

Teacher's Guide

From Cricket Media



click

opening windows for young minds

MAGAZINE ARTICLES

Keep in Touch	8
Expository Nonfiction 780L	
Feeling Fine	14
Photo Essay 830L	
Your Super Skin	17
Expository Nonfiction 820L	
Wild Skin	21
Photo Essay 970L	
Don't Touch Me!	24
Photo Essay 780L	
Mr. Grumpy	27
Contemporary Realistic Fiction 560L	

The skin you're in



Teacher's Guide for *Click: The Skin You're In*

Using This Guide	2
Skills and Standards Overview	3
Article Guides	4
Cross-Text Connections	10
Mini-Unit	11
Graphic Organizers	14
Appendix: Meeting State and National Standards	19



OVERVIEW

In this magazine, readers will learn that plants, animals, and humans all have an outside layer, such as skin, feathers, or thorns.

Click: The Skin

***You're In** includes information about the sense of touch in humans and animals, the science of skin, and the ways creatures and plants use their outer layer for protection.*

ESSENTIAL QUESTION:

Why is the outer layer of plants, animals, and humans important?



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:



Essential Question: Why is the outer layer of plants, animals, and humans important?

MAGAZINE ARTICLES	CORE CONTENT CONCEPT	LITERACY SKILLS	CORRESPONDING CCSS ANCHOR STANDARDS
Keep in Touch Expository Nonfiction	Skin receptors can detect different kinds of information.	<ul style="list-style-type: none"> • Close Reading • Interpret Visual Information • Determine Author's Purpose • Collaborate 	<i>Reading 1, 2, 6 & 7</i> <i>Speaking & Listening 1</i>
Feeling Fine Photo Essay	Animals have special sensory features that help them feel things.	<ul style="list-style-type: none"> • Close Reading • Analyze Text Structure • Interpret Visual Information • Research and Label a Drawing 	<i>Reading 1, 2, 3, 5 & 7</i> <i>Writing 2 & 7</i>
Your Super Skin Expository Nonfiction	Skin works in different ways to keep humans healthy.	<ul style="list-style-type: none"> • Close Reading • Summarize • Interpret Visual Information • Analyze Text Structure • Write a Glossary 	<i>Reading 1, 2, 3, 5 & 7</i> <i>Writing 2</i>
Wild Skin Photo Essay	Animals have special traits that help them survive in their environment.	<ul style="list-style-type: none"> • Close Reading • Analyze Relationships • Interpret Visual Information • Analyze Text Structure • Write a Fictional Story 	<i>Reading 1, 2, 3, 5 & 7</i> <i>Writing 3</i>
Don't Touch Me Photo Essay	Plants have different parts that help them survive and grow.	<ul style="list-style-type: none"> • Close Reading • Analyze Relationships • Interpret Visual Information • Collaborate 	<i>Reading 1, 2, 3 & 7</i> <i>Speaking & Listening 1</i>
Mr. Grumpy Contemporary Realistic Fiction	Different animals use their body parts in different ways to protect themselves.	<ul style="list-style-type: none"> • Close Reading • Analyze Word Choice • Interpret Visual Information • Write a Blog 	<i>Reading 1, 3, 4 & 7</i> <i>Writing 1</i>

Comparing Texts: CCSS Reading 1, 2 & 3; CCSS Writing 2; CCSS Speaking & Listening 1

Mini-Unit: CCSS Reading 1 & 2; CCSS Speaking & Listening 1



Did you know that your skin and your brain are best friends? It's true—they are always talking to each other.

ESSENTIAL QUESTION

Why is the outer layer of plants, animals, and humans important?

CORE CONTENT CONCEPT

Life Science Skin receptors can detect different kinds of information.

CROSS-CURRICULAR EXTENSION

Science Go on a sensory scavenger hunt to find objects that feel warm, cold, rough, smooth, hairy, soft, sharp, slippery, bumpy, and gritty.

KEY VOCABULARY

receptor (p. 9) a nerve ending that senses changes in temperature, pressure, etc.

nerve (p. 9) one of the many thin fibers that carry messages between the brain and other parts of the body

PREPARE TO READ

Ask students to talk about things they touched before school today, such as clothes, a toothbrush, toast, a spoon. Then ask what tells them how the objects feel. Finally, read aloud the introduction. Explain that in this article, students will learn more about their sense of touch.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

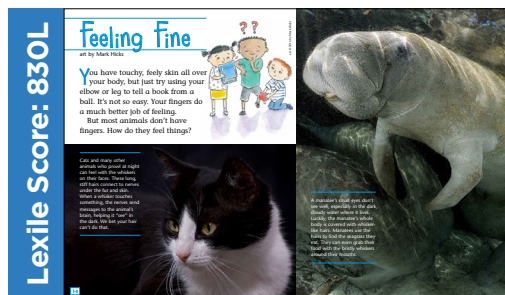
- What is a touch receptor's job? Cite story details to support your answer. *CCSS Reading 1*
- List three feelings pressure receptors can detect. *CCSS Reading 1*
- What key idea about skin receptors does each experiment help you understand? *CCSS Reading 2*

Craft and Structure

- **Interpret Visual Information** Compare the illustrations and the text on page 8. Which text sentence do the illustrations tell you about? Do this same activity on page 9. *CCSS Reading 7*
- **Determine Author's Purpose** What is the author's purpose for writing this article? Which clues in the text helped you arrive at your answer? *CCSS Reading 6*

SPEAKING AND LISTENING

Collaborate What happens when you touch a thorn? Work with a group to answer this question by acting out the way touch receptors send a message to the brain. Assign the roles of touch receptor, nerve pathway messenger, and thorn. Rehearse and then share your scene with the class.



Most animals don't have fingers to help them feel, but they make up for this in weird and wonderful ways.

ESSENTIAL QUESTION

Why is the outer layer of plants, animals, and humans important?

CORE CONTENT CONCEPT

Life Science Animals have special sensory features that help them feel things.

CROSS-CURRICULAR EXTENSION

Writing Write an acrostic poem about one or two of the animals in this article. Use text details in your writing. Then read your poem to the class.

KEY VOCABULARY

prowl (p. 14) to move quietly through an area

bristly (p. 15) short and stiff

plummy (p. 16) long and thin

PREPARE TO READ

Read aloud the title and the introduction to the article. Next, preview the pictures by asking students to describe what they notice in each. Finally, ask students to predict what they will learn about in this article. Have them listen as you read the article aloud.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Identify animals in the text. List the special feature each animal has that helps it feel. *CCSS Reading 1*
- Why does each animal need a special way to feel? With a partner, write down the name of each animal and the reason it needs help feeling. Then match the animals that share the same reason. *CCSS Reading 1*
- One main idea in this text is "Special sensory features help animals that can't see well." With a partner, find four details that show this idea. *CCSS Reading 2*
- What would happen to these animals if they did not have special features? Work in a group of four to explain. Each group member should choose a different animal to talk about. *CCSS Reading 3*

Craft and Structure

- Analyze Text Structure** Rewrite the article using a compare and contrast text structure. How does this affect your understanding of the information in the article? *CCSS Reading 5*
- Interpret Visual Information** Point to the pictures of animals that use these special features to find food. *CCSS Reading 7*

WRITING

Research and Label a Drawing Use the library or a computer to find out about the animals in this article. Then draw pictures of the animals and label the parts that help them feel.



Your skin does a lot to make sure you are healthy and feeling good. Let's face it, your skin has you covered.

ESSENTIAL QUESTION

Why is the outer layer of plants, animals, and humans important?

CORE CONTENT CONCEPT

Life Science Skin works in different ways to keep humans healthy.

CROSS-CURRICULAR EXTENSION

Art Make a model of the three skin layers using modeling clay, straws, toothpicks and pipe cleaners.

KEY VOCABULARY

blood vessel (p. 19) a small tube that carries blood to different parts of a person's or animal's body

sweat gland (p. 19) a small body part that produces sweat

PREPARE TO READ

Write the questions "How?" and "Why?" on the board. Read aloud the different facts about skin. After each fact, ask students to create *how* and *why* questions they could ask to find out more about the fact. Record these questions on the board. Finally, have students point to the different call-outs in the article as you read them aloud.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What can you learn from looking closely at your fingertips? Find text details that support your answer. *CCSS Reading 1*
- What is the main idea of the article? Which details support the main idea? *CCSS Reading 2*
- How does skin regenerate itself? What steps are involved in this process? *CCSS Reading 3*

Craft and Structure

- **Summarize Details** How does skin protect humans? Record your findings on the Skin Details graphic organizer (p. 15). *CCSS Reading 2*
- **Interpret Visual Information** Look at the skin diagram on pages 18-19. With a partner, list 1-3 things you find in each layer. Which layer is the busiest? Which is the least busy? *CCSS Reading 7*
- **Analyze Text Structure** With a partner, identify the three sections in this article. What does the author want you to learn about in each section? Use the Article Sections graphic organizer (p. 16) to record your ideas. *CCSS Reading 5*

WRITING

Write a Glossary Work in a small group to create a glossary of skin words. First, choose five skin words from the article. List them in alphabetical order. Then use a dictionary to find the definitions. Write the definitions next to the words. Share your glossary with the class.



The animals in this article have skin that will shock you. Just imagine what it would be like to live in these skins.

ESSENTIAL QUESTION

Why is the outer layer of plants, animals, and humans important?

CORE CONTENT CONCEPT

Life Science Animals have special traits that help them survive in their environment.

CROSS-CURRICULAR EXTENSION

Language Arts Ask your teacher or librarian to help you find animal folktales that explain something about an animal's traits or behavior. Read the story to your class.

KEY VOCABULARY

shedding (p. 21) losing something naturally

texture (p. 23) the way something feels when you touch it

PREPARE TO READ

Ask students if they've ever touched the skin of an animal, such as a frog, snake, or toad. Invite students to share their experiences and describe how the skin felt. Then discuss differences between animal and human skin. Finally, tell students to listen for information about animal skin as you read the article aloud.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What is this article mainly about? Reread the article and write the main idea. Which details support this idea? Make a list. *CCSS Reading 2*
- Which animals can use the color of their skin to warn enemies to stay away? *CCSS Reading 1*
- What is the key idea about animal skin on each page? Cite text and picture details to support your answer. *CCSS Reading 2*

Craft and Structure

- **Analyze Relationships** Compare a pair of animals from the article. How are they alike? How are they different? Work with a partner to record your ideas in the Comparing Animals graphic organizer (p. 17). *CCSS Reading 3*
- **Interpret Visual Information** What ideas from the text are also shown in the photos? Choose two photos. For each photo, identify the ideas in the text that it shows. What do the photos help you understand? *CCSS Reading 7*
- **Analyze Text Structure** How do the labels in each section help organize the information presented? Cite details to support your answer. *CCSS Reading 5*

WRITING

Write a Fictional Story Make up a fictional story about one of the animals in the article that explains why their skin is the way it is. Your story might be about why the snake sheds its skin, why the frog eats its skin, or why the chameleon turns colors, for example. Use your imagination to make your story descriptive and fun. After you edit and revise, share your story with the class.



Don't let plants fool you—they may look helpless, but they have many different ways of protecting themselves.

ESSENTIAL QUESTION

Why is the outer layer of plants, animals, and humans important?

CORE CONTENT CONCEPT

Life Science Plants have different parts that help them survive and grow.

CROSS-CURRICULAR EXTENSION

Science Find out about other strange and interesting plants. Look in the library and online for information. Share the facts you learn with the class.

KEY VOCABULARY

defenses (p. 24) ways of protecting someone or something from attack

sensitive (p. 26) able to sense very small changes in something

PREPARE TO READ

Ask students if they've ever been pricked by a thorn or had poison ivy. Discuss students' ideas about why some plants have thorns and cause itchy rashes. Point out the title of the article and read the introduction. Then have students predict what they will learn from this article. Tell students to read the article and find out if their predictions are correct.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

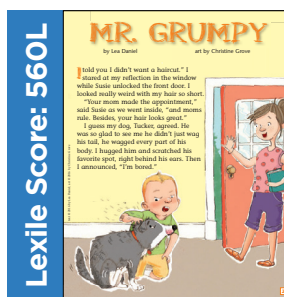
- Why do plants need special parts to keep animals away? Support your answer with details from the text. *CCSS Reading 1*
- The main idea of this text is "Plants protect themselves from animals in different ways." Work in a group to find four details that support this idea. *CCSS Reading 2*
- Why is the plant at the top of page 26 called a shy plant? Think about what the word "shy" means. Get together with classmates and compare your ideas. *CCSS Reading 1*

Craft and Structure

- Analyze Relationships** How do acacia plants and ants help each other? Look for text details to help you answer. *CCSS Reading 3*
- Interpret Visual Information** Look at the photos of the cactus and the stinging nettles. Why did the author use two photographs to show each plant? What do the larger photographs show? What do the smaller photographs help you notice? *CCSS Reading 7*

SPEAKING AND LISTENING

Collaborate With a group, take turns asking and answering questions about the different plants in the article. Use the words *who*, *what*, *when*, *where*, and *why* to make up the questions. Find information in the article to answer the questions.



What happens to dogs and humans on a hot summer day?
Read this story to find out how their bodies react to heat.

ESSENTIAL QUESTION

Why is the outer layer of plants, animals, and humans important?

CORE CONTENT CONCEPT

Life Science Different animals use their body parts in different ways to protect themselves.

CROSS-CURRICULAR EXTENSION

Science Find out how other animals stay cool when the weather gets hot. Use the library or the internet.

KEY VOCABULARY

evaporates (p. 29) changes from a liquid into a gas

buzz cut (p. 32) a very short haircut

PREPARE TO READ

Discuss with students what their bodies do when they are overheated. Ask how students like to cool down. Then ask if students have noticed how dogs and other pets act on a hot day. Ask if students think animals sweat. Finally, have students work in pairs to take turns reading pages of the story aloud.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Why does Susie know a lot about animals? Find text details to support your answer. *CCSS Reading 1*
- George has some mistaken ideas about Tucker's body. Find three of his wrong ideas in the story. Then find the facts that Susie tells him. *CCSS Reading 3*
- This story is fiction, or made-up, but it includes facts about what happens when dog and human bodies get hot. With a partner, identify these facts. *CCSS Reading 3*

Craft and Structure

- **Analyze Word Choice** What words and phrases does the author use in the beginning of the story to show George's mood? *CCSS Reading 4*
- **Interpret Visual Information** Look at the pictures of George in the story. How does his mood change from the beginning to the end? How can you tell? *CCSS Reading 7*

WRITING

Write a Blog Use the facts in this story to write a blog expressing your opinion on which type of skin—human or dog—is better at helping keep the body cool. Share your blog with your class.



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).

- There are lots of different words that describe texture, or the way something feels. *Rough, smooth, bumpy, and hot* are some of these words. Look through multiple articles to find plants, animals, and objects with different textures. Use the Textures graphic organizer on page 19 to record what you find. Then write a paragraph summarizing the different types of textures you can find on plants, animals, and objects.
- How are animals, plants, and humans protected on the outside? Make a three-column chart with the headings “Animals,” “Plants,” and “Humans.” Then look through “Your Super Skin,” “Wild Skin,” and “Don’t Touch Me” to find information to add to your chart. Get together with classmates and discuss the benefits of each type of protection.
- Look through “Wild Skin” and “Don’t Touch Me.” Which plant has the best protection? Which animal? Choose one of each and write sentences explaining why you chose them.
- Make a two-column chart with the headings “Human Touch” and “Animal Touch.” Then look through “Keep in Touch” and “Feeling Fine” for facts and write them in your chart.
- Look through “Your Super Skin” and “Mr. Grumpy” to find facts about pores. Make a two-column chart with the headings “Your Super Skin” and “Mr. Grumpy” and record the facts. Write a paragraph comparing and contrasting these details.



**EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN****ENGAGE****READ FOR A
PURPOSE****APPLY**

In this mini-unit, students will review the different kinds of outer layers of protection in plants, animals, and humans, noting their characteristics. Then, student groups will select their own unique group of objects and place them in a “Mystery Bag.” Finally, students will play a game where each group tests their ability to determine what the mystery objects are, using only their sense of touch!

ENGAGE: Engage students in the topic of skin and the outer layers of animals and plants. First review the Essential Question: Why is the outer layer of plants, animals, and humans important? Help students review what they learned from the magazine articles to fill in a chart like the one below.

Plant or Animal	Outer Layer	Why This Is Important
Rose	Sharp prickles	Keeps animals from eating it
Dog	Fur	Keeps it warm in winter and cool in summer
Human		Gives information to the brain
Manatee		
Poison Ivy		



**READ FOR A PURPOSE**

INTRODUCE THE ACTIVITY: Mystery Bags Explain to students that they are going to work in groups to perform the guess-the-object activity described in the magazine. Continue by explaining that they will set up different stations in the classroom to test different types of objects. All students will visit each station. Now is a good time to divide the class into four groups: Group 1, Group 2, Group 3 and Group 4.

RETURN TO THE TEXT: Explain to students that before groups can set up their stations, they need to gather information about the steps of the activity. Direct all groups to reread the description of the activity from “Keep in Touch” on page 11 of the magazine. Have groups determine and record the steps of the activity on the Mystery Bag graphic organizer (p. 14). Work with students to check that their steps are correct. There should be five steps, as shown below.

Steps		
My Group Number:		
1. Find a variety of objects of the same size.		
2. Place the objects in a bag or pillowcase.		
3. Have someone put their hand in the bag and try to identify the objects by feeling them.		
4. Have the person wear a glove or sock on his or her hand.		
5. Have the person try to identify the objects again.		
What is in each Mystery Bag?		
Group:	Group:	Group:





APPLY: MYSTERY BAGS: Now that students have gathered information from the magazine, they are ready to work in groups to set up and run their experiments. You may want to have students bring in a sock or glove for the activity.

Part A: Setting Up the Experiment

Materials

- 4 grocery bags, shoe boxes, or other containers (a combination is fine too)
- pens or pencils
- a variety of objects, gathered by students
- Mystery Box graphic organizer used in Return to the Text activity

Step 1: Gather Objects Explain that each group will gather four objects for its Mystery Bag. Remind students that their objects should be roughly the same size. In addition, they should be easily found in the classroom, playground, or school.

Brainstorm with students a list of appropriate objects, such as a Band-Aid, a cotton ball, a rock, a shell, a pinecone, a sponge, a bottle cap, a tennis ball, an orange, a feather, a button, a paper clip, a bead, or a rubber band.

Have group members work together to choose their objects. Tell groups to choose a note-taker to list the objects they plan to use on the back of his or her graphic organizer. Check in with note-takers to make sure their objects are appropriate. Some duplication among groups is fine.

Allow time for groups to gather materials and quickly put them in their bags so no one will see them ahead of time.

Step 2: Create Stations

- Have groups set up stations in four different locations in the classroom.
- Each Mystery Bag should be labeled with the group's number.

Part B: Running the Experiment

- Students can use the bottom portion of the Mystery Bag graphic organizer to record their guesses.
- To avoid mayhem, you might choose to run the experiment over the course of a day, allowing students or groups of students to go to the different stations at convenient times.
- Be sure to have one group member at each station as necessary to help run the experiment. The group member can hold the bag and make sure students don't look inside as they touch the objects.
- At the end of the day, after all students have had a chance to go through the stations, have each group read the contents of their bags. Discuss the results of the experiment.



NAME: _____

MYSTERY BAG

My Group Number:		
Steps		
1.		
2.		
3.		
4.		
5.		
What is in each Mystery Bag?		
Group:	Group:	Group:

NAME: _____

ARTICLE SECTIONS

What does the author of “Your Super Skin” want you to learn about in each section?

In Section 1, the author wants me to learn about

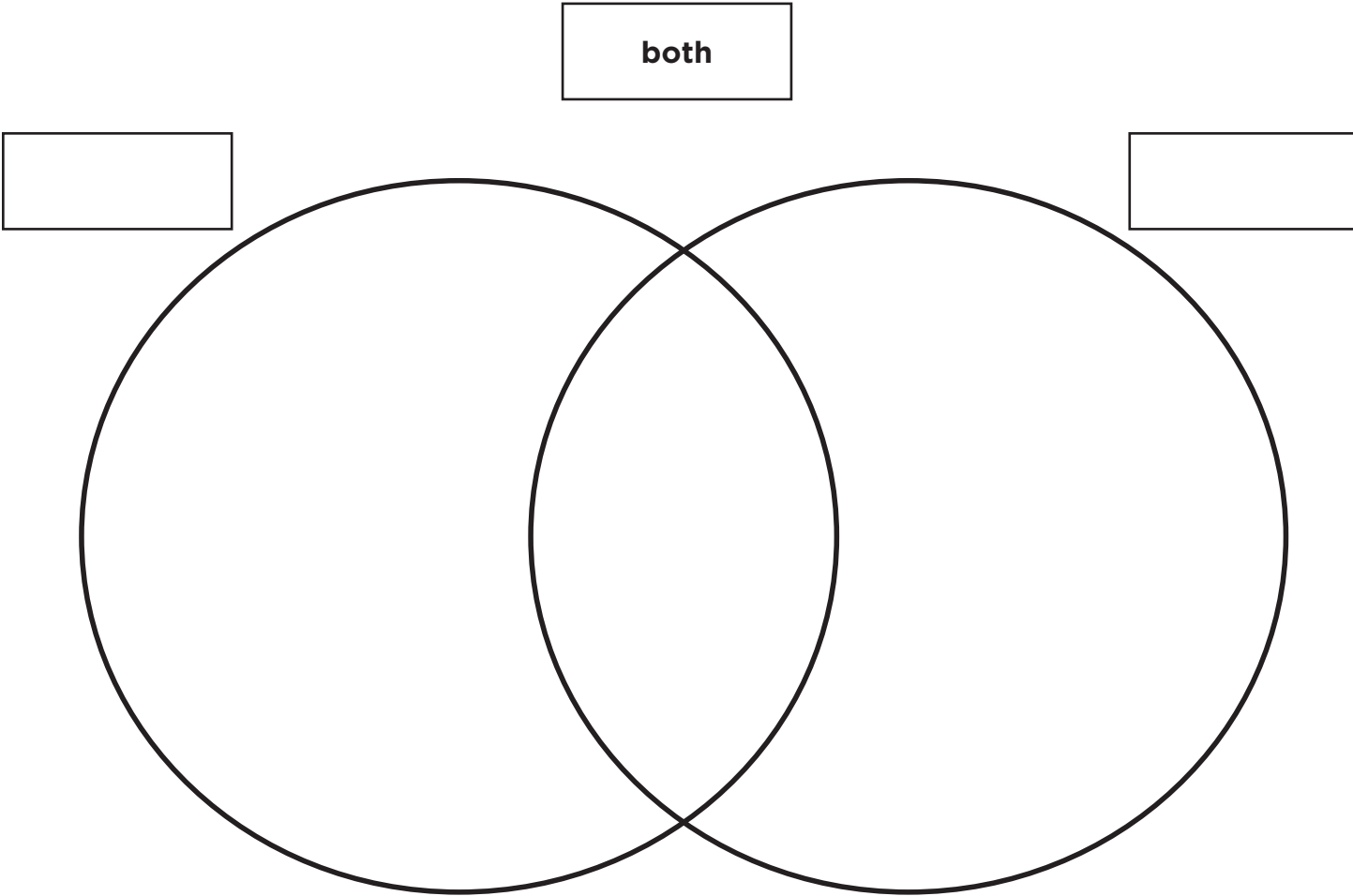
In Section 2, the author wants me to learn about

In Section 3, the author wants me to learn about



NAME: _____

COMPARING ANIMALS





NAME: _____

SKIN DETAILS

Feature/Characteristic	How It Protects Humans
1.	1.
2.	2.
3.	3.



NAME: _____

TEXTURES

Add other textures you find in the bottom row.

WARM	COLD	WET	DRY	STRETCHY
SMOOTH	BUMPY	PRICKLY	SLIMY	BRISTLY
SPIKY	SOFT	HARD	SQUISHY	FURRY



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	PHYSICAL SCIENCE	EARTH SCIENCE	SPACE SYSTEMS
<ul style="list-style-type: none">• Structure and Function of Living Things• Life Cycles and Stages• Reproduction & Inherited Traits• Animals• Plants	<ul style="list-style-type: none">• Forces and Interactions• Energy• Light• Sound• Electricity/ Magnetism• Matter• Waves• Heat• Chemistry• Information Processing	<ul style="list-style-type: none">• Weather• Climate• Rocks & Soil• Erosion and Weathering• Landforms• Water• Oceans• History of Earth• Plate Tectonics• Volcanoes, Earthquakes, and Tsunamis	<ul style="list-style-type: none">• Solar System• Planets• Moon• Sun

