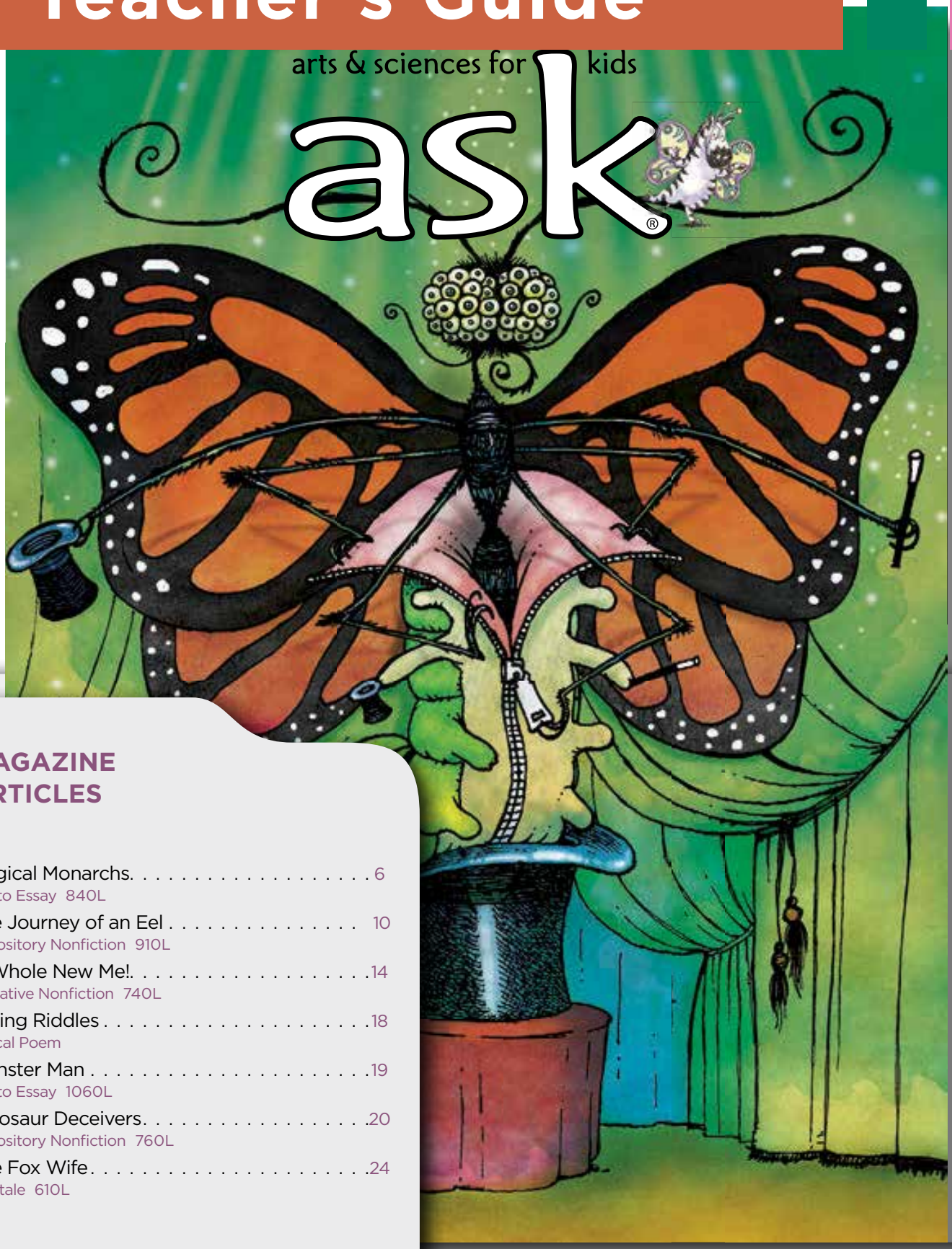
# Teacher's Guide

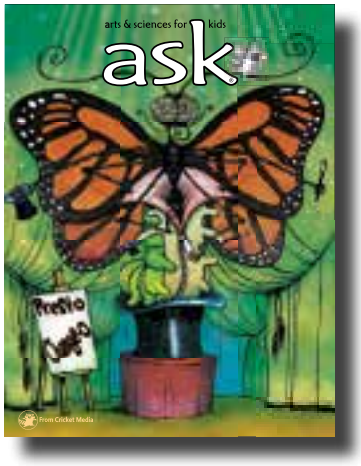



## MAGAZINE ARTICLES

# Contents

## Teacher's Guide for *Ask: Presto Change-o*






## OVERVIEW

*In this magazine, readers will learn about different processes of transformation that animals and humans undergo.* ***Ask: Presto Change-o*** *includes information about the metamorphoses of various insects, the life cycle of a frog, an eel that changes shape and color, an actor who transforms into a monster, and a fox that takes the shape of a human.*

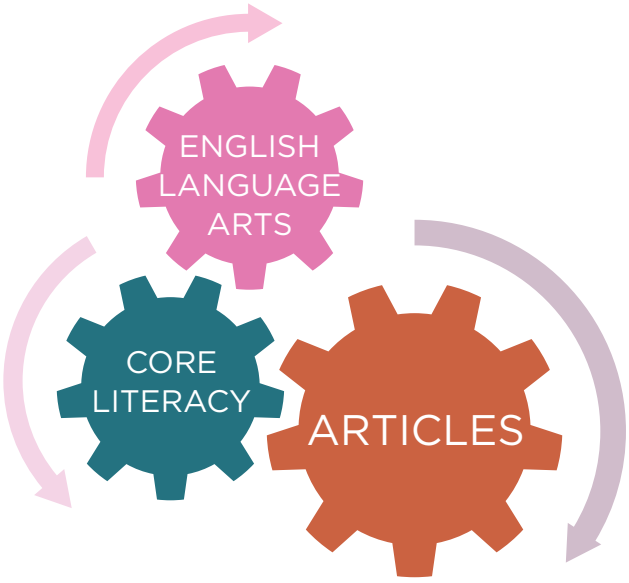
## ESSENTIAL QUESTION:

***How do animals and humans change?***

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 – 10

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 12 – 14

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).

# Skills and Standards Overview

**Essential Question:** How do animals and humans change?

| MAGAZINE ARTICLES | SCIENCE AND ENGLISH LANGUAGE ARTS CONCEPTS | LITERACY SKILLS | CORRESPONDING CCSS ANCHOR STANDARDS |
|---|---|---|---|
| **Magical Monarchs**<br>Photo Essay | Animals have predictable characteristics at different stages of development. | • Close Reading<br>• Analyze Figurative Language<br>• Analyze Tone<br>• Write a Summary | *Reading 1, 2, & 4*<br>*Writing 2* |
| **The Journey of an Eel**<br>Expository Nonfiction | Animals have predictable characteristics at different stages of development. | • Close Reading<br>• Analyze Structure<br>• Summarize<br>• Ask and Answer Questions | *Reading 1, 2, & 5*<br>*Speaking & Listening 1* |
| **A Whole New Me!**<br>Narrative Nonfiction | Animals have predictable characteristics at different stages of development. | • Close Reading<br>• Analyze Author's Purpose<br>• Interpret Visual Information<br>• Write a Story | *Reading 1, 2, 3, 6, & 7*<br>*Writing 3* |
| **Spring Riddles**<br>Lyrical Poem | Animals have predictable characteristics at different stages of development. | • Close Reading<br>• Analyze Word Choice<br>• Analyze Relationships<br>• Write a Report | *Reading 1, 2, 3, & 4*<br>*Writing 2* |
| **Monster Man**<br>Photo Essay | A photo essay includes a group of photographs arranged to help viewers explore a topic or idea. | • Close Reading<br>• Analyze Word Choice<br>• Interpret Visual Information<br>• Write Directions | *Reading 1, 2, 4, & 7*<br>*Writing 2* |
| **Dinosaur Deceivers**<br>Expository Nonfiction | Young animals are much, but not exactly, like their parents. | • Close Reading<br>• Determine Author's Purpose<br>• Interpret Visual Information<br>• Collaborate | *Reading 1, 2, 3, 6, & 7*<br>*Speaking & Listening 1* |
| **The Fox Wife**<br>Folktale | Often in folktales a character is magically changed into another form. | • Close Reading<br>• Analyze Multiple Perspectives<br>• Analyze Characters<br>• Write a Story | *Reading 1, 2, 3, & 5*<br>*Writing 3* |

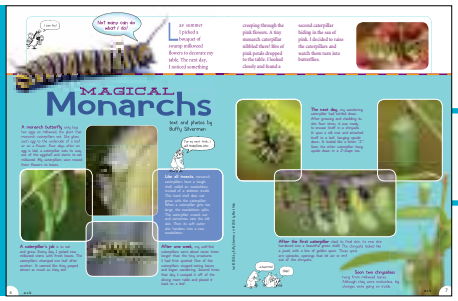
**Comparing Texts:** *CCSS Reading 1, 2, 3 & 9; CCSS Writing 2, 7 & 9*

**Mini-Unit:** *CCSS Reading 1 & 9; CCSS Writing 2 & 9; Speaking & Listening 4*

# ARTICLE: Magical Monarchs

Magazine pages 6 - 9, Photo Essay

Lexile Score: 840




Find out how a tiny egg transforms into a beautiful butterfly—it's pure magic!

## ESSENTIAL QUESTION

**How do animals and humans change?**

## CORE CONTENT CONCEPT

**Life Science** Animals have predictable characteristics at different stages of development.

## CROSS-CURRICULAR EXTENSION

**Science** View a slow motion video of a butterfly's life cycle in order to closely observe the changes the butterfly undergoes during each stage.

## KEY VOCABULARY

***milkweed (p. 6)*** a type of plant that has white, milky juice

***chrysalis (p. 7)*** a moth or butterfly at the stage of growth when it is turning into an adult and is enclosed in a hard case

## PREPARE TO READ

Ask students to share what they know about how caterpillars become butterflies. Make sure students understand that a monarch is a type of butterfly. Then discuss possible reasons why the writer calls monarch butterflies "magical." Tell students that they will be reading an article about this insect.

## CLOSE READING AND TEXT ANALYSIS

**Key Ideas**

- Locate two facts from the article that you found amazing. Explain why these facts surprised you. *CCSS Reading 1*
- The author was able to help the caterpillars change into butterflies. Cite three actions she took to help them. *CCSS Reading 1*
- Why do you think this article is titled "Magical Butterflies"? Identify details about the butterfly that seem magical. *CCSS Reading 2*

**Craft and Structure**

- **Analyze Figurative Language** The author compares a chrysalis to a jewel. What are the qualities of a jewel? What do you think the writer is saying about the chrysalis? *CCSS Reading 4*
- **Analyze Tone** Which details in the article show that the writer felt like a mother to the two caterpillars? Work with a partner to find these details. Then discuss how these details make the information interesting and fun to read. *CCSS Reading 4*

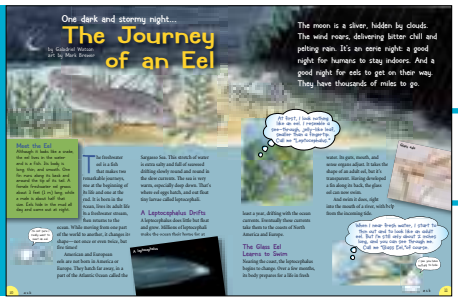
## WRITING

**Write a Summary** Write a paragraph that summarizes the development of a butterfly from a tiny egg to a beautiful butterfly.

# ARTICLE: The Journey of an Eel

Magazine pages 10 - 13, Expository Nonfiction

Lexile Score: 910




This article follows the astonishing journey of the freshwater eel. During its lifetime, this amazing creature changes its shape and color five times.

## ESSENTIAL QUESTION

**How do animals and humans change?**

## CORE CONTENT CONCEPT

**Life Science** Animals have predictable characteristics at different stages of development.

## CROSS-CURRICULAR EXTENSION

**Geography** Conduct research to learn more about the Sargasso Sea. Why is this body of water so unusual?

## KEY VOCABULARY

***transparent (p. 11)*** easily seen through

***guts (p. 11)*** the stomach or intestines

***migrating (p. 13)*** moving from one place to live in another

## PREPARE TO READ

Ask students if they have ever taken a long trip. Discuss questions kids often ask on long trips, such as "Are we almost there?" and "How long until we get there?" Explain that this article is about an animal that travels thousands of miles during its lifetime.

## CLOSE READING AND TEXT ANALYSIS

**Key Ideas**

- How is the freshwater eel's journey remarkable? Support your answer with details from the article. *CCSS Reading 1*
- What causes an eel to become male or female? Locate details in the text to support your answer. *CCSS Reading 1*
- How do leptocephali depend on ocean currents? Use text details to support your answer. *CCSS Reading 1*

**Craft and Structure**

- **Analyze Structure** How do the subheadings prepare you to read each section? What information do they give you? *CCSS Reading 5*
- **Summarize** Work with a group to create a timeline that summarizes the life of the eel. Add facts about the eel's color, size, and location to your timeline. *CCSS Reading 2*

## SPEAKING AND LISTENING

**Ask and Answer Questions** With a group of classmates, take turns asking and answering questions about the article. Use the words who, what, when, where, and why to make up questions. Look for information in the article to answer questions.

# ARTICLE: A Whole New Me!

Magazine pages 14 - 17, Narrative Nonfiction

Lexile Score: 740


In this entertaining article, talking creatures describe how their bodies changed shape from babyhood to adulthood.

## ESSENTIAL QUESTION

**How do animals and humans change?**

## CORE CONTENT CONCEPT

**Life Science** Animals have predictable characteristics at different stages of development.

## CROSS-CURRICULAR EXTENSION

**Science and Art** Research the metamorphosis of a bee. Create a poster illustrating the different stages.

## KEY VOCABULARY

***nymph (p. 14)*** a young insect that has almost the same form as an adult

***larvae (p. 16)*** worm-like insects at a very young stage of development

***pupa (p. 16)*** ) an insect in a middle stage of its development, between larva and adult

## PREPARE TO READ

Ask students what they know about metamorphosis. Explain that in this article, they will learn about certain animals whose shapes change completely from birth to adulthood. Discuss how this differs from the ways humans change during the same period.

## CLOSE READING AND TEXT ANALYSIS

**Key Ideas**

- What is the main idea of this article? How does each metamorph's story support this idea? Cite text information in your answer. *CCSS Reading 2*
- Compare the life cycles of a dragonfly and a salamander. How are they similar? How are they different? Support your answer with details from the text. *CCSS Reading 3*
- How does changing shape benefit the animals in this article? Cite evidence from the article to support your answer. *CCSS Reading 1*

**Craft and Structure**

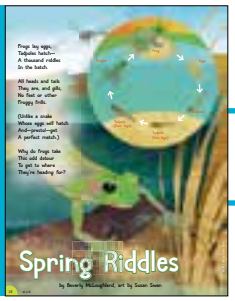
- **Analyze Author's Purpose** Find details in the article that create an informal and humorous writing style. Is the author's purpose to entertain readers, to inform them, or both? Explain your thinking. *CCSS Reading 6*
- **Interpret Visual Information** Work in a group to study the photos and discuss how they help you understand the information presented in the text. What do all of these photos have in common that is especially helpful for viewing tiny things? *CCSS Reading 7*

## WRITING

**Write a Story** Write a fictional autobiography of another creature that goes through the four stages of metamorphosis. What does the metamorph experience during these changes? Write from the creature's perspective. Use humor in your story and add illustrations.

# ARTICLE: Spring Riddles

Magazine page 18, Lyrical Poem




This poem uses rhyme to ask a scientific question: why do frogs change?

## ESSENTIAL QUESTION

**How do animals and humans change?**

## CORE CONTENT CONCEPT

**Life Science** Animals have predictable characteristics at different stages of development.

## CROSS-CURRICULAR EXTENSION

**Language Arts** Look in the library or online to find more science poems. Share a few with the class.

## KEY VOCABULARY

***tadpole (p. 18)*** a small creature that grows up to be a frog or a toad

***gills (p. 18)*** the body part that fish and some other creatures use for breathing

***frills (p. 18)*** things that are not necessary and added mostly for show

## PREPARE TO READ

Explain to students that a riddle is something that is hard to understand or a question that is difficult to answer. Have students preview the illustrations and predict what this poem will be about.

## CLOSE READING AND TEXT ANALYSIS

**Key Ideas**

- Both frogs and snakes hatch from eggs. How are they different when they come out? Support your answer with details from the poem and the diagram. *CCSS Reading 1*
- What riddle, or difficult question, is the poem asking? Write the question in your own words. Cite details from the poem to support your ideas. *CCSS Reading 2*
- What is a frog "headed for" when it hatches? Use the diagram to help you answer this question. *CCSS Reading 1*

**Craft and Structure**

- **Analyze Word Choice** Think about the use of the word "riddles" in the title and the first stanza of the poem. What are the riddles that the poet is referring to? Discuss ideas with a partner. Use the diagram to help you think about the word. *CCSS Reading 4*
- **Analyze Relationships** Compare the information about frogs in the poem and the diagram. Create a T-chart to list facts from each source. *CCSS Reading 3*

## SPEAKING AND LISTENING

**Write a Report** What is the difference between a frog and a toad? This isn't a riddle—you can answer this question by conducting online or library research. Write 1-2 paragraphs to explain the similarities and differences between these two amphibians.

# ARTICLE: Monster Man

Magazine page 19, Photo Essay


This article explains how makeup artist George Troester transforms an actor into a movie monster.

## ESSENTIAL QUESTION

**How do animals and humans change?**

## CORE CONTENT CONCEPT

**Language Arts** A photo essay includes a group of photographs arranged to help viewers explore a topic or idea.

## CROSS-CURRICULAR EXTENSION

**Art** Create a movie monster collage using photos and pictures from magazines and the internet.

## KEY VOCABULARY

***plaster (p. 19)*** a wet paste that hardens when it becomes dry

***mold (p. 19)*** a container that gives shape to a liquid or a soft substance that is poured into it

## PREPARE TO READ

Tell students to preview the photos and predict what they will learn from this article. Then have them look at the first numbered photo. Ask students to guess how they would feel if this mixture were poured over their heads.

## CLOSE READING AND TEXT ANALYSIS

**Key Ideas**

- What is the main idea of this article? Identify details from the text and photos that helped you figure this out. *CCSS Reading 1*
- Why do you think Alan is giving George a thumbs-up sign in the first numbered photo? Use details from the text to support your answer. *CCSS Reading 1*
- Write a brief summary of the steps involved in creating the "creepy elf" mask for Alan. *CCSS Reading 2*

**Craft and Structure**

- **Analyze Word Choice** The author says that in real life, Alan's head doesn't look like a "warty potato." What are the qualities of a warty potato? What is the author suggesting about the way Alan's head looks when he wears the mask? *CCSS Reading 4*
- **Interpret Visual Information** Study the numbered photos. How do the images and text work together to explain Alan's transformation into a monster? *CCSS Reading 7*

## WRITING

**Write Directions** Write step-by-step directions for making a costume or mask that you might wear to a costume party. Include a list of materials needed for the project. Number the steps and add pictures. Ask a classmate to review your directions and suggest revisions if they are not clear.

# ARTICLE: Dinosaur Deceivers

Magazine pages 20 - 23, Narrative Nonfiction

Lexile Score: 760


Recently, paleontologists have discovered fossils that are causing them to think about dinosaur offspring in new ways.

## ESSENTIAL QUESTION

**How do animals and humans change?**

## CORE CONTENT CONCEPT

**Life Science** Young animals are much, but not exactly, like their parents.

## CROSS-CURRICULAR EXTENSION

**Writing** "Cute as a button" and "big as a bus" are similes. Similes are comparisons that use the words "as" or "like." Write and illustrate a poem about a dinosaur. Include at least three similes in your poem.

## KEY VOCABULARY

***paleontologist (p. 21)*** a scientist who studies the fossils of dinosaurs and other plants and animals of that era

## PREPARE TO READ

Discuss with students what a paleontologist does. Then ask what they know about the *Triceratops*. Explain that until recently, no one really knew what a baby *Triceratops* looked like. Finally, tell students that they'll find out what paleontologists have learned about baby *Triceratops* when they read this article.

## CLOSE READING AND TEXT ANALYSIS

**Key Ideas**

- Why might a baby *Triceratops* look so different from an adult? Find details in the text about what scientists believe. *CCSS Reading 1*
- How have scientists been deceived, or tricked, by some of the fossils they've found? Support your ideas with details from the text. *CCSS Reading 2*
- In what ways are dinosaurs like birds? In what ways are they like reptiles? Cite evidence from the article to support your answer. *CCSS Reading 3*

**Craft and Structure**

- **Determine Author's Purpose** Authors write to persuade, entertain, inform, or to give an opinion. What is the main purpose of this article? Explain your ideas. *CCSS Reading 6*
- **Interpret Visual Information** How do the photos in this article help you understand the text? Find information in the text that is also shown in the photos. *CCSS Reading 7*

## SPEAKING AND LISTENING

**Collaborate** Conduct research to find out more about dome-headed dinosaurs. Do you agree or disagree with paleontologist Mark Goodwin's theory that *Pachycephalosaurus, Stygimoloch,* and *Dracorex* are just one species? Work in groups to discuss opinions. Be sure to support your opinion with evidence from the article and from your research.

# ARTICLE: The Fox Wife

Magazine pages 24 - 27, Folktale

Lexile Score: 610

In this Japanese tale, a fox transforms into a beautiful woman and tricks a man into marrying her.

## ESSENTIAL QUESTION

**How do animals and humans change?**

## CORE CONTENT CONCEPT

**Language Arts** Often in folktales a character is magically changed into another form.

## CROSS-CURRICULAR EXTENSION

**Social Studies** Conduct research to find out more about the history and characteristics of kitsune.

## KEY VOCABULARY

***province (p. 25)*** one of the large divisions into which some countries are divided

***plea (p. 26)*** a serious or emotional request

## PREPARE TO READ

Have volunteers read the text boxes on page 24 aloud. Then tell students to read the rest of this article silently to learn more about kitsune.

## CLOSE READING AND TEXT ANALYSIS

**Key Ideas**

- How does the husband react to his wife's transformation? Support your answer with details from the text and pictures. *CCSS Reading 1*
- What is the theme of this folktale? Use information from the tale to support your answer. *CCSS Reading 2*
- What magical abilities does a kitsune have? Use information from all three parts of the article to support your answer. *CCSS Reading 3*

**Craft and Structure**

- **Analyze Multiple Perspectives** This article contains three sections that tell about the kitsune. What do you learn about the kitsune in the article? Does each section contain new information or simply repeat information from the other sections? Work in a group of three to analyze the article. *CCSS Reading 5*
- **Analyze Characters** Is the kitsune in the folktale evil or just mischievous? Support your answer with details from the text. *CCSS Reading 3*

## WRITING

**Write a Story** The folktale ends with the fox wife staying with her husband. Write and illustrate a scene that tells what happens next. Be sure to make your next scene exciting and full of details. Decide whether you will use a comic strip format or simply write your story.

## 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)*.

- Review "Magical Monarchs" and "A Whole New Me!" to compare the life cycles of a monarch butterfly and a salamander. Create a T-chart to record characteristics of each life cycle. Then write a short paragraph describing similarities and differences.
- Refer to "The Journey of an Eel" and "Dinosaur Deceivers" to compare the life cycles of dinosaurs and eels. How are these life cycles similar and different? Use a Venn diagram (p. 16) to record your ideas.
- Compare the changes described in "Monster Man" and "The Fox Wife." What do the changes have in common? What makes them different? Use a Venn diagram (p. 16) to record your ideas.
- What ideas about change and magic do you find in "Magical Monarchs" and "The Fox Wife"? Write a paragraph to explain how the transformations in these two articles are magical.
- Use multiple articles to compare how animals change shape during their lifetime. Create a three-column chart with the following headings: "Looks like a little copy of its parents," "Undergoes metamorphosis," and "Changes slightly as it grows." Then look for examples of each category and add them to the chart.

## EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

**ENGAGE** | **READ FOR A PURPOSE** | **APPLY**

**ENGAGE: Engage students in the topic of life cycles by first reviewing the Essential Question: How do animals and humans change? Help students review what they learned from the magazine articles about the different ways animals change. Record responses in a chart like the one below.**

| Very little change | Some change | Total change (metamorphosis) |
|---|---|---|
| snakes | *Triceratops* | butterfly |
| | | frog |
| | | |
| | | |
| | | |
| | | |

## READ FOR A PURPOSE

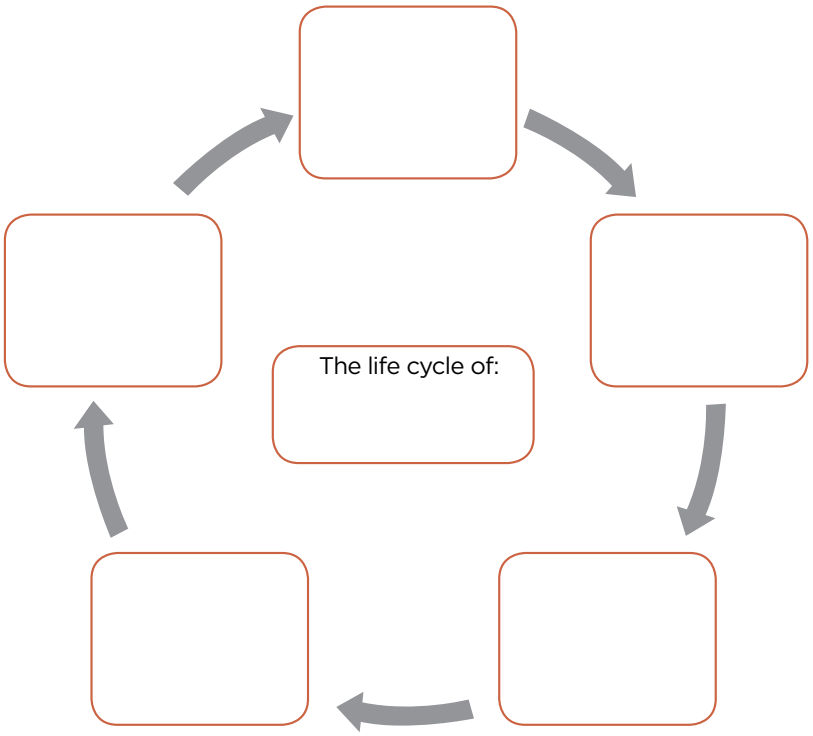
**INTRODUCE THE ACTIVITY: Life Cycle Poster:** Tell students that they will be creating posters that show the life cycle of one of the animals from the magazine. Explain to students that their posters will include:

- A title, such as "The Life Cycle of a Ladybug."
- Detailed pictures to show the different stages in the life cycle.
- Captions that describe what is happening at each stage of the life cycle.

Have students choose their animal now.

**RETURN TO THE TEXT:** Explain to students that before they can create their life cycle posters, they need to gather facts and details from the magazine about their animal's life cycle. Later they will use this information to write captions for their posters. Tell students that they need to do the following:

- Reread the article that describes the life cycle of their chosen animal.
- Use a graphic organizer like the one below to record information about the stages of the life cycle. (See Life Cycle graphic organizer on page 15.)
- Draw boxes on the graphic organizer page if there are more than five stages to describe.



**APPLY: LIFE CYCLE POSTER:** Students are now ready to begin creating their posters using the information about life cycles that they gathered from the magazine. Students may work independently, in pairs, or in groups, based on the animals they chose.

**Materials:** plain paper, poster board or construction paper, pencils, markers, colored pencils, glue, scissors

**STEP 1: Plan**
Tell students that they will be drawing the life cycle of their chosen animal using the magazine photos to help them know what to draw. Explain that their drawings will be bigger than the pictures in the magazine.

Distribute paper or poster board to students and have them use a pencil to mark where they will place the drawings of the different life cycle stages. They can use the life cycle layouts from the magazine to get ideas about how to display information on their posters.

At this point, students should also plan where they will place the poster title.

**STEP 2: Draw**
Have students use a pencil to sketch the cycle stages on plain paper. Later they can cut the pictures out and glue them onto the poster. Remind students to refer to the magazine pictures to help them make their drawings accurate.

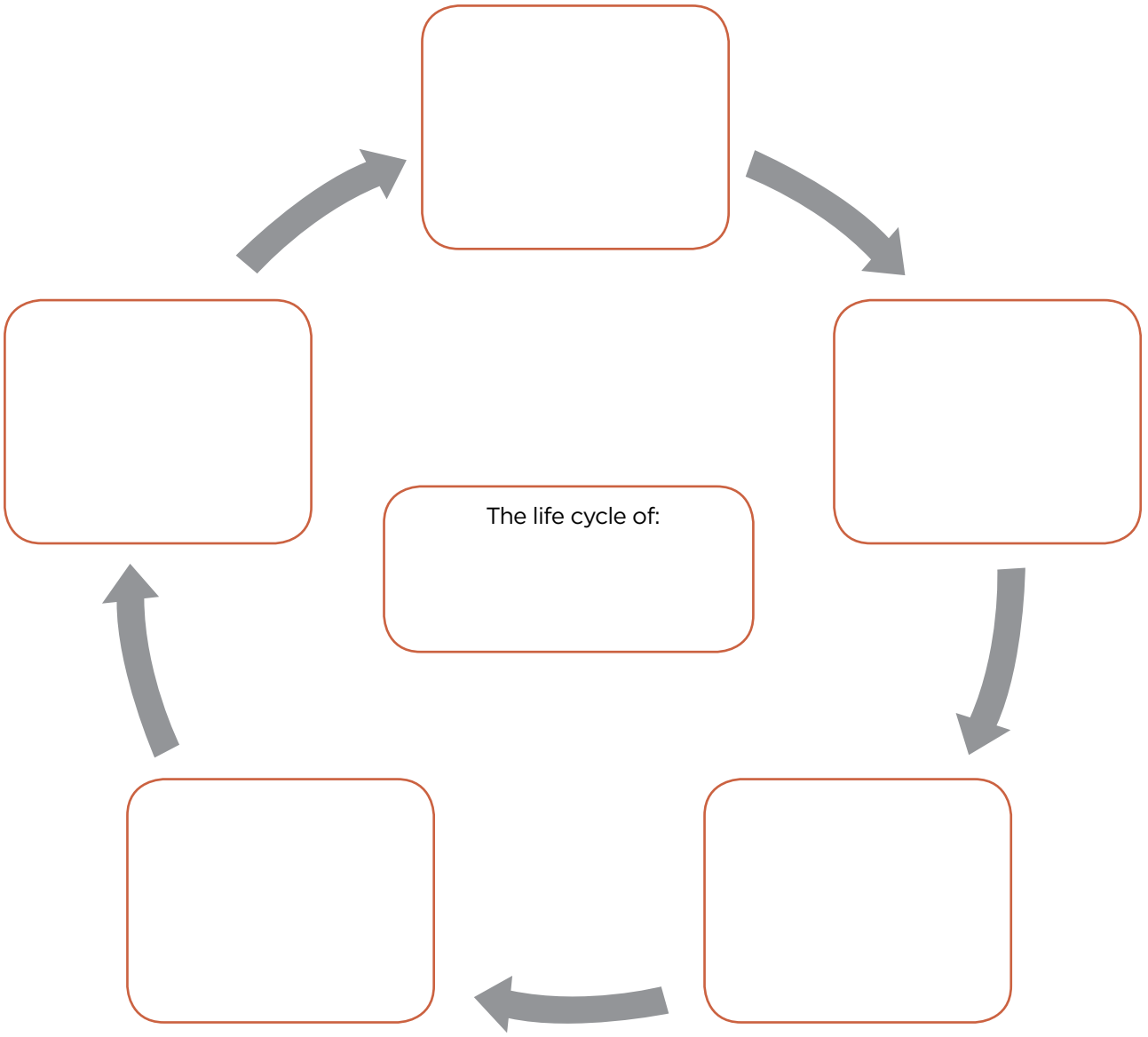
When students are finished drawing, distribute markers and colored pencils and have them add color and detail to their sketches.

**STEP 3: Assemble**
Have students cut out the pictures and glue them onto their posters. Then have them add the poster title as well as captions for each picture. They should use the notes they made in the Life Cycle graphic organizer for this activity.

**STEP 4: Present**
Have students share their posters by giving oral presentations. Provide time for students to rehearse. Invite another class in to watch the presentations.

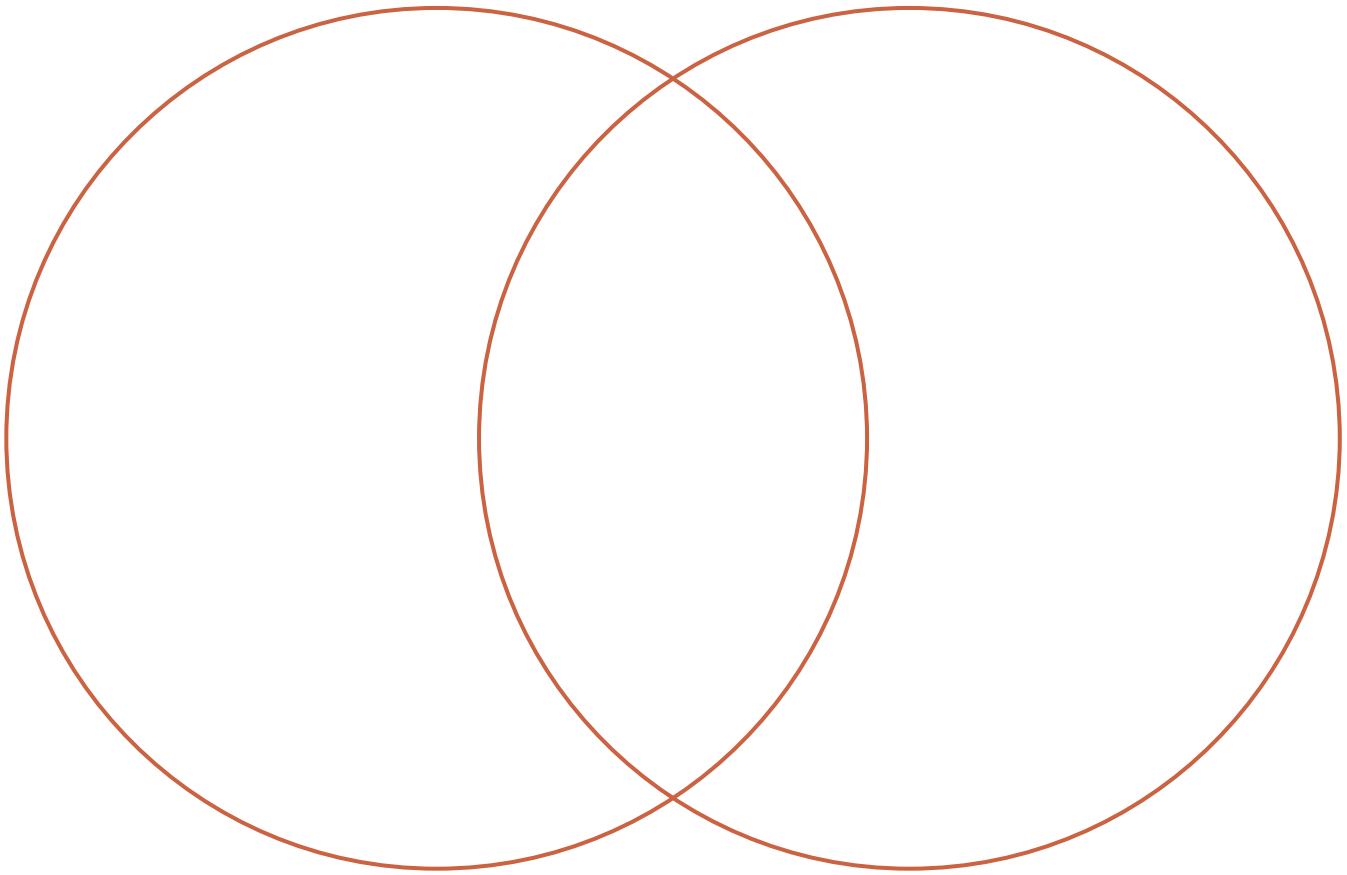
## LIFE CYCLE

Draw boxes here if there are more than five stages to describe.



NAME: _____

## VENN DIAGRAM



Appendix

# 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 |
|---|---|---|
| **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<br>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