

Teacher's Supplement

April 2016

arts & sciences for kids

ask[®]



Up in the Clouds

MAGAZINE ARTICLES

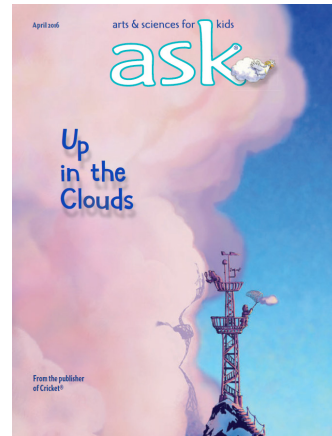
Curious Clouds	6
Expository Nonfiction	870L
Cloud Spotting	12
Informational Text	1390L
Cloud Maker	16
Expository Nonfiction	700L
Kangaroos, Clouds, and Coffee.	18
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Teacher's Guide for *Ask: Up in the Clouds*

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OVERVIEW

In this magazine, readers will learn all about clouds.

Ask: Up in the Clouds includes information about different kinds of clouds, how clouds form, and

how clouds impact those studying science, art, animals, and space.

ESSENTIAL QUESTION:

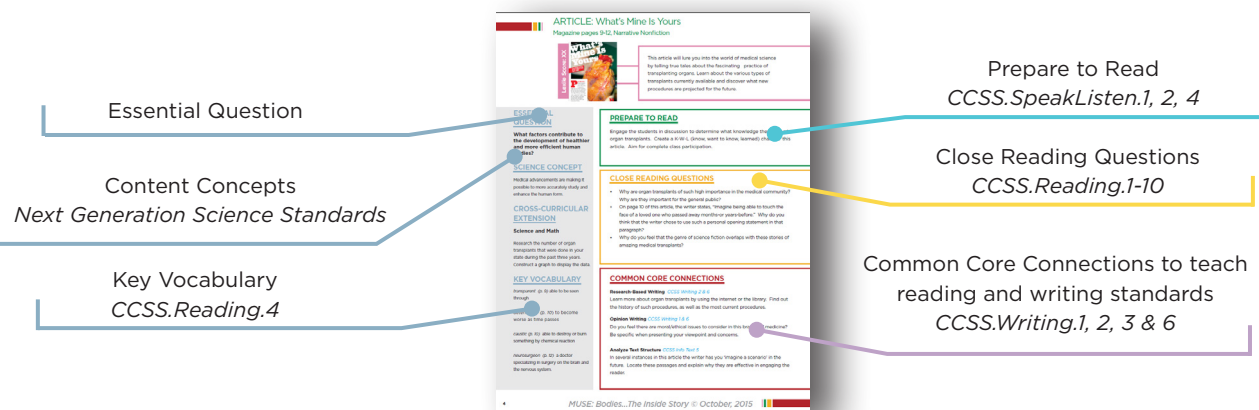
What are clouds and why are they important to study?



We invite you to use this magazine as a flexible teaching tool that is ideal for interdisciplinary learning of social studies and science content and 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 MULTIPLE ARTICLES PAGES 4 - 8

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

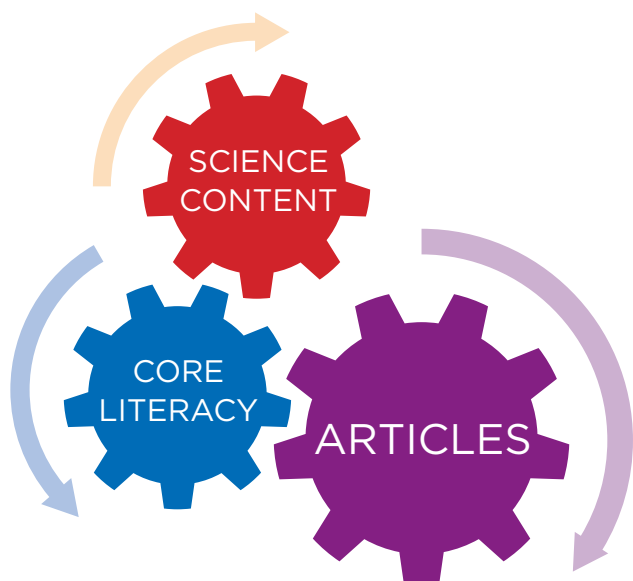


The diagram illustrates the components of an article page, with callouts pointing to specific sections of a sample article titled "ARTICLE: What's Mine Is Yours" (Magazine pages 9-12, Narrative Nonfiction).

- Essential Question**: Points to the "ESSENTIAL QUESTION" section.
- Content Concepts** and **Next Generation Science Standards**: Points to the "SCIENCE CONCEPT" and "CROSS-CURRICULAR EXTENSION" sections.
- Key Vocabulary** and **CCSS.Reading.4**: Points to the "KEY VOCABULARY" section.
- Prepare to Read** and **CCSS.SpeakListen.1, 2, 4**: Points to the "PREPARE TO READ" section.
- Close Reading Questions** and **CCSS.Reading.1-10**: Points to the "CLOSE READING QUESTIONS" section.
- Common Core Connections to teach reading and writing standards** and **CCSS.Writing.1, 2, 3 & 6**: Points to the "COMMON CORE CONNECTIONS" section.

TEACH A MINI-UNIT PAGES 10 - 12

Magazine articles can be easily grouped to make cross-text connections and comparisons. Our Common Core mini-unit guides students to read and discuss multiple articles and integrate ideas and information (CCSS.Reading.9). Discussing multiple articles (CCSS.SpeakListen.1, 2, 4) prepares students to write texts to share and publish in a variety of ways (CCSS.Writing.2).



READING

Core literacy concepts, such as the ones found in the Common Core State Standards, help students access social studies and science content. Integration of both literacy thinking and content study offers students a great way to become experts in reading informational text and literature for content knowledge. This guide provides questions to cover many core literacy concepts.

Draw Inferences (CCSS.InfoText.1)

Describe Relationships (CCSS.InfoText.3)

Analyze Text Structure (CCSS.InfoText.5)

Interpret Visual Information (CCSS.InfoText.7)

Summarize (CCSS.InfoText.2)

Determine Word Meaning (CCSS.InfoText.4)

Understand Author's Point of View (CCSS.InfoText.6)

Explain Reasons and Evidence (CCSS.InfoText.8)

FOCUS STANDARD: CCSS.InfoText.9: Integrate Ideas and Information

Have students read multiple articles on the same topic from this magazine to build knowledge and make cross-text comparisons. See ideas for Cross-Text Connections on page 13 of this guide.

SPEAKING AND LISTENING

Use the articles in this magazine to spark meaningful discussions in person and online. Encourage deeper discussions where students can become topic experts (CCSS.SpeakListen.1, 2, 4).

DISCUSSION OPTIONS—IN CLASS OR ONLINE

Article Clubs: Form small reading groups of students reading the same article. Have students discuss the content, share ideas, and critically evaluate the text.

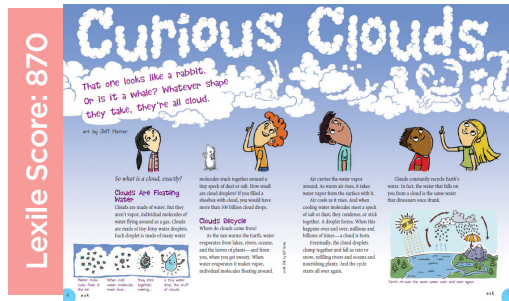
Jigsaw Clubs: Form small reading groups of students reading *different* articles. Invite students to share information and resources with each other.

Inquiry Discussions: Pose open-ended questions that engage students and prompt them to form an opinion and support it with reasons found directly in the text.

Whole Class: Launch with an essential question. Encourage students to find and share evidence from different articles to build a greater understanding of the question.

WRITING

Use the articles in this magazine to prompt **informative/explanatory writing** (CCSS.Writing.2). Have students use evidence from the texts to share information about social studies, language arts, or science content. See the **Mini-Unit** section of this guide (pgs. 10 - 12) as well as the **Article Pages** (pgs. 4 - 8) for ways to incorporate writing into your instruction.



You might not be able to live in a cloud, but some creatures do! Find out about the science and characteristics of clouds and what tiny organisms can be found hitching a ride.

ESSENTIAL QUESTION

What are clouds and why are they important to study?

SCIENCE CONCEPT

The water cycle supports life on Earth. Clouds are a part of this cycle.

CROSS-CURRICULAR EXTENSION

Social Studies

Research to find out more about Luke Howard, the Man Who Named Clouds, introduced on page 11.

KEY VOCABULARY

condense (p. 7) to change from a gas into a liquid

evaporate (p. 6) to change from a liquid into a gas

molecule (p. 6) the smallest possible amount of a particular substance that has all the characteristics of that substance

PREPARE TO READ

Explain that this article is all about the science behind clouds. Create a KWL chart and have children help fill in what they already know about clouds as well as any questions they may have. As they read, ask students to take notes in the third column of the chart to share what they have learned and correct any misinformation.

CLOSE READING QUESTIONS

- This article is divided into many different sections. How do the section titles help prepare you to read each section?
- Explain why clouds are heavy. Use evidence from the article in your explanation.
- Underline words that describe temperature in the article. How does temperature relate to clouds?

COMMON CORE CONNECTIONS

Key Ideas and Details *CCSS Info Text 1 & 3*

Locate two cloud facts that amaze you. Share with a partner why these facts surprised you.

Writing Explanatory Text *CCSS Writing 2 & 4*

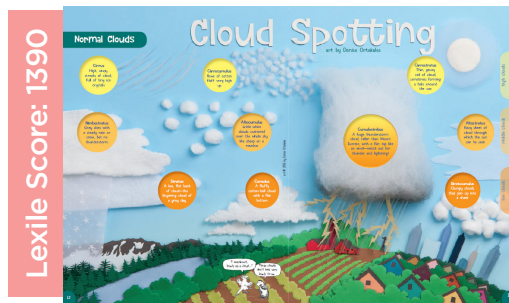
Use the information in the article to draw a diagram of the water cycle. Use vocabulary from the article to label the parts of your picture.

Narrative Writing *CCSS Writing 3 & 6*

Write a fictional account from the point of view of one of the creatures that live in a cloud. What does the organism experience in its cloud journey?

ARTICLE: Cloud Spotting

Magazine pages 12 - 15, Informational Text



Is that cloud tall and fluffy, high and wispy, or flat and gray? Clouds come in many different shapes, sizes, and patterns. Art and photos help you see the difference so you can be a cloud spotter.

ESSENTIAL QUESTION

What are clouds and why are they important to study?

SCIENCE CONCEPT

Water has three different states: liquid, gas, and solid.

CROSS-CURRICULAR EXTENSION

Art

Glue cotton onto construction paper to create your own cloud art that represents three or more of the clouds described in the article.

KEY VOCABULARY

anvil (p. 12) a heavy iron block on which heated metal is shaped by hitting it with a hammer

tornado (p. 15) a violent and destructive storm in which powerful winds move around a central point

PREPARE TO READ

Have children look at the sky to spot clouds. Ask them to describe what they see. If there are no clouds that day, ask children to describe clouds they often see. Are all clouds the same? Ask them to describe the differences.

CLOSE READING QUESTIONS

- Each description in this article includes a picture. How do the illustrations and photos help you understand the text descriptions?
- Find the clouds in the article that are most apt to bring rain. Underline details in the text that support your answer.
- Which clouds could mean that you should run for cover? How do you know?

COMMON CORE CONNECTIONS

Interpret Visual Information *CCSS Info Text 7*

This article uses both art and photos to illustrate the information. Describe the pros and cons of each style.

Collecting Data and Writing Reports *CCSS Writing 2 & 7*

Keep a cloud science journal for 10 days. Record the kinds of clouds you see, as well as facts about the weather and the time of day each cloud is spotted. Summarize your findings in a report.

Describe Relationships *CCSS Info Text 3*

Looking over the different types of clouds, find the kinds of clouds most often associated with the place you live. What kinds of clouds are you not likely to see? Why?

Lexile Score: 700



Find out how an artist captures the fleeting appearance of a cloud in his special studio.

ESSENTIAL QUESTION

What are clouds and why are they important to study?

SOCIAL SCIENCE CONCEPT

Specific physical conditions are required for clouds to form.

CROSS-CURRICULAR EXTENSION

Science

Create a cloud chamber from two clear plastic cups. Place warm water in one and cover it with the second cup turned upside down. Place ice on the top cup and watch for a cloud.

KEY VOCABULARY

sculpture (p. 17) a piece of art that is made by carving or molding clay, stone, metal, etc.

spritz (p. 17) to spray (something) quickly with a small amount of liquid

temporary (p. 17) continuing for a limited amount of time; not permanent

PREPARE TO READ

Explain that this article is about an artist who makes clouds. Ask students to think about how an artist might do this. Have you ever seen clouds indoors (from vaporizers, humidifiers, steam, freezers, or ovens)?

CLOSE READING QUESTIONS

- What specific conditions does the artist need to create clouds?
- Underline details in the text that describe why the artist likes clouds.
- What evidence is there to support the artist's opinion that the clouds he makes are temporary?

COMMON CORE CONNECTIONS

Draw Inferences *CCSS Info Text 1*

Why does the artist go to the trouble of creating the clouds? Support your answer with reasons from the article.

Describe Relationships *CCSS Info Text 3*

Compare the similarities and differences between Smilde's clouds and ones found in the sky.

Key Ideas Supported by Text Details *CCSS Info Text 1*

What are the key steps for making an artificial cloud? What else would you need to know to make an artificial cloud?



Did you know that some kinds of kangaroos live in trees?

What about cloud forests? Find out about the Matschie's tree kangaroos that live in the cloud forests of New Guinea and the woman who is working to save them. Coffee might just be the answer!

ESSENTIAL QUESTION

What are clouds and why are they important to study?

SCIENCE CONCEPT

Plants and animals are interrelated within an ecosystem.

CROSS-CURRICULAR EXTENSION

Social Studies

Create a diagram or chart that shows the cause and effect of economic impact on the animals and habitat of the cloud forest as described in the article.

KEY VOCABULARY

conservation (p. 20) the protection of animals, plants, and natural resources

marsupial (p. 18) a type of animal (such as a kangaroo or an opossum) that carries its babies in a pocket of skin on the mother's stomach

preserve (p. 21) an area where plants, animals, minerals, etc., are protected.

PREPARE TO READ

Look at the title and images on the first two pages of the article. Ask students to predict how the three nouns in the title might be related.

CLOSE READING QUESTIONS

- What is the relationship between kangaroos, clouds, and coffee in the article? Cite evidence that supports your ideas.
- Why do you think Dabek says that she believes the future of conservation is with kids? Underline details in the text that support your answer.
- Find where the word "conservation" is used in the article and explain its meaning.

COMMON CORE CONNECTIONS

Describe Relationships *CCSS Info Text 3*

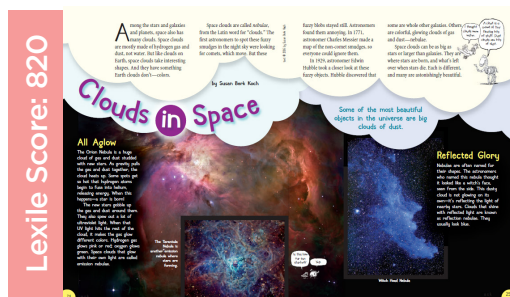
What is the relationship between the YUS and the cloud forests? How do they depend on the resources? How does the relationship change with conservation practices?

Explain Events *CCSS Info Text 3*

Make a chart to list the actions Lisa Dabek and others have taken to protect the tree kangaroos. How can these actions be grouped? Could you take any of these same actions to help protect an animal in your location?

Research-Based Writing *CCSS Writing 2 & 6*

Research to learn more about cloud forests. How do the clouds impact the animals and plants that live there? Create a presentation or poster to share what you have learned.



View the beautiful clouds that make up nebulas in space. See how they are formed and what we can learn about the universe from these spectacular clouds.

ESSENTIAL QUESTION

What are clouds and why are they important to study?

SCIENCE CONCEPT

Stars have life cycles that can be studied by astronomers.

CROSS-CURRICULAR EXTENSION

Science

Learn more about the cycle of a star. Find out how stars form and why they die.

KEY VOCABULARY

gravity (p. 24) the natural force that tends to cause physical things to move toward each other

nebula (p. 24) a cloud of gas or dust in space that can sometimes be seen at night

ultraviolet (p. 24) used to describe rays of light that cannot be seen and are slightly shorter than rays of violet light

PREPARE TO READ

Do a picture walk of the amazing nebula photos in this article. Ask students to share what they know about nebulas and what they would like to find out.

CLOSE READING QUESTIONS

- In the first passage, All Aglow, what word choices does the author make to create vivid descriptions? Cite evidence from the text to support your answer.
- What causes the colors in a nebula? Underline details in the text that support your answer.
- Why did early astronomers think nebulas were “fuzzy blobs”? What changed their minds?

COMMON CORE CONNECTIONS

Compare and Contrast Information *CCSS Info Text 9*

Compare and contrast the different nebulas shown and described in the article with nebulas shown and described in other sources (e.g. an encyclopedia, magazine). How are they the same and different? What conclusions can you make from this comparison?

Key Ideas and Details *CCSS Info Text 1 & 3*

Locate the different ways nebulas form as described in the article, and compare your findings with a partner.

Range of Writing *CCSS Writing 5 & 8*

Use the colorful images and details in the article to inspire you to write a poem about nebulas. Include interesting words from the article and choose descriptions to capture what you see in the photos.

CROSS-TEXT CONNECTIONS WITH MULTIPLE ARTICLES

COMPARE ARTICLES

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

- Combine the information in “Curious Clouds” (p. 6) and “Cloud Spotting” (p. 12) to make a chart that describes types of clouds and important facts about clouds.
- Compare the shapes, sizes, and makeup of Earth clouds in the article “Cloud Spotting” to the clouds described in “Clouds in Space” (p. 24).
- Using information from multiple articles, format a response to the essential question: ***What are clouds and why are they important to study?***
- Use multiple articles to help you explain how people study clouds in their careers.

EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

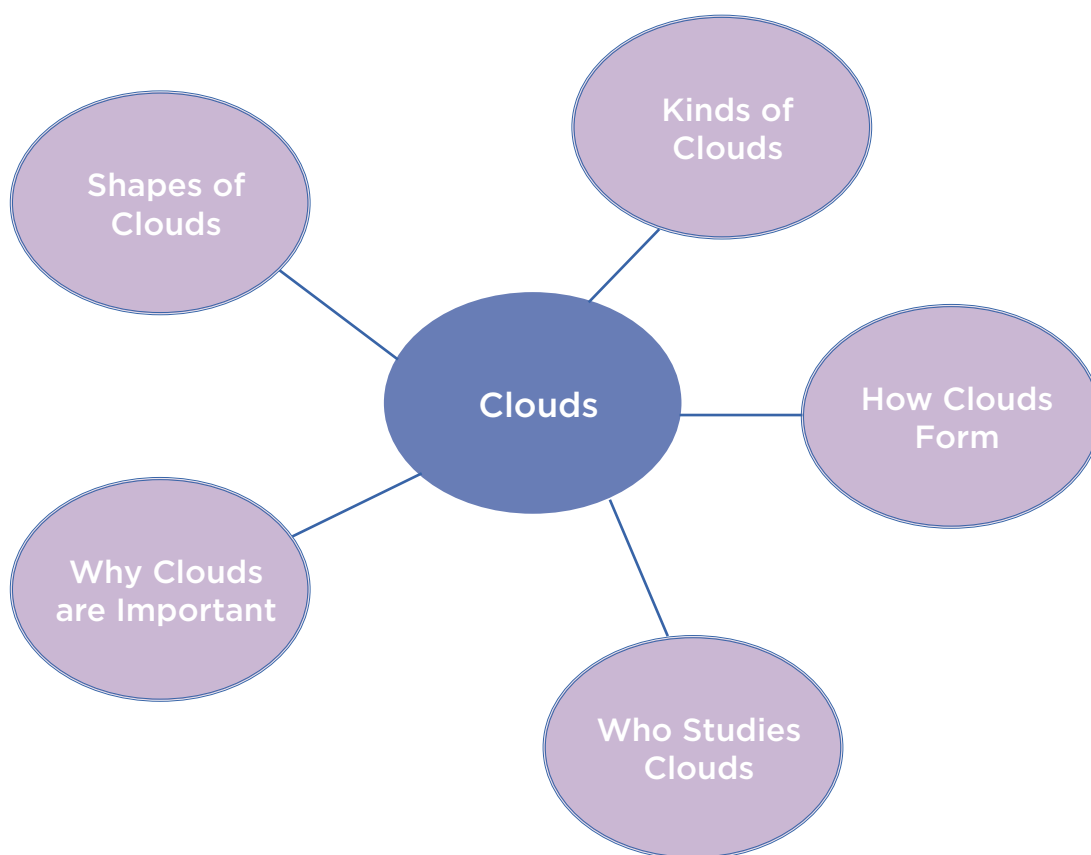
The mini-unit offers three levels of activities. The Engage section helps activate prior knowledge. Compare Articles offers additional ways to use information from multiple articles and prepares students to integrate their ideas and knowledge in the Apply activity.

ENGAGE

READ AND
COMPARE

APPLY

ENGAGE: Engage students in the topic of clouds by creating a cloud web like the one below. As a class, fill in details that correspond with each cloud subtopic, or add other bubbles to extend ideas.



Share the essential question:

What are clouds and why are they important to study?

READ AND COMPARE ARTICLES: Begin with a focus article as a base for building content knowledge and model how to work through the text.

1) READ ALOUD: Use “Curious Clouds” (pgs. 6-11) as a focus article, or choose a different article that works well for your teaching goals. Share the article summary on page 4 of this guide. Students can read their own copies of the article and use sticky notes to mark places they find interesting or have questions about.

2) DISCUSS THE ARTICLE: After reading, guide students to talk about the article. See the Article Pages for Close Reading Questions.

3) READ NEW ARTICLES: Help students choose additional articles to read based on their inquiry questions or what they find interesting. Refer to the Article Pages for summaries of each article within *Ask: Up in the Clouds*.

4) COMPARE ARTICLES: After students have read multiple articles, guide them to make cross-text connections. Refer to page 9 to Compare Articles using prompts that help students integrate ideas and information.

CHOOSE A PURPOSE FOR READING

CLOSE READ *CCSS Reading Info Text 1* Mark the text, noting important details and highlighting what interests, surprises, or confuses you.

UNDERSTAND MAIN IDEAS TO DEVELOP EXPERTISE *CCSS Reading Info Text 2* Record the main ideas in the article. Note how these main ideas build on the main ideas from the focus article. How is your topic knowledge growing?

REVIEW GRAPHIC FEATURES *CCSS Reading Info Text 7* Examine graphic features within this issue and describe how the images, charts, and photographs enhance your understanding of the content.

APPLY: EYES TO THE SKY

In this activity, students will apply what they are learning in *Ask: Up in the Clouds* to what they notice in the sky right above them. Take a look at the weather report and try to begin this unit when there is a forecast for changing weather with the best opportunity for children to observe different type of clouds.

Materials

Digital camera (or other device with digital camera)

Tools for collecting data (on air temperature, wind speed, humidity, precipitation)

Step 1

Have students use or share smartphones or digital cameras to capture images of the sky on each day of the week for two weeks.

Step 2

Prompt students to print out their photos and add them to a copy of the Eyes to the Sky Chart, found in the Printables section of this guide.

Step 3

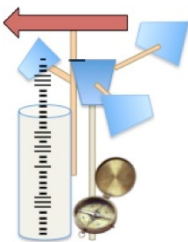
Prompt students to make observations and record the outdoor air temperature, wind speed, humidity, precipitation, and any other weather-related data based on the type of tools available in your classroom. For tools that are not available, have students access a local weather report online and record this data below each cloud photo.

Step 4

Have students work in a group to compare the weather data they collected to official weather data.

Step 5

As a class, discuss the factors involved in making accurate weather measurements.



Extension Activity

For an extension to cloud watching, consider creating a classroom weather station.



NAME: _____

Mini-Unit Graphic Organizer

Eyes to the Sky

Monday	Tuesday	Wednesday	Thursday	Friday
Weather Conditions	Weather Conditions	Weather Conditions	Weather Conditions	Weather Conditions
Monday	Tuesday	Wednesday	Thursday	Friday
Weather Conditions	Weather Conditions	Weather Conditions	Weather Conditions	Weather Conditions

NAME: _____

ANALYZE GRAPHIC FEATURES

GRAPHIC FEATURE	PAGE LOCATION	HOW THIS FEATURE HELPED YOUR UNDERSTANDING

NAME: _____

CONCEPT CHART

Show how reading multiple articles developed your understanding of the essential question or your own inquiry question.

ESSENTIAL QUESTION OR INQUIRY QUESTION:

ARTICLE 1:

ARTICLE 2:

ARTICLE 3:



anvil a heavy iron block on which heated metal is shaped by hitting it with a hammer

*A huge thunderstorm cloud, taller than Mount Everest, with a flat top like an **anvil**—watch out for thunder and lightning. (p. 12)*

condense to change from a gas into a liquid

*And when cooling water molecules meet a speck of salt or dust, they **condense**, or stick together. (p. 7)*

conservation the protection of animals, plants, and natural resources

*She became interested in environmental studies and **conservation**, like her hero, Jane Goodall. (p. 20)*

evaporate to change from a liquid into a gas

*As the sun warms the Earth, water **evaporates** from lakes, rivers, oceans, and the leaves of plants—and from you, when you get sweaty. (p. 6)*

gravity the natural force that tends to cause physical things to move toward each other

*As **gravity** pulls the gas and dust together, the cloud heats up. (p. 24)*

marsupial a type of animal (such as a kangaroo or an opossum) that carries its babies in a pocket of skin on the mother's stomach

*Even with binoculars, the small, shy **marsupials** are hard to find. (p. 18)*

molecule the smallest possible amount of a particular substance that has all the characteristics of that substance

*The air is full of tiny water **molecules** floating around. (p. 6)*

nebula a cloud of gas or dust in space that can sometimes be seen at night

*The Orion **Nebula** is a huge cloud of gas and dust studded with new stars. (p. 24)*

preserve an area where plants, animals, minerals, etc., are protected

*After talking with Dabek and other scientists, they decided to set aside more than 180,000 acres to create a cloud forest nature **preserve**. (p. 21)*

sculpture a piece of art that is made by carving or molding clay, stone, metal, etc.

*Smilde's cloud **sculptures** last about 10 seconds, then—poof—they're gone. (p. 17)*

spritz to spray (something) quickly with a small amount of liquid

*Then he makes the air very damp by **spritzing** it with water from an ordinary spray bottle. (p. 17)*

temporary continuing for a limited amount of time; not permanent

*He calls his indoor clouds "**temporary** sculptures of almost nothing." (p. 17)*

tornado a violent and destructive storm in which powerful winds move around a central point

*The distinctive funnel-shaped cloud of a **tornado** is the center of a fast-spinning column of air. (p. 15)*

ultraviolet used to describe rays of light that cannot be seen and are slightly shorter than rays of violet light

*They also spew out a lot of **ultraviolet** light. (p. 24)*



“Curious Clouds”

- <http://www.srh.noaa.gov/srh/jetstream/clouds/cloudwise/types.html>

Analyze the features of 10 basic cloud types.

“Cloud Spotting”

- <https://cloudappreciationsociety.org/>

Read about cloud viewing on the official site of the Cloud Appreciation Society.

“Cloud Maker”

- <http://abcnews.go.com/International/photos/artist-creates-clouds-art-15903014/image-15903130>

View amazing photos of Smilde’s work.

- https://www.youtube.com/watch?v=1XKXIZgqr_I

Watch a video of Smilde’s work in action.

“Kangaroos, Clouds, and Coffee”

- https://www.youtube.com/watch?v=5WAiBI_b2cE

Watch a National Geographic video of Lisa Dabek in action in the cloud forests of New Guinea with the tree kangaroos.

“Clouds in Space”

- <http://hubblesite.org/gallery/album/nebula/>

See more stunning images of nebulae at the Hubble Telescope Nebulae Image Gallery.