

Teacher's Guide



MAGAZINE ARTICLES

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**Teacher’s Guide for *Ladybug:*
*March 2017***

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OVERVIEW

In this magazine, readers will encounter a variety of friendly, generous, and helpful characters.

Ladybug: March 2017 includes fiction, nonfiction,

and poetry about families enjoying a vacation trip to Switzerland, the behavior of cuckoo birds and storks in spring, a girl who sings in a very loud voice, a cat whose hat becomes a home for mice, and a boy who helps his friend play guitar.

ESSENTIAL QUESTION:

How do characters show kindness?

We invite you to use this magazine as a flexible teaching tool, ideal for providing interdisciplinary instruction of social studies and science content as well as core literacy concepts. Find practical advice for teaching individual articles or use a mini-unit that helps your students make cross-text connections as they integrate ideas and information.

READ INDIVIDUAL ARTICLES PAGES 4 - 9

Each article in this magazine is well-suited for teaching literacy concepts and content area knowledge. For each individual article in this guide, you'll find the following:



TEACH A MINI-UNIT PAGES 11 - 13

Magazine articles can easily be grouped to make cross-text connections and comparisons. Our Mini-Unit allows students to read and discuss multiple articles and integrate ideas and information (CCSS.Reading.9). Discussing multiple articles (CCSS.Reading.9) prepares students to write texts to share and publish in a variety of ways (CCSS.Writing.2).

Essential Question: How do characters show kindness?

MAGAZINE ARTICLES	CORE CONTENT CONCEPT	LITERACY SKILLS	CORRESPONDING CCSS ANCHOR STANDARDS
Max and Kate Contemporary Realistic Fiction	Illustrations can help readers learn about the setting of a story.	<ul style="list-style-type: none"> Close Reading Interpret Visual Information Analyze Word Choice Retell a Story 	<i>Reading 1, 3, 4 & 7</i> <i>Speaking & Listening 1</i>
Sounds of Spring Expository Nonfiction	The illustrations in a nonfiction article help readers understand the facts an author presents.	<ul style="list-style-type: none"> Close Reading Identify Text Structure Analyze Word Choice Write a Story 	<i>Reading 1, 5 & 7</i> <i>Writing 3</i>
Sing Softer, Maggie Contemporary Realistic Fiction	A character may learn a lesson as a result of the events in a story.	<ul style="list-style-type: none"> Close Reading Analyze Perspectives Interpret Visual Information Act Out a Story 	<i>Reading 1, 3, 6 & 7</i> <i>Speaking & Listening 1</i>
Hello, Primavera Lyrical Poem	Illustrations can help readers notice and understand details in the poems they read.	<ul style="list-style-type: none"> Close Reading Identify Sensory Details Identify Sound Devices Write an Acrostic Poem 	<i>Reading 1, 3 & 4</i> <i>Writing 3</i>
Mrs. Cat's Hat Fantasy	A character's actions tell a lot about him or her.	<ul style="list-style-type: none"> Close Reading Identify Text Structure Identify Author's Purpose Collaborate 	<i>Reading 1, 3, 5 & 6</i> <i>Speaking & Listening 1</i>
Two for One Contemporary Realistic Fiction	Characters can help each other solve problems.	<ul style="list-style-type: none"> Close Reading Analyze Word Choice Interpret Visual Information Support an Opinion 	<i>Reading 2, 3, 4 & 7</i> <i>Writing 1</i>

Comparing Texts: *Reading 9*

Mini-Unit: *Reading 1; Writing 3 & 5; Speaking & Listening 1*



ARTICLE: Max and Kate

Magazine pages 3 - 7, Contemporary Realistic Fiction



Max and Kate are having another adventure. This time they're on vacation in Switzerland!

ESSENTIAL QUESTION

How do characters show kindness?

CORE CONTENT CONCEPT

English Language Arts Illustrations can help readers learn about the setting of a story.

CROSS-CURRICULAR EXTENSION

Geography Find your town on a world map. Then find the country of Switzerland on the same map. How do you think Max and Kate got to Switzerland? Could they have taken a train, a bus, a plane, a ship, a car? Talk about your ideas with a partner.

KEY VOCABULARY

pops (p. 5) suddenly breaks open or comes away from something

merrily (p. 5) in a happy and cheerful way

stripy (p. 6) striped

PREPARE TO READ

Ask students if they know what a cuckoo clock is and if they have heard one. Show pictures of cuckoo clocks or a video of a cuckoo clock chiming (available online). Then explain that a cuckoo is a real bird and play a clip of a cuckoo bird call. Finally, tell students to look for cuckoos in this story.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What does a cuckoo clock look like? What does it do? Use details from the text and pictures to support your answer. *CCSS Reading 1*
- What are some examples of friendship in this story? How can you tell? Support your answer with word and picture clues. *CCSS Reading 3*
- What do you learn about Switzerland from the illustrations on pages 6 and 7? Use details in the pictures to support your answer. *CCSS Reading 3*

Craft and Structure

- **Analyze Word Choice** Look for words in the story that describe the sounds of cuckoos. Write the words you find. *CCSS Reading 4*
- **Interpret Visual Information** Compare the pictures of the real cuckoo bird and the cuckoo bird in the clock. How are these birds the same? How are they different? Talk about your ideas with a classmate. *CCSS Reading 7*

SPEAKING AND LISTENING

Retell a Story Work with a partner to take turns retelling parts of the story. Use the pictures to help you. When it's your turn to retell, point to a picture and tell your partner about the story events it shows. When it's your partner's turn to retell, listen quietly and pay attention.



In Ukraine, everybody knows spring has arrived when they hear storks clacking and cuckoos calling.

ESSENTIAL QUESTION

How do characters show kindness?

CORE CONTENT CONCEPT

English Language Arts The illustrations in a nonfiction article help readers understand the facts an author presents.

CROSS-CURRICULAR EXTENSION

Science With the help of your teacher or another adult, search online for recordings of the sounds storks and cuckoos make. Then try to imitate these sounds using musical instruments or ordinary objects.

KEY VOCABULARY

unique (p. 9) unlike anything or anyone else

mute (p. 10) not able or willing to speak; silent

clacking (p. 10) making a series of short, sharp sounds

mate (p. 12) either one of a pair of animals that have offspring together

PREPARE TO READ

Ask students to describe what birds do in spring. Invite students to share their experiences with birds building nests and laying eggs. Then explain that the next article is about two kinds of birds that create nests in very different ways.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What sounds do storks and cuckoos make in spring? Why do they make these sounds? Use details from the text to support your answer. *CCSS Reading 1*
- How do storks use their beaks? Support your answer with details from the text. *CCSS Reading 1*
- How do mother and father storks help each other and their babies? Use details from the text to support your answer. *CCSS Reading 1*

Craft and Structure

- **Analyze Text Structure** This article describes storks and cuckoos. What do you learn about these birds? Use the Storks and Cuckoos chart (p. 15) to record information about them. *CCSS Reading 5*
- **Analyze Word Choice** Reread the text on page 10. Which words describe the size of the storks? Which details help you understand how storks sound? Make lists of these words. *CCSS Reading 7*

WRITING

Write a Story Turn this article into a story. First, decide whether your story will be about storks or cuckoos. Then make up names for the birds. Next, think about what the birds might say as they build or find nests and hatch their eggs. Put quotation marks before and after each bird's words. Draw a picture to go with your story.



Maggie loves to sing. Some people think her voice is too loud, but not her Great-Grandma.

ESSENTIAL QUESTION

How do characters show kindness?

CORE CONTENT CONCEPT

English Language Arts A character may learn a lesson as a result of the events in a story.

CROSS-CURRICULAR EXTENSION

Music Ask your teacher to help you and your classmates learn some songs about spring. Then sing your songs for another class.

KEY VOCABULARY

produce (p. 14) fresh fruits and vegetables

cupped (p. 15) curved into the shape of a cup

murmured (p. 16) said something in a quiet and soft voice

PREPARE TO READ

Read aloud the title and walk through the illustrations with students. Discuss what is happening in each picture. Then ask students to predict what they think will happen in the story. After reading the story, help students check their predictions.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What kind of person is Maggie? How does she show kindness? Support your answer with details from the story. *CCSS Reading 1*
- Why did Maggie sing softly for Great-Grandma at first? Use information from the story to support your answer. *CCSS Reading 3*
- What lesson does Maggie learn in this story? Support your ideas with details from the story. *CCSS Reading 3*

Craft and Structure

- **Analyze Perspectives** Some characters in this story like the way Maggie sings and some do not like it. Who likes it? Who doesn't? Make two lists. Talk with a partner about why characters don't like it. *CCSS Reading 6*
- **Interpret Visual Information** Which person in the picture is Mrs. Ellis? How do you think Mrs. Ellis feels? Which clues in the text helped you answer these questions? *CCSS Reading 7*

SPEAKING AND LISTENING

Act Out a Story Work with your classmates to act out this story. First decide who will play Maggie, Maggie's mom, Mrs. Ellis, Ned, Mr. Baldwin, and Great-Grandma. Other classmates can be smiling bus passengers, shoppers, readers, and great-grandmas and great-grandpas. Act out what happens on the bus, in the supermarket, in the library, and at the nursing home. Practice your play and then perform for another class.



This poem welcomes spring in two languages: Spanish and English.

ESSENTIAL QUESTION

How do characters show kindness?

CORE CONTENT CONCEPT

English Language Arts Illustrations can help readers notice and understand details in the poems they read.

CROSS-CURRICULAR EXTENSION

Science Grow your own grass. You will need a plastic cup, potting soil, and grass seed. Fill the cup with soil and plant the seeds. Be sure to water the seeds and keep them moist. Place the cup in a sunny window. How long did it take the grass to grow?

KEY VOCABULARY

***crocus* (p. 17)** a small flower that blooms in the early spring

***hasta luego* (p. 17)** a Spanish phrase meaning “see you later”

***señor* (p. 17)** a Spanish word meaning “mister”

***bienvenida* (p. 17)** a Spanish word meaning “welcome”

***doña* (p. 17)** a Spanish word meaning “mistress”

PREPARE TO READ

Ask students what they notice in the two pictures. Then read the title aloud and ask if any students know what *primavera* means (spring). Next, read aloud the last line in each stanza and go over the meaning of the Spanish words (see you later, welcome). Finally, lead students in a choral reading of the poem.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

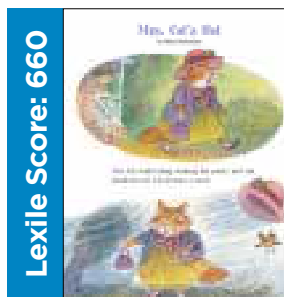
- What signs of spring do you find in this poem? Use details in the poem and the pictures to support your answer. *CCSS Reading 1*
- How would you describe Mrs. Spring? Use information from the picture to support your answer. *CCSS Reading 1*
- How many differences can you find between the two mornings? Make a list of the differences you notice in the text and pictures. *CCSS Reading 3*

Craft and Structure

- **Identify Sensory Details** Which words in the poem describe something you might hear in spring? Which words describe things you might see? Work with a partner to find these words. *CCSS Reading 4*
- **Identify Sound Devices** Which words in this poem have the same ending sound? Write down the words that rhyme. Then work with a partner to think of other words that rhyme with the words you found. *CCSS Reading 4*

WRITING

Write an Acrostic Poem Use the Spring Poem frame (p. 16) to write an acrostic poem about spring. Use the first letter of each line to spell a word or phrase that tells about spring. Draw a picture to go with your poem. Then read it to the class.



Mrs. Cat just bought a new hat. Why does she need to buy another one?

ESSENTIAL QUESTION

How do characters show kindness?

CORE CONTENT CONCEPT

English Language Arts A character's actions tell a lot about him or her.

CROSS-CURRICULAR EXTENSION

Art Create your own mouse house using a small box, craft supplies, fabric, cardboard, and any odds and ends you find. Make a bed, table, chairs, windows, curtains, pictures, or anything else you can think of. Use your imagination.

KEY VOCABULARY

meadow (p. 19) a usually flat area of land that is covered with tall grass

lovely (p. 21) beautiful

PREPARE TO READ

Read the title aloud and preview the illustrations with students. Ask students to predict what the story will be about. Record predictions on the board and then read the story. Pause as you read to revisit and revise predictions.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

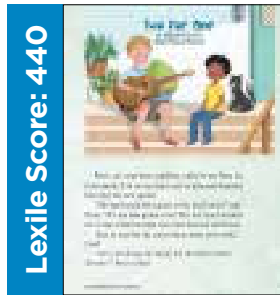
- What happens to Mrs. Cat's hat? Find details in the story and pictures to support your answer. *CCSS Reading 1*
- What kind of person is Mrs. Cat? How can you tell? Support your answer with details from the story. *CCSS Reading 3*
- Why do you think the mice like living under Mrs. Cat's hat? Use details in the story and pictures to support your answer. *CCSS Reading 3*

Craft and Structure

- **Identify Text Structure** Who are the characters in this story? What happens at the beginning, middle, and end of the story? Write your answers in the Story Chart handout (p. 17). *CCSS Reading 5*
- **Identify Author's Purpose** Why did the author write "Mrs. Cat's Hat"? Does she want to entertain you by telling a story? Does she want to give you information? Does she want you to believe something? *CCSS Reading 6*

SPEAKING AND LISTENING

Collaborate In what ways do the animals in this story look and act like humans? Work in a small group to take turns answering this question. Look at the words and pictures in the story to help you.



Petey has been practicing playing his guitar for the school talent show. One day he hurts his hand and has to wear a cast. How can he play guitar now? A good friend shows him how.

ESSENTIAL QUESTION

How do characters show kindness?

CORE CONTENT CONCEPT

English Language Arts Characters can help each other solve problems.

CROSS-CURRICULAR EXTENSION

Performing Arts Work with your teacher and classmates to organize a class talent show. Students can sign up to play an instrument, perform a gymnastic routine, sing a song, read a poem or anything else. Invite another class to watch your show.

KEY VOCABULARY

thrift store (p. 23) a store that sells used goods

chords (p. 24) a group of three or more musical notes that are played or sung at the same time

scrunched (p. 25) tightened the muscles of the face or nose

PREPARE TO READ

Ask students to answer the question, “What does a friend do?” Then invite them to share examples of how they and others have been a good friend. Share an example from your own life, too. Then tell students that the next story is about two good friends.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- How does Petey feel after he hurts his hand? Use details from the story to support your answer. *CCSS Reading 3*
- How is Jeremy a good friend to Petey? Find details in the text to support your answer. *CCSS Reading 3*
- What ideas about friendship does this story teach? Support your answer with details from the story. *CCSS Reading 2*

Craft and Structure

- **Analyze Word Choice** What does the title “Two for One” mean? How are Petey and Jeremy an example of two for one? Work with a partner to discuss your ideas. *CCSS Reading 4*
- **Interpret Visual Information** What do you learn about Petey’s and Jeremy’s feelings by looking at the pictures? How do their feelings change in the story? *CCSS Reading 7*

WRITING

Support an Opinion Why are friends important? Write a paragraph to answer this question. In your paragraph, give reasons for your opinion.

CROSS-TEXT CONNECTIONS

SYNTHESIZE: Guide students to compare articles they read. Help students find the connections between pieces of information in multiple articles. Use prompts, such as the following examples, to have students work together to **Integrate Ideas and Information** (CCSS.Reading.9).

- Think about the stories “Mrs. Cat’s Hat” and “Two for One.” How are Mrs. Cat and Petey alike? Write sentences to explain this.
- Think about the characters in “Sing Softer, Maggie,” “Mrs. Cat’s Hat,” and “Two for One.” What problems do the characters have? How do they solve their problems? Write sentences to answer these questions for each story.
- Both “Max and Kate” and “Sounds of Spring” include information about birds. How is the story “Max and Kate” different from the nonfiction article “Sounds of Spring”? Use a Venn diagram (p. 18) to answer this question.
- “Sounds of Spring” and “Hello, *Primavera*” are both about spring. What do you learn about spring in each text? Draw a T-chart. Write “Sounds of Spring” and “Hello, *Primavera*” at the top of the chart. Write your answers in the columns of the chart.
- Many of the articles in the magazine tell about birds and characters singing or playing music. Make a list of all these birds and characters. Then write sentences to explain why they sing or play music.

EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

This mini-unit offers students the opportunity for an in-depth look at how different story characters show kindness to others. Students will first discuss how they can be kind to people. Then they will identify acts of kindness in the stories. Finally, students will write a note to one of the characters in the magazine to express thanks for his or her kindness.

ENGAGE

READ FOR A
PURPOSE

APPLY

ENGAGE: Engage students in the topic of kindness by first reviewing the Essential Question: How do characters show kindness? Remind students that story characters were friendly, helpful, and generous in different ways. Then brainstorm different ways students can be friendly, helpful, and generous to family, friends, and classmates. Record ideas in the chart below. Then briefly discuss how students feel when someone is kind to them.

How can you be kind?

To your family	To your friends	To your classmates

READ FOR A PURPOSE

INTRODUCE THE ACTIVITY: Thank You for Being Kind Tell students that in this activity, they will be making thank you cards and drawings for story characters. Explain that they will pretend to be one of the characters from the magazine. Continue by explaining that they will write a note from this character to another character from the magazine to thank them for their kindness.

RETURN TO THE TEXT: Explain to students that before they can write their cards, they need to think about who story characters were kind to and how they were kind. Display sentence frames like the ones below and use them to identify the relevant characters in each story. After filling in each sentence frame, discuss how one character was kind to the other. Keep these sentence frames on display to help students as they write their notes in the Apply section. Before going on to the next section, have students choose which story character they will write to.

In “Max and Kate,” _____ was kind to _____.

In “Sing Softer, Maggie,” _____ was kind to _____.

In “Mrs. Cat’s Hat,” _____ was kind to _____.

In “Two for One,” _____ was kind to _____.

APPLY: THANK YOU FOR BEING KIND Now that students have looked closely at the story characters and their acts of kindness, they are ready to begin making their cards. Students should work independently to write their notes and draw their pictures.

STEP 1: Build Background

Remind students that they will pretend to be a story character when they write their thank you notes. Explain that they will use the words *I* and *me* when they write. Help students understand this by discussing what they might write if they were pretending to be Petey from “Two for One” writing to Jeremy: “Thanks for helping me play my guitar.”

Next, distribute one copy of the Thank You frame to each student and help them understand how to fold it.

STEP 2: Write

Go over the Thank You frame with students to help them understand what to write in each section. Encourage students to include story details and the character’s thoughts and feelings in their notes.

STEP 3: Draw

Make drawing materials available to students and tell them to decorate the front of their cards. Explain that their pictures should show how the character they are writing to was kind to them.

MATERIALS

- Thank You frame (p. 14)
- pencils
- colored pencils, markers, crayons

STEP 4: Edit and Proofread

Tell students to reread their cards to see if they need to add more details or information. Then display the list below and have students use it to proofread their writing.

1. I used the words *I* and *me*.
2. My handwriting is clear.
3. My sentences begin with a capital letter.
4. My sentences end with a punctuation mark.

STEP 5: Share

Have students take turns reading their cards aloud and sharing their drawings. Then display the cards in the classroom or keep them in a large envelope labeled “Thank You for Your Kindness” and allow students to look through them during free time.





NAME: _____

THANK YOU FRAME

Dear :

Because of your kindness,

Thank you for

Your actions showed me that you

You made me feel

Very Sincerely Yours,





NAME: _____

STORKS AND CUCKOOS CHART

	STORKS	CUCKOOS
What sounds do they make?		
How do they make their nests?		
How do they care for their young?		





NAME: _____

SPRING POEM FRAME

S	
P	
R	
I	
N	
G	





NAME: _____

STORY PLANNER

Story Characters

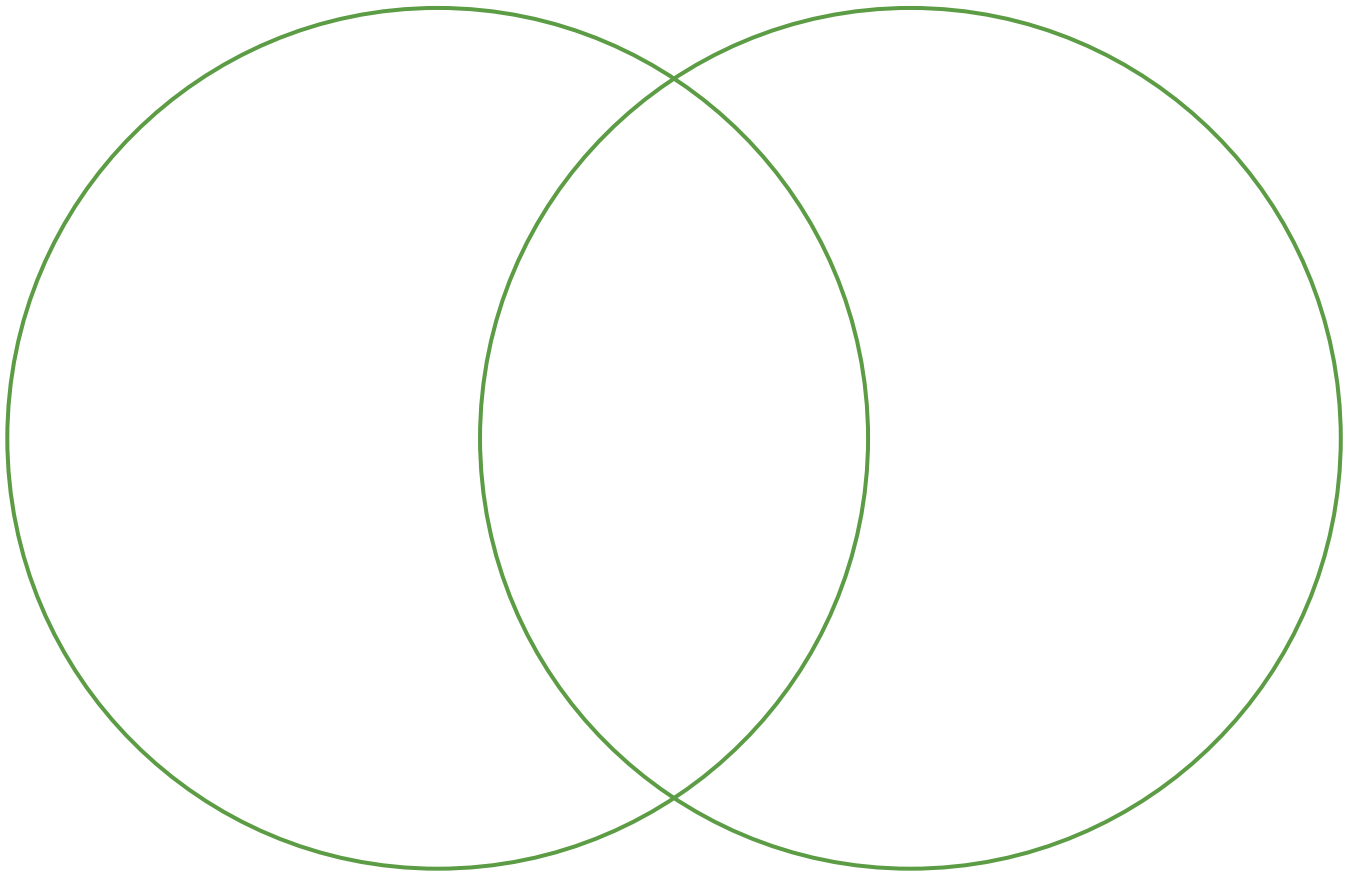
Story Characters		
Beginning	Middle	End





NAME: _____

VENN DIAGRAM



Meeting State and National Standards: Core Instructional Concepts

The articles in this magazine provide a wealth of opportunities for meeting state and national instructional standards. The following pages contain charts listing Core Instructional Concepts for each of three curricular areas: English Language Arts, Science, and Social Studies.

USING THE STANDARDS CHARTS

ELA

Corresponding CCSS anchor standards have been listed next to each item on the Core Instructional Concepts chart. To customize the chart, add your own grade, state, or district standards in the last column. Match the concepts and standards from the chart to the activities on each page of the Teacher's Guide to complete your lesson plans.

SOCIAL STUDIES

Content Concepts in each Article Guide are based on Dimension 2 of the CS Framework for Social Studies: Applying Disciplinary Concepts and Tools. Use the last column in the accompanying chart to correlate these concepts to your state or district standards.

SCIENCE

Content Concepts in each Article Guide are drawn from the Three Dimensions of the Next Generation Science Standards. You will also find connections to these concepts within individual close-reading questions.

MATH

Content Opportunities for math activities are provided in the Cross-Curricular extensions on each Article Guide page.

CORE INSTRUCTIONAL CONCEPTS: READING, LITERATURE, AND LANGUAGE ARTS

SKILLS AND CONCEPTS	CCSS ANCHOR STANDARD	CORRESPONDING STANDARD
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KEY IDEAS AND DETAILS

Read closely to determine what a text says explicitly.	Reading 1	
Make logical inferences to determine what the text communicates implicitly.	Reading 1	
Cite specific textual evidence to support conclusions drawn from the text.	Reading 1	
Determine central ideas or themes of a text and analyze their development.	Reading 2	
Summarize key supporting details and ideas.	Reading 2	
Analyze how individuals, events, and ideas develop and interact over the course of a text.	Reading 3	

CRAFT AND STRUCTURE

Interpret words and phrases as they are used in a text.	Reading 4	
Determine technical, connotative, and figurative meanings.	Reading 4	
Analyze how specific word choices shape meaning or tone.	Reading 4	
Analyze the structure of texts (sequence, cause/effect, compare/contrast, problem/solution)	Reading 5	
Recognize the genre, key elements, and characteristics of literary texts.	Reading 5	
Assess how point of view or purpose shapes the content and style of a text.	Reading 6	
Analyze how an author's style and tone affects meaning.	Reading 6	

INTEGRATION OF KNOWLEDGE AND IDEAS

Integrate and evaluate content presented in diverse media and formats.	Reading 7	
Identify and evaluate the argument and claims in a text.	Reading 8	
Analyze how two or more texts address similar themes or topics.	Reading 9	

WRITING

Write arguments to support claims, using valid reasoning and relevant and sufficient evidence.	Writing 1	
Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately.	Writing 2	
Write narratives to develop real or imagined experiences or events.	Writing 3	
Draw evidence from literary or informational texts to support analysis, reflection, and research.	Writing 9	
Conduct short as well as more sustained research projects.	Writing 10	



CORE INSTRUCTIONAL CONCEPTS: SOCIAL STUDIES

**C3 INQUIRY ARC
DIMENSION 2: APPLYING DISCIPLINARY CONCEPTS AND TOOLS**

**STATE OR
DISTRICT
STANDARD**

CIVICS

Analyze the origins, functions, and structure of different governments and the origins and purposes of laws and key constitutional provisions.	
Summarize core civic virtues and democratic principles .	
Evaluate policies intended to address social issues.	

ECONOMICS

Evaluate the benefits and costs of individual economic choices .	
Analyze economic incentives , including those that cause people and businesses to specialize and trade.	
Explain the importance of resources (i.e. labor, human capital, physical capital, natural resources) in methods of economic production .	
Explain the functions of money in a market economy.	
Explain the importance of competition in a market economy.	
Apply economic concepts (i.e. interest rate, inflation, supply and demand) and theories of how individual and government actions affect the production of goods and services .	
Analyze economic patterns , including activity and interactions between and within nations.	

GEOGRAPHY

Construct and use maps and other graphic representations (i.e. images, photographs, etc.) of different places.	
Explain cultural influences on the way people live and modify and adapt to their environments.	
Analyze places, including their physical, cultural and environmental characteristics and how they change over time.	
Analyze movement of people, goods, and ideas .	
Analyze regions, including how they relate to one another and the world as a whole from a political, economic, historical, and geographic perspective.	

HISTORY

Interpret historical context to understand relationships among historical events or developments .	
Evaluate historical events and developments to identify them as examples of historical change and/or continuity .	
Analyze perspectives , including factors that influence why and how individuals and groups develop different ones.	
Evaluate historical sources , including their reliability, relevancy, utility, and limitations.	
Analyze causes and effects , both intended and unintended, of historical developments.	



CORE INSTRUCTIONAL CONCEPTS: SCIENCE

DIMENSION 1: SCIENTIFIC AND ENGINEERING PRACTICES

Dimension 1 focuses on the practice of science, and how knowledge is continually adapted based on new findings. The eight practices of the K-12 Science and Engineering Curriculum are as follows:

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

DIMENSION 2: CROSSCUTTING CONCEPTS

Dimension 2 provides an organizational schema for integrating and interrelating knowledge from different science domains. The eight NGSS Crosscutting Concepts are as follows:

- Patterns
- Similarity and Diversity
- Cause and Effect
- Scale, Proportion, and Quantity
- Systems and System Models
- Energy and Matter
- Structure and Function
- Stability and Change

DIMENSION 3: DIMENSIONS AND DISCIPLINARY CORE IDEAS

Dimension 3 presents a contained set of Disciplinary Core Ideas to support deeper understanding and application of content. The following chart details Core Ideas for curriculum, instructional content, and assessments within four domains.

LIFE SCIENCE

- Structure and Function of Living Things
- Life Cycles and Stages
- Reproduction & Inherited Traits
- Animals
- Plants

PHYSICAL SCIENCE

- Forces and Interactions
- Energy
- Light
- Sound
- Electricity/
Magnetism
- Matter
- Waves
- Heat
- Chemistry
- Information Processing

EARTH SCIENCE

- Weather
- Climate
- Rocks & Soil
- Erosion and Weathering
- Landforms
- Water
- Oceans
- History of Earth
- Plate Tectonics
- Volcanoes, Earthquakes, and Tsunamis

SPACE SYSTEMS

- Solar System
- Planets
- Moon
- Sun

