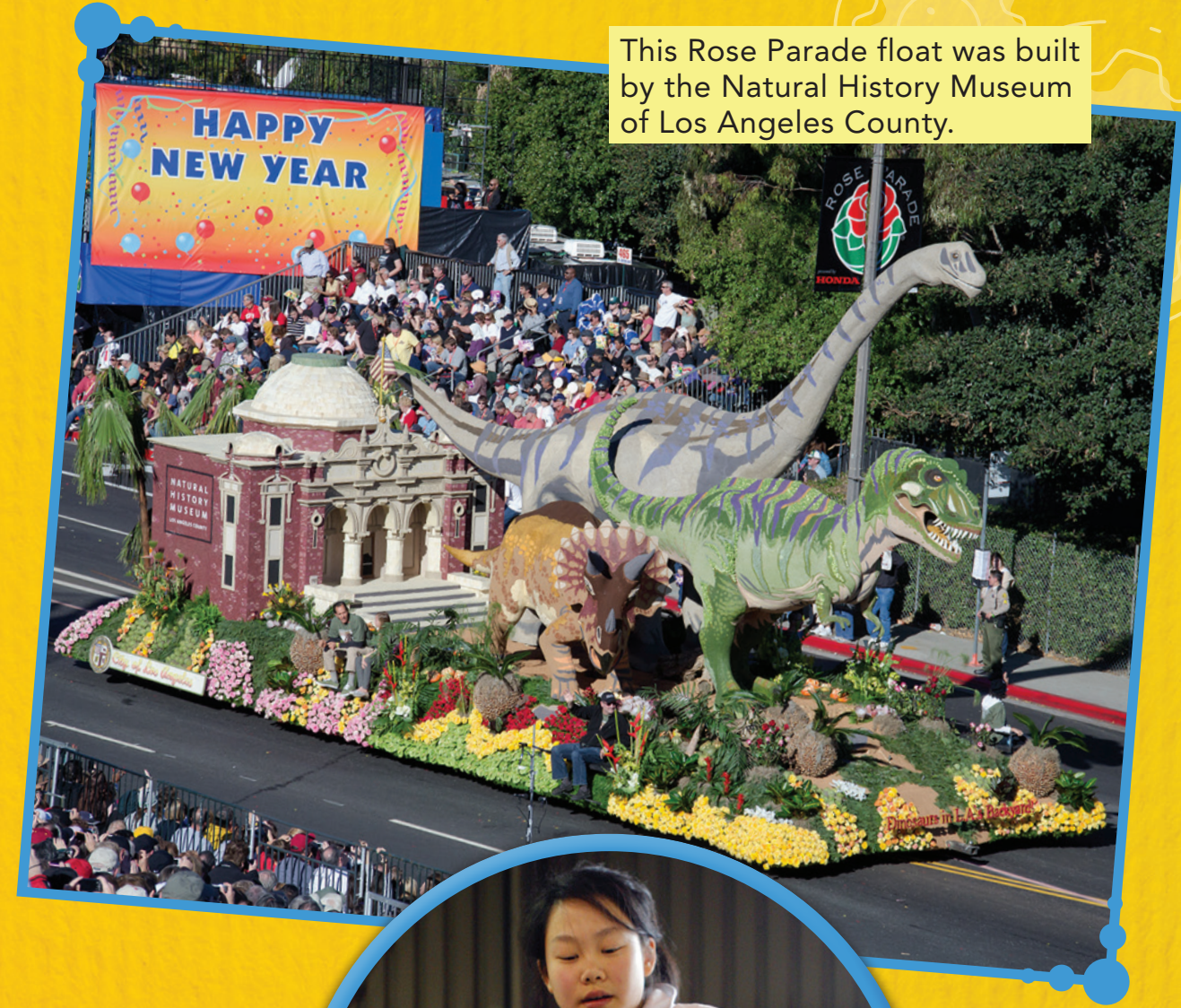
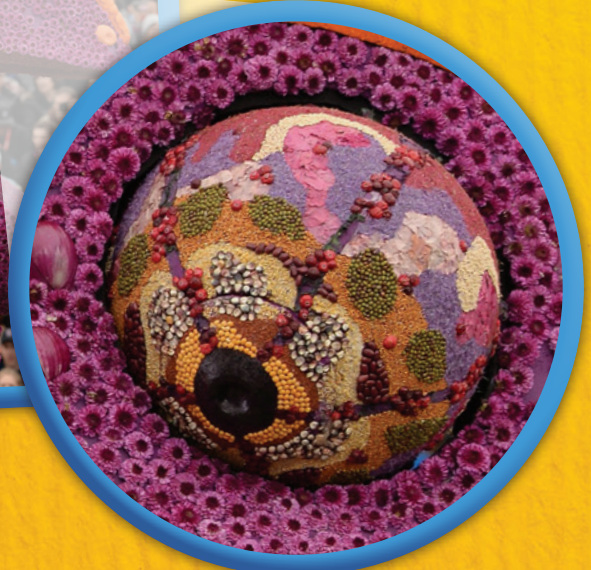


Near Los Angeles, there are more art pieces that are built piece by piece. And these works of art are moving! There is a parade that takes place each New Year's Day. The Tournament of Roses Parade® is filled with **floats**. The floats are covered with flowers and other plant life. Hundreds of helpers make these works of art.

Workers cover the floats with millions of flowers, leaves, and seeds. They put each piece on one at a time. But the plants do not last long. New floats are made each year.



The Rose Parade has many colorful floats every year.



This Rose Parade float was built by the Natural History Museum of Los Angeles County.



A volunteer puts a rose onto a float.

Art Is Where You Find It

Anything can be used to make art! Many people have made art from small plastic bricks, but could they have used toothpicks? What about cereal or toast? These have all been used to craft works of art!

Art can be anything, and it can be found anywhere. Look around. Where do you find a work of art?

Artist Nathan Wyburn adds toast to his art of British royal Kate Middleton.



Making art from found objects may have started in France. That practice was called *objet trouvé*, or "found object."



This statue of comic book hero The Flash® was made of plastic bricks in France in 2018.

This statue of video game character Yoshi® was made of soup cans in New York in 2015.



Artist Liu Xuedong stands with his horse made of toothpicks.





STEAM CHALLENGE

Define the Problem

Your town is having a Trash-to-Treasure day. People have asked you to design a sculpture.



Constraints: You must use at least 10 items to make your sculpture. You must use items that most people would put in the trash. You may use tape or glue to hold the parts together.



Criteria: Your sculpture must be able to stand on its own for at least 15 seconds.



Research and Brainstorm

Why should you have patience when creating art? What types of items might be considered trash? How can you make your sculpture stand?



Design and Build

Collect at least 10 pieces of trash for your artwork. What purpose will each part serve? What materials will work best? Create your sculpture.



Test and Improve

Show your design to your friends. Did your sculpture use 10 items of trash? Did it stand for 15 seconds? How can you improve it? Improve your design and try again.



Reflect and Share

Why should people make art with items from the trash? How else can people turn trash into something new?

Glossary

ancient—refers to something from a time long ago

bits—small pieces of things

decompose—to slowly break down by natural processes

floats—vehicles with platforms that carry displays in parades

grout—a material used for filling cracks or spaces between small pieces

intact—not broken

lint—tiny pieces of cloth or other soft materials that can be found in clothes dryers

mediums—methods or materials used by artists

monks—male members of some religious groups who live separate from society, usually without money

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Career Advice

from Smithsonian



Do you want to be an artist?

Here are some tips to get you started.

“Ask questions and talk to people. Try new things, and you can be a great artist!” —**Emily Key, Education Programs Manager**

“To be a great artist, you need to know about a lot of subjects, such as history and science. Study hard and start creating!” —**Diane Kidd, Illustrator and Museum Educator**

Read and Respond

1. What did Simon Rodia call his towers?
2. Some artists make art from plastic found in oceans. What messages might these artists be trying to send?
3. How might *Nuestro Pueblo* be different if it were made in a small town?
4. Can anything be art? Why or why not?
5. Is found art better than art made from more common mediums? Why do you think so?
6. Think about the materials you can find where you live. Draw a plan for your own found art.

