i-Ready Learning

Magnetic Reading™

GRADE 4
UNIT 3, LESSON 10 SAMPLE

Teacher's Guide

i-Ready Learning

Magnetic Reading™

Teacher's Guide

GRADE 4

NOT FOR RESALE

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Welcome to
Magnetic Reading

Magnetic Reading is built on four key pedagogical pillars that draw students to the center of learning.

Data to Inform Instruction

i-Ready lesson-level data and reporting give teachers valuable strategies for individual students, groups, and impactful pairings.

Knowledge-Rich Learning

A content-rich curriculum encourages students to build a store of knowledge and vocabulary that they can activate when reading future texts.

Culturally and Linguistically Responsive (CLR) Pedagogy

Culturally and Linguistically Responsive (CLR) teaching and texts validate and affirm diverse backgrounds and perspectives so all students may see themselves as part of a rich, thriving community of cultures and ideas.

Scaffolds to Support Learner Variability

Built on the principles of Universal Design for Learning, *Magnetic Reading* opens access for all students to engage with high-quality, grade-level text.

Authors and Advisors

Magnetic Reading provides research-based instruction informed by practical classroom experience. Guidance from our program authors and advisors ensures that the program is rigorous for students and manageable for teachers to implement.

Authors

James W. Cunningham, Ph.D.

Awards and Key Positions
- Reading Hall of Fame
- National Reading Conference Board of Directors
- *International Encyclopedia of Education* contributor

Advisory Focus
- Text complexity
- Reading comprehension
- Vocabulary
- Writing (K–8)

D. Ray Reutzel, Ph.D.

Awards and Key Positions
- Literacy Researchers Association Board of Directors
- International Reading Association Board of Directors
- John C. Manning Public School Service Award

Advisory Focus
- Informational text
- Reading comprehension
- Reading assessment
- Response to Intervention—at-risk children
- Fluency

Advisors

Culturally Responsive Texts and Instruction
Sharroky Hollie, Ph.D.

Dr. Sharroky Hollie is the Executive Director of the National Institute of Culturally Responsive Teaching and Learning. A national educator who provides professional development in cultural responsiveness, Dr. Hollie has trained more than 150,000 educators and worked in nearly 2,000 classrooms since 2005. He has authored several texts and journal articles, including *Strategies for Culturally and Linguistically Responsive Teaching and Learning* (2015) and a chapter in the *Oxford Handbook of African American Language* (2015).

Universal Design for Learning (UDL)
David A. Dockterman, Ph.D.

Dr. David Dockterman, a lecturer at the Harvard Graduate School of Education, has more than 35 years of experience translating research into scalable and effective educational programs. He works with publishers and academic and nonprofit organizations, and he teaches courses in evidence-driven innovation and adaptive learning with a focus on responding effectively to multiple dimensions of learner variability.

Cultural Authenticity
Odia Wood-Krueger

Odia Wood-Krueger focuses on culturally relevant content, curriculum writing, and community engagement in public education. She worked for nine years in the Indian Education Department at Minneapolis Public Schools. Her projects include the first-of-its-kind Native American Freedom Schools®, sensitivity writing for publishers, and community outreach for *The Bias Inside Us*, a Smithsonian Institution exhibition on implicit bias. Wood-Krueger is a member of the Central Urban Métis Federation, Inc. (CUMFI).

English Learners
English Learner Success Forum

ELSF is a collaboration of researchers, teachers, education leaders, and content creators who are dedicated to improving the quality and accessibility of instructional materials for English learners (ELs). ELSF's experts provide guidance to curriculum developers in addressing the linguistic and cultural assets and needs of ELs. The goal of our collaborative efforts is to provide ELs full access to grade-level content and quality learning.

Knowledge Building
Johns Hopkins Institute for Education Policy

The Johns Hopkins Institute for Education Policy is dedicated to integrating the domains of research, policy, and practice to achieve educational excellence for all of America's students. Experts team up with educational publishers and other organizations to ensure that instructional units are comprised of texts that effectively build knowledge in critical areas.

African American History and Culture
Schomburg Center for Research in Black Culture

The Schomburg Center for Research in Black Culture is a world-leading cultural institution devoted to the research, preservation, and exhibition of materials focused on African American, African Diaspora, and African experiences. Through content reviews, the Schomburg Center has provided guidance on the representation of African American history and experience.

Program Components

Whether using *Magnetic Reading* as a stand-alone program or in conjunction with other ELA components, educators have the resources and flexibility to meet all their instruction and assessment needs.

Essential Components

Teacher's Guide

Everything you need in one book, including standards-aligned curriculum, content roadmap, scaffolded activities, and assessments.

Student Book

A powerful resource for students to become better readers. Scaffolded supports throughout help students to build stamina in reading grade-level content.
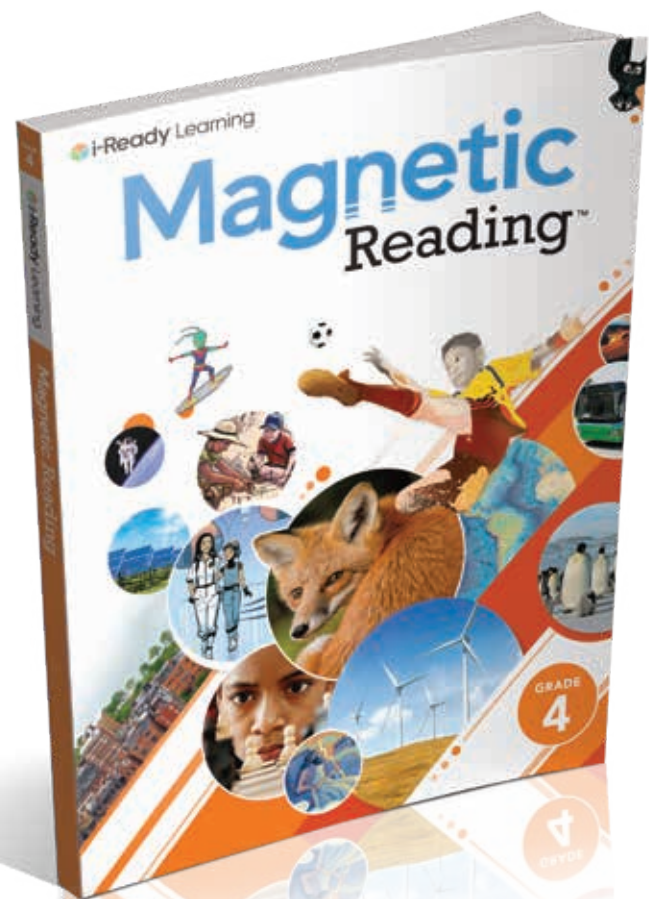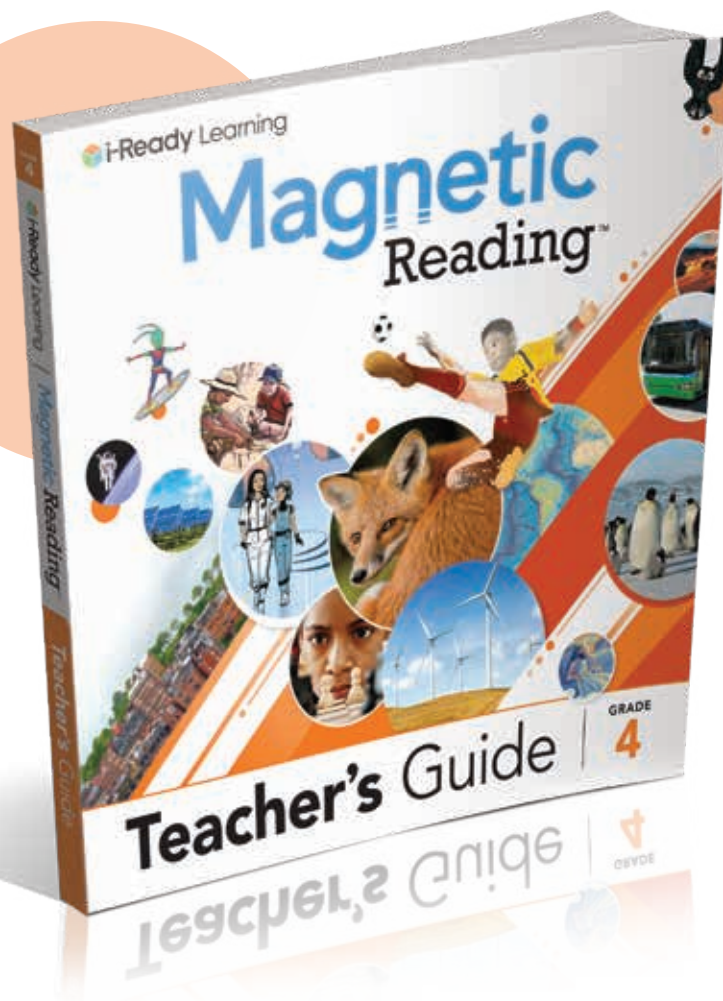
Resources to Optimize Implementation

Teacher Toolbox

- Interactive Tutorials
- Lesson Presentation Slides
- Posters of Routines
- The Language Handbook
- Assessment Resources
- Tools for Scaffolding Comprehension
- Tools for Instruction
- Discourse Cards
- Graphic Organizers
- Writing Rubrics

i-Ready

- Assignable Practice Resources
- *i-Ready* Assessments & Reports
- *i-Ready* Grade-Level Scaffolding Report
- *i-Ready* Personalized Instruction
  — Auto-generated, individual pathway for students
  — Teacher-assigned practice options
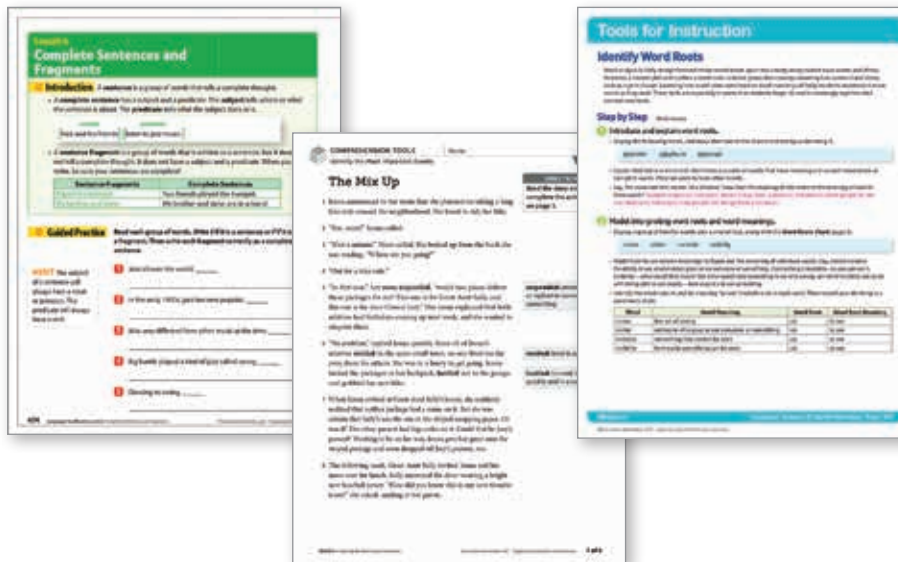
Using *Magnetic Reading* with *i-Ready*

Magnetic Reading in the *i-Ready* Product Suite

Magnetic Reading is situated within the *i-Ready* product suite, giving educators the resources and flexibility to meet their instruction and assessment needs. The *i-Ready* suite has the tools for diagnosing and monitoring progress, providing whole-class instruction, and setting students on a personalized learning path.

Diagnose and Monitor

i-Ready **Diagnostic**
See a portrait of student growth and a path to proficiency with this adaptive diagnostic assessment.

i-Ready **Standards Mastery**
Assess mastery of standards and monitor student progress with standards-based digital assessments.

Oral Reading Fluency Assessments
Assess students' reading fluency with benchmark assessments that measure rate, accuracy, prosody, and comprehension.

Teacher-Led Instruction

Magnetic Reading
Inspire students to read engaging, grade-level texts while providing rigorous comprehension instruction.

Phonics for Reading
Prepare students for grade-level reading with age-appropriate phonics instruction.

Ready Writing
Guide students to become effective writers across all modes.

Personalized Learning

i-Ready **Personalized Learning**
Set students on a personalized pathway with digital instruction.

Data-Driven Instruction

i-Ready Assessments and Personalized Instruction strategically address students' individual learning needs and make the best use of educators' time with actionable reports.

The *i-Ready* Diagnostic empowers *Magnetic* teachers to make data-driven instructional decisions.

Review *i-Ready* **Diagnostic** results to see comprehensive data about student learning and growth across all K–8 skills.
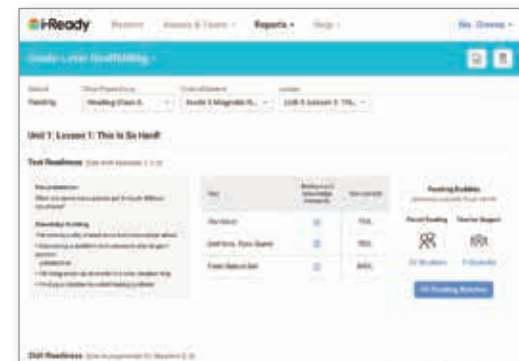
Consult the **Grade-Level Scaffolding Report** before teaching each *Magnetic Reading* lesson to plan reading and standards-based instructional scaffolds with students' individual needs in mind.

i-Ready reporting gives teachers data to monitor student progress and mastery.

Personalized Instruction uses data from the Diagnostic to generate a tailored pathway of interactive lessons for each student. *i-Ready* reporting allows teachers to regularly track student progress and use that progress to inform classroom instructional decisions.

When given at regular intervals during the school year, **Standards Mastery** provides insight into the skills students struggle with and those they have mastered, providing ongoing data to inform planning for remediation and enrichment.

How *Magnetic Reading* Units Work

Magnetic Reading includes six units at each grade level. Each unit explores a grade-appropriate science, social studies, or social-emotional theme and includes **Focus Lessons** and a **Connect It Lesson**.

UNIT 1					UNIT 2					UNIT 3					UNIT 4					UNIT 5					UNIT 6			
L1	L2	L3	L4	CI	L5	L6	L7	L8	CI	L9	L10	L11	CI	L12	L13	L14	CI	L15	L16	L17	CI	L18	L19	L20	CI

UNIT 6

Humans and Energy

LESSON 18 — First Fires — 348
LESSON 19 — Sources of Energy — 366
LESSON 20 — Solar Power — 382
CONNECT IT — Smarter Energy — 398

346 UNIT 6 | Humans and Energy   ©Curriculum Associates, LLC   Copying is not permitted.   ©Curriculum Associates, LLC   Copying is not permitted.   347

Structure of a Unit

- Three or four conceptually related **Focus Lessons** build knowledge on a focused part of the unit topic and provide rigorous instruction and practice on the focus standard. Focus Lessons can be taught in sequence or in isolation to target particular standards while still building knowledge of the unit topic.
- A **Connect It Lesson** at the end of each unit extends the knowledge build with a longer, culminating text and integrated review and practice of the unit's focus standards.

Each **Focus Lesson** targets a single literary or informational standard and builds knowledge on the lesson topic.

Multiple lessons offer fresh perspectives and opportunities for students to deeply explore the unit topic.

The **Connect It Lesson** synthesizes skills and knowledge from across the unit.

How *Magnetic Reading* Lessons Work

Focus Lessons

Each **Focus Lesson** provides rigorous instruction on a single standard through authentic reading experiences that build knowledge and comprehension skills across six 30–45-minute sessions. Each session has a primary instructional focus, but knowledge building and the practice of comprehension skills are integrated into authentic reading experiences in all six sessions.

TEXT 1		TEXT 2		TEXT 3	
BUILD BACKGROUND / **READ**	**PRACTICE THE FOCUS STANDARD**	**READ**	**PRACTICE THE FOCUS STANDARD**	**INDEPENDENT READING** / **INDEPENDENT PRACTICE**	**SYNTHESIZE KNOWLEDGE**
1	**2**	**3**	**4**	**5**	**6**

INCREASING INDEPENDENCE →

SESSION 1:
- Students build background knowledge and explore conceptual vocabulary.
- They consider a Focus Question that will guide the building of knowledge across lesson texts.
- Students read to understand Text 1.

SESSION 2:
- Students receive explicit instruction on the focus standard.
- They apply the focus standard to analyze Text 1.

SESSION 3:
- Students read to understand Text 2, building knowledge on the lesson topic and practicing comprehension skills.

SESSION 4:
- Students receive additional instruction and practice on the focus standard and apply it to Text 2.

SESSION 5:
- Students read Text 3 independently, applying knowledge and vocabulary gained in the first two texts.
- They work independently to complete a series of rigorous, text-based items that practice the focus standard.

SESSION 6:
- Students synthesize knowledge as they respond to the Focus Question using evidence from all lesson texts.

Connect It Lessons

A **Connect It Lesson** at the end of each unit culminates learning. Students read and analyze a longer text and integrate knowledge and standards practice gained across the unit. Each Connect It Lesson takes place across four 30–45-minute sessions. The Teacher's Guide provides additional resources for reteaching and suggestions for projects to extend learning.

| CONNECT CONCEPTS / BUILD BACKGROUND **1** | READ A CULMINATING TEXT **2** | PRACTICE THE UNIT STANDARDS **3** | SYNTHESIZE KNOWLEDGE ACROSS UNIT TEXTS **4** |

SESSION 1:
- Students discuss what they have learned about the unit topic by sharing details and insights from texts across the unit.
- They explore a network of conceptual vocabulary to build background for reading the culminating text.

SESSION 2:
- Students read to understand a longer, culminating text that builds on the knowledge gained in previous lessons.

SESSION 3:
- Students work independently to complete a series of items about the text that integrate practice of standards taught throughout the unit.
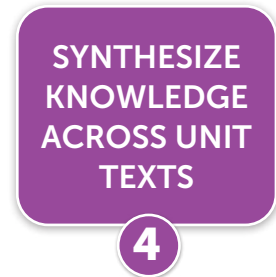
SESSION 4:
- Students "put it all together" in an activity that explores the unit topic and requires students to make connections between the Connect It text and other unit texts, drawing on evidence from multiple unit texts.

Primary Instructional Focus

Although students read, apply standards, and build knowledge in every session, each session is color-coded according to its primary instructional focus.

Blue Pages: Reading

Green Pages: Standards Practice

Purple Pages: Knowledge Building

Pacing Guide

Magnetic Reading includes 20 Focus Lessons, 6 Connect It Lessons, and 6 Unit Assessments. Each session is designed to be completed in 30–45 minutes. Sessions allow for a flexible implementation and can be paced out over two days, taught one per day, or combined for a longer block.

MONTHLY PACING BY LESSON

MONTH 1
- ***i-Ready* Diagnostic** *(2 days)*
- **Lesson 0** *(5 days)*

Unit 1
- **Lesson 1:** It's a Mystery *(6 days)*
- **Lesson 2:** Learning from Others *(6 days)*

MONTH 2

Unit 1 (continued)
- **Lesson 3:** Future Worlds *(6 days)*
- **Lesson 4:** Imagining Possibilities *(6 days)*
- **Unit 1 Connect It:** Dealing with Your Fears *(4 days)*
- **Unit 1 Assessment** *(1 day)*

MONTH 3

Unit 2
- **Lesson 5:** World-Changing Inventions *(6 days)*
- **Lesson 6:** Invention Upgrades *(6 days)*
- **Lesson 7:** Problem Solvers *(6 days)*

MONTH 4

Unit 2 (continued)
- **Lesson 8:** Young Inventors *(6 days)*
- **Unit 2 Connect It:** From Idea to Invention *(4 days)*
- **Unit 2 Assessment** *(1 day)*

Unit 3
- **Lesson 9:** Uncovering the Past *(6 days)*

MONTH 5

Unit 3 (continued)
- **Lesson 10:** Mapping the Unknown *(6 days)*
- **Lesson 11:** Exploring Extremes *(6 days)*
- **Unit 3 Connect It:** Exploring Space *(4 days)*
- **Unit 3 Assessment** *(1 day)*

MONTH 6

Unit 4
- **Lesson 12:** Storytelling Through Art *(6 days)*
- **Lesson 13:** Keeping Up Traditions *(6 days)*
- **Lesson 14:** Different Perspectives *(6 days)*

MONTH 7

Unit 4 (continued)
- **Unit 4 Connect It:** Building Traditions *(4 days)*
- **Unit 4 Assessment** *(1 day)*

Unit 5
- **Lesson 15:** Changing the Game *(6 days)*
- **Lesson 16:** Crossing the Finish Line *(6 days)*

MONTH 8

Unit 5 (continued)
- **Lesson 17:** Heart of the Game *(6 days)*
- **Unit 5 Connect It:** What Makes a Sport a Sport? *(4 days)*
- **Unit 5 Assessment** *(1 day)*

Unit 6
- **Lesson 18:** First Fires *(6 days)*

MONTH 9

Unit 6 (continued)
- **Lesson 19:** Sources of Energy *(6 days)*
- **Lesson 20:** Solar Power *(6 days)*
- **Unit 6 Connect It:** Smarter Energy *(4 days)*
- **Unit 6 Assessment** *(1 day)*

FOCUS LESSON PACING		Daily Timing
SESSION 1	**SCAFFOLD READING**	• **Notice and Wonder** *(5 minutes)* • **Essential Concepts** *(5 minutes)* • **Read** *(15 minutes)* • **Discuss the Text** *(5 minutes)*
SESSION 2	**PRACTICE THE FOCUS STANDARD** • Formative Assessment ✔	• **Reread/Think** *(20 minutes)* • **Talk** *(10 minutes)* • **Write** *(5 minutes)*
SESSION 3	**SCAFFOLD READING**	• **Read** *(20 minutes)* • **Discuss the Text** *(5 minutes)*
SESSION 4	**PRACTICE THE FOCUS STANDARD** • Formative Assessment ✔	• **Reread/Think** *(20 minutes)* • **Talk** *(10 minutes)* • **Write** *(5 minutes)*
SESSION 5	**INDEPENDENT READING AND PRACTICE** • Formative Assessment ✔	• **Read** *(20 minutes)* • **Reread/Think** *(10 minutes)* • **Write** *(10 minutes)*
SESSION 6	**RESPOND TO THE FOCUS QUESTION**	• **Reread/Think** *(20 minutes)* • **Talk** *(15 minutes)* • **Write** *(10 minutes)*

CONNECT IT LESSON PACING		Daily Timing
SESSION 1	**MAKE CONNECTIONS**	• **Make Connections** *(10 minutes)* • **Talk About What You Know** *(15 minutes)* • **Essential Concepts** *(10 minutes)*
SESSION 2	**SCAFFOLD READING**	• **Read** *(20 minutes)* • **Discuss the Text** *(10 minutes)*
SESSION 3	**PRACTICE THE FOCUS STANDARDS** • Formative Assessment ✔	• **Reread/Think** *(20 minutes)* • **Write** *(10 minutes)*
SESSION 4	**BUILD KNOWLEDGE**	• **Make Connections** *(5 minutes)* • **Reread/Think** *(15 minutes)* • **Talk** *(15 minutes)*

ALTERNATE PACING OPTIONS

Consider alternate pacing to accommodate flexible instructional blocks.

- Combine adjacent sessions for 60-minute sessions.
- Spread sessions over two days for 20-minute sessions.
- Omit Session 6 for a 5-day Focus Lesson pacing plan.
- Omit the Connect It lesson when choosing a custom path through the lessons in this curriculum.

Engaging Texts That
Build Knowledge

Research suggests that reading proficiency is connected to students' prior knowledge and that a content-rich curriculum can improve student learning.

Magnetic Reading supports students to build knowledge in key content areas and relevant social-emotional themes.

- Literary texts *(Lit)* represent a range of backgrounds, experiences, and text types. They explore social-emotional themes that students will relate to and learn from, such as conflict resolution, building empathy and awareness, and dealing with emotions.
- Informational texts *(Info)* offer fresh perspectives on science, social studies, technology, and the arts.
- Rich and varied texts build knowledge in key content areas and act as both windows into new worlds and mirrors in which students see themselves.

Humans and Energy

1 **Maui and the Flaming Fingernails** *(Lit)*

2 **Coyote Steals Fire** *(Lit)*

3 **First Came Fire** *(Info)*

4 **What Makes It Go?** *(Info)*

5 **Cool Solutions: Trash to Gas** *(Info)*

6 **Panda Power** *(Info)*

7 **From Race Cars to Solar Cells** *(Info)*

8 **Teen Inventor Captures the Sun** *(Info)*

Key Content Areas

- ● ecology (8)
- ● technology & invention (8)
- ● Native American experience (3)
- ● world cultures (3)
- ● electricity (2)
- ● fables & myths (2)
- ● geology & earth science (1)

Multiple texts in each **Focus Lesson** build knowledge on the lesson topic. As students read each new text, they build on the concepts and vocabulary of the previous text or texts.

Sources of Energy

First Came Fire: A Story of Energy and Fuel
by Jessica Miller

FOCUS QUESTION

Why have people used energy from different sources?

What Makes It Go?
by Stephanie Peters

NOTICE AND WONDER
Look at the titles and images of the three texts you will read in this lesson. What do you notice? What do you wonder? Discuss your ideas with a partner.

TALK ABOUT WORDS
Circle the terms below that you know. Pick one term and tell a partner what you know about it.

energy   renewable resources

fuel   nonrenewable resources

I think the word ___ means ___ because ___.

One example of ___ is ___.

Cool Solutions: Trash to Gas
by Danielle Jansen

Smarter Energy

TALK ABOUT WHAT YOU KNOW
Use the pictures to remember the texts that you read in this unit. Turn and talk with a partner about what you already know about humans and energy. Use the sentence frames to help you.

Humans need energy to ___.

In the past, people used energy to ___.

___ and ___ are types of energy.

LESSON 18
First Fires

LESSON 19
Sources of Energy

LESSON 20
Solar Power

WORD SORT
Underline words that name energy sources. Circle words that describe how we use energy. Discuss your thinking with a partner.

fuel   wood   light bulb

solar panel   car

coal   fire   sun

The **Connect It Lesson** guides students to connect learning across the texts they have read and extends knowledge with a longer, culminating text.

UNIT 6

Humans and Energy

LESSON 18
First Fires
348

LESSON 19
Sources of Energy
366

LESSON 20
Solar Power
382

CONNECT IT
Smarter Energy
398

Each **Focus Lesson** stands on its own and has a distinct knowledge focus within the unit. The **Focus Lessons** also work together with the **Connect It Lesson** to build knowledge on the broader unit topic.

Supporting Students to
Read Complex Texts

The ability to read and analyze complex texts is key to students' success in the classroom and beyond. *Magnetic Reading* supports students to read more so they become informed readers capable of recognizing others' perspectives and enriching their own.

- Scaffolds woven throughout reading sessions support students to engage with grade-level texts.
- Scaffolds during practice sessions support students to unpack the text's ideas, structure, and perspectives to arrive at a deeper understanding.

Each lesson starts with a **Focus Question** that gets students thinking and talking about the lesson topic.

Sources of Energy

FOCUS QUESTION

Why have people used energy from different sources?

First Came Fire:
A Story of Energy and Fuel
by Jessica Miller

NOTICE AND WONDER
Look at the titles and images of the three texts you will read in this lesson. What do you notice? What do you wonder? Discuss your ideas with a partner.

What Makes It Go?
by Stephanie Peters

TALK ABOUT WORDS
Circle the terms below that you know. Pick one term and tell a partner what you know about it.

energy	renewable resources
fuel	nonrenewable resources
waste	fossil fuels

I think the word ___ means ___ because ___.

One example of ___ is ___.

Cool Solutions:
Trash to Gas
by Danielle Jansen

Students **build essential background** by exploring key vocabulary and mapping related words and concepts.

Sentence frames during reading and practice activities help students understand what they should analyze and how to talk and write about it.

First Came Fire
A Story of Energy and Fuel
by Jessica Miller

source = where something comes from

dung = animal waste

Stop & Discuss
Why did people look for fuels?
Underline details that tell why people looked for fuels. Discuss the details with your partner.

1 People have used fire for thousands of years to cook food, stay warm, and light up the dark. Fire is a powerful **source** of energy. But to make fire and use its energy, you need a fuel. So, for as long as people have been using fire, they have been looking for fuel.

2 People found that certain types of materials, such as wood, oil, and cow **dung**, could be burned as fuel for a fire. For a long time, wood was the main source of fuel for many people. But as more and more trees were cut down, people searched for other fuels and, finally, found something deep underground: coal.

3 Coal is a fuel that looks like hard black lumps of rock. It formed over millions of years from dead plants that got buried under layers of dirt and rock. Pound for pound, coal gives off more energy when it is burned than wood does, and it burns longer, too. Coal continues to be used to heat homes, as well as to power engines and generate, or make, electricity.

4 Natural gas and petroleum are other fuels that formed over millions of years from living things that died. In the 1850s, people in the United States started using petroleum, also called oil. Gasoline, which powers many cars and trucks, is made from oil.

5 Over time, scientists have learned that fuels such as coal and oil have **disadvantages**. Burning them pollutes the air, and they can't be replaced once they're used up. So, more and more people are turning to different sources of energy to power their homes, vehicles, and machines.

disadvantages = problems; things that cause difficulty

Stop & Discuss
How is coal helpful? How is it harmful?
Underline one way coal is helpful and one way it is harmful.

FUEL USE

More than 400,000 years ago
People begin to control fire and use it for heat, light, and cooking. People use fuel such as wood and dried dung, or animal poop.

More than 3,000 years ago
Coal is first used in China.

1500s
Coal replaces wood as fuel in parts of Europe. As time goes on, coal is used by more and more people.

1821–1859
First successful natural gas well is dug (1821) and first oil well is drilled (1859) in the United States.
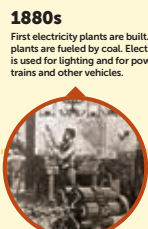
1880s
First electricity plants are built. The plants are fueled by coal. Electricity is used for lighting and for powering trains and other vehicles.

TOP ENERGY SOURCES IN THE U.S. IN 2019

Heat Energy in Quadrillion BTUs

Energy Source	Value
Natural Gas	37
Petroleum	32
Coal	11
Renewable	11

Text is chunked into sections of 75–100 words, making it easier for students to process what they read.

Definitions at point of use allow for fluent reading to access ideas.

Students pause after each section to monitor comprehension by responding to a **Stop & Discuss** prompt.

Sentence starters model the language needed to talk and write about texts as students practice the focus standard.

Interpret Visual Information

• **Visuals** such as time lines and bar graphs can help show information and explain ideas in a text.
• A **time line** shows the dates of important events in the order they happened. A **bar graph** shows amounts or numbers of items in different categories.

Reread/Think

How have wood, coal, and oil been used as fuel over time? Reread "First Came Fire: A Story of Energy and Fuel" and complete the chart with information from both the visuals and the text.

Fuel	Information from the Text	Information from the Visuals
wood		
coal		
petroleum (oil)		

Talk

How have wood, coal, and oil been used as fuel over time?
• Talk about what you have learned using information from both the text and the visuals.
• Explain how the visuals helped you better understand the topic.

The text says ___.
The time line explains ___.
The bar graph shows ___.

Long ago, ___.
Now ___.

Write

How has coal been used over time? Use information from the text and the visuals to support your response.

WRITING CHECKLIST
☐ I explained how coal has been used over time.
☐ I included information from the text, time line, and bar graph.
☐ I used complete sentences.
☐ I used correct spelling, punctuation, and capitalization.

Repeated use of the **Reread/Think, Talk, Write Routine** guides students to critically analyze texts using a graphic organizer and to process their understanding through structured discussions and writing.

Graphic organizers provide a transferable, evidence-based framework for unpacking the text to analyze its ideas, viewpoints, and structure.

Supporting Students to
Read Complex Texts (continued)

The best support students have is a well-informed teacher who knows what to look for and how to monitor comprehension based on knowledge of students' reading proficiency and experiences. Planning resources and scaffolds support participation in grade-level reading and discourse and provide flexible options for applying scaffolds when needed and removing them as students develop independence.

The **Lesson Overview** provides a snapshot of supports and resources to facilitate planning.

A **Text At-a-Glance** feature lists challenging elements in each text so teachers can anticipate gaps to address.

An overview of **English learner-specific supports** and strategies is provided for every session and addresses the language domains of listening, speaking, reading, and writing.

OVERVIEW

LESSON 19

Sources of Energy

FOCUS QUESTION

Why have people used energy from different sources?

About the Lesson

OBJECTIVES

Content Objectives
- Understand information in time lines, graphs, diagrams, and charts.
- Explain how visuals support understanding of a text.
- Understand that energy comes from nonrenewable and renewable resources.

Language Objectives
- Compare and contrast information from text and visuals, using a graphic organizer.
- Use complete sentences to tell a partner how time lines, graphs, diagrams, and charts support understanding.
- Explain in writing why people have used energy from different sources.

ACADEMIC TALK

See **Glossary of Terms** on pp. 478–485.
visuals, time line, bar graph, diagram, chart

Spanish Cognates
visuales, diagrama

Build Knowledge

Lesson texts build knowledge about:
- Why people have used different natural resources as fuel
- How people use energy from both nonrenewable and renewable resources
- How people have found ways to use energy from recycled waste

Plan Student Scaffolds

- Use **i-Ready data** to guide grouping and choose strategic scaffolds.
- Use **Teacher Toolbox** resources as needed to address related skills:
  — Cite textual evidence
  — Text structure
- Partner English learners with students who can serve as language models to support them during Sessions 2 and 4. **EL**
- Preview texts and activities to anticipate barriers to engagement, access, and expression. Modify based on needs.

Use Protocols That Meet the Needs of All Students

In order to increase engagement and validate cultural and linguistic behaviors, specific protocols are included in the lesson. To further customize activities for your students, consider optional protocols listed on pp. A46–A51.

PROTOCOL	SESSION	VALIDATES
Vote with Your Feet	1	movement, multiple perspectives
Give One, Get One	1, 2	movement, shared responsibility
Pass It On	1, 3, 5	spontaneity, connectedness
Jump in Reading	2	spontaneity, collective success
Pick a Stick	2, 3	spontaneity
Shout Out	3, 4, 5	spontaneity, multiple ways to show focus
Musical Shares	4	movement, musicality, social interaction

LEARNING PROGRESSION | Interpret Visual Information

Students build on this skill:	Students learn this skill:	Students prepare for this skill:	Students review and practice:
Use information gained from illustrations and the words in a text to demonstrate understanding of the text.	Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears.	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	• Make inferences • Analyze a scientific text • Determine word meanings

366a UNIT 6 | Humans and Energy

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LESSON PLANNING GUIDE

TEXT 1: First Came Fire: A Story of Energy and Fuel • SCIENCE ARTICLE

		TEXT AT-A-GLANCE	ENGLISH LEARNER SUPPORT (EL)
SESSION 1	**READING**	**Concepts/Background** • using fuel to create energy • creating fire from fuel • how dead plants turn into fuel **Language** • **Vocabulary:** *fuel, natural gas, oil well, petroleum, turning to* • **Idiom:** *pound for pound*	**Speaking/Reading** • Activate prior knowledge **Listening/Reading** • Analyze phrases **Reading** • Leverage cognate knowledge **Listening/Speaking** • Use sentence frames
SESSION 2	**PRACTICE THE FOCUS STANDARD** • Formative Assessment ✓		**Speaking/Reading** • Leverage cognate knowledge **Writing** • Use sentence frames

TEXT 2: What Makes It Go? • SCIENCE ARTICLE

SESSION 3	**SCAFFOLD READING**	**Concepts/Background** • how energy from the sun is used • how rock forms from sand and clay • how fossils form **Language** • **Vocabulary:** *formed, pressure, power plants, pollution, environment, turbine, nonrenewable, renewable* • **Informal Language:** *turns into (energy), runs on (energy)*	**Speaking/Reading** • Identify informal language, Determine multiple meanings of words **Listening/Speaking** • Use sentence frames, Rephrase questions
SESSION 4	**PRACTICE THE FOCUS STANDARD** • Formative Assessment ✓		**Listening/Reading** • Reinforce academic vocabulary **Speaking/Writing** • Create captions, Talk before writing

TEXT 3: Cool Solutions: Trash to Gas • SCIENCE ARTICLE

SESSION 5	**INDEPENDENT READING AND PRACTICE** • Formative Assessment ✓	**Concepts/Background** • how waste moves to landfills • using biogas as fuel **Language** • **Vocabulary:** *morsel, solutions, waste, organic, break down, recycling, developed, reuse, manure, sludge*	**Reading** • Leverage cognate knowledge **Speaking/Reading** • Paraphrase, Identify formal language **Writing** • Use sentence frames

KNOWLEDGE BUILDING

SESSION 6	**RESPOND TO THE FOCUS QUESTION** • Why have people used energy from different sources?	• Integrate information from the lesson texts • Collaborative discussion • Short response	**Reading/Writing** • Use sentence frames **Speaking/Writing** • Collaborate with a partner

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LESSON 19 | Sources of Energy **366b**

Suggestions for grouping and **skill-specific resources** support planning and help scaffold instruction.

Formative assessment checks and tools are clearly identified to support teachers in monitoring proficiency.

Help & Go scaffolds are used flexibly and as needed. Each support provides a quick Check In, Look For, or Listen For diagnostic and offers specific remediation strategies.

Use **CHECK INs** and related **Help & Go** scaffolds as needed to support understanding of the text. Monitor based on annotations, observation, and your knowledge of students.

• **CHECK IN** Students understand the content vocabulary word *fuel* and time-order words.

HELP & GO: Vocabulary

• Clarify the meaning of *fuel* in paragraphs 1 and 2. **Ask,** *What does the text say about fuel? You need fuel to make a fire. People burned wood, oil, and dung as fuel. What is fuel? something you burn to make fire*

• Clarify phrases that show time: *for thousands of years, for as long as, for a long time.* **EL**

Strategic **scaffolds for English learners** are embedded throughout reading.

SESSION 1 SCAFFOLD READING

① Support Reading

• Set a purpose for reading. **Say,** *In this text, you will read to learn about the history of energy. Use the time line and bar graph to help you understand the text.*

• Have students read paragraphs 1 and 2. Have them circle unknown words and mark confusing parts with a question mark.

• Preview the images in the time line and have students share what they know about fire and fuel. **EL**

• Use **CHECK INs** and related **Help & Go** scaffolds as needed to support understanding of the text. Monitor based on annotations, observation, and your knowledge of students.

• **CHECK IN** Students understand the content vocabulary word *fuel* and time-order words.

HELP & GO: Vocabulary

• Clarify the meaning of *fuel* in paragraphs 1 and 2. **Ask,** *What does the text say about fuel? You need fuel to make a fire. People burned wood, oil, and dung as fuel. What is fuel? something you burn to make fire*

• Clarify phrases that show time: *for thousands of years, for as long as, for a long time.* **EL**

Stop & Discuss

• Have students **Turn and Talk** to complete the **Stop & Discuss.**

• **LISTEN FOR** People looked for fuels they could burn to cook, stay warm, and create light. People looked for new fuels when one ran out.

HELP & GO: Comprehension

• **Say,** *Reread paragraphs 1 and 2. Why did people look for fuel? to make fire and use its energy to cook food, stay warm, and light up the dark What did people burn as fuel? wood, oil, dung, and coal Why did people look for a fuel they could use instead of wood? They had cut down too many trees.*

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③ Support Reading

• Have students read paragraphs 3–5 and the time line.

• **CHECK IN** Students understand the phrase *pound for pound* and key content words.

HELP & GO: Vocabulary

• Read aloud the sentence in paragraph 3 that begins with *Pound for pound.* Explain that this phrase is an idiom used to compare one thing with another. **Ask,** *What two things are compared? a pound of coal and a pound of wood* **Ask,** *What does the comparison help you understand? A pound of coal gives off more heat and burns longer than a pound of wood.*

• Have students identify Spanish cognates: *generate (generar), disadvantage (desventaja).* **EL**

④ Stop & Discuss

• Have students **Turn and Talk** to complete the **Stop & Discuss.**

• **LOOK FOR** Students underline relevant details.

HELP & GO: Comprehension

• Have students reread paragraphs 3 and 4. **Ask,** *Why do people use coal instead of wood? Coal burns longer and gives off more heat. What do people use coal for? to heat homes and generate electricity*

• Have students reread paragraph 5. Clarify that *turning to* means people are starting to look for different sources of energy? *Burning coal pollutes the air. It can't be replaced once it's used up.*

• Provide sentence frames for discussion: *Coal is helpful/harmful because ___.* **EL**

Discuss the Whole Text

Use **Pass It On** with the whole class to revisit the Focus Question: *Why have people used energy from different sources?* Record responses for students to reference later.

LESSON 19 | Sources of Energy **369**

Each practice session incorporates the use of familiar, often-repeated **protocols to structure activities**, discussions, and writing.

• Have students use **Give One, Get One** to complete the Talk activity. Students can talk about wood with their first partner, coal with their second partner, and petroleum with their third partner.

• Tell partners to share one thing they learned from the text and one thing they learned from the time line or bar graph.

• Then have partners work together to summarize what they learned about how the fuel was used long ago and how it is used now.

Detailed **teacher modeling** is provided for the instruction of reading comprehension standards and skills.

MODEL THE STANDARD Use the bar graph to model how to interpret information in a visual and connect it to information in the text.

• **Say,** *Paragraph 3 says people still use coal, but the bar graph tells more about energy sources today. The height of the bars helps me to compare the energy sources. The bars for "Coal" and "Renewable" are the same height, so those sources are used the same amount. Petroleum and natural gas have longer bars, which shows those sources are used more.*

SESSION 2 PRACTICE THE FOCUS STANDARD

PRACTICE

Interpret Visual Information

① • **Visuals** such as time lines and bar graphs can help show information and explain ideas in a text.

• A **time line** shows the dates of important events in the order they happened. A **bar graph** shows amounts or numbers of items in different categories.

② Reread/Think

How have wood, coal, and oil been used as fuel over time? Reread "First Came Fire: A Story of Energy and Fuel" and complete the chart with information from both the visuals and the text.

Fuel	Information from the Text	Information from the Visuals
wood	(para. 2) for a long time was main source of fuel for fire	(time line) used more than 400,000 years ago as fuel for fire
coal	(para. 2) after a long time, people found coal (para. 3) burned; used to heat homes, power engines, generate electricity	(time line) • 3,000 years ago in China • 1500s: replaced wood in Europe • 1880s: first electricity plants (bar graph) 2019: used less than petroleum and natural gas
petroleum (oil)	(para. 4) • U.S. started using oil in 1850s • used to make gasoline	(time line) 1859: first oil well, U.S. (bar graph) second-most-used energy source in the U.S. in 2019

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③ Talk

How have wood, coal, and oil been used as fuel over time?

• Talk about what you have learned using information from both the text and the visuals.

• Explain how the visuals helped you better understand the topic.

The text says ___
The time line explains ___
The bar graph shows ___

Long ago, ___
Now ___

④ Write

How has coal been used over time? Use information from the text and the visuals to support your response.

Sample response: People have burned coal to create heat and cook food. The time line shows that coal was first used in China 3,000 years ago. Then, in the 1500s, coal replaced wood as fuel in parts of Europe. In the 1880s, the first electricity plants were fueled by coal. Today, coal is still burned to heat homes, power engines, and generate electricity. But the bar graph shows that in 2019, coal was not the main source of energy in the United States. Now coal is used less than petroleum and natural gas and as much as renewable resources. People are looking for new sources of energy that don't pollute or run out.

WRITING CHECKLIST

☐ I explained how coal has been used over time.

☐ I included information from the text, time line, and bar graph.

☐ I used complete sentences.

☐ I used correct spelling, punctuation, and capitalization.

LESSON 19 | Sources of Energy **371**

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③ Talk

LISTEN FOR Students use the text, time line, and bar graph to identify information about energy over time.

HELP & GO: Standards Practice

• **Say,** *Paragraph 3 explains how coal is used to heat homes, power engines, and generate energy. What additional information does the time line give about coal? The time line says that coal was first used in China more than 3,000 years ago, and that in the 1500s, coal replaced wood as fuel in parts of Europe.*

• After students complete the activity, use **Pick a Stick** to have 2–3 students share what they learned with the whole class.

• **Ask,** *Why do you think the author used a time line? The time line summarizes the history of fuel. It shows it in an easy-to-understand way.*

④ Write

• Have students complete the Write task and use the checklist to check their work.

• Encourage students to use the sentence frames from the Talk section in their responses. **EL**

• Use written responses to determine whether students need additional support.

Vocabulary Development

Magnetic Reading integrates word learning into reading, writing, and discussion.

Research shows that a student's knowledge of words and phrases is critical to reading success and that increasing the size and depth of a student's vocabulary can lead to higher levels of reading comprehension. *Magnetic Reading* integrates word learning into reading, writing, and discussion.

Key vocabulary is reinforced across lesson texts as students encounter words in different contexts and use them in academic discussions and writing activities. Word knowledge builds from lesson to lesson as students encounter new words on conceptually related topics within each unit.

Definitions at point of use in the text allow students to read fluently without getting stuck on vocabulary.

SESSION 1 — TALK ABOUT THE TOPIC

Sources of Energy

FOCUS QUESTION

Why have people used energy from different sources?

NOTICE AND WONDER

Look at the titles and images of the three texts you will read in this lesson. What do you notice? What do you wonder? Discuss your ideas with a partner.

TALK ABOUT WORDS

Circle the terms below that you know. Pick one term and tell a partner what you know about it.

energy   renewable resources

fuel   nonrenewable resources

waste   fossil fuels

I think the word ___ means ___ because ___.

One example of ___ is ___.

Students explore **networks of conceptually related words** at the beginning of each lesson.

SESSION 1 — SCAFFOLD READING

1 Support Reading

- Set a purpose for reading. **Say,** *In this text, you will read to learn about the history of energy. Use the time line and bar graph to help you understand the text.*
- Have students read paragraphs 1 and 2. Have them circle unknown words and mark confusing parts with a question mark.
- Preview the images in the time line and have students share what they know about fire and fuel. **EL**
- Use **CHECK INs** and related **Help & Go** scaffolds as needed to support understanding of the text. Monitor based on annotations, observation, and your knowledge of students.
- **CHECK IN** Students understand the content vocabulary word *fuel* and time-order words.

HELP & GO: Vocabulary

- Clarify the meaning of *fuel* in paragraphs 1 and 2. **Ask,** *What does the text say about fuel? You need fuel to make a fire. People burned wood, oil, and dung as fuel. What is fuel? something you burn to make fire*
- Clarify phrases that show time: *for thousands of years, for as long as, for a long time.* **EL**

2 Stop & Discuss

- Have students **Turn and Talk** to complete the **Stop & Discuss**.
- **LISTEN FOR** People looked for fuels they could burn to cook, stay warm, and create light. People looked for new fuels when one ran out.

HELP & GO: Comprehension

- **Say,** *Reread paragraphs 1 and 2. Why did people need fuel?* to make fire and use its energy to cook food, stay warm, and light up the dark *What did people burn as fuel?* wood, oil, dung, and coal *Why did people look for a fuel they could use instead of wood?* They had cut down too many trees.

SESSION 1 — READ

First Came Fire
A Story of Energy and Fuel
by Jessica Miller

source = where something comes from

dung = animal waste

1 People have used fire for thousands of years to cook food, stay warm, and light up the dark. Fire is a powerful **source** of energy. But to make fire and use its energy, you need a fuel. So, for as long as people have been using fire, they have been looking for fuel.

Stop & Discuss

Why did people look for fuels?

Underline details that tell why people looked for fuels. Discuss the details with your partner.

2 People found that certain types of materials, such as wood, oil, and cow **dung**, could be burned as fuel for a fire. For a long time, wood was the main source of fuel for many people. But as more and more trees were cut down, people searched for other fuels and, finally, found something deep underground: coal.

FUEL USE

More than 400,000 years ago
People begin to control fire and use it for heat, light, and cooking. People use fuel such as wood and dried dung, or animal poop.

1500s
Coal replaces wood as fuel in parts of Europe. As time goes on, coal is used by more and more people.

More than 3,000 years ago
Coal is first used in China.

1821–1859
First successful natural gas well is dug (1821) and first oil well is drilled (1859) in the United States.

Academic Talk words and phrases—the language that supports development of reading comprehension skills as students talk and write about texts— are taught, modeled, and used throughout each lesson to support successful acquisition of reading comprehension skills.

Help & Go scaffolds guide students to use morphology and context clues to determine word meaning, building knowledge of domain-specific words and "tier 2" words encountered broadly across content areas.

Interpret Visual Information

- **Visuals** such as time lines and bar graphs can help show information and explain ideas in a text.
  - A **time line** shows the dates of important events in the order they happened. A **bar graph** shows amounts or numbers of items in different categories.

Reread/Think

How have wood, coal, and oil been used as fuel over time? Reread "First Came Fire: A Story of Energy and Fuel" and complete the chart with information from both the visuals and the text.

Fuel	Information from the Text	Information from the Visuals
wood		
coal		
petroleum (oil)		

Students keep a **word journal** of new words learned in a lesson and are prompted to recall and use the words.

COOL SOLUTIONS:
TRASH TO GAS

by Danielle Jansen

1 Lunch is almost over. You crunch into the last morsel of your apple. Then you toss your apple core into the trash bin. In a week or two, this trash will be dumped in a landfill, where the trash will remain.

2 In the United States, people throw away tons and tons of waste every year, and most of it goes to landfills. Can you guess the most common type of waste at landfills? It's not plastic, and it's not paper—it's food!

3 Food is a kind of organic waste. Organic waste is plant or animal material that breaks down over time. This waste takes up a lot of space in landfills, but imagine if it could be turned into something useful, instead of sitting in a landfill, left there to rot.

4 Sweden has thought of one solution. In 2005, the country **banned** organic waste in landfills. What does Sweden do with all this organic waste, then?

banned = stopped allowing

Reconnect to the Texts

Display responses to the Focus Question for "First Came Fire: A Story of Energy and Fuel" and "What Makes It Go?" Have students **Raise a Hand** to make connections between the two texts.

Independent Reading

- **Note:** The text describes how poop is recycled. Some students may giggle as they read.
- **Say,** *Today you will independently read text and visuals to learn more about energy. As you read, stop at the end of each page to ask yourself questions about the text.*
- If students need more support, work with them in small groups.
- Use **CHECK INs** and related **Help & Go** scaffolds as needed.
- **CHECK IN** Students understand the meaning of *morsel, waste,* and *breaks down.*

HELP & GO: Vocabulary
- Remind students to look around the word for clues to the meaning of words in paragraphs 1–3: *morsel* (last morsel of your apple), *waste* (throw away), and *breaks down* (rot).
- Encourage students to look for words with cognates in their home language: *organic (orgánico/a).* **EL**

Routines That Structure Learning

Magnetic Reading includes the regular use of research-based routines to support standards instruction, vocabulary acquisition, and good habits of reading, writing, and discussion. Each routine is referenced in the Teacher's Guide at point of use. It is recommended that you familiarize yourself and your students with each routine at the beginning of the year to ensure effective implementation

1 Reread/Think, Talk, Write

What: This tried-and-true routine is used to structure all standards practice and knowledge-building sessions.

Why: The repeated sequence of reading and analyzing text, academic discussion, and writing supports students to develop critical thinking and metacognition as they unlock complex text.

When: During all standards practice and knowledge-building sessions (Sessions 2, 4, 5, and 6)

How:
1. **Reread/Think** After an initial read of the text, students reread to analyze and evaluate it for deeper meaning, using a graphic organizer to analyze the text's structure and evidence.
2. **Talk** Students make connections with their peers and dig deeper into the texts, gaining new insights and divergent ways of thinking about their reading.
3. **Write** Through scaffolded writing prompts that extend and solidify their learning, students produce writing that demonstrates their understanding of comprehension skills and pushes them to make authentic connections to the text and expand their knowledge.

helpful

base word → ↑   ↑ ← suffix
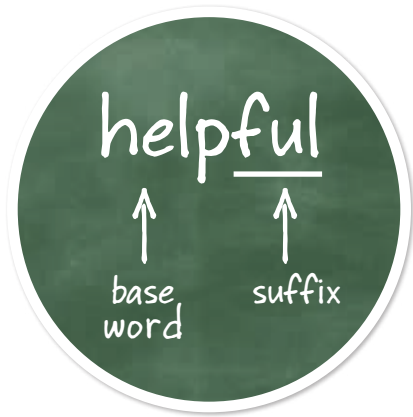
② Word Learning Routine

What: Students are prompted to use morphology (word parts), context clues, and resources such as dictionaries to determine the meaning of unfamiliar words. The routine is referred to at point of use during reading and is provided here in student-facing language that can be copied and displayed for reference.

Why: Students internalize word-learning strategies through repeated use and transfer those skills to other texts.

When: During all reading sessions (Sessions 1, 3, and 5)

How:
1. **Say the word or phrase aloud**. Circle the word or phrase that you find confusing. Read the sentence aloud.

2. **Look inside the word or phrase**. Look for familiar word parts, such as prefixes, suffixes, and root words. Try breaking the word into smaller parts. Can you figure out a meaning from the word parts you know?

3. **Look around the word or phrase**. Look for clues in the words or sentences around the word or phrase you don't know and the context of the paragraph.

4. **Look beyond the word or phrase**. Look for the meaning of the word or phrase in a dictionary, glossary, or thesaurus.

5. **Check the meaning**. Ask yourself, "Does this meaning make sense in the sentence?"

③ Compare and Connect

What: Students are prompted to think about texts they have read and to compare and make connections between them.

Why: When students are given the opportunity to reflect on, compare, and make connections between texts, they increase meta-awareness, solidify understandings, and become more skilled at academic discourse.

When: During whole-class discussions after reading or writing about two or more texts (Sessions 3, 5, and 6)

How:
1. Identify two or more previously read texts on the lesson or unit topic that students will review. You may wish to have different students focus on different texts or have all students review all of the identified texts.

2. Ask questions to elicit students' reflections, comparisons, and connections. *What are some examples of ___ in the texts? How are those examples alike? How are they different? What connections do you see between ___ and ___?*

3. Ask other questions specific to the idea or topic to help students see the underlying ideas to formulate important generalizations.
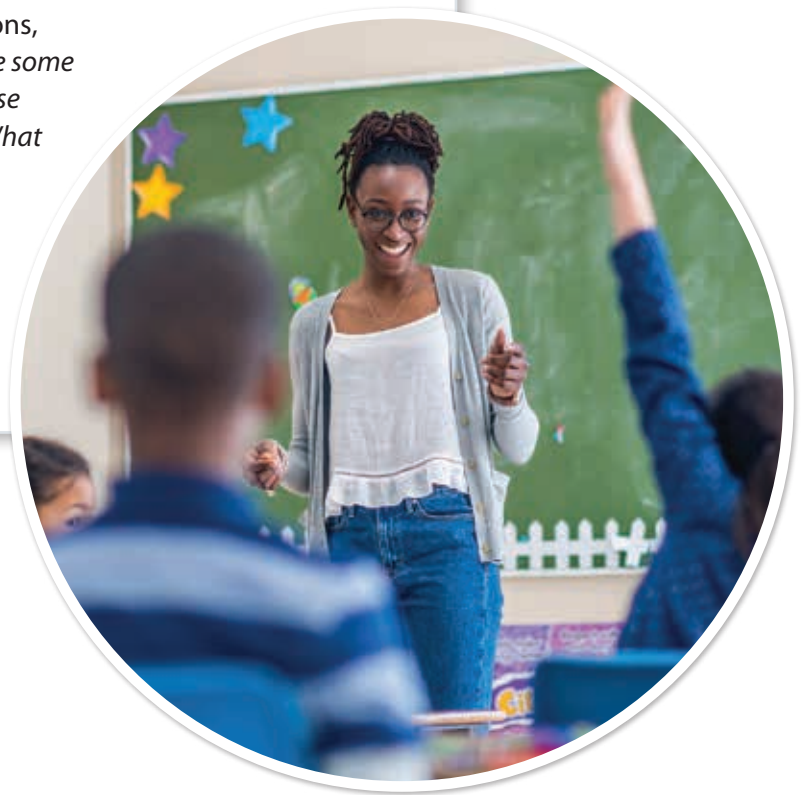
4 Opinion Lines

What: This routine prompts students to explore statements by deciding how strongly they agree or disagree with the statements and comparing their opinions with those of their peers.

Why: When students explore diverse views and relate them to their own views, they gain an understanding of the deeper reasoning underlying those views and distinguish similarities and differences between them.

When: During whole-class discussions (Sessions 1, 3, 5, and 6)

How:
1. Create a line long enough for students to stand along. You may wish to mark the line with tape or string.
2. Mark one end with *Strongly Agree* and the other end with *Strongly Disagree*. Divide the line into regular intervals and label them with degrees of agreement and disagreement such as *agree, neither agree nor disagree,* and *disagree*.
3. Write and display a bold statement that relates to what students are learning or discussing in the classroom.
4. Allow students time to think about how they feel about the statement and determine where on the scale their own opinion falls. Then ask them to stand on the part of the line that describes how much they agree or disagree with the statement. Have students talk with the people around them to share their reasons for standing where they are. Alternatively, consider having students talk with someone with a very different opinion. Provide sample questions and sentence starters to support discussion as needed: *Why do you think that? I feel this way because___. I agree/disagree because ___.*

5 Stronger and Clearer Each Time

What: Students use this routine to revise and refine their ideas for a written response through structured conversations.

Why: Students develop precision, reasoning, and communication skills as they work to analyze complex text.

When: During writing activities (Sessions 2, 4, and 6)

How:
1. Pose a question to the class and allow students time to think independently about their response.
2. Students meet with their first partner. Each shares their ideas and gets feedback from their partner about the ideas, evidence, or points. The partners incorporate changes to make their ideas stronger and clearer before moving to the next partner.
3. Students meet with up to two more partners, revising their responses to make them "stronger each time" with better and better evidence, examples, and explanations; and to make their ideas "clearer each time" by refining their responses to make sense and by using precise words. At the end, the student should have a strong, clear response to the question to share.

Ongoing Opportunities to
Monitor Comprehension

Magnetic Reading can be used on its own or with the *i-Ready* Diagnostic and *i-Ready* Standards Mastery as part of a full assessment and progress-monitoring solution.

> **i-Ready Diagnostic** ....▶ **Magnetic Reading Instruction** ....

Formative Assessment Opportunities

Magnetic Reading provides ongoing opportunities to monitor comprehension and track student progress throughout each lesson.

Tool	What It Does	How to Use It
STUDENT BOOK		
Reread/Think, Talk	Encourages students to collaborate when applying the lesson standard and sharing ideas about the text	• Observe students as they participate in these activities. • Respond to individual needs with targeted strategies using the embedded Help & Go supports.
Write	Provides an opportunity for students to respond independently to a writing prompt about the text	
Writing Checklists	Provides students with a concrete way to self-assess	
Independent Practice	Allows students to demonstrate understanding as they apply the lesson standard to a new text	
TEACHER'S GUIDE		
Help & Go Supports	Provides quick Check In, Look For, or Listen For diagnostic and offers specific remediation strategies	Identify individual needs and provide immediate support.
Answer Analysis	Provides a depth-of-knowledge (DOK) level and an explanation of why each answer choice is correct or incorrect	Discuss correct and incorrect answers, helping students understand reasons for their errors.

Summative Assessment Opportunities

Each Unit Assessment targets the standards covered within a Unit and includes:

- A variety of item types
- An extended written response
- An answer analysis and depth-of-knowledge (DOK) level for each item
- A writing rubric for scoring written responses

Our Commitment to **Learner Variability and Equity**

Our Mission

Curriculum Associates believes that all students deserve access to high-quality, anti-biased, equitable educational resources. We strive to ensure that learners from all cultural identities, economic statuses or circumstances, and linguistic backgrounds, as well as those with disabilities, can engage with and see themselves reflected in our materials.

Supporting All Learners in *Magnetic Reading*

The creators of *Magnetic Reading* were guided by the understanding that there is no such thing as an average learner, and that all students bring their own unique assets, backgrounds, and variables to their learning. Instruction in *Magnetic Reading* reflects the guidelines of Universal Design for Learning (UDL), principles of cultural and linguistic responsiveness (CLR), and best practices for English learners (EL).

UDL, CLR, and EL best practices are not separate or competing approaches to teaching. They are interrelated frameworks, concepts, and practices that teachers draw on strategically to suit the strengths and needs of their students. For example, discussing the setting of a passage before reading provides options for comprehension (UDL), allows students to share relevant personal experiences and connect to learning (UDL, CLR), and supports English language development (EL). Providing regular partner work fosters collaboration and community (UDL, CLR), ensures greater participation by all students (UDL, CLR, EL), and builds language and background knowledge (EL).
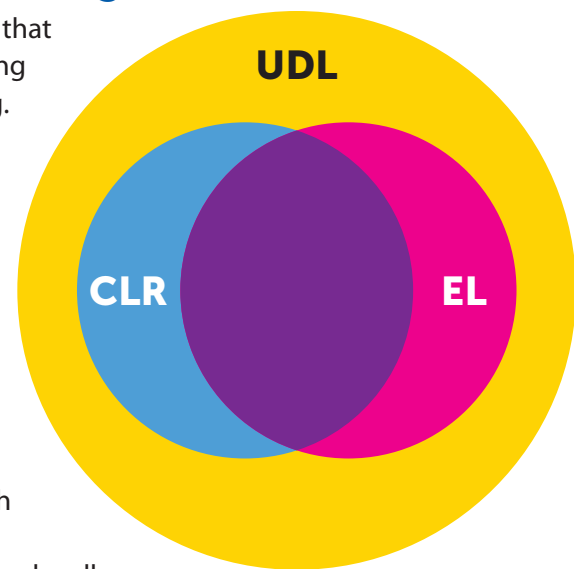
Magnetic Reading and **Universal Design for Learning** (UDL)
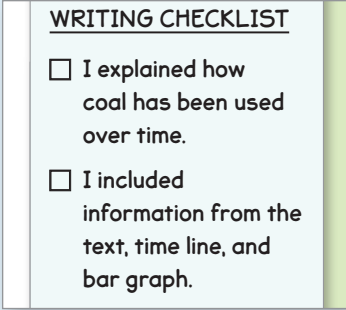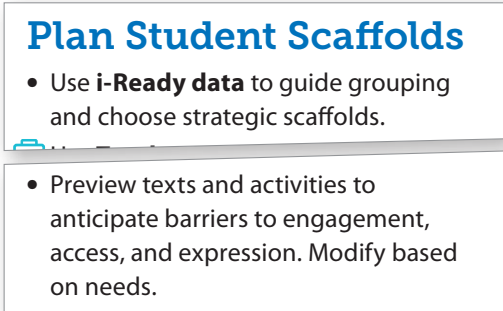
The UDL guidelines were created to "ensure that all learners can access and participate in meaningful, challenging learning opportunities[1]." This means that UDL:

- **IS** about reducing and removing barriers to allow all learners to access and engage with rigorous materials.
- **IS NOT** about reducing expectations or rigor.

Empowering Teachers & Students to Apply UDL

UDL implemented with fidelity ensures that students and teachers recognize and use the unique assets and needs of ALL students as tools for learning. *Magnetic Reading* empowers them with direct and implied opportunities to apply UDL and related frameworks. Teaching suggestions offer direct applications of the UDL guidelines at point of use, and the instructional model offers the flexibility for educators and students to apply relevant guidelines as they identify opportunities to do so.

> " *(UDL) aims to change the design of the environment rather than to change the learner. When environments are intentionally designed to reduce barriers, all learners can engage in rigorous, meaningful learning.*[2] "

UDL Guideline Application Type	Examples	Visuals From *Magnetic Reading*
Direct	Embedded scaffolds such as writing checklists and sentence frames A variety of routines allowing for multiple means of engagement and action and expression	WRITING CHECKLIST ☐ I explained how coal has been used over time. ☐ I included information from the text, time line, and bar graph.
Flexible	Reminders throughout the teacher materials to look ahead and plan accordingly for scaffolds	**Plan Student Scaffolds** • Use **i-Ready data** to guide grouping and choose strategic scaffolds. • Preview texts and activities to anticipate barriers to engagement, access, and expression. Modify based on needs.

1. CAST (2020). UDL Guidelines. Retrieved from https://udlguidelines.cast.org

2. CAST (2020). Frequently Asked Questions. Retrieved from https://udlguidelines.cast.org/more/frequently-asked-questions

Magnetic Reading Helps
English Learners Thrive

Start with an Asset-Based Mindset

English learners (ELs) represent a broad spectrum of learners with a wide range of backgrounds, experiences, and language and academic proficiencies. We recognize the linguistic and cultural assets ELs bring to the classroom, and ensuring they achieve academic success with rigorous grade-level content is our priority. With high expectations, access to rich and complex, grade-level text, and appropriate scaffolds, ELs will acquire the language and content skills they need to succeed.

UDL

CLR

EL
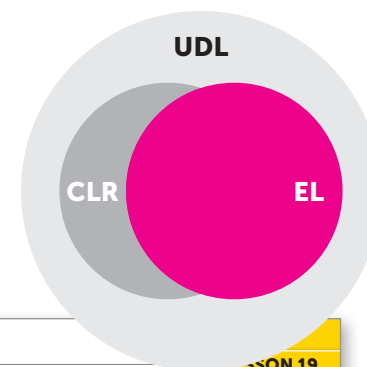
Plan for Success

Magnetic Reading incorporates strategic scaffolds for English learners. During planning, teachers have the opportunity to consider the needs of ELs and how best to provide content and language supports.

- **Text At-a-Glance** provides key background, vocabulary, and other features of language students will need to grapple with as they read complex texts.

- **English Learner Support** lists the EL-specific strategies and scaffolds in the lesson and identifies tasks students will engage with in the language domains of *reading*, *speaking*, *listening*, and *writing*.

LESSON PLANNING GUIDE

TEXT 1: First Came Fire: A Story of Energy and Fuel • SCIENCE ARTICLE

TEXT AT-A-GLANCE	ENGLISH LEARNER SUPPORT (EL)
Concepts/Background • using fuel to create energy • creating fire from fuel • how dead plants turn into fuel **Language** • **Vocabulary:** *fuel, natural gas, oil well, petroleum, turning to* • **Idiom:** *pound for pound*	**Speaking/Reading** • Activate prior knowledge **Listening/Reading** • Analyze phrases **Reading** • Leverage cognate knowledge **Listening/Speaking** • Use sentence frames **Speaking/Reading** • Leverage cognate knowledge

TEXT 3: Cool Solutions: Trash to Gas • SCIENCE ARTICLE

INDEPENDENT READING AND PRACTICE • Formative Assessment ✓	**Concepts/Background** • how waste moves to landfills • using biogas as fuel **Language** • **Vocabulary:** *morsel, solutions, waste, organic, break down, recycling, developed, reuse, manure, sludge*	**Reading** • Leverage cognate knowledge **Speaking/Reading** • Paraphrase, Identify formal language **Writing** • Use sentence frames

KNOWLEDGE BUILDING

RESPOND TO THE FOCUS QUESTION • *Why have people used energy from different sources?*	• Integrate information from the lesson texts • Collaborative discussion • Short response	**Reading/Writing** • Use sentence frames **Speaking/Writing** • Collaborate with a partner

LESSON 19 | Sources of Energy   **366b**

Magnetic Reading offers scaffolded instruction at point of use, with explicit attention to English learners. Teachers can flexibly and intentionally support both ELs and native English speakers in reading and analyzing the complex language of the text.

Promote Access to Complex Texts

- Texts are chunked into meaningful units and anchored by text-dependent questions.
- Questions are catalysts for partner discussion and allow teachers to check for understanding.
- Discussions allow students to practice text-specific vocabulary and language structures.
- Teachers are encouraged to use students' home language to support them in negotiating texts.

Activate Prior Knowledge and Build Background

- **Before Teaching the Lesson** provides information about the text and background knowledge students need to access it.
- **Focus Questions** set a purpose for reading and support students in synthesizing information across texts.
- **Notice and Wonder** engages students in previewing texts and using what they know to anticipate and predict.

Engage Through Academic Discourse

All students are academic English learners. Daily discussion allows students to practice active listening and speaking and to communicate meaningfully in academic English. Sentence starters and frames guide students to:

- Justify ideas.
- Agree and build on to the ideas of others.
- Disagree and explain.

Scaffold Instruction for ELs

Help & Gos include strategies and scaffolds that address specific language needs of ELs such as:

- Interpreting figurative and idiomatic language, differentiating between formal and informal language.
- Understanding shades of meaning.
- Analyzing multiple-meaning words.
- Leveraging cognates.
- Unpacking complex sentences.

> **Talk**
>
> Use your story maps to discuss the questions below. Then complete the last section of the story map.
>
> - What is Maui's goal?
> - What is his plan?
> - How does the plan turn out?
> - What theme or message can you learn from the events?
>
> I think the story's message is ___ because ___.
>
> You said ___. I agree/disagree because ___.

> **HELP & GO: Vocabulary**
>
> - Remind students to use the titles and photographs to look for clues about the meaning of the terms.
> - Encourage students to look inside the word for familiar prefixes (*non-*, *re-*), suffixes (*-able*), and base words (*new, source*).
> - Encourage students to look inside the word for word parts that are cognates in their home language. **EL**

Instruction That
Validates and Affirms

ALL learners deserve equitable opportunities to learn. Culturally and Linguistically Responsive (CLR) teaching gives teachers tools not only to be equitable in instructional practices but also to validate and affirm students' diverse racial and ethnic backgrounds and help students feel comfortable and excited to learn. Dr. Sharroky Hollie defines CLR as validating and affirming cultural and linguistic behaviors of all students and building and bridging those behaviors to lead to success in school (Hollie, 2015).

Validating and Affirming

Cultural and linguistic behaviors that are the norm in many historically marginalized cultures—such as frequent use of movement, socializing while learning, and spontaneity—are often seen as unacceptable in school culture. They are seen through a deficit-based lens and treated as being off-topic, interrupting, or attention-seeking, and students are left feeling misunderstood, unwelcome, isolated, or deflated. CLR teaching allows teachers to:

- Demonstrably acknowledge and value cultural and linguistic backgrounds.
- Look for and build on the ways that students show their brilliance.
- Plan instruction that validates and affirms behaviors that historically have been seen in a negative way.
- Leverage students' cultures and languages as opportunities for cross-cultural experiences and understandings.

When students are validated and affirmed, they are more likely to feel recognized, valued for their contributions, and ready to learn.
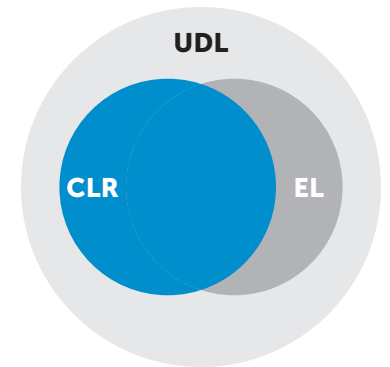
Instruction in *Magnetic Reading*

Magnetic Reading supports culturally and linguistically responsive teaching by suggesting appropriate CLR protocols and activities at point of use.

- Protocols that validate and affirm a variety of cultural behaviors are used to structure reading, writing, and discussion.

- The Teacher's Guide provides guidance for classroom discussion about culturally authentic texts.

Use Protocols That Meet the Needs of All Students

In order to increase engagement and validate cultural and linguistic behaviors, specific protocols are included in the lesson. To further customize activities for your students, consider optional protocols listed on pp. A46–A51.

PROTOCOL	SESSION	VALIDATES
Vote with Your Feet	1	movement, multiple perspectives
Shout Out	1, 4	spontaneity, multiple ways to show focus
Pick a Stick	2, 4	spontaneity
Jump in Reading	2	spontaneity, collective success
Somebody Who	2, 4	social interaction
Pass It On	3, 5, 6	spontaneity, connectedness
Stand and Share	3, 5	spontaneity, movement, connectedness
Merry-Go-Round Share	4	multiple ways to show focus, connectedness

Before Teaching the Lesson

Preview the texts in advance of teaching the lesson. Plan scaffolds to use and provide background information as needed before reading each text.

- **Hula: Keeping a Tradition Fresh: Culture** When people from New England arrived in the Hawaiian Islands in 1820, the people there were all indigenous Polynesians who had a culture and traditions—including hula—all their own.

- **The Roots of Rap: Rap Music** Rap artists sometimes use their performances to bring attention to serious problems in their community and to help bring positive change. As an alternative means of representation, consider playing part of a rap song. If available, play griot recordings and have students focus on the rhythms and patterns of sound.

- **Cy Thao: Story Painter: The Hmong** This text is about someone who is Hmong. The Hmong originally lived in Laos, Vietnam, Thailand, Burma, Cambodia, and China. In the 1970s and 1980s, to escape war, many Hmong settled in the United States, particularly in Minnesota, California, and Wisconsin. Show these places on a map or globe.

- **LISTEN FOR** Students correctly use the term *traditions* in their discussion.

HELP & GO: Background

- Explain that traditions people participate in might be different from household to household. These habits and ways of life might extend beyond their household to their bigger family. This is part of their culture. Ask students to think of something their family does that is part of their culture.

- Explain that traditions are things that are special to their family or culture and have been done for a long time. Consider sharing a tradition from your own family. For example, **say,** *When someone in my family has a birthday, we all get together to celebrate. We take turns sharing our favorite story about the birthday person.*

- Provide a sentence frame to support active listening: *I think you said ___. Is that correct?* **EL**

Texts That Reflect
the **Diversity** of Our World

Texts in *Magnetic Reading* provide students with mirrors of their own cultural identities and windows into the world around them and the people in it.

- Informational texts present information about compelling, high-interest topics. They also include background knowledge for or extensions of other passages in a lesson and unit.
- Informational and literary texts mirror many cultural backgrounds and experiences. Students learn more about themselves, their classmates, and people they have yet to meet.
- Some passages give background on the historical roots of social and racial injustice that students may have experienced in their lives or in mainstream and social media.

UDL

CLR **EL**
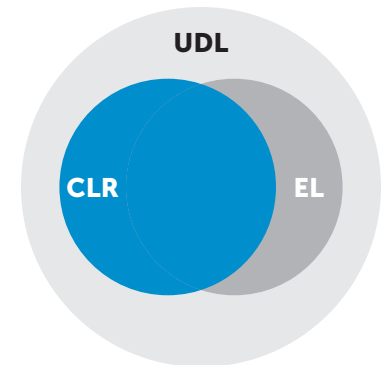
Rings of Culture

Culture is more than just food and holidays. It shapes our identities and gives us ground rules for interpreting and operating in the world, everything from interactions with elders to understandings of time and personal space. All of us operate from multiple and different cultural identities—what Dr. Sharroky Hollie refers to as "rings of culture."

Age **Orientation**

Gender **Ethnicity** **Nationality**

Region/ Location **Religion** **Socioeconomic Class** **Disability**
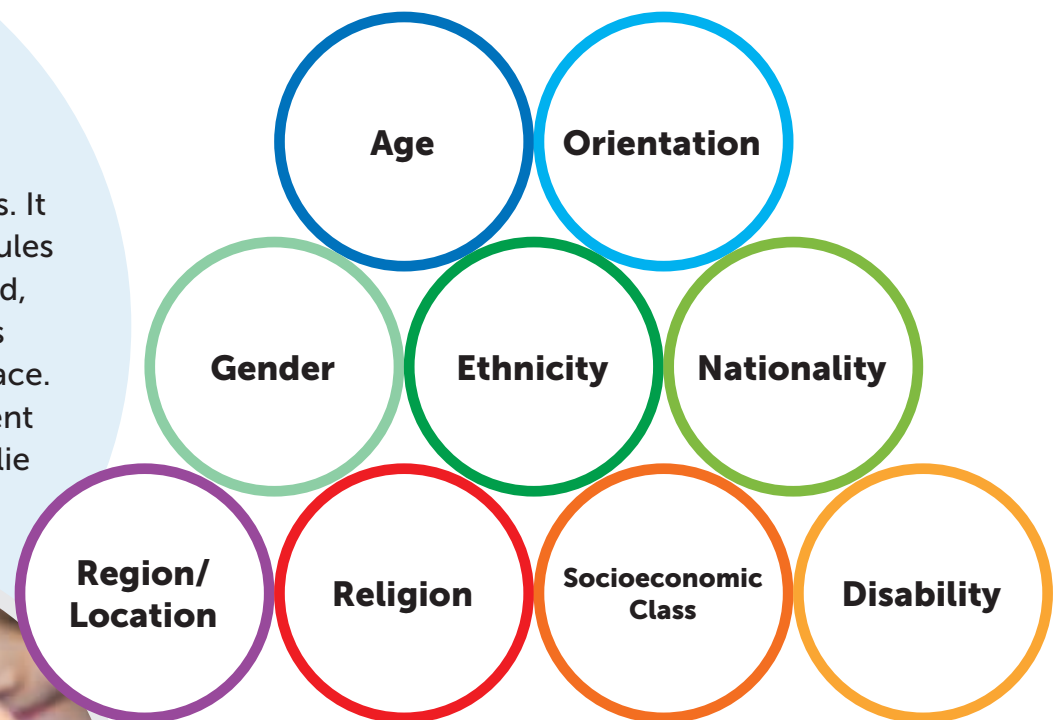
Texts in *Magnetic Reading* portray different rings of culture so that students see something of themselves and their worlds represented in school. Some texts illuminate the authentic cultural beliefs and experiences of a particular group. These texts may address socioeconomic status, gender, ethnicity, nationality, disability, or geographic location. In other texts, cultural background plays a lesser role. Cultural identities may be shown more through "surface" details such as food and dress than through representation of deeper beliefs and customs.

This mix of cultural representation, from deeper culture to more surface-level culture, gives students the opportunity to:

- Bring themselves to the text culturally and linguistically.
- Connect ideas and information from the texts to what they know and have experienced in their own lives.
- Make personal connections to the lesson topic when they preview lesson texts and explore essential concepts.
- Share their cultures and home languages, providing other students with a window into cultures and experiences that may be unfamiliar.

Protocols for Engagement and Accountability

Magnetic Reading ensures student engagement and accountability through the regular use of protocols that affirm cultural backgrounds and behaviors.

What are protocols? Protocols provide structure for activities so that all students have a chance to think, talk, and participate equally in classroom activities. Each protocol incorporates modes of communication common to one or more cultures (see the Rings of Culture on page A44) and leverages those behaviors for a particular instructional purpose. Thus, cultural behaviors are **validated and affirmed (VA)** and used to **build and bridge (BB)** toward academic success.

When are they used? Protocols structure reading, writing, skills practice, and academic discourse. They are embedded throughout each lesson and referenced at point of use in the Teacher's Guide and in the Overview. Protocols can take from less than a minute to five or ten minutes to complete.

How can they be customized? The chart below lists protocols according to how they are typically used: for Reading, to complete Practice Activities or Academic Discourse, or to Share Responses. *Magnetic Reading* suggests protocols to use within each lesson, but as you become familiar with the protocols and the behaviors they validate, you may choose Reading, Activity/Academic Discourse, or Response protocols that take better advantage of your students' cultural assets. Use the Cultural Behaviors chart on pp. A50 and A51 to match cultural behaviors to the protocols that use them.
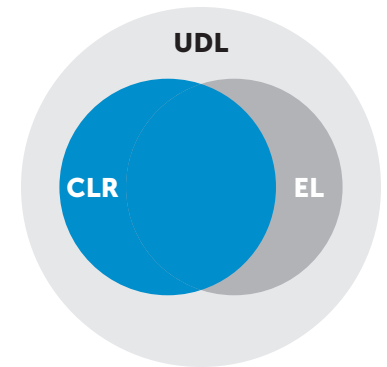
READING PROTOCOLS

Name	Time	Description	Cultural Behaviors
Buddy Read	text dependent	Students take turns reading a passage together. They may take turns reading sentences or paragraphs.	• **VA:** collective success, social interaction • **BB:** turn-taking
Jump in Reading	text dependent	Teacher calls on the first student to read aloud. That student reads at least one sentence, no more than a paragraph. When that student pauses, another student may jump in to continue reading. Continue until all paragraphs are complete.	• **VA:** spontaneity, collective success, conversational overlap
Teacher Read-Aloud	text dependent	Teacher reads aloud to students.	• **VA:** oral tradition

VA: behaviors that are validated and affirmed; **BB:** classroom behaviors that the protocol builds and bridges toward

RESPONSE PROTOCOLS

Name	Time	Description	Cultural Behaviors
VOLUNTARY RESPONSE PROTOCOLS			
Raise a Hand	1–2 mins.	Students raise a hand or fist to volunteer information.	• **VA:** verbal expressiveness • **BB:** turn-taking
Shout Out	< 1 min.	Students *softly* shout out responses at the same time. This protocol can be used for one-word or very short answers. Posed questions can require either one correct answer or a variety of short answers.	• **VA:** conversational overlap, spontaneity, verbal expressiveness, multiple ways to show focus
Stand and Share	1–2 mins.	When a student wants to share a response, they stand and share it. After sharing, they sit down.	• **VA:** spontaneity, movement, subjectivity, connectedness

Name	Time	Description	Cultural Behaviors
NON-VOLUNTARY RESPONSE PROTOCOLS			
Pick a Stick	1–2 mins.	After asking a question, the teacher picks from a group of class popsicle sticks, each of which has a student's name on it. The chosen student answers the question. Stick selection can continue until a sufficient number of answers are heard.	• **VA:** multiple ways to show focus, spontaneity • **BB:** turn-taking
Somebody Who	1–2 mins.	The teacher uses a random identifier (such as birthdays in summer, wearing green, or having only one sibling) and invites the identified students to stand. Then the standing students share out their responses to a question.	• **VA:** social interaction, spontaneity
Take a Poll	< 1 min.	Students vote on a question. This can be used with Raise a Hand, Shout Out, or Vote with Your Feet.	• **VA:** multiple perspectives
Thumbs-Up or Thumbs-Down	< 1 min.	The teacher asks students to hold their hand near their chest and give a thumbs-up, thumbs-down, or (if appropriate) thumbs-sideways to show their response to a question.	• **VA:** connectedness, multiple perspectives
Vote with Your Feet	1–2 mins.	The teacher designates a different part of the room for each voting option. Students vote by moving to the place designated for the option they choose.	• **VA:** movement, multiple perspectives, collective success, social interaction

Protocols for Engagement and Accountability (continued)

ACTIVITY AND ACADEMIC DISCOURSE PROTOCOLS

Name	Time	Description	Behaviors
3-2-1	5–10 mins.	Students summarize multiple takeaways from an activity or identify multiple details in a text. The format can vary and is specified at point of use in the Teacher's Guide. *Example:* Ask students to name **3** things they learned, **2** things they found interesting, and **1** question they still have.	• **VA:** multiple perspectives • **BB:** quiet, independent, prompted
Give One, Get One	2–5 mins.	Students get up and mingle with their peers. After a few seconds, the teacher calls out "GIVE ONE to a partner." Participants form pairs, and each "gives" a key learning or important idea about the topic to the other so that each person "gives one" and "gets one." This can be repeated multiple times.	• **VA:** social interaction, movement, shared responsibility
Individual Think Time	10 secs.–2 mins.	Students are given a short time to think about a question before discussing with a partner, a small group, or the whole class. This private processing time gives students time to make sense of the question and begin to gather their thoughts and questions.	• **BB:** quiet, independent
Merry-Go-Round Share	2–5 mins.	Students form groups of 3–4 to share their responses. Each student takes a quick turn sharing with the group.	• **VA:** social interaction, multiple ways to show focus, connectedness **BB:** turn-taking
Musical Shares	5–10 mins.	Students share a written response to a question or prompt. The teacher directs all students to stand up with their Student Books, then turns on music. Students walk or dance around the room. When the music stops, students stop and share with the closest person to them, and each one takes a turn. This can be repeated 2–3 times.	• **VA:** movement, multiple ways to show focus, musicality, spontaneity, social interaction

VA: behaviors that are validated and affirmed; **BB:** classroom behaviors that the protocol builds and bridges toward

Name	Time	Description	Behaviors
Pass It On	2–5 mins.	Students call on each other to answer a question or prompt. Students should not raise hands to be called on, and they should be encouraged to call on a variety of people. Students can "pass" on a question by calling on another student. This protocol can also be done with the use of a soft object that students toss to one another to "pass it on."	• **VA:** collective success, spontaneity, connectedness
Silent Appointment	1–2 mins.	Students look around the room and get the attention of a classmate without talking by using facial expressions or other nonverbal communication. Once they have made eye contact with a classmate, they give some indication that they have a partner: hand over heart or on top of the head, etc. Once everyone has a partner, have them move quietly to their Silent Appointment.	• **VA:** social interaction, subjectivity, nonverbal expression
Snowballs	2–5 mins.	To share a short, written response to a question, students ball up their papers and throw their snowballs to a designated part of the room. The teacher then directs groups (each table or section) to take turns picking up a snowball, checking to make sure they don't get their own. Once all students have a snowball, use a non-volunteer protocol to have a few students read out the response on the paper they picked up.	• **VA:** movement, connectedness, spontaneity, collective success
Synonym Plug-In	< 1 min.	Students brainstorm or identify synonyms for a key word.	• **VA:** shared responsibility
Team-Pair-Solo-(Team)	5–10 mins.	Students work in groups of 4 to complete an activity that has multiple parts or steps. Specific directions for what to do at each step are provided at point of use in the Teacher's Guide. *Example:* **Team:** Students work together as a group to complete one part of a chart. **Pair:** Each team breaks into pairs, and the pairs work together to complete another part of the chart. **Solo:** Students work independently to complete the next part of the chart. **Team:** Students move back to their original groups to complete the chart and/or discuss details.	• **VA:** social interaction, multiple ways to show focus, shared responsibility, conversational overlap • **BB:** quiet, independent
Turn and Talk	1–2 mins.	Students turn and talk with a partner.	• **VA:** social interaction • **BB:** turn-taking

Cultural Behaviors
Leveraged for Learning

Consult this chart to learn more about the cultural behaviors validated and affirmed through the use of responsive protocols.

Cultural Behavior	What It Is	Why It's Important	Protocols That Validate and Affirm It
collective success	working together for a purpose	School culture often emphasizes independent work, while shared work and responsibility is encouraged in many cultures and seen as contributing to overall performance of the group.	*Buddy Read, Jump in Reading, Pass It On, Snowballs, Vote with Your Feet*
connectedness	taking actions in the moment that communicate warmth, acceptance, closeness, and availability	Connectedness alleviates stress in students who feel a sense of urgency and want to know about things "now."	*Merry-Go-Round Share, Pass It On, Snowballs, Stand and Share, Thumbs-Up or Thumbs-Down*
conversational overlap	speaking up while someone else is talking	Verbal overlapping shows engagement and focus in some languages and cultures, while not overlapping can show the same levels of engagement in other languages and cultures.	*Jump in Reading, Shout Out, Team-Pair-Solo-Team*
movement	moving while learning; learning through physical activities	School culture often prioritizes sitting still for much of the day, but some cultures learn better while moving.	*Give One, Get One; Musical Shares; Snowballs; Stand and Share; Vote with Your Feet*
multiple perspectives	allowing for a number of perspectives that are equally valued	School culture can emphasize a "right" or "wrong" way of looking at or doing something, but the essential understanding of a topic or concept can be arrived at through alternate perspectives and means of expression.	*3-2-1, Take a Poll, Vote with Your Feet*
multiple ways to show focus	demonstrating varied ways to show focus and approach a task	School culture may prioritize a single way of showing focus (e.g., sitting quietly and watching the teacher intently) while other cultures allow for different ways (e.g., moving around).	*Merry-Go-Round Share, Musical Shares, Pick a Stick, Shout Out, Team-Pair-Solo-Team*

Cultural Behavior	What It Is	Why It's Important	Protocols That Validate and Affirm It
musicality	shared musical experiences that bring people together for a purpose	Music is often not incorporated into school activities, but shared musical experiences are important in many cultures and can engage and invest students in learning.	*Musical Shares*
nonverbal expression	communicating with the eyes or using gestures	School culture sometimes sees extended eye contact as rude, but in many cultures it is a way of showing respect, attention, and interest.	*Silent Appointment*
oral tradition	the practice of using storytelling and oral expressiveness	School culture often prioritizes reading silently to oneself over reading aloud, but many cultures view oral language and storytelling as important norms and traditions.	*Teacher Read-Aloud*
shared responsibility	sharing collectively in learning tasks and activities	School culture often emphasizes independent work, but shared work and responsibility is encouraged in many cultures and seen as contributing to overall performance of the group.	*Give One, Get One; Synonym Plug-In; Team-Pair-Solo-Team*
social interaction	the use of social interaction to learn	In some cultures, the act of social interaction is valued as much as the content being learned; the interaction contributes to successful learning.	*Buddy Read; Give One, Get One; Merry-Go-Round Share; Musical Shares; Silent Appointment; Somebody Who; Team-Pair-Solo-Team; Turn and Talk; Vote with Your Feet*
spontaneity	responding in an immediate and unplanned way	Spontaneity is viewed as natural and appropriate in some cultures, but it is often discouraged in school culture.	*Jump in Reading, Musical Shares, Pass It On, Pick a Stick, Shout Out, Snowballs, Somebody Who, Stand and Share*
subjectivity	allowing for the expression of personal perspectives	Inviting students to share personal experiences and opinions can get them more interested and invested in learning.	*Stand and Share, Thumbs-Up or Thumbs-Down*
verbal expressiveness	using words combined with gestures and other nonverbal means of expression to communicate ideas and emotions	School culture often values a limited subset of the many ways students can express their ideas. However, alternative ways of sharing and expressing ideas are equally additive to the classroom culture and conversation.	*Raise a Hand, Shout Out*

Build Knowledge

The texts in this unit explore how and why people explore new places.

- In Lesson 9, **Uncovering the Past**, students read a fictional story about a character who learns about paleontology and himself.

  — "Digging In," Parts 1–3, realistic fiction

- In Lesson 10, **Mapping the Unknown**, students read informational texts about explorers who map new territories.

  — "Marie Maps the Sea," biography

  — "Braving the Cave," biography

  — "The Rainforest's Hidden Cities," technology article

- In Lesson 11, **Exploring Extremes**, students read informational articles about scientists who explore extreme environments to learn more about volcanoes and Antarctica.

  — "Science on the Edge," narrative nonfiction

  — "River of Fire," science article

  — "Secrets of a Frigid World," science article

  — "Drawing Under Ice," narrative nonfiction

Exploring

LESSON 9

Uncovering the Past

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LESSON 10

Mapping the Unknown

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- The Connect It Lesson, **Exploring Space**, features culminating texts about Leland Melvin, an NFL star turned astronaut.
  — "From the NFL to Space," biography
  — from *Chasing Space: An Astronaut's Story of Grit, Grace, and Second Chances*, autobiography

Preview the Unit

- Introduce the unit topic and read aloud the lesson titles.
- **Say,** *Look at the titles and pictures. What questions or predictions do you have about what we will learn?*
- Use **Raise a Hand** to have 2–3 students share a question or a prediction.

Mapping the Unknown

FOCUS QUESTION

How do people create maps of new places?

About the Lesson

OBJECTIVES

Content Objectives

- Make inferences by combining what the text says with what is already known.
- Support inferences with details from the text.
- Understand how and why maps are made.

Language Objectives

- Combine details from the text with what is known to make inferences, using graphic organizers.
- Justify inferences about a character with supporting details during partner discussion.
- Explain in writing how people create maps of new places.

ACADEMIC TALK

See **Glossary of Terms** on pp. 478–485.

inference, text evidence, supporting detail

Spanish Cognates

inferencia, evidencia de texto

Build Knowledge

Lesson texts build knowledge about:

- How Marie Tharp created the first map of the ocean floor in 1957
- How Stephen Bishop explored and mapped Mammoth Cave in 1842
- How LiDAR technology is used to map the rainforest floor and make discoveries about ancient Mayan civilization

Plan Student Scaffolds

- Use **i-Ready data** to guide grouping and choose strategic scaffolds.
- 📦 Use this **Teacher Toolbox** resource as needed to address related skills:
    - —Make inferences in informational texts
- For novice English learners, it may be helpful to chunk the text in Session 3 into smaller sections for discussion within a small group. **EL**
- Preview texts and activities to anticipate barriers to engagement, access, and expression. Modify based on needs.

Use Protocols That Meet the Needs of All Students

In order to increase engagement and validate cultural and linguistic behaviors, specific protocols are included in the lesson. To further customize activities for your students, consider optional protocols listed on pp. A46–A51.

PROTOCOL	SESSION	VALIDATES
Pick a Stick	1	spontaneity
Individual Think Time	1	independence
Somebody Who	1, 2, 4	social interaction
Stand and Share	2, 4	spontaneity, multiple ways to show focus
Pass It On	3	spontaneity, connectedness
Shout Out	5	spontaneity, multiple ways to show focus
Merry-Go-Round Share	5	multiple ways to show focus, connectedness
Give One, Get One	6	movement, shared responsibility

LEARNING PROGRESSION | Make Inferences

Students build on this skill:
Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

Students learn this skill:
Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

Students prepare for this skill:
Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

Students review and practice:
- Determine word meanings

LESSON PLANNING GUIDE

TEXT 1: Marie Maps the Sea • BIOGRAPHY

		TEXT AT-A-GLANCE	ENGLISH LEARNER SUPPORT (EL)
SESSION 1	**SCAFFOLD READING**	**Concepts/Background** • map making • plotting a 3-D graph • theory of plate tectonics • barriers in the past to women doing ocean research	**Listening/Reading** • Chunk text, Explore descriptive language **Speaking/Reading** • Rephrase questions
SESSION 2	**PRACTICE THE FOCUS STANDARD** • Formative Assessment ✔	**Language** • **Vocabulary:** *(to) map, Midwest, revealed, data, depth, mountain range, Earth's crust, plates, centimeters* • **Figurative Language:** *she put the graphs together like slices of bread* • **Descriptive Language:** *(a crack) running through the mountain range, solve an old puzzle*	**Listening/Speaking** • Reinforce academic vocabulary, Leverage cognate knowledge **Writing** • Use sentence frames

TEXT 2: Braving the Cave • BIOGRAPHY

SESSION 3	**SCAFFOLD READING**	**Concepts/Background** • Mammoth Cave in Kentucky • enslaved people • tourist attraction	**Reading** • Explore content vocabulary, Analyze phrases **Listening/Speaking** • Use sentence frames, Use visual support
SESSION 4	**PRACTICE THE FOCUS STANDARD** • Formative Assessment ✔	**Language** • **Vocabulary:** *braving, passageway, (tour) guide, original, crystals, bottomless, explorations, eyeless, chamber, against the law, full credit, of all time* • **Idioms:** *follow his own dreams* • **Figurative Language:** *yawning entrance*	**Reading** • Use a dictionary **Writing** • Use sentence frames

TEXT 3: The Rainforest's Hidden Cities • TECHNOLOGY ARTICLE

SESSION 5	**INDEPENDENT READING AND PRACTICE** • Formative Assessment ✔	**Concepts/Background** • rainforests of northern Guatemala • Mayan empire and its ruins • LiDAR technology • PACUNAM Foundation **Language** • **Vocabulary:** *pyramids, palaces, stretch (across), trace their roots, remains, technology, vegetation, detection, ranging, organization, teamed up* • **Idioms:** *blew our minds* • **Figurative Language:** *pyramids … tell the story, covering up … the past*	**Reading** • Leverage cognate knowledge, Activate prior knowledge **Listening** • Read aloud questions and answer choices **Writing** • Collaborate with a partner, Explore content vocabulary

KNOWLEDGE BUILDING

SESSION 6	**RESPOND TO THE FOCUS QUESTION** • *How do people create maps of new places?*	• Integrate information from the lesson texts • Collaborative discussion • Short response	**Writing** • Use sentence frames, Use word bank

Before Teaching the Lesson

Preview the texts before teaching the lesson and plan scaffolds to use. If needed, provide the background information below to students before they read a text. Alternate means of representation are suggested below.

- **Marie Maps the Sea: The Sea Floor** The land at the bottom of the sea is not flat. It has high and low spots just as land above the sea does.
- **Braving the Cave: Mammoth Cave** Mammoth Cave in Kentucky is the longest cave system in the world. The person in this text was an enslaved man required to explore and give tours of the cave. His accomplishments helped make money for the men who enslaved him. Use a map to show Mammoth Cave's location in Kentucky.
- **The Rainforest's Hidden Cities: Tropical Climate** Mexico and Central America, where the ancient Maya lived, are in a tropical climate where plant life grows thickly over Mayan ruins. If possible, find photographs of Mayan ruins within the Central American rainforest.

Talk About the Topic

BUILD STUDENTS' INTEREST

1
- Introduce the lesson topic and the Focus Question. Tell students that throughout the lesson, they will read, talk, and write about different kinds of maps and the people who created them.
- Have students **Pick a Stick** to share ways in which they have used maps.
- Introduce the focus standard. **Say,** *As you read, you will use details from the text and things you already know to make inferences. Be sure to pay close attention as you read.*

2
- Ask students to complete Notice and Wonder with a partner.
- Allow students **Individual Think Time** before discussing with a partner. **EL**
- Circulate to identify gaps in background knowledge to address during reading.

Mapping the Unknown

1 **FOCUS QUESTION**

How do people create maps of new places?

2 NOTICE AND WONDER

Look at the three texts you will read in this lesson. What do you notice? What do you wonder? Discuss your ideas with a partner.

3 CREATE A WORD WEB

What are some words that are related to maps? Add words to the word web below. Then, discuss your choices with a partner.

Sample responses:

explore — discover — maps — oceans — countries
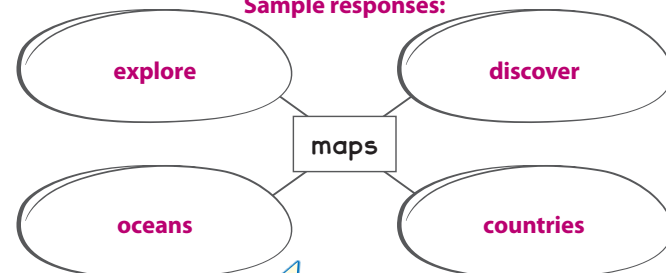
The word ___ is related to maps because ___.

When I think of maps, I think of ___ because ___.

Marie Maps the Sea
by Liz Huyck
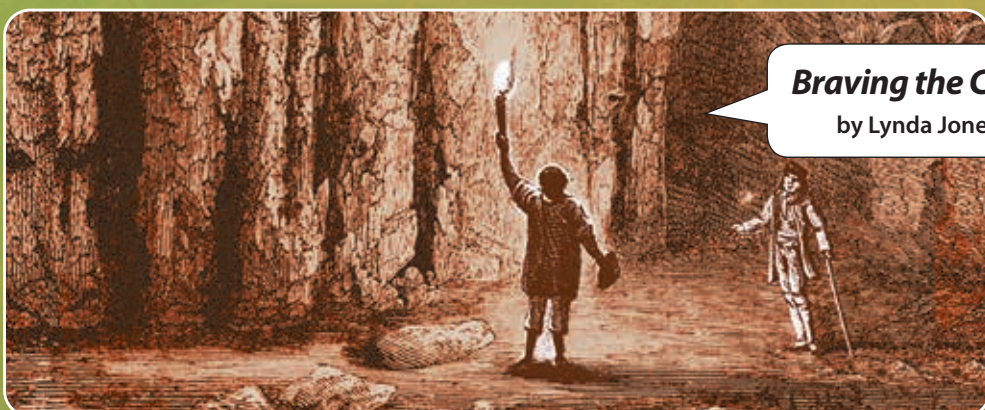
Braving the Cave
by Lynda Jones
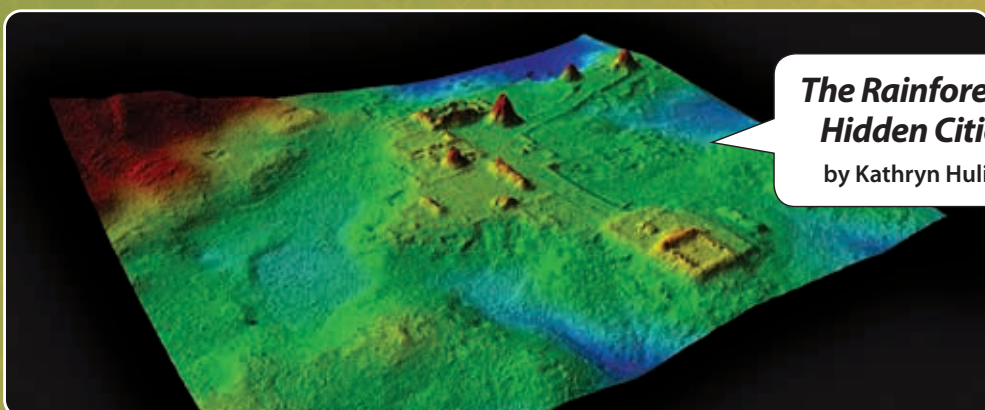
The Rainforest's Hidden Cities
by Kathryn Hulick

3 **INTRODUCE ESSENTIAL CONCEPTS**

- Display a world map that has topographic features and review its basic parts. Tell students they should think about a map of the world as they work on the Create a Word Web activity.

- If needed, encourage students to brainstorm words for the activity in their home language and then look up the English translation for them in a bilingual dictionary. Have students add the words from both languages to their word webs. **EL**

- Have students complete their word web independently and then compare their word web with a partner's.

- With the whole class, create a class word web as students **Raise a Hand** to contribute words they added to their own word web.

- Invite students to brainstorm additional words for the class word web.

- Have students create entries for words in their word journals.

- Use **LOOK FOR** to monitor understanding. Use **Help & Go** scaffolds as needed.

- **LOOK FOR** Students include words naming a variety of map features in their word maps.

HELP & GO: Background

- Refer students back to the world map with topographic features. Ask them to point out and name the major elements of land and water.

- Then guide students to name natural parts of the map for each element (e.g., land: continents, mountains, deserts; water: oceans, rivers, lakes) as well as human-made parts (e.g., countries, cities, highways). Add them to the class word web.

- Tell students that the maps they will read about in this lesson are different from world maps, but each kind includes many different kinds of details in the same way that a world map does.

① Support Reading

- Set a purpose for reading. **Say,** *In this session, you will read to learn how a woman named Marie Tharp created a map of the sea floor.*

- Have students read paragraphs 1–6. Have them circle unknown words and mark confusing parts with a question mark.

- Support students by chunking text into paragraphs. Include comprehension checks for paragraphs 3–6. **EL**

- Use **CHECK INs** and related **Help & Go** scaffolds as needed to support understanding of the text. Monitor based on annotations, observation, and your knowledge of students.

- **CHECK IN**　Students understand the use of *map* and *like slices of bread.*

> **HELP & GO: Vocabulary**
>
> - Call students' attention to the title and elicit that *map* can be both a noun and a verb.
> - Explain that "put the graph together like slices of bread" in paragraph 6 means that Tharp was piling the graphs one atop the other.

② Stop & Discuss

- Have students **Turn and Talk** to complete **Stop & Discuss** with a partner.

- Have students rephrase the **Stop & Discuss** question to ensure understanding. **EL**

- **LOOK FOR**　Students understand that the questions in paragraph 3 reflect what Tharp was curious about.

> **HELP & GO: Comprehension**
>
> - Have students reread paragraph 3. **Ask,** *What questions arose in Tharp's college geology class? What was under water? Was the sea floor flat? Or were there mountains and valleys? What was Tharp's reaction to these questions? She was curious.*

SESSION 1　📖 **READ**

Marie Maps the Sea
by Liz Huyck

1 Young Marie Tharp thought her dad had the best job ever. During the 1920s, he traveled around the Midwest, making maps. His maps were special—they revealed details about the soil that helped farmers know what to plant. He taught Marie to draw maps too.

2 In college, Marie took art, music, and math classes. She also took geology, the study of Earth's surface and how it has changed over time.

3 One day, Marie's geology teacher pointed to a big map of Earth. Almost three-quarters of it was plain blue ocean. What was under all that water? Was the sea floor flat, like a beach? Or were there mountains and valleys, as on land? No one knew. Marie Tharp was **intrigued**.

intrigued = curious about something

4 After college, in 1948, Tharp got a job in New York with a group of geologists who were studying the oceans. Women weren't allowed on research ships back then, so her job was to stay in the office and keep track of data that ships sent back. One number she often recorded was how deep the water was in different places.

5 Tharp noticed there were huge books in the office that listed how deep the ocean was along routes where ships had sailed in the past. The numbers gave her an idea. Could she use them to make a map of the whole sea floor?

6 Tharp recorded the numbers as dots on a graph. When she connected the dots, each line showed the changing depth of the water. She put the graphs together, like slices of bread, and created a 3-D view of the ocean floor. 🖐

② Stop & Discuss

What was Tharp curious about in her college geology class?

Underline details in the text.

Tharp wanted to know more information about ___.

Marie Tharp (*left*) looks at the map of the sea floor that she created (*right*). The circled area shows a long rift through the Atlantic Ocean.
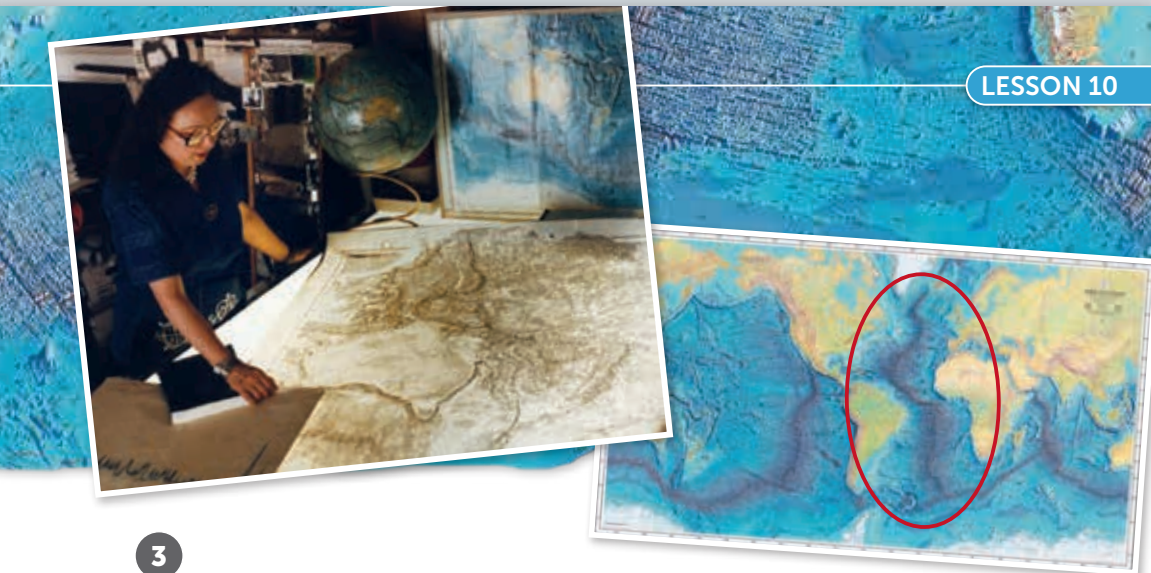
3

7 Another geologist, Bruce Heezen, collected more numbers to add to the map. Ocean scientists from other countries shared their measurements. Finally, in 1957, the first map of the ocean floor was complete.

8 This new map showed that the bottom of the ocean was full of mountains and valleys. A long mountain range went down the middle of the Atlantic Ocean. Running through the mountain range was another surprise—a crack, or rift, right down the center. That rift helped solve an old puzzle.

9 In 1912, a geologist named Alfred Wegener had suggested that the continents move. Most people laughed at or ignored his idea. But Tharp's map proved that Wegener was right. The Earth's crust is made of huge, rocky, slow-moving plates. Where the plates pull apart, **magma** bubbles up and hardens, forming new mountains. In other places, the plates move toward each other and crunch together.

10 Today, **satellites** can measure the continents moving—very slowly, a few centimeters a year. And Marie Tharp's map showed the way. ✋ ∙∙∙➤

magma = liquid rock deep within Earth

satellites = objects in space that collect and send information

4

Stop & Discuss

What new information did Tharp's map provide?

Discuss details from the text with a partner.

---

3 Support Reading

- Have students read paragraphs 7–10.
- **CHECK IN** Students understand phrases and terms that describe the ocean floor.

HELP & GO: Vocabulary

- Clarify the phrases *running through the mountain range* and *solve an old puzzle* (paragraph 8). **EL**
- Have students reread paragraph 9. Explain that Earth's crust is like the shell of a hard-boiled egg that the continents and ocean floor rest on. The crust is made of sections called plates that can move apart or toward each other over time. If possible, show students a diagram or a web animation of this process.

4 Stop & Discuss

- Have students **Turn and Talk** to complete **Stop & Discuss** with a partner.
- **LISTEN FOR** Students understand that Tharp's map helped prove that Alfred Wegener's idea was correct.

HELP & GO: Comprehension

- Have students reread paragraphs 8 and 9. Reinforce that Tharp's map showed mountains, valleys, and a crack in the sea floor.
- **Ask,** *What was Alfred Wegener's idea? The continents move over time. What did Tharp's map prove? The sea floor includes giant cracks where the plates move apart from each other. This shows that Wegener's idea is correct: because the plates move, the continents move.*

Discuss the Whole Text

Use **Somebody Who** to have students answer the Focus Question as it relates to this text. Record responses, telling students they will revisit the question after they read other texts.

Reconnect to the Text

Use **Somebody Who** to have students recall details about how Tharp mapped the sea floor.

1 Introduce the Standard

- Introduce making inferences. **Say,** *Not all important ideas in a text are directly stated. An inference is a way to make meaning from text by combining what the text says with what you know.*

MODEL THE STANDARD Read the text at the top of the chart, then use the chart to model making an inference.

- Point out the headings for each column on the chart. **Say,** *The first column shows what the text says. It is from paragraph 3, where there are several questions asked. The next column is where I can write what I know. I know people ask questions about things they want to know. I can combine these pieces of information to make an inference. I can infer that the questions in the text are those that Marie Tharp was wondering about as she looked at the map of Earth.*

- Have students add the sample inference to the chart.

- Assess students' familiarity with academic terms: *inference, infer, map, caption, details, graph*. Teach word meanings as needed. **EL**

2 Reread/Think

GUIDE STANDARDS PRACTICE Have students complete the chart for each of the given quotations from the text. Provide guidance as needed.

- Tell students to focus on one quotation at a time to complete the chart.

- Provide some guiding questions to students to help them make inferences. **Ask,** *What does that detail help you know? What do you know already that can help you figure out what the text means?*

SESSION 2 🖉 **PRACTICE**

1 Make Inferences

An **inference** is an idea about the text that makes sense based on details in the text and what you already know.

What the Text Says	+	What I Know	=	Inference
"What was under all that water? Was the sea floor flat, like a beach? Or were there mountains and valleys, as on land? No one knew. Marie Tharp was intrigued." (paragraph 3)		Asking questions is what you do when you are trying to learn something.		The questions in the text are ones that Tharp asked herself as she looked at a map of Earth in geology class.

2 Reread/Think

Reread "Marie Maps the Sea." Complete the chart to make inferences.

What the Text Says	+	What I Know	=	Inference
"Young Marie Tharp thought her dad had the best job ever." "He taught Marie to draw maps too." (paragraph 1)		Family members can have an effect on young people.		Watching her father made Marie interested in maps.
"Women weren't allowed on research ships back then." (paragraph 4)		Some people think women can't or shouldn't do the same jobs as men.		Tharp faced challenges reaching her goals because people had unfair ideas about what women should do.

3 Talk

- Have partners complete the Talk activity.
- Explain that *to infer* is a verb that means "to come to a conclusion about something based on ideas you learn and know." Have students identify the Spanish cognate *inferir* to help support meaning. **EL**
- **LISTEN FOR** Students share what they already knew to make an inference. Use **Help & Go** scaffolds as needed. ✔

HELP & GO: Standards Practice

- **Ask,** *What do you already know about how some people used to think about women and work? In the past, some people thought women couldn't do some of the same jobs as men. How did your knowledge help you make an inference about why Marie Tharp couldn't go on the ship to work? Men wouldn't allow her to go on the ship because they thought women should not do that type of job.*

4 Write

- Introduce the Write task.
- Explain to students that they should use text evidence when answering the prompt. Remind them to combine that evidence with what they know about how people we respect can impact our decisions.
- Suggest students use sentence frames to help them begin: *The text says ___ , and I know ___ . I can infer that ___ .* **EL**
- Use written responses to determine whether students need additional support. ✔
- Invite 2–3 students to **Stand and Share** their written responses. Ask the class to **Raise a Hand** any time the speaker uses a text detail.

---

3 Talk

Share your chart with a partner. Discuss your inferences and the background knowledge you used to support them. Take turns sharing your thinking and then make changes to your chart if needed.

> I used what I know about ___ to infer that ___.

> I had a similar/different idea. I thought ___.

4 Write

Reread paragraphs 1 and 2 of the text. How did Marie Tharp's father influence her career? Use text evidence to support your response.

Sample response: I think Tharp and her father were close and had a good relationship. The text says that Tharp thought her dad had the best job ever. He also taught her to draw maps. Tharp was very interested in her dad's work, and this led her to learn and think about maps. Eventually, she used her knowledge to map the ocean floor. All of this evidence suggests that Tharp's father had a strong and positive influence on her career.

WRITING CHECKLIST

- ☐ I made an inference in response to the question.
- ☐ I included text evidence.
- ☐ I used complete sentences.
- ☐ I used correct spelling, punctuation, and capitalization.

1 Support Reading

- Set a purpose for reading. **Say,** *In this session, you'll read to learn about a man who explored a huge cave and mapped where he had gone.*

- Clarify the meaning of *enslaved*. Explain that Bishop was forced to work without pay and had no freedom to make decisions about his life.

- Have students read paragraphs 1–4. Have them circle unknown words and mark confusing parts with a question mark.

- Use **CHECK INs** and related **Help & Go** scaffolds as needed.

- **CHECK IN** Students understand the use of *yawning entrance, guide,* and *brave.*

> **HELP & GO: Vocabulary**
>
> - Clarify the figurative language of *yawning entrance* (paragraph 1) by showing how a yawn is similar to a cave entrance.
> - Have students write sentences using the word *guide* from paragraph 2. **EL**
> - Explain how "braving" in the title hints that the cave might be scary or hard to be in.

2 Stop & Discuss

- Have students **Turn and Talk** to complete **Stop & Discuss** with a partner.

- **LOOK FOR** Students realize that Bishop was forced to become a guide by his enslaver. Then he continued to explore.

> **HELP & GO: Comprehension**
>
> - Provide sentence starters: *Bishop first went into the cave because* ___ . **EL**
> - Have students reread paragraph 2. **Ask,** *Why did Gorin buy Mammoth Cave? to make it a tourist attraction Why did Bishop go into the cave? Gorin forced Bishop to be a cave guide.*
> - Reread paragraph 4. **Ask,** *Why do you think Bishop returned to the cave?*

SESSION 3 📖 READ

Braving the Cave

by Lynda Jones

Stephen Bishop as a young man.

1 One evening in the mid-1800s, enslaved 17-year-old Stephen Bishop entered the yawning entrance to Kentucky's Mammoth Cave to begin his night's work. He lit his kerosene lantern, raised it high, squeezed through a narrow passageway, and disappeared into darkness.

2 Bishop first entered Mammoth Cave in 1838 as an enslaved Black teenager. Frank Gorin, Bishop's enslaver, had purchased the cave to make it a tourist attraction. Gorin made Bishop work as a cave guide.

3 Bishop knew little about caves, but this changed as he began to explore them. It wasn't long before he knew the eight miles of the original cave routes. Soon, he began giving tours. Unlike white tour guides, however, Bishop wasn't paid for his work. Enslaved people were forced to do hard jobs every day without pay.

4 With only a lantern and a rope, Bishop spent many hours in Mammoth Cave. During his tours, he often spotted trails off the main routes. Later, he would explore beyond the known trails. He climbed up slick walls and high **domes** and down into deep pits. He saw rocks that looked like icicles growing down from the cave ceilings and up from the cave floor. He also discovered cave rooms filled with sparkling crystals shaped like roses. 👆

domes = rounded shapes

2

> **Stop & Discuss**
>
> Why did Bishop first enter and then keep returning to Mammoth Cave?
>
> Underline details in paragraphs 2 and 3 that tell why Bishop did both things.

3

5 The Bottomless Pit, however, was one part of the cave that Bishop had not explored beyond. The pit was so wide and deep that no one had ever dared to cross it—until one day a visitor challenged Bishop to cross over the pit with him.

6 After placing a long, shaky ladder across the pit, Bishop carried a lantern between his teeth as he and the man made the journey to the other side. They entered a part of the cave that no one had ever seen.

7 Bishop returned again and again to this part of the cave. He discovered new creatures hiding in the walls and swimming in underground rivers. Bishop was becoming known for his explorations and findings. It was because of him that scientists traveled from all over the world to see animals they had never known existed. There, they saw eyeless cave fish and different kinds of bats.

8 Bishop discovered many miles of new passageways, domes, pits, and **caverns**. He gave his discoveries names like Snowball Room, Haunted Chamber, Giant's Coffin, and **Gothic** Avenue. These interesting names helped him remember details about each place. 👆 ········▶

caverns = large caves

Gothic = a style of building known for extremely high walls and pointed ceilings

4

Stop & Discuss

What happened as a result of Bishop crossing the Bottomless Pit?

Discuss with a partner what happened because Bishop crossed the pit.

> When Bishop crossed the pit, ___.

3 Support Reading

- Have students read paragraphs 5–8.
- **CHECK IN** Students understand *bottomless* and *eyeless*.

HELP & GO: Vocabulary

- Use the **Word Learning Routine** to provide the meaning of *-less* (without) and guide students to use it to determine the meaning of *bottomless* (paragraph 5) and *eyeless* (paragraph 7).
- Show students photographs of bottomless pits and eyeless cave fish to reinforce the words *bottomless* and *eyeless*. **EL**

- **CHECK IN** Students understand what Bishop found in various parts of the cave.

HELP & GO: Comprehension

- Draw students' attention to paragraphs 5 and 6. **Ask,** *Where did Bishop discover new creatures in the cave? on the other side of the Bottomless Pit*
- Refer students to paragraph 8. **Ask,** *Why did Bishop give names to some parts of the caves? The names helped him remember details about those places.*

4 Stop & Discuss

- Have students **Turn and Talk** to complete the **Stop & Discuss** with a partner.
- **LISTEN FOR** Students understand that no one was known to have crossed the Bottomless Pit or seen the creatures on the other side.

HELP & GO: Comprehension

- Have students reread paragraphs 5–7. **Ask,** *What was the Bottomless Pit like? It was very wide and deep, and no one was known to have crossed it before.*
- **Ask,** *What happened after Bishop crossed the pit? He found new creatures that scientists did not know about.*

5 Support Reading

- Have students read paragraphs 9–11.
- **CHECK IN** Students understand *against the law, given full credit,* and *of all time.*

> **HELP & GO: Vocabulary**
>
> - Ask students to share what they know about the phrases *against the law* (paragraph 9), *given full credit* (paragraph 10), and *of all time* (paragraph 11). Provide support as needed. **EL**
> - After students read paragraph 9, discuss how remarkable Bishop's memory must have been for him to remember all the places in the cave.

6 Stop & Discuss

- Have students complete **Stop & Discuss** with a partner.
- **LISTEN FOR** Students recognize that enslaved people were rarely credited for their accomplishments.

> **HELP & GO: Comprehension**
>
> - Have students reread paragraphs 9 and 10. **Ask,** *Why was it unusual for Bishop's map to be published in a book with his name? It was against the law for enslaved people to read and write. Enslavers did not usually give credit to people who were enslaved.*

Discuss the Whole Text

- Use **Compare and Connect** to revisit the Focus Question using examples from the text. Have students use **Pass It On** to share their responses.
- Display responses along with those recorded for "Marie Maps the Sea."
- Use **3-2-1** to ask students to tell 3 ways that Tharp and Bishop are similar, 2 ways that they are different, and 1 thing they liked about one of the maps.

SESSION 3   📖 READ

update = add new information to

accomplishments = great actions

6

> **Stop & Discuss**
>
> **Why was it unusual for Bishop to get credit for mapping the cave?**
>
> Discuss with a partner what was unusual about Bishop receiving credit.

5 **9** After only a year of owning Mammoth Cave, Gorin sold the cave—and Bishop—to John Croghan. Because of Bishop's knowledge and the discoveries he had made, in 1842 Croghan told to him to **update** the map of the cave. He spent two weeks sketching the map without using any notes or drawings. Someone else wrote in the names of Bishop's findings. It was against the law for enslaved people to read and write.

10 Copies of the map were made available at the cave, and the map was later published in a book. Bishop was given full credit for his **accomplishments**, which was unusual for an enslaved person to receive.

11 Stephen Bishop is known as Mammoth's greatest cave explorer of all time. While this is amazing, it is still important to remember that, as an enslaved person, Bishop had no choice but to work in that cave. Imagine the exciting things Bishop might have done if he was free to follow his own dreams. ✋

Stephen Bishop's map of Mammoth Cave, Kentucky, 1844

Gothic Avenue

Bottomless Pit

Map of the EXPLORED PARTS OF THE MAMMOTH CAVE OF KY. BY STEPHEN BISHOP ONE OF THE GUIDES

Snowball Room
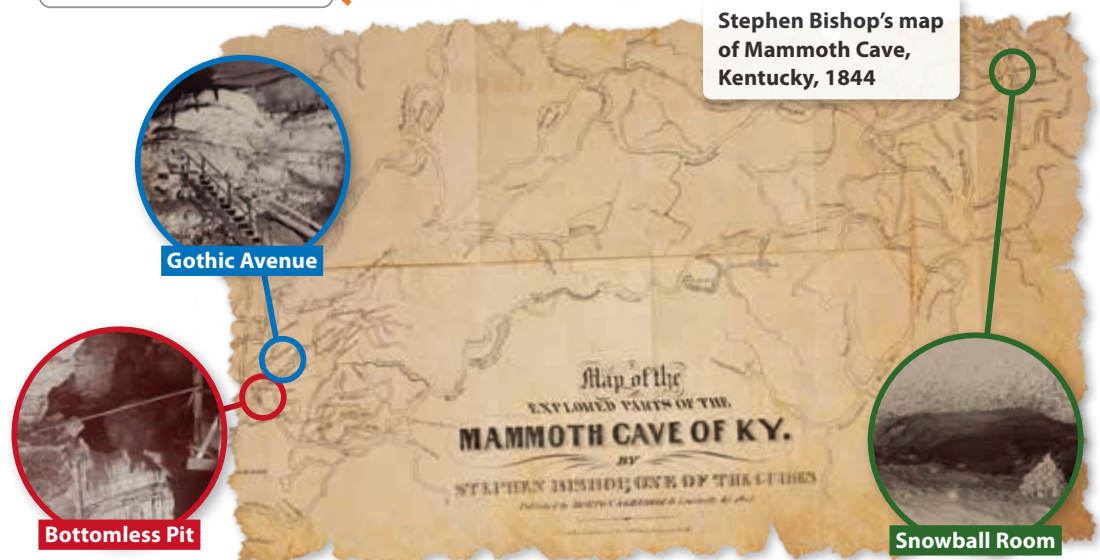
SESSION 4 ✏️ **PRACTICE**　　　　　　　　　　　LESSON 10

1 Make Inferences

When explaining or writing about an inference, use text details to support the inference. This provides evidence to back up your ideas.

Inference	Supporting Detail
Mammoth Cave includes long, narrow tunnels.	(paragraph 1) "squeezed through a narrow passageway, and disappeared into darkness."
	(paragraph 3) "It wasn't long before he knew the eight miles of the original cave routes."

2 Reread/Think

Reread "Braving the Cave." Complete the chart by supporting the inferences with details from the text.

Inference	Supporting Detail
Bishop wanted to discover new things.	(paragraphs 4 and 7)
	"During his tours, he often spotted trails off the main routes. Later, he would explore beyond the known trails."
	"Bishop returned again and again to this part of the cave."
Bishop had a detailed memory of the cave.	(paragraph 9)
	"He spent two weeks sketching the map without using any notes or drawings."

Reconnect to the Text

Use **Somebody Who** to have a student summarize "Braving the Cave."

1 Practice the Standard

- Read the information at the top of the student page.
- Have a few students **Stand and Share** their explanation of how to make an inference.

MODEL THE STANDARD　Read the first inference on the student page and model how to use evidence to support an inference.

- **Say,** *I usually think of a cave as a big opening like a room in a hill or cliff, but it seems like Mammoth Cave was much bigger. Paragraph 1 says Bishop "squeezed through a narrow passageway, and disappeared into darkness." Paragraph 3 says, "It wasn't long before he knew the eight miles of the original cave routes." These details show that the opening was narrow and there were very long tunnels underground.*

2 Reread/Think

GUIDE STANDARDS PRACTICE　Have students work in pairs to find at least one supporting detail for each inference in the chart.

- Have students use sticky notes to flag any words they have trouble with. Allow them to use a bilingual dictionary to find the meanings. **EL**

3 Talk

- Have partners **Turn and Talk** to complete the Talk activity.

- Have students compare the details in their charts and give reasons why they chose the text evidence they did. Have them make any changes they feel are necessary after talking with their partner.

- Have partners discuss other inferences they can make about Bishop. Then have students find details in the text that support their inferences. Suggest they use the sentence starters to practice quoting from the text aloud.

4 Write

- Have students work independently to complete the Write activity using the checklist.

- Suggest that students use the sentence starters in Talk to help them begin to write. **EL**

- **LOOK FOR** Students support inferences with details from the text.

> **HELP & GO:** Writing
>
> - Have students check to see that they have provided at least one detail for each inference they make in their writing.
> - Remind students to use their chart after writing to be sure they've included all of the important information needed to make an inference.

- Ask 2–3 students to **Stand and Share** their written responses.

- Use written responses to determine whether students need additional support. ✓

SESSION 4 ✏ PRACTICE

3 Talk

Share your chart with a partner. Compare your responses and explain how the text details support each inference. Then discuss your own inferences about Bishop.

> The text says ___. This shows that Bishop ___.

> I think Bishop ___ because the text says ___.

4 Write

Using inferences in the chart and what you discussed with your partner, what can you infer about Bishop? Support your response with text details.

Sample response: The text explains that Bishop kept

exploring new parts of the cave. He also discovered animals

that scientists had not known about. I can infer from these

details that Bishop was a curious person and liked to learn.

The text also says that Bishop made a detailed map of the

cave without any notes. This shows that Bishop was a very

smart person who had an amazing memory. He must have

been good at picturing images in his head and drawing them.

WRITING CHECKLIST

☐ I answered the question.

☐ I included details from the text.

☐ I used complete sentences.

☐ I used correct spelling, punctuation, and capitalization.

The Rainforest's Hidden Cities

by Kathryn Hulick

1 The rainforests of northern Guatemala hide a secret: **ruins** of ancient cities stretch across the forest floor. Pyramids, palaces, and roads built more than a thousand years ago tell the story of a large **empire** that once spread throughout Central America and Mexico. Some of the largest buildings rise above the trees. But thick forest has grown over other parts, covering up much of the past.

ruins = what remains after something has fallen apart

empire = kingdom

2 Today, about six million people trace their roots back to the Maya, the people who built these structures. Yet no one knows for sure why their empire didn't last. Was it disease? War? Archaeologists—scientists who study ancient buildings, tools, and other objects to understand past human life—have been trying for years to figure out what happened. The remains of these cities may give clues. But searching for ruins in a rainforest is slow, difficult work. Luckily, a special technology now allows scientists to take a closer look into areas with heavy vegetation, while also avoiding poisonous snakes, swarms of bees, and hot, moist air.

Some Mayan ruins are tall enough to rise above the rainforests of Central America and Mexico.

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LESSON 10 | Mapping the Unknown   **189**

Reconnect to the Texts

Display responses to the Focus Question for "Marie Maps the Sea" and "Braving the Cave." Invite students to make connections between the two texts.

1 Independent Reading

- Set a purpose for learning. **Say,** *Today you will work independently to read a text and learn how researchers are mapping an ancient civilization. Then you will answer questions that involve making inferences and finding text details.*

- If students need more support, work with them in small groups to guide reading.

- Use **CHECK INs** and related **Help & Go** scaffolds as needed.

- **CHECK IN** Students understand *ruins, technology, vegetation, pyramids, palaces,* and *trace their roots*.

HELP & GO: Vocabulary

- Have students identify cognates for *ruins (ruinas;* paragraph 1) and *technology* (*technología;* paragraph 2) to understand meaning. **EL**
- Help students look around the word to understand *vegetation* (paragraph 2). Point to *thick forest* and *grown over* (paragraph 1) and give them the root word *vegetable*.
- Show photos of ancient *pyramids* and *palaces* (paragraph 1) and discuss their size.
- Clarify *trace their roots* (paragraph 2) by explaining that *roots* means "where you are from."

- **CHECK IN** Students understand that a rainforest is packed with plant and animal life.

HELP & GO: Background

- Show students a map of Mexico and Central America. Have them locate Guatemala. **Say,** *For thousands of years, the Mayan people lived in large, complex cities. Although descendants of the Maya still live in the area, people left the ancient cities long ago.*

Independent Reading

2 • **CHECK IN** Students understand *teamed up* and *blew our minds* in paragraph 4.

HELP & GO: Vocabulary

- Clarify the phrase *teamed up* in paragraph 4 by breaking down how a *team* is a group of people supporting a similar goal or cause.
- To help elaborate on the meaning of *teamed up*, ask students to share if they have ever worked together with friends or family to do something. Break the phrase by discussing what the noun *team* is and what it does. **EL**
- Draw students' attention to the phrase *blew our minds* in paragraph 4. Elicit that this is an expression of surprise. **Ask,** *What were the researchers surprised by? They expected that LiDAR would help them find Mayan structures, but they didn't expect to find more than 61,000 of them.*

• **CHECK IN** Students understand how LiDAR can help researchers even when the forest is thinner.

HELP & GO: Comprehension

- Have students reread paragraph 3. **Ask,** *How does LiDAR technology work? LiDAR shows important details, such as the shapes of buildings.*

• **CHECK IN** Students understand paragraph 4, sentence 1.

HELP & GO: Sentence Comprehension

- Help students unpack sentence 1 of paragraph 4. Explain that sometimes in an effort to provide as much information as possible in a clear and organized way, authors add smaller nuggets of information, or clauses, in sentences.
  —The first part of the sentence tells about the "when" (2015).
  —The second part tells the "who" (PACUNAM).
  —The third part describes what PACUNAM does (preserves Mayan culture).
  —The last part tells what PACUNAM did (teamed up with a group of archaeologists).

2
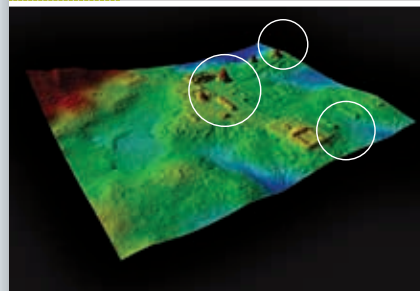
LiDAR technology sees through the thick rainforest (*above*) to create a map of the structures that stand within it (*below*).

preserves = takes action to protect something

scale = size

landscape = everything that makes up an area of land, including buildings, hills, and forests

3 The technology is called LiDAR. The letters stand for "**L**ight **D**etection **A**nd **R**anging." A helicopter flies over the forest while LiDAR equipment attached to the bottom of the helicopter shoots quick, powerful rays of light at the ground. These laser beams are narrow enough to pass through openings between branches and leaves. They hit the ground and then bounce back. The LiDAR equipment measures the distance the beams travel. When many measurements are put together, they show the shape of the ground and any buildings on it. The result is a 3-D map of the forest floor.

4 In 2015, the PACUNAM Foundation, a Guatemalan organization that **preserves** Mayan culture, teamed up with a group of archaeologists. They began using LiDAR to map the forest floor. By 2018, they had mapped more than 61,000 structures. "The **scale** of [the ruins] really blew our minds," said archaeologist Thomas Garrison.

5 Even when the forest isn't very thick, LiDAR maps make important details easier to see. In 2019, archaeologist Takeshi Inomata was studying a LiDAR map of part of Mexico. It showed 27 large shapes. From the ground, the shapes had seemed like part of the natural **landscape**. But the LiDAR map showed that they were flat, rectangular structures. They must have been built by humans. Researchers think the early Maya probably used these low platforms for special events and celebrations.

6 LiDAR has made mapping ancient ruins easier and faster than ever before. Each newly mapped site helps researchers learn more about the mystery of the Maya.

SESSION 5 ✏️ PRACTICE

LESSON 10

Respond to Text

③ Reread/Think

Reread "The Rainforest's Hidden Cities." Choose the best response to each question.

1. **PART A**

According to paragraph 2, why is searching for ruins in a rainforest "slow, difficult work"?

A. It takes years to collect the equipment needed for a search.

B. The region is difficult to explore.

C. Archaeologists must make a map of the area.

D. The Maya buried structures deep inside the thick forest.

PART B

Which key detail from the text **best** supports your answer in Part A?

A. ". . . the Maya, the people who built these structures."

B. "Yet no one knows for sure why their empire didn't last."

C. "The remains of these cities may give clues."

D. ". . . poisonous snakes, swarms of bees, and hot, moist air."

2. Which phrase helps you know what *laser beams* means in paragraph 3?

A. "attached to the bottom of the helicopter"

B. "quick, powerful rays of light"

C. "narrow enough to pass through openings"

D. "the shape of the ground"

③ Reread/Think

- Have students complete the Reread/Think items independently.

- Consider reading aloud questions and answer choices. **EL**

- Point out that item 1 has two parts. Students should answer Part A first. Then they should answer Part B.

Answer Analysis

After students complete the independent practice, review each item and have students **Shout Out** their responses. Use the answer analysis below to clarify ideas. ✅

1. **PART A** The correct choice is **B**. Details toward the end of paragraph 2 describe some of the challenging conditions people face in the rainforest. Choices **A** and **C** are likely true, but paragraph 2 mentions neither issue. Choice **D** is false because the rainforest grew over the remnants of the Mayan civilization.

PART B The correct choice is **D**. This is the best choice because it lists examples of challenges faced by people who search for ruins in the rainforest. Choices **A**, **B**, and **C** provide no such examples. **DOK 1**

2. The correct choice is **B**. The phrase *quick, powerful rays of light* is the one referred to by "these laser beams" in the text (paragraph 3). Choices **A**, **C**, and **D** do not provide any context that helps readers understand *laser beams*. **DOK 2**

4 Answer Analysis

3. The correct choice is **A**. It explains why the groups teamed up. Choice **B** is incorrect because the groups wanted to search for human-made structures. Choice **C** could be true, but the text does not confirm this. Choice **D** misreads the text; the ancient Maya, not the modern teams, held special events. **DOK 2**

4. The correct choice is **C**. It is the only choice that describes an idea in paragraph 5. Choices **A, B,** and **D** are inaccurate. **DOK 2**

5 Write

- Have students respond independently to the Write prompt. **DOK 3**
- Have students work with a partner to identify the text evidence before writing. **EL**
- **LOOK FOR** Students quote from paragraph 4 to support the inference that researchers were surprised to find so many structures.

> **HELP & GO: Writing**
> - Help students make an inference to answer the Write question. Then **ask,** *What details in the text support this inference?*
> - Remind students that *LiDAR* is an abbreviation for "Light Detection and Ranging." **EL**

Lesson Wrap-Up

Have students use **Compare and Connect** to revisit the Focus Question using examples from the text. Record responses and display them along with those recorded for the other texts in the lesson. Invite students to take part in **Merry-Go-Round Share** to make connections between the three texts.

SESSION 5 🖉 PRACTICE

4 Reread/Think

3. Why did the PACUNAM Foundation and a group of archaeologists work together to map the forest floor?

A. Locating Mayan ruins benefited both groups, helping one to preserve the ruins and the other to study it.

B. Both groups wanted to explore the natural landscape of the rainforest.

C. One team mapped half of the structures they found, while the other team mapped the other half.

D. Neither group wanted special events to celebrate the work they did.

4. Which statement describes an idea from paragraph 5?

A. An archaeologist studied a LiDAR map to prove that 27 shapes in the forest were natural parts of the landscape.

B. The 27 large structures discovered on a LiDAR map proved that the forest was easy to travel through.

C. A LiDAR map showed that 27 structures on the ground were probably platforms for Mayan events.

D. The forest was not very thick, so a LiDAR map was easily able to show 27 large shapes.

5 Write

Why were the LiDAR discoveries surprising? Use two details from the text in your response.

Sample response: Finding "more than 61,000 structures" was a surprise to researchers because, as the text states, when they first set out to map the forest floor, they expected LiDAR to find only "some ruins." Researchers knew that locating ruins in a rainforest was "slow, difficult work" and that ruins were almost "impossible to see from the ground." Finding so many was an unexpected surprise.

> **WRITING CHECKLIST**
> ☐ I answered the question.
> ☐ I provided an introduction and a concluding sentence.
> ☐ I included details from the text.
> ☐ I used complete sentences.

SESSION 6 · PUT IT TOGETHER · LESSON 10

Respond to the Focus Question

How do people create maps of new places?

1 Reread/Think

Choose one text from this lesson to reread.

TEXT: "Marie Maps the Sea"

What did you learn from your text about how people create maps?

Sample response: In "Marie Maps the Sea," Tharp made a graph showing different

sea depths and then put those graphs together to create a 3-D map.

_____

_____

_____

_____

2 Talk

In a small group, first share your responses from Reread/Think.

WHAT WE LEARNED

Next, as a group, discuss how you would respond to this question:

How do people create maps of new places?

> Marie Tharp measured ___.

> Stephen Bishop explored ___.

> People use LiDAR to ___.

3 Write

Think about how people create maps for new places. What would you do to create a map for your neighborhood or your school?

Respond to the Focus Question

Read the Focus Question. Tell students that today they will answer the question using information from all three texts.

1 Reread/Think

- Have students choose their favorite text from this lesson. Have them reread and record what they learned from that text about how people create maps.
- Use **Help & Go** scaffolds as needed.
- **LOOK FOR** Students identify examples of ways in which people create maps.

> **HELP & GO: Comprehension**
>
> - Guide students to review each text to find details about the maps created: "Marie Maps the Sea" (paragraphs 5–7), "Braving the Cave" (paragraphs 8 and 9), and "The Rainforest's Hidden Cities" (paragraph 3).

2 Talk

Have students complete the Talk activities. Use **Give One**, **Get One** to guide a class discussion.

3 Write

- Have students respond independently to the prompt.
- Have students use the Talk sentence frames to start writing. **EL**
- **LOOK FOR** Student responses include an introduction and information from all three texts.

> **HELP & GO: Writing**
>
> - Provide a word bank for writing: *map, depth, ocean, caves, sketched, ruins, mapped.* **EL**
> - Create a checklist for content (introduction, details, conclusion) and conventions (spelling, punctuation, capitalization, grammar).

Unit Assessments

UNIT 3 ✓ ASSESSMENT

Read the story. Then answer the questions that follow.

Out to Win

by Wendy Baryl

1 As the yearly track meet approached, all I could think about was defeating Anna Banks. For the past three years, she'd beaten me in the 400-meter run, and always by just a step. But this year, I planned to win. In fact, I was obsessed with the idea of victory—it was the only thing I was able to focus on for weeks. Of course, I did a lot more than just think. I practiced my starts daily, and I ran and ran and ran.

2 On the day of the race, I was eager to compete. I chased away any thoughts of uncertainty as I made my way to the starting line. *TWEET!*—the whistle blew, and we were off.

3 Anna and I quickly sprinted out in front of the other racers. At first, I was ahead of Anna, but as the finish line drew closer she began to gain on me. She passed me. As Anna inched ahead of me, I could feel panic boiling in my stomach. I could not lose again. I would not lose again.

4 Then I thought, *Not this time!* I **lunged** toward the finish line with a burst of energy. I shot forward with such force my shoe flew right off my foot. I pulled a Cinderella—running with one shoe on and one shoe off. I was so focused on the finish line I barely even felt the ground pushing into my sock. All my thoughts, all my strength, all my energy **propelled** me forward. The space between us grew smaller. When we crossed the finish line, we were so close that I wasn't even sure who'd won. Then I heard the announcer—it was me!

5 Still breathing hard, Anna rushed over, smiling. She shook my hand and panted, "That was amazing! Great race!" That's when I realized that I'd been looking at Anna all wrong. She wasn't some evil person out to destroy me. She was a good runner who liked racing other good runners. Competing against her had made me a better racer than I ever would have become otherwise. It was time to start thinking of Anna Banks as my muse, not my enemy.

lunged = quickly moved forward
propelled = pushed

Get Started
- Set a purpose for the lesson. **Say,** *Today you will read one story and two articles independently. You will use the skills you have learned in this unit to think and write about what you have read.*
- Use **Raise a Hand** to have students recall some of the skills they practiced in the unit, such as making inferences, determining the meaning of unknown words, and comparing and contrasting accounts of the same topic.
- Have students read the passages and complete the assessment. Encourage them to read carefully and to use Academic Talk words and phrases from the unit lessons in their written responses.
—Create a word bank of Academic Talk words and phrases that students might use while planning and writing their responses: *firsthand account* and *secondhand account.* **EL**

2 Answer Analysis
When students have completed the Unit Assessment, discuss correct and incorrect responses.

1. **PART A** The correct choice is **B**. The story is mostly about the narrator's desire to defeat Anna Banks in the race.
- **A** is incorrect because there is no evidence that the narrator feels her training is hurting her performance at school.
- **C** is incorrect because the narrator does not seem bothered by her schedule.
- **D** is incorrect because the narrator's shoe falling off is a minor (but suspenseful) detail in the story.

ASSESSMENT

Respond to Text

Reread/Think

2

1. PART A

What is the story mostly about?

A. The narrator feels that her training keeps her from doing well in school.

B. The narrator wants to beat Anna Banks in a race.

C. The narrator's strict practice schedule makes her unhappy.

D. The narrator's shoe unexpectedly falls off during the race.

PART B

Which detail from the text **best** supports the answer in Part A?

A. ". . . all I could think about was defeating Anna Banks." (paragraph 1)

B. "I practiced my starts daily, and I ran and ran and ran." (paragraph 1)

C. ". . . my shoe flew right off my foot." (paragraph 4)

D. "Still breathing hard, Anna rushed over, smiling." (paragraph 5)

2. Which detail in paragraph 1 helps the reader understand what *track* is?

A. "she'd beaten me in the 400-meter run"

B. "But this year, I planned to win."

C. "I was obsessed with the idea of victory"

D. "Of course, I did a lot more than just think."

3. Read these sentences from paragraph 1.

But this year, I planned to win. In fact, I was **obsessed** with the idea of victory—it was the only thing I was able to focus on for weeks. Of course, I did a lot more than just think.

What is the meaning of the word *obsessed*?

A. thinking of one thing only

B. learning about one thing only

C. feeling disappointed by something

D. feeling confused by something

PART B The correct choice is **A** because this detail illustrates the narrator's desire to beat Anna Banks.

- **B** incorrectly supports the idea that the narrator's practice schedule makes her unhappy; it is not the best support for the correct answer because it does not mention Anna Banks.

- **C** and **D** are incorrect because these details do not illustrate what the story is mostly about. **DOK 2**

2. The correct choice is **A**. "400-meter run" provides context that illustrates *track* is a sport that involves running races.

- **B**, **C**, and **D** do not provide context clues about running in particular. **DOK 1**

3. The correct choice is **A**. In this context, *obsessed* means "thinking of one thing only."

- Students may have chosen **B** because training for something is a learning process. Students may have chosen **C** because they think the narrator is disappointed she has never won against Anna Banks. Students may have chosen **D** because they think the narrator is confused about how to run faster than Anna Banks. **DOK 2**

4. What is the meaning of *uncertainty* as it is used in paragraph 2?

   A. speed

   B. happiness

   (**C.**) doubt

   D. anger

5. SHORT RESPONSE In Greek mythology, a *muse* was a goddess who helped people find their inner strength to reach their goals. Why does the narrator refer to Anna Banks as "my muse" in paragraph 5? Include details from the story to support your response.

Sample response: The narrator really wants to win against Anna Banks in the

400-meter run. This goal makes the narrator practice daily. At the end of the

race, the narrator comes from behind to win. The narrator realizes that

competing against Anna has made her a better racer than she ever would

have become otherwise. This is why she calls Anna her "muse," not her

enemy. Anna has helped the narrator's talents and skills grow.

Read the article. Then answer the questions that follow.

from

Ferris's GRAND Idea

by Marcia Amidon Lusted

1 Daniel Burnham needed a good idea. He was one of Chicago's best building designers, but he was **stumped**. A huge fair was going to be held in Chicago in 1893. It was called the World's Columbian Exposition, and it needed a special attraction—something that would bring thousands of visitors. Burnham knew this attraction had to be even more amazing than the Eiffel Tower, built a few years earlier in Paris, France. Burnham wanted to show the world that America's **engineers** were more talented than France's. He told a group of engineers at a dinner that "something original, daring, and unique must be designed and built" in order to "out-Eiffel" the 1,063-foot metal tower. The Eiffel Tower was built for the Paris world's fair held in 1889.

2 George Washington Gale Ferris, a young engineer from Pittsburgh, Pennsylvania, was at the banquet that night. Ferris remembered an idea he had been working on. He scribbled the design on his dinner napkin. It was something that had never been done before. It would be a giant, rotating wheel, 250 feet wide. It would hold more than 2,000 people in 36 cars attached to the wheel's rim. Each car would be as large as a bus and would hold 40 to 60 people. Burnham loved the idea!

> **stumped** = unable to find an answer
> **engineers** = people who design machines or structures

---

4. The correct choice is **C**. *Uncertainty* is a condition of doubt.

- Students may have chosen **A** because speed is related to racing. Students may have chosen **B** because the narrator wants to be serious, not happy, at this moment. Students may have chosen **D** because the narrator seems angry at Anna Banks at the beginning of the story. However, none of these choices gives the meaning of *uncertainty*. **DOK 2**

5. Responses will vary but should explain the meaning of *muse* as used in the text and provide text details for support. See the sample response on the student page. **DOK 3**

3 The wheel was not finished in time for the fair's opening day on May 1. But by June the engineers were testing it. On the first day of testing with passengers aboard, crowds of onlookers refused to stand back. Instead, they rushed the wheel and climbed into the cars for the 20-minute ride. The first ten minutes were spent getting passengers off and on. This was followed by a 10-minute single turn of the wheel. Ferris's grand idea was a huge success. It quickly became the highlight of the fair.

4 A ride on the Ferris wheel cost 50 cents, the same as the price to get into the fair itself. The huge wheel had cost $400,000 to build and operate during the fair. That was an enormous amount of money in those days. But the wheel's total earnings were more than $700,000, making a nice **profit** for everyone involved.

5 After the fair closed in October of 1893, the wheel was taken down. It was used several more times in other places, including at the St. Louis World's Fair in 1904. But two years later it was sold and turned into scrap metal.

6 Today there are Ferris wheels at almost every amusement park and carnival. So if you find yourself sitting at the top of one of these rides, enjoy the view. Then think of George Ferris and the vision he had to put you there.

profit = amount of money gained

Respond to Text

Reread/Think

1. Why did Daniel Burnham want a special attraction at the World's Columbian Exposition?

A. Burnham wanted to bring in thousands of visitors and show that America's engineers were more talented than France's.

B. Burnham wanted to show the world that he was Chicago's best building designer.

C. Burnham wanted engineers to build a structure that could hold more people than the Eiffel Tower in Paris, France.

D. Burnham wanted engineers in Chicago to build his idea of a giant rotating wheel.

2. Read these sentences from paragraph 3 of "Ferris's Grand Idea."

On the first day of testing with passengers aboard, crowds of onlookers refused to stand back. Instead, they rushed the wheel and climbed into the cars for the 20-minute ride.

What can readers infer from these sentences?

A. People could not wait to ride the Ferris wheel.

B. People were confused by the Ferris wheel.

C. People were worried about the Ferris wheel.

D. People did not care about the Ferris wheel.

---

3 Answer Analysis

1. The correct choice is **A** because Burnham told a group of engineers at a dinner that he wanted to "out-Eiffel" the Eiffel Tower.

- **B** is incorrect because the attraction could be designed by any engineer, not just Burnham.

- **C** is incorrect because it is not supported by details in the text.

- **D** is incorrect because the Ferris wheel was not Burnham's idea. **DOK 2**

2. The correct choice is **A**. Readers can infer from the rushing crowd that people could not wait to go on the new ride.

- **B** and **C** are incorrect. It is not likely that people would rush to get on something that caused confusion or worry.

- **D** is incorrect. People would not form a crowd if they did not care. **DOK 2**

Read the article. Then answer the questions that follow.

from THE FERRIS WHEEL

by Denton J. Snider, *World's Fair Studies (1893)*

1 After thinking about the matter for a while, and seeing the huge toy revolve several times in a playful way, I **conclude** that my experience of the Fair will not be complete unless I take the trip. I enter the **coach** and the thing starts, slowly rounding upwards.

2 My imagination starts to work, being set in motion by the Wheel. Can any person help asking repeatedly, "What if?" What if the Wheel should leap from its supports and start rolling down the street like a boy's hoop? What if it should break a **cog** and begin whizzing round and round? What if it should stop when we are at the top and absolutely refuse to budge? How could we ever get down?

3 Thus my imagination calls up all sorts of possibilities, painting them in vivid colors, while the wheel keeps steadily going. The wheel goes round twice, and it is just as well, for I am focused inwardly on my own thoughts at first. But with the second turn, my mind is called outward by the splendid views of the buildings of the Fair, with gleams of the lake beyond, and of the city in the distance. Not the least interesting is the wheel itself, holding us out at arm's-length and giving us a slow toss through the air as a father does his child. Down it brings us once more, and we pick up the ground where we left it a few moments before.

---
conclude = make up one's mind
coach = passenger car with doors
cog = a piece on a wheel

Respond to Text

Reread/Think

3. PART A

How does the author of "The Ferris Wheel" feel in the first two paragraphs?

A. joyful
(B.) worried
C. peaceful
D. tired

PART B

Which detail from the text **best** supports the answer in Part A?

A. "I conclude that my experience of the Fair will not be complete unless I take the trip." (paragraph 1)

B. "I enter the coach and the thing starts, slowly rounding upwards." (paragraph 1)

C. "My imagination starts to work, being set in motion by the Wheel." (paragraph 2)

(D.) "Can any person help asking repeatedly, 'What if?'" (paragraph 2)

---

3. PART A The correct choice is **B**. Paragraph 2 shows the author worrying about what will happen if the Ferris wheel breaks or gets stuck at the top.

- **A** and **C** are incorrect. *Joyful* and *peaceful* describe the author's feelings later, but not at first.
- **D** is incorrect. There is nothing in the passage to suggest the author feels tired.

PART B The correct choice is **D**. This statement illustrates the author's doubtful questioning and worry.

- **A** is incorrect. This detail shows the author's resolve or interest in riding the Ferris wheel, but it does not support the feeling of worry.
- **B** is incorrect. This detail describes the action of the author entering the Ferris wheel coach.
- **C** is incorrect. This detail describes the author's mind beginning to work, but it does not clearly illustrate any particular emotion.
  DOK 2

4. Read this sentence from "The Ferris Wheel."

> But with the second turn, my mind is called outward by the splendid views of the buildings of the Fair, with gleams of the lake beyond, and of the city in the distance.

Which statement would the author of "The Ferris Wheel" **most likely** agree with?

A. The Ferris wheel makes people feel sick.

Ⓑ. The Ferris wheel allows riders to enjoy the sights.

C. The Ferris wheel moves around very quickly.

D. The Ferris wheel is the best attraction at the fair.

5. Use the word bank to fill in the blanks with words that best complete the sentences.

secondhand account	facts	firsthand account	sensory details

Both texts provide information about the Ferris wheel, but "Ferris's Grand Idea" is a ____secondhand account____ and "The Ferris Wheel" is a ____firsthand account____. "Ferris's Grand Idea" gives ____facts____ about how the wheel was planned. "The Ferris Wheel" includes ____sensory details____ about riding on the wheel.

4 Write

EXTENDED RESPONSE Compare the information in "Ferris's Grand Idea" and "The Ferris Wheel." Describe how the different information provided by a firsthand and secondhand account gives the reader a more complete understanding of the Ferris wheel. Use at least one example from each text in your response.

Sample response:

"Ferris's Grand Idea" and "The Ferris Wheel" are both about the Ferris wheel, but they provide different information about this topic.

"Ferris's Grand Idea" is a secondhand account. This is an informational text and includes several facts, such as who the inventor of the Ferris wheel was and why George Washington Gale Ferris invented it. It also compares the Ferris wheel to other structures built around this time, like the Eiffel Tower. Lastly, the text includes the Ferris wheel's size and how much it cost to first ride it.

On the other hand, "The Ferris Wheel" is a firsthand account. The text describes what it was like to ride the Ferris wheel when it was first invented. It includes sensory details and how the author felt scared at first. But once on the ride, the author describes the splendid views and the interesting feeling of a "slow toss through the air."

Reading both "Ferris's Grand Idea" and "The Ferris Wheel" helps readers understand what the Ferris wheel was, why it was built, and what it felt like to ride on the wheel.

WRITING CHECKLIST

☐ I compared the texts.

☐ I included details from both texts to show the similarities and differences.

☐ I explained the types of information in firsthand and secondhand accounts.

☐ I used correct spelling, punctuation, and capitalization.

---

4. The correct choice is **B**. The sentences describe what the author is seeing. The use of *splendid* and *gleams* suggests that the author would most likely agree that the sights are enjoyable.

- **A** is incorrect because there is nothing to suggest illness.
- **C** is incorrect because there is nothing to suggest the ride is moving quickly.
- **D** is incorrect because although the author uses positive words to describe the Ferris wheel, there is no evidence in these sentences to suggest he thinks it is the best attraction. **DOK 2**

5. See the sample response on the student page.

- "Ferris's Grand Idea" is a secondhand account that includes several facts about the Ferris wheel, such as its inventor, why it was invented, and how much it first cost to ride. "The Ferris Wheel" is a firsthand account that uses sensory details to describe what it was like to ride the Ferris wheel for the first time. **DOK 3**

4 Write

REVIEW RESPONSES

After students have completed the Unit Assessment, evaluate their responses to the Extended Response using the **4-Point Unit Assessment Writing Rubric** on page A52. See sample response on the student page. **DOK 3**

Wrap-Up

Use **Stand and Share** to have students share whether they would rather win a race or be one of the first people to ride a Ferris wheel. Have them refer to text details as well as personal experiences and opinions in their responses.

Glossary of Terms

Academic Talk Words and Phrases

A

account a written or spoken retelling of an event or topic

act a main section, or part, of a play

actions things that a person or character does

alliteration repetition of initial consonant sounds to create a special effect

allusion an indirect mention or reference to something

analyze to closely and carefully examine a text or part of a text

B

bar graph a graph that uses two or more bars to show amounts or numbers that are being compared

base word a complete word that has no prefixes or suffixes added to it

C

caption a phrase or sentence next to a picture in a text that explains something about the picture

cast of characters a list of all the characters in a play, usually in order of appearance or importance

cause a reason, event, or action that makes something else happen

cause and effect a relationship between events in which one event—the cause—brings about, or causes, another event—the effect

cause-effect text structure a text organization that describes events, what made them happen, and how they affect other people and events

central message an important lesson about people or life that the author of a story wants to share

challenge a problem or difficulty that needs to be solved

chapter a section, or part, of a story or book

character a person, animal, or made-up creature in a story or play

character trait a quality or characteristic that a character in a story has, such as courage, pride, or honesty

chart an image that shows or organizes information so that it is easier to understand

chronological text structure a text organization in which events are described in the order in which they happen

chronology the order in which events happen

climax the most exciting or important part of a story, which usually comes near the end

compare to describe how two or more things are similar

compare-contrast text structure a text organization that describes the similarities and differences between two or more things

conflict a challenge that a character faces; a disagreement that people, characters, or organizations have with one another

context clues words, phrases, or sentences near an unknown word or phrase in a text that help you determine the meaning of the unknown word or phrase

contrast to describe how two or more things are different

D

describe to tell what something is like; to explain something

details facts, examples, or other pieces of information in a text

determine to find out or figure out something

diagram a drawing or picture that explains what something looks like or how it works

dialogue the words the characters say in a story or play

direct quotation the exact words that an author wrote or a speaker said; these words go inside quotation marks

drama a story that is performed on a stage by actors

Glossary of Terms (continued)

E

effect something that happens as a result of something else

event something that happens in a story or in the natural world

evidence facts, details, quotes, or other pieces of information used to support a point, idea, or reason

example something that shows what other things in a particular group are like

explain to describe or give details about something so it can be understood

F

figurative language a word or phrase that means something different from its regular or literal meaning and is used to make a comparison or create a certain feeling or mental image

first-person point of view when the narrator of a story is a character in the story who describes events using the pronouns *I*, *me*, or *we*; a first-person narrator can describe their own thoughts and feelings but not what other characters think or feel

firsthand account an informational text about an event written by a person who witnessed the event or took part in it

G

glossary a list at the back of a book of important words from the text and their meaning

H

heading a word or phrase at the beginning of a section of a text that tells what the section is about

historical fiction a story that takes place in the past

historical text an informational piece of writing that describes people, events, and ideas from the past

I

idea a thought, opinion, or belief that someone has about something

identify to be able to say who or what a person or thing is

illustration a picture in a text that gives more information about the text

image a drawing, photograph, map, or chart that shows information about something in a text

infer to reach a conclusion about a text based on text clues and background knowledge

inference a conclusion, or an idea you have about a text, based on details in the text and your own background knowledge

information facts and details about someone or something

integrate to put together or combine information on a topic from more than one text

interaction the way people or things act with or affect one another

K

key detail an important fact, example, or other piece of information in a text that helps explain the main idea

key word a word in bold print that calls attention to an important idea or piece of information in a text

L

label a word or phrase that gives more information about an image

lesson something learned in a text or story or through experience

literal having the usual or most basic meaning of a word's dictionary definition

M

main idea something important that an author wants readers to know about a topic

map a picture or drawing of an area that shows its cities, roads, rivers, mountains, and other features

metaphor a type of figurative language that compares two things without using the word *like* or *as*

Glossary of Terms (continued)

mood the feeling a story creates in the reader; setting, word choice, and tone all contribute to mood

motivations the reasons why characters act, think, or feel the way they do

myth an ancient story told by a people or culture that explains their origin and history

N

narrator the person or character who tells a story

nonliteral describing an unusual or unexpected meaning of a word or phrase

P

paragraph a group of sentences about a particular idea or topic

personification a type of figurative language that gives human qualities or characteristics to animals or objects

perspective (informational texts) what an author thinks or feels about a topic

perspective (literary texts) what a narrator or character thinks or feels about the events in a story

persuade to cause someone to do something or think a certain way about something by giving them good reasons for it

photo or photograph a picture made using a camera

phrase a short group of words that has meaning

play a story that is performed on stage by actors

plot the sequence of events in a story

poem a piece of writing in which the words are chosen for their beauty and sound; the words are often arranged in short lines

point an idea that an author wants readers to remember or believe is true

point of view (informational texts) what an author thinks or feels about a topic

point of view (literary texts) what a narrator or character thinks or feels about the events in a story

predict to say what you think will happen in the future

prefix a word part that comes at the beginning of a word and changes the word's meaning

problem a challenge that the main character or characters face

problem-solution text structure a text organization that describes one or more problems and solutions

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Q

quote the exact words that an author wrote or a speaker said; these words go inside quotation marks

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R

reason an explanation why an idea or point is correct or true

recount to retell events and details of a story or text in the order in which they happen using your own words

relationship the way in which two or more people, events, or things are connected

repetition the use of repeated words or sounds to show that something is important or to create a certain effect

research serious study of a topic, or the facts learned during that study

resolution the part of a story when the main conflict or problem is solved or when the main goal is reached; the resolution happens at the end of a story

respond to make a reply; to answer

result something that happens or exists because of something else that happened before

rhyme the repeated use of words that end in the same or similar sounds

rhythm the regular pattern of sounds in a poem or beats in a piece of music

rising action the part of a story when the main conflict or problem builds, creating excitement or suspense

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S

scan to look quickly through a text to find a particular word or piece of information

scene a part of a play in which all the action takes place in the same setting; one or more scenes make up each act of a play

Glossary of Terms (continued)

scientific text a piece of writing that gives information about a science topic or about how or why something happens in the natural world

secondhand account an informational text about a topic or event written by someone who did not experience it but instead found information and facts about it

section a particular part of something, such as a paragraph or a chapter of a book

sensory details details that describe the way something looks, sounds, feels, smells, or tastes

sequence the order in which events or steps in a process happen

setting where and when a story or play takes place

sidebar a short text, often boxed, placed near the main text that gives more information about the topic

signal words words or phrases that show the connection between ideas or events

simile a type of figurative language that compares two things using the word *like* or *as*

skim to read through something quickly to find the main facts or ideas

solution the answer to a problem; the way the main characters resolve the conflict at the center of a story

source a text or image that gives information about a specific subject area or topic; a source may be printed or digital

stage directions instructions in a play that tell what actors should do, how actors should speak, and what should appear or happen on stage

stanza several lines of a poem that are grouped together to form one part of the poem

steps in a process a set of actions or directions to take in order to make or do something

story elements the major parts of a story, including the setting, characters, problem, solution, and theme

structure the particular way an author organizes a text, such as acts for a drama or stanzas for a poem

summarize to briefly retell in your own words the most important ideas, events, and details of a text

summary a short retelling of a text that includes the main idea and key details of a text, or the important events and details of a story

support to help explain or provide evidence for a main idea in a text

T

table of contents a list at the front of a book of the sections or chapters of the book in the order in which they appear

technical text a piece of writing that explains how to make or do something

text evidence a detail, fact, or example in a piece of writing that can be used to support an idea

text features special parts of a text that help you find certain information or learn more about a topic; titles, headings, sidebars, pictures, time lines, and glossaries are examples of text features

text structure the way an author organizes the ideas and information in a piece of writing; text structures include comparison, cause-effect, chronology, and problem-solution

theme an important message or lesson that an author wants to share about people or life

third-person point of view when the narrator of a story is not a character in the story and describes events using pronouns such as *he*, *she*, and *they*; a third-person narrator can describe what different characters think and feel

time line a chart or image that shows the dates of important events in the order they happened, sometimes with additional details about the events

title the name of a text

tone the general feeling or attitude of a text or story

topic the general subject of a text

trait a quality or characteristic that a person or character in a story has, such as courage, pride, or honesty

V

visual an image or picture that appears with a text; visuals can include illustrations, photos, charts, diagrams, and time lines

visual elements features of an image that an artist can use to show meaning or feeling; shape and color are examples of visual elements

Unit Assessment Writing Rubrics

2-Point Writing Rubric

Use this rubric to evaluate Short Response items. All three criteria must be satisfied in order for a response to gain full points.

Points	Focus	Evidence	Organization
2	The response demonstrates comprehension and provides accurate analysis.	The response supports the analysis with adequate textual evidence.	Ideas are clear and follow a logical order.
1	The response demonstrates some comprehension and provides minimally accurate analysis.	The response supports the analysis with limited textual evidence.	Some ideas are unclear and out of order.
0	The response demonstrates no comprehension and provides inaccurate or no analysis.	The response provides little or no textual evidence.	Ideas are unclear and not in any order.

4-Point Writing Rubric

Use this rubric to evaluate Extended Response items. All three criteria must be satisfied in order for a response to gain full points.

Points	Focus	Evidence	Organization
4	The response demonstrates a full understanding of the prompt and provides accurate analysis.	The response supports the analysis with generous textual evidence.	Ideas are consistently presented in a purposeful and logical order.
3	The response demonstrates a good understanding of the prompt and provides mostly accurate analysis.	The response supports the analysis with adequate textual evidence.	Ideas are generally presented in a purposeful and logical order, although some ideas may be unclear or out of order.
2	The response demonstrates a general understanding of the prompt and provides some accurate analysis but includes inaccurate descriptions or explanations.	The response supports the analysis with limited textual evidence but does not reference the text explicitly.	Some ideas are presented in a purposeful and logical order, but others are unclear or out of order.
1	The response demonstrates a limited understanding of the prompt and provides limited analysis with significant inaccuracies.	The response may use textual evidence, but it does not support the analysis and does not reference the text explicitly.	Most ideas are not presented in a purposeful and logical order.
0	The response does not demonstrate understanding of the prompt.	Ideas are not supported with reference to textual evidence.	The response does not present ideas in a purposeful or logical order.

Supporting Research

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