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## **Smithsonian STEAM Readers—Grade 1 (Spanish)**

**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** (13 pages)

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# Smithsonian

## STEAM Readers

Science ■ Technology ■ Engineering ■ Arts ■ Mathematics

**Management Guide**

Teacher Created Materials

Grade  
**1**

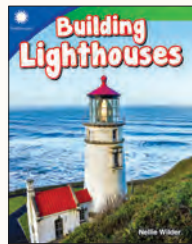
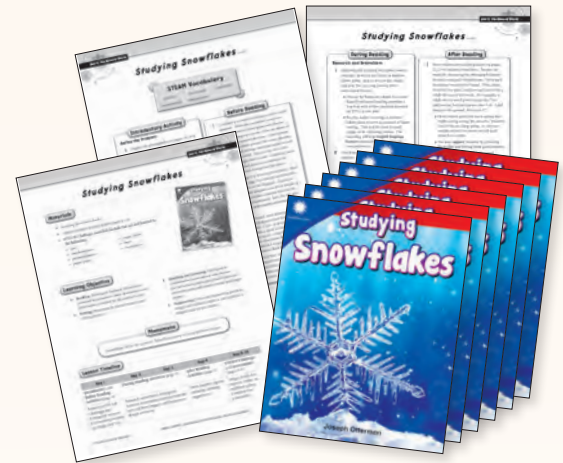
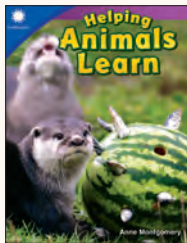


# Table of Contents

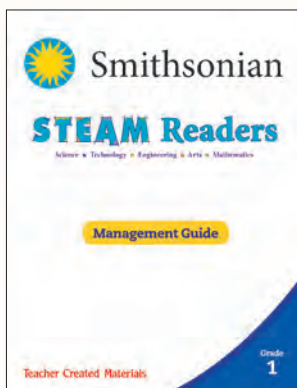
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# Kit Components

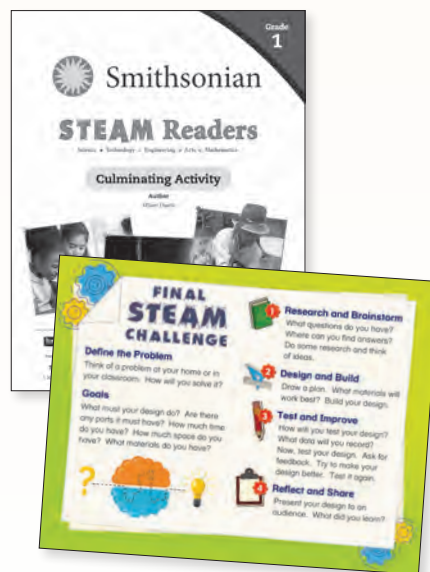
15 lesson plans with 6 copies of each book



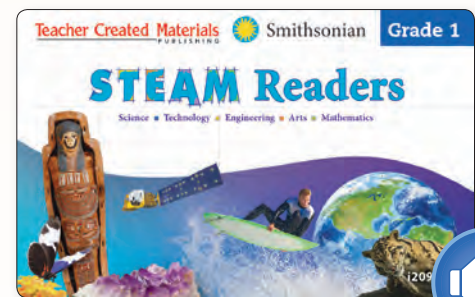
## Management Guide



## Culminating Activity



## Digital and Audio Resources



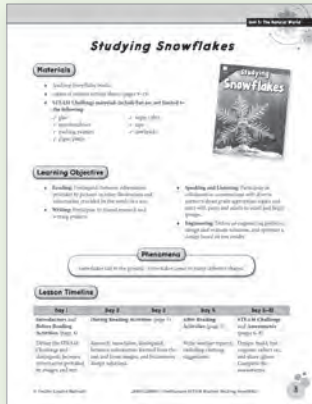


# Lesson Plan Components

Each 10-day lesson sequence is organized in a consistent format for ease of use.

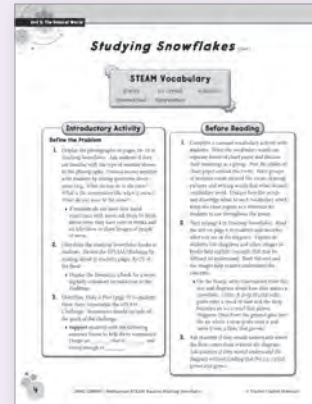
## Overview

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



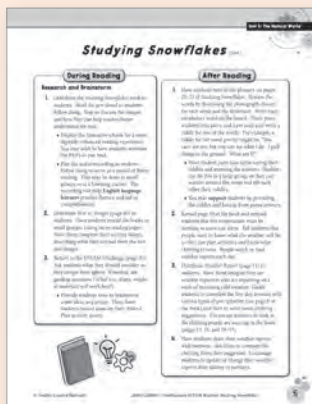
## Day 1

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



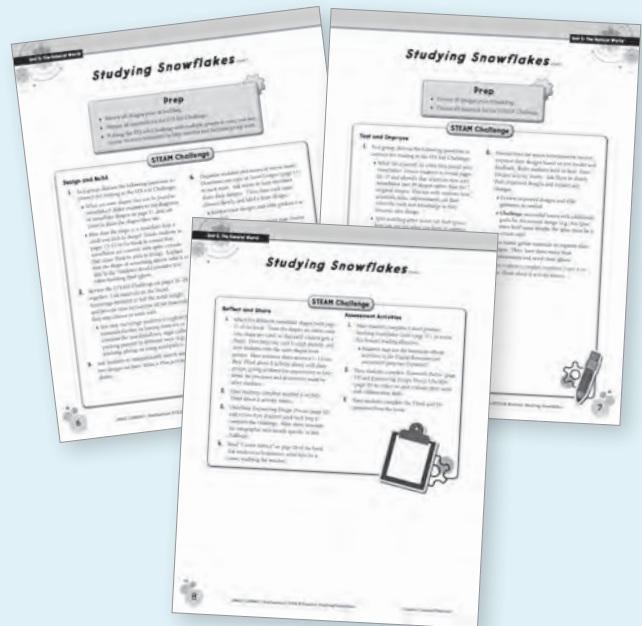
## Days 2-4

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



## Days 5-10

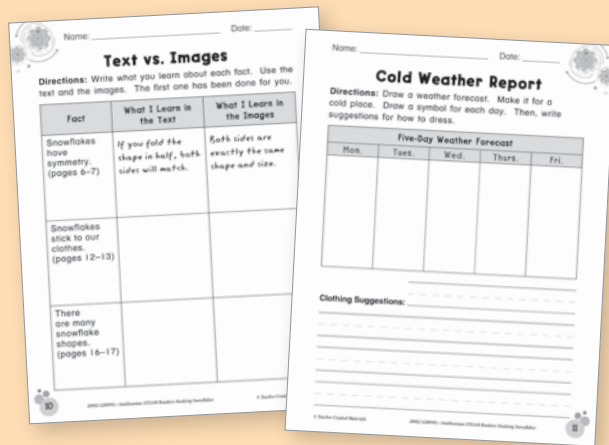
- Students take what they've learned and apply it to design, build, test, and improve a solution.
- Students reflect, share work, and take assessments.



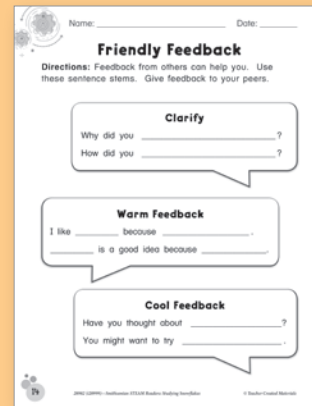
# Lesson Plan Components *(cont.)*

## Student Activity Sheets

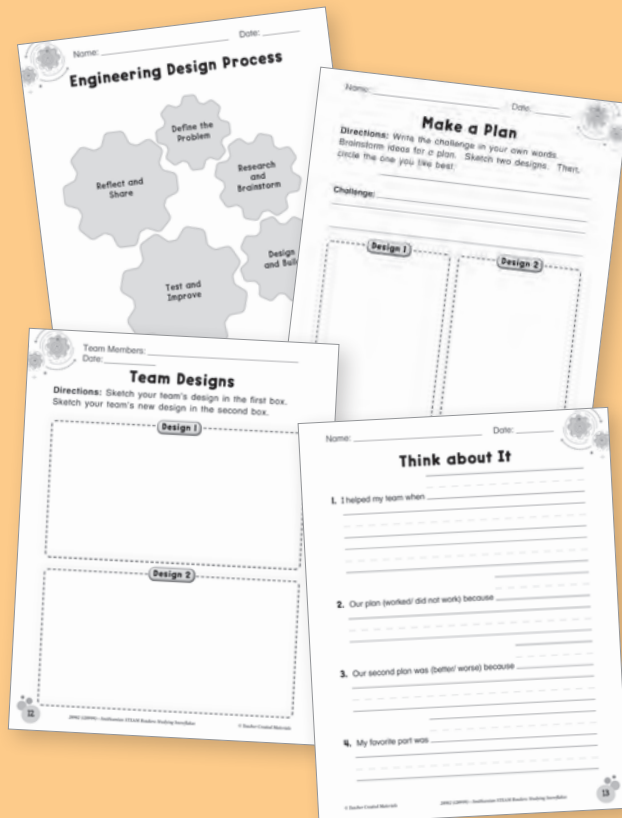
Literacy skills are supported with meaningful activities that **promote higher-order thinking skills**.



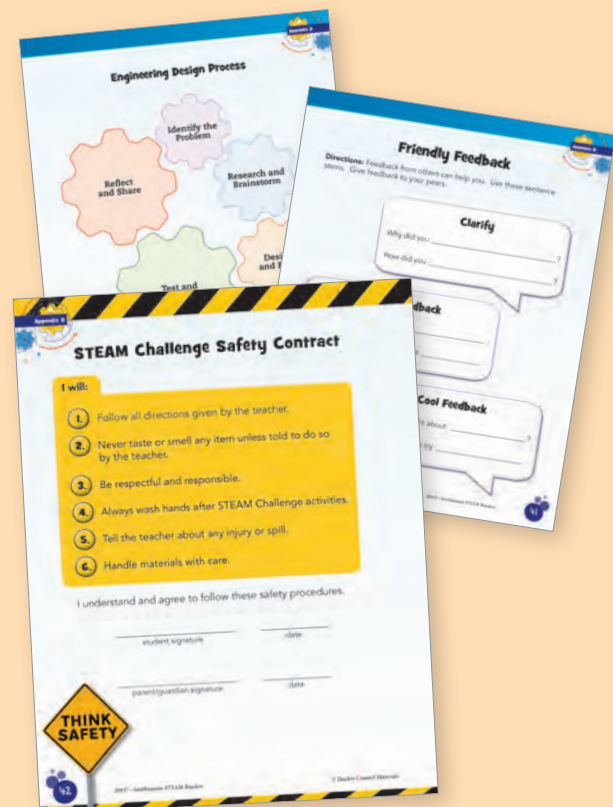
**Effective feedback techniques** are supported with **sentence frames** to help students provide feedback to peers and to facilitate productive classroom dialogue.



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: \_\_\_\_\_

### Studying Snowflakes Quiz

**Directions:** Read each question. Fill in the bubble for the best answer. Then, answer the last question.

- What does a snowflake need to form?
  - A spiky crystals
  - B symmetry
  - C gravity
  - D a speck of dust
- The \_\_\_\_\_ can change the shape of a snowflake.
  - A gravity
  - B temperature
  - C symmetrical
  - D scientists
- What makes snowflakes fall to the ground?
  - A scientists
  - B gravity
  - C snow
  - D temperature
- Why do snowflakes stick to things?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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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
<b>Total</b>				

Teacher Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Engineering Design Process Checklist

**Directions:** Read the list. Check the boxes to show what you did.

- Define the Problem**
  - I wrote the problem in my own words.
- Research and Brainstorm**
  - I read a book and thought of ideas.
- Design and Build**
  - I planned and made a model.
  - I thought about shape, size, and/or weight in my design.
- Test and Improve**
  - I tested a design.
  - I improved a design.
  - I thought about shape, size, and/or weight in my design.
- Reflect and Share**
  - I shared my results.

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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**

**1 Research and Brainstorm**  
What questions do you have? Where can you find answers? Do some research and think of ideas.

**2 Design and Build**  
Draw a plan. 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. Try to make your design better. Test it again.

**4 Reflect and Share**  
Present your design to an audience. What did you learn?

---

**Final STEAM Challenge Rubric**

Directions: Score each item on a scale of 3 to 1.  
3 = Yes, we did this well! 2 = We did okay. 1 = We did not do this well.

Categories	Scores		
<b>Design</b> We tried to meet all our goals with our designs.	3	2	1
<b>Content</b> We used words and pictures to share what we did.	3	2	1
<b>Presentation</b> We spoke in loud, clear voices.	3	2	1
<b>Teamwork</b> We worked together.	3	2	1

## Think and Do

Think and Do 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.

## 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.

**Think and Do**

1. What do we use water for apart from drinking?
2. Which type of filter do you think is best? Why?



# Pacing and Instructional Setting Options

*Smithsonian STEAM Readers* is flexibly designed and can be used in tandem with a core curriculum within a science/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 students' needs and the teacher's preferred instructional framework, such as Balanced Literacy.

## Smithsonian STEAM Readers within the Balanced Literacy Framework

<b>Modeled and Shared Reading/Writing</b>	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.
<b>Small-Group Reading/Workshop</b>	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.
<b>Independent Reading</b>	Professional audio recordings, PDFs of the books, and Interactiv-eBooks are provided to support independent reading at workstations and listening centers.
<b>Assessment</b>	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

# El arte del teatro de sombras



Unit 3  
Fun in Action



## Lesson Plan

**Author**

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**Spanish  
Version**



Smithsonian

**STEAM Readers**

Science ■ Technology ■ Engineering ■ Arts ■ Mathematics

**Teacher Created Materials**  
PUBLISHING

5301 Oceanus Drive  
Huntington Beach, CA 92649-1030  
www.tcmpub.com

**TCM 112794 (i33972)**

ISBN 978-0-7439-2625-6

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ISBN-13: 978-0-7439-2625-6



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References to digital components are included for educators who purchased the full kit: *Smithsonian STEAM Readers: Grade 1 (Spanish)*. Please disregard digital component references if this lesson was purchased in a different product configuration.

### Answer Key: *El arte del teatro de sombras*

#### page 10—Haz y responde preguntas

Preguntas	Respuestas
¿Quién crea y usa las marionetas?	Los marionetistas crean las marionetas.
¿Qué hacen los marionetistas?	Usan las marionetas para contar historias.
¿Dónde se usan las marionetas?	Las sombras de las marionetas se muestran sobre una pared o un telón.
¿Por qué se usan marionetas en el teatro de sombras?	Las marionetas se usan porque sirven para contar historias.
¿Cuándo producen sombra las marionetas?	Las marionetas producen sombra cuando se apunta una luz sobre ellas.

#### page 11—Había una vez

Students' sequence maps should retell the story of "Los tres cerditos" including the following events: the pigs building their houses, the wolf blowing down the straw house, the wolf blowing down the stick house, the wolf trying to blow down the brick house, the wolf failing, and the wolf going down the chimney and running away.

#### page 17—Prueba: *El arte del teatro de sombras*

1. B
2. A
3. D
4. Las marionetas se usan para hacer sombras y contar historias.

# El arte del teatro de sombras

## Materials

- ▶ books: *El arte del teatro de sombras*
- ▶ copies of student activity sheets (pages 9–19)
- ▶ **STEAM Challenge materials include but are not limited to the following:**
  - ✓ cardboard
  - ✓ coloring tools such as crayons or pencils
  - ✓ construction paper
  - ✓ dowels, sticks, or craft sticks
  - ✓ glue
  - ✓ light source(s) such as a lamp, flashlight, or projector
  - ✓ paper
  - ✓ paper fasteners
  - ✓ sheets
  - ✓ stapler
  - ✓ tape
  - ✓ tissue paper



## Learning Objective

- ▶ **Reading:** Ask and answer questions about key details in a text.
- ▶ **Writing:** Write narratives in which they recount two or more appropriately sequenced events, including some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.
- ▶ **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

When something is placed in a path of light, it can be seen, and a shadow is created.

## 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 review the five question words.	Research making shadows with puppets to tell stories, ask and answer questions about the text, and brainstorm design solutions.		Write plans to tell the story of “The Three Little Pigs.”	Design, build, test, improve, reflect on, and perform shadow puppet plays. Complete the assessments.



# El arte del teatro de sombras (cont.)

## STEAM Vocabulary

cuero                      gobernante  
marionetistas            telón

### Introductory Activity

#### Define the Problem

1. Take students to the playground and find some shadows on the playground, maybe even their own. If possible, return to the playground another time of the day and observe how the shadows change.
  - ▶ If the sun is not shining on the day you choose to do this, bring a flashlight into the classroom and shine it on objects to make shadows. Discuss with students what the light source is, what the object is, and how moving the light source changes the shadow.
  - ▶ If neither option is available, display pages 4–5 in *El arte del teatro de sombras* and discuss the shadows in the photographs.
  - ▶ Keep this part of the lesson brief. It is not meant to be the discovery part of the lesson but rather a quick introduction to get students engaged and interested in the topic.
2. Distribute the books *El arte del teatro de sombras* to students. Reveal the STEAM Challenge by reading aloud to students pages 20–21 of the book.
  - ▶ Display the Read-Along eBook for a more digitally enhanced introduction to the challenge.
3. Distribute *Haz un plan* (page 9) to students. Have them summarize the STEAM Challenge. Summaries should include all the goals of the challenge.
  - ▶ **Support** students with the following sentence frame to help them summarize:  
*Diseña y crea \_\_\_\_\_ para \_\_\_\_\_.*

### Before Reading

1. Write the vocabulary words on the board and read each word to students. Write sentences on the board that give context clues for the vocabulary words. Have students use context clues to determine the meaning of each word. Ask students to provide a rationale as to what they think the words mean. What other words give clues? Use the sentences below or create your own.
  - ▶ Estas botas están hechas de *cuero*.
  - ▶ El rey era el *gobernante* del país.
  - ▶ Los *marionetistas* usaron marionetas para hacer el espectáculo.
  - ▶ Vimos las sombras de las marionetas en un *telón* grande.
2. Tell students that good readers check for understanding as they read. They ask themselves questions about what they read and try to find answers in the text. One good way to do this is to ask and answer questions about the main topic of the text. The main topic is often the title of the book. Read the title of the book, and tell students they will practice asking and answering questions about *El arte del teatro de sombras* as they read.
  - ▶ Hold up one hand to show five fingers. Explain that they should use the five question words (*quién, qué, dónde, por qué, cuándo*) to ask questions and look for answers as they read.

# El arte del teatro de sombras (cont.)

## During Reading

### Research and Brainstorm

1. Distribute the books *El arte del teatro de sombras* to students. Remind students of the five question words (*quién, qué, dónde, por qué, cuándo*), and tell them they should try to find the answers to those questions as they read.
2. Read aloud the text as a group. Stop occasionally to ask students if any of the five types of questions have been answered and discuss them.
  - ▶ Point out that they might ask and find answers to more than one question for each question word (e.g., *¿Quién hace el teatro de sombras? ¿Quién hizo teatro de sombras por primera vez?*).
  - ▶ Play the audio recording or the Read-Along eBook to serve as a model of fluent reading as students follow along. This may be done in small groups or at a listening station. The recording will help **Spanish language learners** practice fluency and aid in comprehension.
3. Distribute *Haz y responde preguntas* (page 10) to students. Have students either write the question or the answer to complete the activity sheet. Students can work independently or in small groups.
4. Tell students that sometimes a sixth question can help ensure that they understand a text—*¿cómo?* Have students discuss *how* puppeteers use the puppets, lights, and shadows to tell their stories.
5. Have students brainstorm and discuss ideas for the STEAM Challenge with some guiding thoughts or questions (e.g., *¿Qué tamaños y formas funcionarían mejor? ¿A qué distancia deberían estar las marionetas de la luz y del telón?*). Record their ideas on a sheet of chart paper.

## After Reading

1. Review the vocabulary words by returning to the text and finding where each vocabulary word is used (*cuero*—page 8, *gobernante*—page 10, *telón*—page 12, *marionetistas*—page 13). Reread the sentences and identify any context clues in the sentences that help students make meaning.
  - ▶ Ask students the following questions:  
*¿Qué palabra o palabras son más útiles?  
 ¿Las imágenes nos ayudan? ¿En qué se parecen estas claves de contexto a las oraciones de la actividad que hicimos antes de leer, o en qué se diferencian?  
 ¿Cómo nos ayudan a entender cada palabra?*
2. Review the STEAM Challenge with students. They will be creating and using shadow puppets to tell the story of “Los tres cerditos”. If needed, read a version of the story to students.
3. Distribute *Había una vez* (page 11) to students. Ask them to make a plan for telling “Los tres cerditos” in their own words. Remind them that using temporal words can help them signal the sequence of events. Six boxes are provided on the activity sheet; however, students can use additional paper to add more boxes if needed.
4. Have students orally practice telling “Los tres cerditos” from their sequencing maps to partners. Encourage partners to provide feedback to ensure all the main events from the story are included.



# El arte del teatro de sombras (cont.)

## Prep

- ▶ Review all designs prior to building.
- ▶ Prepare all materials for the STEAM Challenge.
- ▶ If doing the STEAM Challenge with multiple groups at once, you may choose to invite volunteers to help monitor and facilitate group work.

## STEAM Challenge

### Design and Build

1. As a group, discuss the following questions to connect the reading to the STEAM Challenge:
  - ▶ *¿Cómo cambian los marionetistas el tamaño de las sombras?* Refer students to page 14 to remind them that the size and shape of puppets' shadows can be changed as the puppets are moved closer to or farther from the light source and screen.
  - ▶ *¿Qué marionetas tendrán que diseñar y crear ustedes para contar su historia?* Refer students to the activity sheet *Había una vez*. Have students identify which characters and settings they will need.
2. Review the STEAM Challenge on pages 20–21 together. List materials on the board, and encourage students to preview all the materials prior to making their plans.
  - ▶ If necessary, demonstrate how to use paper fasteners.
  - ▶ You can set up this challenge a few ways: with one large screen area and a fixed light position, with one screen area and the option of moving the light source or using different light sources, or with each team creating their own screen area and planning how to use it. Review your plan with students.
3. Ask students to independently sketch and label plans on their activity sheets *Haz un plan*. Their plans should include the location of puppets, people, a screen, and a light source. Encourage students to label their designs with materials.
4. Organize students into teams. Distribute one copy of *Diseños en equipo* (page 12) to each team. Ask teams to have members share their designs. Then, have each team choose, sketch, and label a team design.
  - ▶ Review team designs and offer guidance as needed.
  - ▶ Have teams use one team member's activity sheet *Había una vez* to guide their story planning. Choose for them, if necessary.
5. Explain to students that they must follow their design plans when they build their puppets. Reassure them that they will have an 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 their shadow puppets and theaters.
  - ▶ Remind students to plan how the story will be told (with no sound, with a narrator, or with character voices).
  - ▶ Provide students access to the screen and light source to practice how the puppet performance will take place (optional).
6. Distribute *Piénsalo* (page 13) to each student. Explain that reflection is an important part of the engineering design process. Read aloud number 1 on the activity sheet and have students write their responses. Ask volunteers to share.

# El arte del teatro de sombras (cont.)

## Prep

- ▶ Review all designs prior to building.
- ▶ Prepare all materials for the STEAM Challenge.

## STEAM Challenge

### Test and Improve

1. As a group, discuss the following questions to connect the reading to the STEAM Challenge:
  - ▶ *¿Cómo hacen los marionetistas para que se muevan las marionetas?* Refer to page 16 in the book to reference how puppets can be designed with moving parts. Encourage students to think about how well their puppets move as they test them and how they might improve them.
  - ▶ *¿Cómo muestran las imágenes del libro a los marionetistas trabajando juntos?* Display pages 16–17 from the text, and guide students to notice how important it is for puppeteers to work together to tell their stories.
2. Gather teams for testing. Explain that teams will offer feedback after the test. Use *Crítica constructiva* (page 14) to review best practices for giving feedback.
3. Distribute *Teatro de sombras: resultados de las pruebas* (page 15) to students, and ask them to record results for each team.
4. Explain that one team at a time will perform. Allow the team to set up the screen and light source so the shadows fall the way the team wants them to. Encourage the team to speak loud enough for the rest of the group to hear. Remind the rest of the groups of appropriate audience manners as they watch the performance. Ask volunteers to provide feedback.
5. Provide time for teams to brainstorm ways to improve their designs based on their performances and feedback. Distribute a second copy of *Diseños en equipo* to each team. Ask them to sketch their improved designs and explain any changes.
  - ▶ Review improved designs and offer guidance as needed.
  - ▶ **Challenge** students to consider how using translucent materials (*papel encerado, papel tisú, etc.*) would change how their puppets look and have them try it.
6. Have teams gather materials to improve their designs. Then, have them make their improvements and retest their shadow puppets.
7. Have students complete numbers 2 and 3 on their activity sheets *Piénsalo*.



# El arte del teatro de sombras (cont.)

## STEAM Challenge

### Reflect and Share

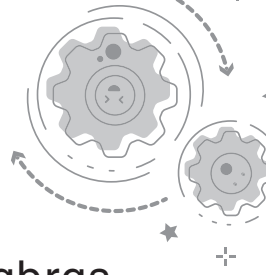
1. Ask half the group to form an outward-facing circle. Then, have the other half form a circle facing the other, creating inner and outer circles.
2. Have students reflect on their STEAM Challenge experiences by discussing what was challenging when they planned and performed their stories and what they enjoyed most. Have students discuss their responses with the person in front of them. Ring a bell or give students a signal for the outside circle to rotate one person to the left. Repeat this activity two more times so each person has had a chance to share with three different peers.
3. Have students complete number 4 on their activity sheets *Piénsalo*.
4. Distribute *Proceso del diseño de ingeniería* (page 16) to students, and review how they used each step to complete the challenge. Annotate the infographic together with details specific to this challenge.
5. Read “Consejos profesionales” on page 24 of the book. Ask students to brainstorm other tips for a career as a shadow puppeteer.

### Assessment Activities

1. Have students complete a short posttest, *Prueba: El arte del teatro de sombras* (page 17), to assess this lesson’s reading objective.
2. Have students complete *Pautas para el trabajo en equipo* (page 18) and *Proceso del diseño de ingeniería: lista de control* (page 19) to reflect on and evaluate their work and collaboration skills.
3. Have students complete the questions from *Piensa y hazlo* in the book.



Nombre: \_\_\_\_\_ Fecha: \_\_\_\_\_



# Haz un plan

**Instrucciones:** Escribe el desafío con tus propias palabras. Dibuja un plan para el teatro. Dibuja el diseño de tus marionetas.

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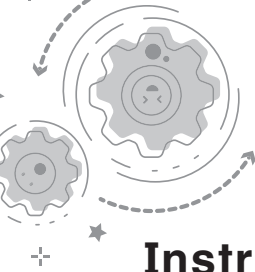
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**Diseño 1**

**Diseño 2**

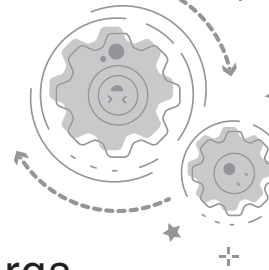


Nombre: \_\_\_\_\_ Fecha: \_\_\_\_\_

# Haz y responde preguntas

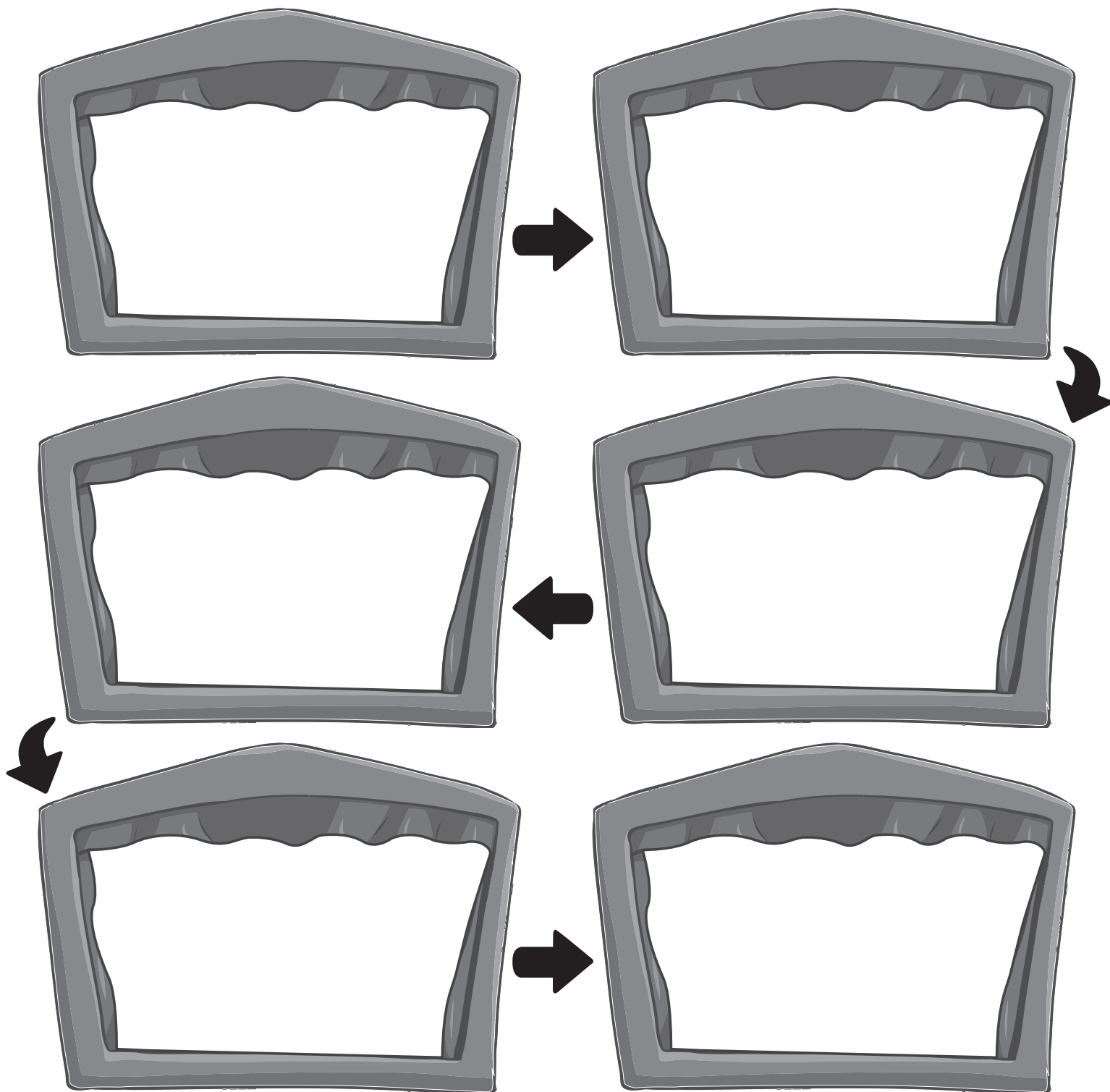
**Instrucciones:** Completa los recuadros en blanco. Escribe una pregunta para cada respuesta. Escribe una respuesta para cada pregunta.

Preguntas	Respuestas
<b>¿Quién?</b>	Los marionetistas crean las marionetas.
<b>¿Qué?</b> ¿Qué hacen los marionetistas?	
<b>¿Dónde?</b>	Las sombras de las marionetas se muestran sobre una pared o un telón.
<b>¿Por qué?</b>	Las marionetas se usan porque sirven para contar historias.
<b>¿Cuándo?</b> ¿Cuándo producen sombra las marionetas?	

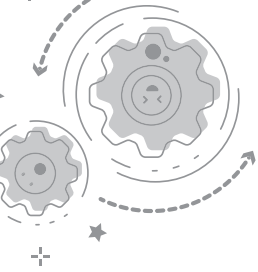


# Había una vez

**Instrucciones:** Planea una función de teatro de sombras. Vuelve a contar la historia de “Los tres cerditos”. Escribe o dibuja la historia.







Miembros del equipo: \_\_\_\_\_

Fecha: \_\_\_\_\_

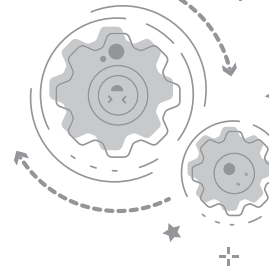
# Diseños en equipo

**Instrucciones:** Bosqueja el teatro de tu equipo en el primer recuadro. Bosqueja al menos una marioneta en el segundo recuadro. Intenta mostrar cómo se moverá.

**Teatro**

**Marionetas**

Nombre: \_\_\_\_\_ Fecha: \_\_\_\_\_



# Piénsalo

1. Ayudé a mi equipo cuando \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Nuestro plan (funcionó/no funcionó) porque \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Nuestro segundo plan fue (mejor/peor) porque \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

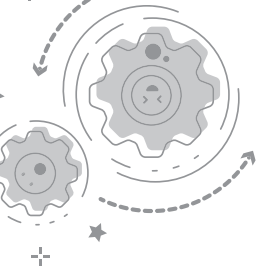
\_\_\_\_\_

4. Mi parte favorita fue \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Nombre: \_\_\_\_\_ Fecha: \_\_\_\_\_

# Crítica constructiva

**Instrucciones:** La crítica constructiva de los demás puede ayudarte. Usa estos comienzos de oraciones. Haz comentarios a tus compañeros.

## Aclarar

¿Por qué decidiste \_\_\_\_\_ ?

¿Cómo hiciste para \_\_\_\_\_ ?

## Comentarios cálidos

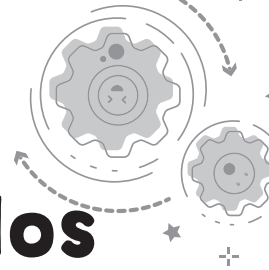
Me gusta \_\_\_\_\_ porque \_\_\_\_\_ .

\_\_\_\_\_ es una buena idea porque \_\_\_\_\_ .

## Comentarios tibios

¿Has pensado en \_\_\_\_\_ ?

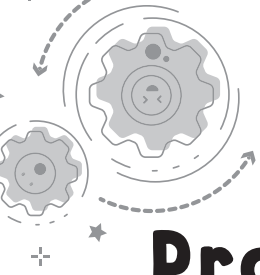
Tal vez quieras intentar \_\_\_\_\_ .



# Teatro de sombras: resultados de las pruebas

**Instrucciones:** Mira la obra de teatro de cada equipo. Responde las preguntas sobre cada obra. Usa palabras o dibujos para completar la última columna.

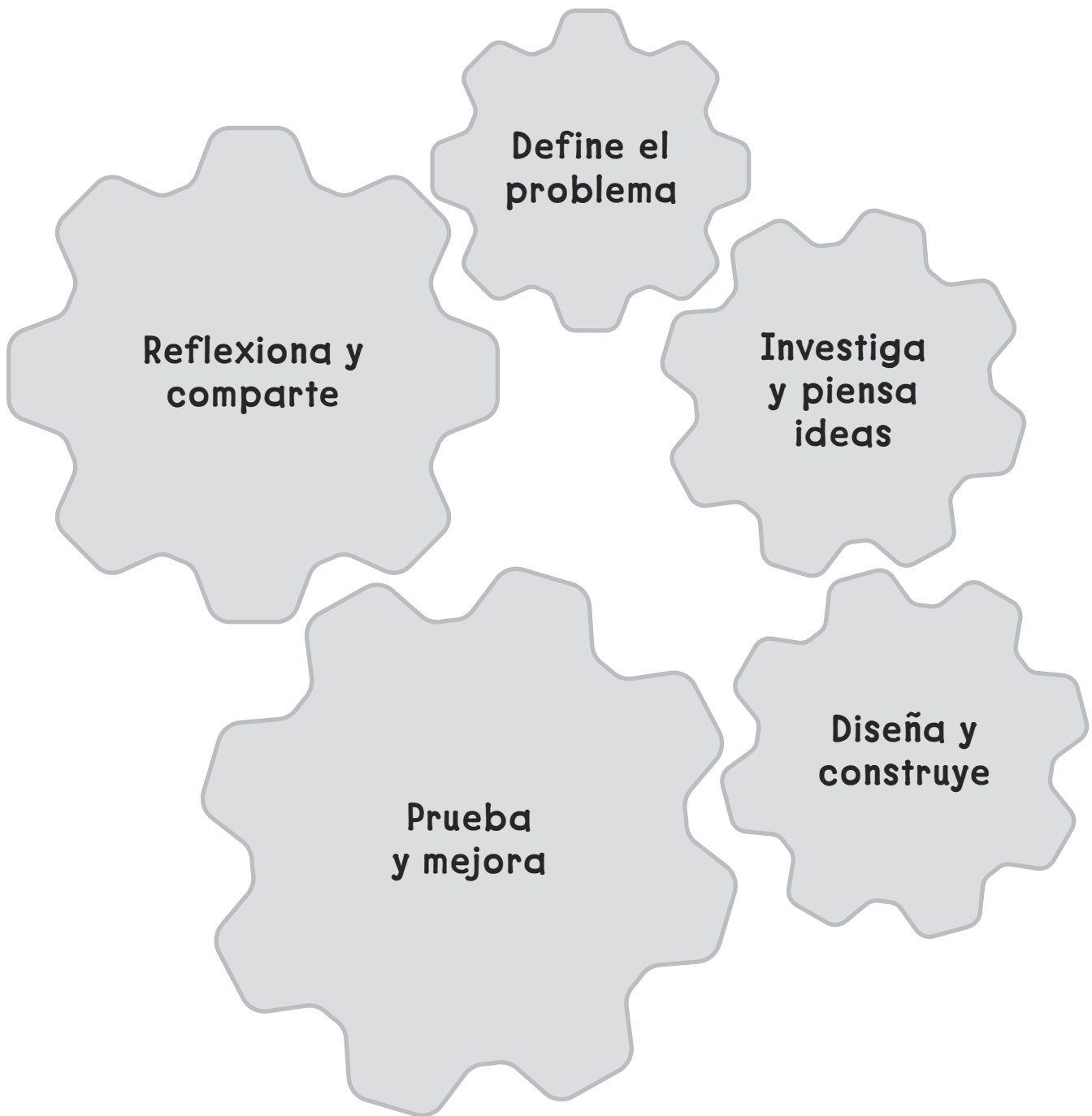
Equipo	¿La obra fue fácil de ver?	¿Las marionetas se movían?	¿Cómo se movían las marionetas?
	sí      no	sí      no	
	sí      no	sí      no	
	sí      no	sí      no	
	sí      no	sí      no	
	sí      no	sí      no	



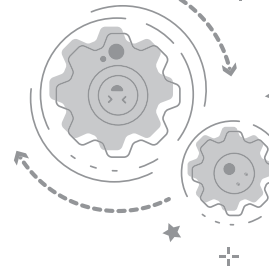
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Fecha: \_\_\_\_\_

# Proceso del diseño de ingeniería







# Prueba: *El arte del teatro de sombras*

**Instrucciones:** Lee cada pregunta. Rellena la burbuja de la mejor respuesta. Luego, responde la última pregunta.

1. Las sombras se forman cuando se \_\_\_\_\_ la luz.

- (A) forma
- (B) bloquea
- (C) sostiene
- (D) apaga

2. ¿Dónde vemos las sombras?

- (A) en una pared o un telón
- (B) en un escenario
- (C) en un marionetista
- (D) en un pedazo de cuero

3. ¿Cómo se mueven las marionetas?

- (A) Se mueven sobre ruedas.
- (B) Una máquina las mueve.
- (C) Se mueven con la luz.
- (D) Hay personas que las mueven.

4. ¿Para qué se usan marionetas en el teatro de sombras?

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Nombre: \_\_\_\_\_ Fecha: \_\_\_\_\_

# Pautas para el trabajo en equipo

**Instrucciones:** Piensa en cómo trabajaste con tu equipo. Califícate en cada punto en una escala del 4 al 1.

4 = Siempre      3 = A menudo      2 = A veces      1 = Nunca

 Escuché a mis compañeros de equipo.	4	3	2	1
 Ayudé a mis compañeros de equipo.	4	3	2	1
 Compartí ideas con mis compañeros de equipo.	4	3	2	1
 Tomamos decisiones en equipo.	4	3	2	1
<b>Total</b>				

**Notas del maestro:** \_\_\_\_\_

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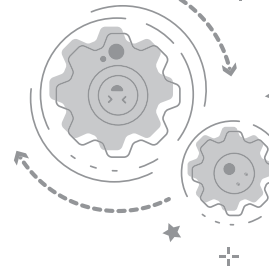
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# Proceso del diseño de ingeniería: lista de control

**Instrucciones:** Lee la lista. Tilda las casillas para mostrar lo que hiciste.

## Define el problema

- Escribí el problema con mis propias palabras.

## Investiga y piensa ideas

- Leí un libro y pensé ideas.

## Diseña y construye

- Planeé e hice un modelo.
- Pensé en la forma, el tamaño y/o el peso de mi diseño.

## Prueba y mejora

- Probé un diseño.
- Mejoré un diseño.
- Pensé en la forma, el tamaño y/o el peso de mi diseño.

## Reflexiona y comparte

- Compartí mis resultados.



# DESAFÍO DE CTIAM



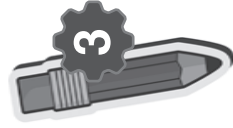
## Investiga y piensa ideas

¿Qué necesitas para crear sombras? ¿A qué distancia del telón pondrás las marionetas? ¿Dónde pondrás la luz?



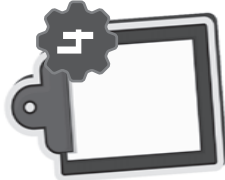
## Diseña y construye

Dibuja tu plan. ¿Cómo funcionará? ¿Qué materiales usarás? ¡Construye tu modelo!



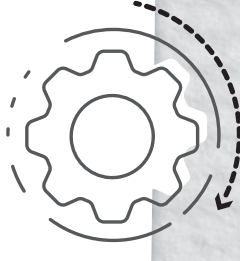
## Prueba y mejora

Haz tu presentación. ¿El público puede verla? ¿Estás tapando alguna de las sombras? ¿Puedes mejorar tu obra? Inténtalo de nuevo.



## Reflexiona y comparte

¿Cómo mostraste y contaste tu historia? ¿Qué ocurriría si mostraras las sombras de personas reales en lugar de marionetas? ¿Qué ocurriría si movieras las luces?

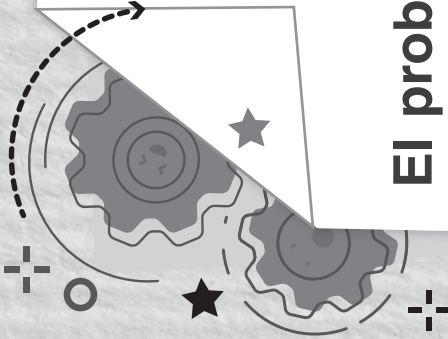


## El problema

Un grupo de marionetistas estaba en camino a tu escuela. ¡Pero se perdieron! Tu maestro quiere que tu clase los reemplace para hacer el teatro de sombras. ¿Puedes hacer marionetas para contar la historia de “Los tres cerditos”?

## Los objetivos

- Diseña las marionetas para contar la historia.
- Diseña un teatro y un telón para tu presentación.
- Diseña el lugar donde pondrás la luz de acuerdo a cómo deseas que se vean las sombras.





Smithsonian

# El arte del teatro de sombras



Dona Herweck Rice



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## Library of Congress Cataloging-in-Publication Data

Names: Rice, Dona, author.

Title: El arte del teatro de sombras / Dona Herweck Rice.

Other titles: Art of shadow puppets. Spanish

Description: Huntington Beach, CA : Teacher Created Materials, [2020] |

"Smithsonian." | Audience: Grades K-1.

Identifiers: LCCN 2019038479 (print) | LCCN 2019038480 (ebook) | ISBN

9780743925938 (paperback) | ISBN 9780743926089 (ebook)

Subjects: LCSH: Shadow shows--Juvenile literature. | Shadow puppets--Juvenile literature. | Puppets--Juvenile literature. | Shades and shadows--Juvenile literature. | CYAC: Shadow shows. | Shadow puppets. | Shadows. | Puppets. | Spanish language materials.

Classification: LCC PN1979.S5 R5318 2020 (print) | LCC PN1979.S5 (ebook)

| DDC 791.5--dc23

LC record available at <https://lccn.loc.gov/2019038479>

LC ebook record available at <https://lccn.loc.gov/2019038480>



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## Teacher Created Materials

5301 Oceanus Drive  
Huntington Beach, CA 92649-1030  
[www.tcmpub.com](http://www.tcmpub.com)

ISBN 978-0-7439-2593-8

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# En las sombras

Casi todas las cosas pueden hacer una sombra. Una sombra es lo que se forma cuando las personas o las cosas bloquean la luz.



Este árbol forma una sombra al bloquear la luz del sol.

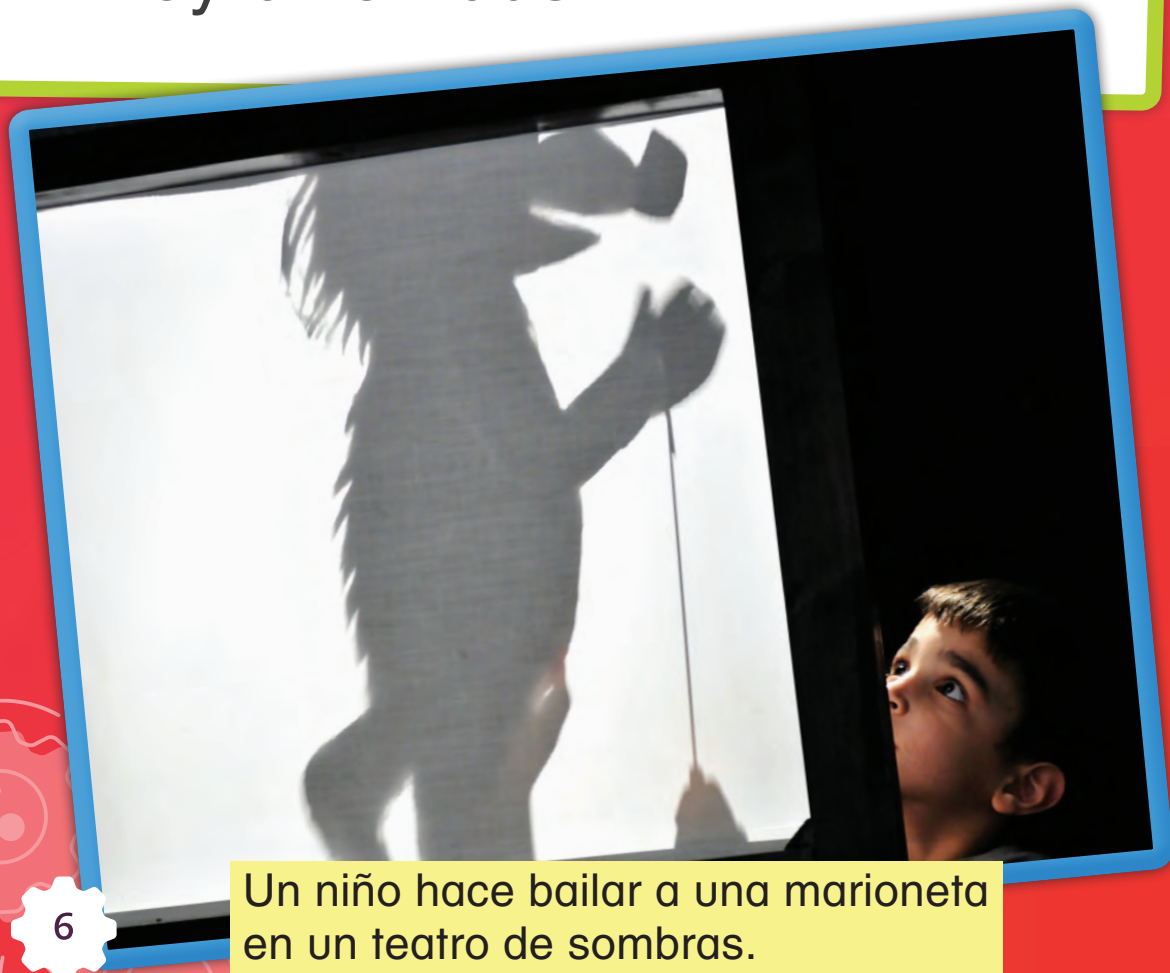


Este juguete forma una sombra al bloquear la luz del teléfono.



# Teatro de sombras

El teatro de sombras se usa para contar historias. Tiene marionetas que se mueven y bailan con la música. Son muy divertidas.



Un niño hace bailar a una marioneta en un teatro de sombras.



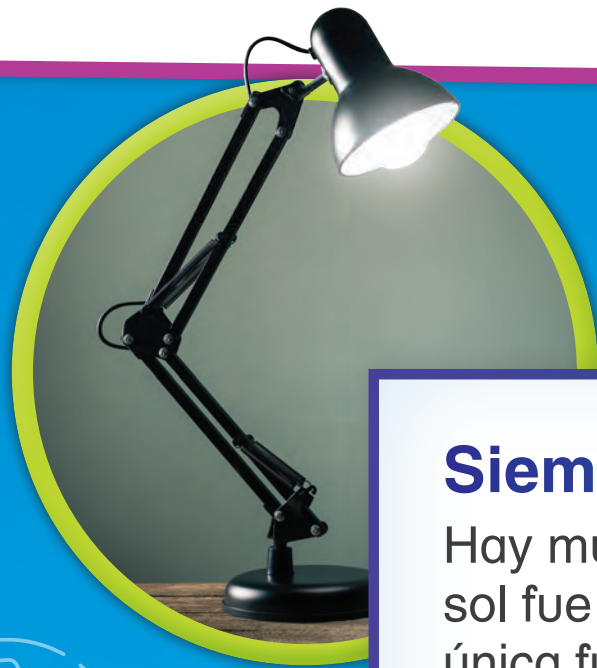
## Ciencia y arte

### Mi sombra y yo

Las sombras cambian cuando las luces o los objetos se mueven. Pide a un amigo que dibuje una línea alrededor de tu sombra afuera. Más tarde, ponte en el mismo lugar. El sol se ha movido, ¡así que tu sombra también cambiará!



El teatro de sombras es un arte muy antiguo. Se hizo por primera vez en Asia. Las personas hacían marionetas con papel o con **cuero**. Movían las marionetas para contar historias.



### Tecnología

#### Siempre con luz

Hay muchos tipos de luz. El sol fue por mucho tiempo la única fuente de luz. Luego vino el fuego. Hoy en día, podemos tener luz cuando queremos.



Este hombre de China muestra sus marionetas.



En China, hay una vieja historia. Un **gobernante** amaba a una mujer que murió. Su amigo hizo teatro de sombras con una marioneta de esa mujer. Eso animó al gobernante. Tal vez esa fue la primera vez que se hizo teatro de sombras.



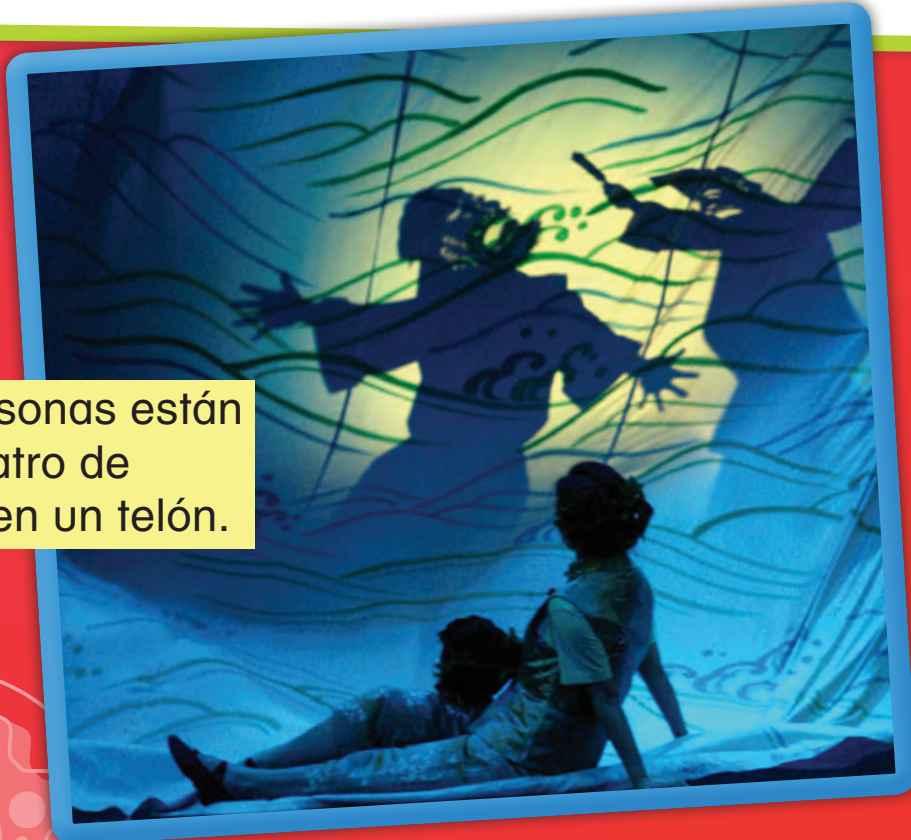
gobernante  
Wudi, de China





# Marionetas mágicas

El teatro de sombras se hace con luz y sombra. Se apunta una luz sobre una marioneta. La marioneta bloquea parte de la luz. Eso produce una sombra sobre una pared o un **telón**.



Estas personas están viendo teatro de sombras en un telón.

La sombra de esta marioneta se ve en un telón.



**Ingeniería y matemáticas**

## La forma de las cosas

Los **marionetistas** pueden poner las marionetas más cerca de la luz para que las sombras se vean más grandes. Si alejan las marionetas de la luz, las sombras se ven más pequeñas.

**¿Cómo se lee?**

*marionetista* = (ma-rio-ne-TIS-ta)



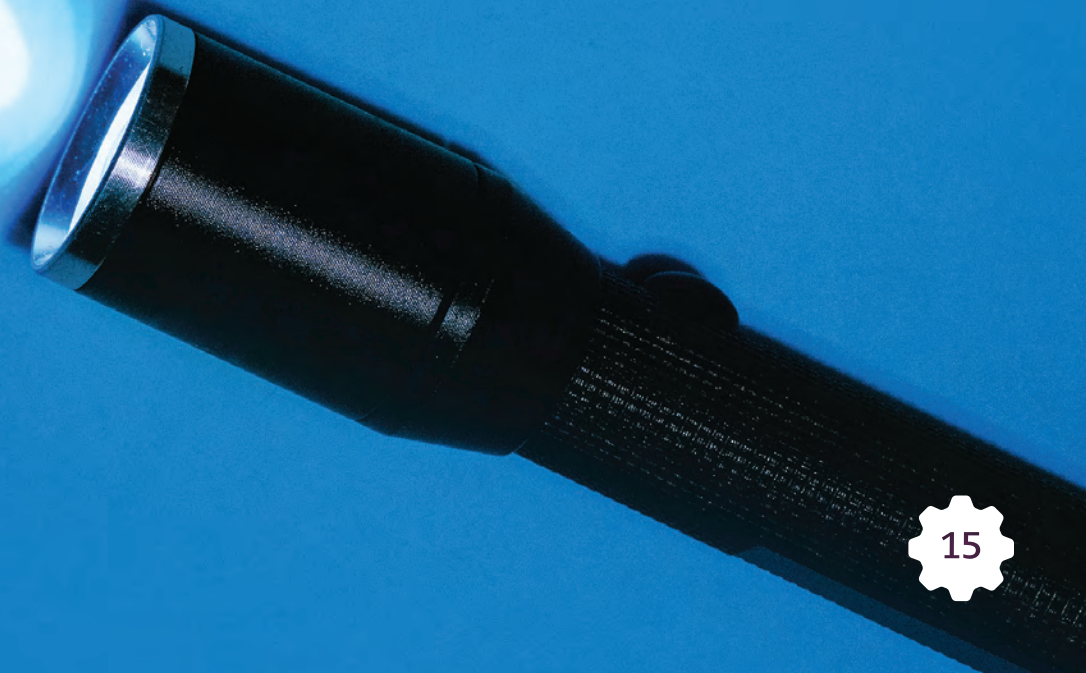
Se apunta una luz a una marioneta desde detrás de un telón. O se apunta a una marioneta que está delante de un telón. La sombra de la marioneta se ve en el telón. Su forma y su tamaño cambian a medida que se mueve.



Una luz apunta a estas marionetas desde detrás del telón.



Una luz apunta a esta marioneta, que está delante del telón.





Muchas personas pueden manejar marionetas al mismo tiempo. Así, pueden contar historias más largas. También pueden mover algunas partes de las marionetas. ¡Eso las hace parecer reales!



Se pueden mover los brazos de esta marioneta.





# Más para contar

Los marionetistas saben mucho de sombras. Las usan para contar historias.

Hay muchísimas historias para contar. ¡Mira! Están ahí, esperando en las sombras.





# DESAFÍO DE CTIAM

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- Diseña las marionetas para contar la historia.
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## Investiga y piensa ideas

¿Qué necesitas para crear sombras?  
¿A qué distancia del telón pondrás las marionetas? ¿Dónde pondrás la luz?



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## Reflexiona y comparte

¿Cómo mostraste y contaste tu historia?  
¿Qué ocurriría si mostraras las sombras de personas reales en lugar de marionetas?  
¿Qué ocurriría si movieras las luces?

# Glosario



**cuero**



**marionetistas**



**gobernante**



**telón**



# Consejos profesionales del Smithsonian

## ¿Quieres hacer teatro de sombras?

Estos son algunos consejos para empezar.



“Puedes contar muchas historias con marionetas. Inventa tu propia historia. Crea marionetas que te ayuden a contar tu historia. ¡Usa tu imaginación!”.

—**Diane Kidd,**  
**ilustradora**  
**y educadora**  
**del museo**

“Haz preguntas y habla con las personas. Aprende cosas nuevas ¡y serás un gran artista!”. —**Emily Key,**  
**directora de programas**  
**educativos**

## Piensa y hazlo

1. ¿Qué es una sombra?
2. ¿Adónde crees que van las sombras cuando está oscuro?

