

# ask

## Where the River Runs

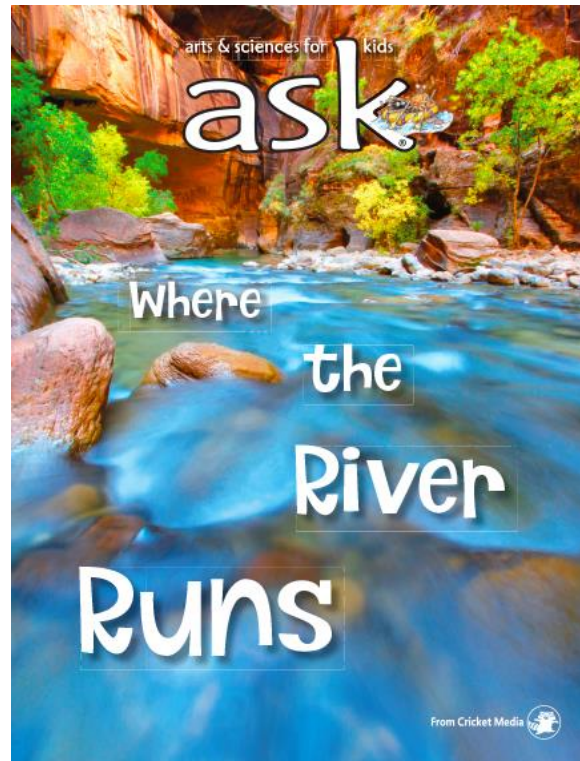
Rivers shape the land, transport water, and are filled with life forms. Learn about the amazing features of rivers and why they are so important.

### CONVERSATION QUESTION

What can we learn from a river?

### TEACHING OBJECTIVES

- Students will read and analyze a nonfiction science article about rivers
- Students will identify how beavers impact rivers
- Students will determine the methods used to investigate a stream
- Students will obtain information from text and graphics
- Students will collect evidence that can be used to determine if a beaver lives in a river habitat
- Students will use information from the article to create an investigation plan
- Students will construct and use maps
- Students will design and construct models
- Students will identify cause-and-effect relationships
- Students will design a poster to show how streams are important



In addition to supplemental materials focused on core STEM skills, this flexible teaching tool offers vocabulary-building activities, questions for discussion, and cross-curricular activities.

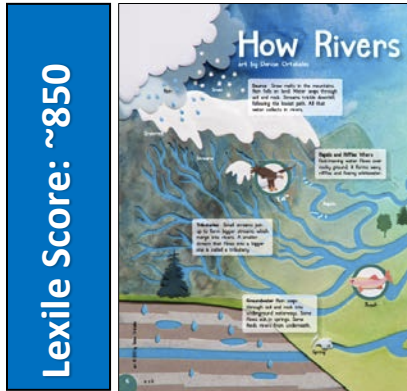
### SELECTIONS

- **How Rivers Run**  
Expository Nonfiction, ~850L
- **Busy Beavers**  
Expository Nonfiction, ~850L
- **Our Creek**  
Narrative Nonfiction, ~750L

## How Rivers Run

pp. 6–9, Expository Nonfiction

Use this article to teach students about important river features using both text and graphics.



## RESOURCES

- How Rivers Run

## OBJECTIVES

- Students will read and analyze a nonfiction science article about rivers
- Students will obtain information from text and graphics
- Students will construct and use maps

## KEY VOCABULARY

- **riffles (p. 6)** a patch of waves or ripples in a stream
- **whitewater (p. 6)** water in part of a river that looks white because it is moving very fast over rocks
- **sediment (p. 7)** material that sinks to the bottom of a liquid
- **hydroelectric (p. 9)** production of electricity by using machines that are powered by moving water
- **artificial (p. 9)** not happening or existing naturally: created or caused by people

## ENGAGE

**Conversation Question:** What can we learn from a river?

Show photos or a map of a local stream and ask these questions to engage prior knowledge and curiosity.

- Where does the water come from that is in this stream?
- Where does the stream go?
- Where is the stream widest?
- Where does the water move faster? Slower?
- Can we drink the water in this stream? Why or why not?

## INTRODUCE VOCABULARY

Project the vocabulary words and have students search for these words in the article with a partner. Have students use the illustration and text to help them define each word. Review the meanings in a class share-and-compare discussion.

## READ & DISCUSS

Have students read the article with a partner, then use the following prompts in a class discussion to address the conversation question: What can we learn from a river?

- What is the purpose of rivers?
- What are some of the different features rivers can have?
- How do rivers help to form sediment?

## CONCEPT/SKILL FOCUS: Obtain Information

**INSTRUCT:** Guide students to obtain information about the rivers from both the text and graphics. Have students trace the path of the river, reading aloud the text boxes that follow the path.

Have students read the text a second time, pretending to follow the path of a single drop of water. Ask students what situations the drop encounters that cause it to become polluted, and what areas along the water's path are helpful to people and other animals.

**ASSESS:** Have students fill out the *How Rivers Run* graphic organizer that helps students organize and record information they collect from both the text and illustrations.

## EXTEND

**Social Studies: Construct and Use Maps**

Provide students with a map of a local stream and have them label the features they see that compare to the features described in this article.

## How Rivers Run

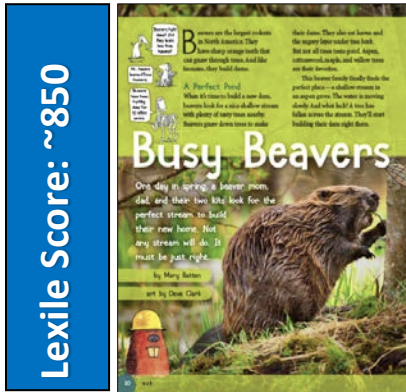
Look for information in the following categories from the article text and graphics and record in the chart below.

The Source and Flow of Rivers		
Page	Text or Illustration	Information
6	Text	Rivers run downhill.
How Rivers Change		
How Rivers Are Used		
6	Illustration	Eagle uses the river to catch a trout to eat.

## Busy Beavers

pp. 10–13, Expository Nonfiction

Use this article to search for evidence on how beavers impact rivers.



## RESOURCES

- Collect Evidence

## OBJECTIVES

- Students will read and analyze a nonfiction science article about beavers
- Students will collect evidence that shows if a beaver lives in a river habitat
- Students will design and construct models

## KEY VOCABULARY

- **rodent (p. 10)** a small furry mammal whose teeth never stop growing, including mice, rats, squirrels, beavers, and many more
- **gnaw (p. 10)** to chew something repeatedly
- **dam (p. 10)** a structure that is built across a river or stream to stop water from flowing
- **kits (p. 11)** the name of some baby animals
- **predators (p. 11)** animals that live by killing and eating other animals

## ENGAGE

**Conversation Question:** What can we learn from a river?

Have students examine the photos in the article before reading the text. Ask them to construct a list of facts that they know about beavers already (prior knowledge) or can gain from the photos. Students share and compare their list of facts with a partner.

## INTRODUCE VOCABULARY

Present and read aloud the vocabulary words. Explain that each of these words is related to the topic of beavers. Have students discuss the meaning of the words and how each might relate to beavers. Students can then use the article to search for the word to check on these connections.

## READ & DISCUSS

Have students read the article with a partner, then use the following prompts in a class discussion.

- How do beavers depend on the river to live?
- How do beavers change a river?

## CONCEPT/SKILL FOCUS: Collect Evidence

**INSTRUCT:** Explain that this article is a good source of information to help understand how to investigate if beavers live in an area. Ask students to collect information from the article about how beavers impact their environment using the *Collect Evidence* graphic organizer to answer the question:

What evidence can be found that beavers are living on a river?

**ASSESS:** Students discuss the graphic organizers with a partner to compare and share the evidence they recorded. Ask them to discuss which evidence would be easiest to observe and which evidence would be challenging to collect.

## EXTEND

**Engineering: Design and Construct Models** Provide groups of students with clay and sticks to construct a model of a beaver dam and lodge in a tray of water. Students will share their models and explain how they used the information in the article to assist in designing and constructing their models.

## Collect Evidence

Pretend that you are a naturalist studying a river environment. What evidence would you look for to see if beavers are living in the area? Use the article text and photos to look for clues.

Page	Evidence
10	Chewed bark and twigs of aspen, willow, maple, and cottonwood trees.

## Our Creek

pp. 14–18, Narrative Nonfiction

Use this article about children investigating a local stream to determine the purposes, materials, and steps used to plan investigations.



## RESOURCES

- Stream Investigation Planner

## OBJECTIVES

- Students will determine the methods used to investigate a stream
- Students will use information from the article to create an investigation plan
- Students will design a poster to show how streams are important

## KEY VOCABULARY

- streambed** (p. 15) the channel bottom of a stream, river, or creek
- dissolved** (p. 16) mixed and became part of the liquid
- acidic** (p. 16) having the properties of an acid, or containing acid; having a pH below 7
- hardness** (p. 16) measure of the amount of dissolved minerals in water
- larvae** (p. 17) very young forms of insects

## ENGAGE

**Conversation Question: What can we learn from a river?**

Ask students to respond to the conversation question by explaining how they would go about learning about a river. Record their ideas on a class chart. Compare this chart with what the students investigated in the article after Read & Discuss.

## INTRODUCE VOCABULARY

Present and read aloud the vocabulary words. Explain that each of these words is related to the topic of stream investigations. Have students discuss the meaning of the words and how each might relate to rivers. Ask students to point out these words with a partner as they read the article.

## READ & DISCUSS

Have students read the article with a partner, then use the following prompts in a class discussion.

- How did the students learn about their local stream?
- How did they use chemistry to learn about the stream?
- How did they use math to learn about the stream?
- What kind of investigation would you most want to do to learn about a stream?

## CONCEPT/SKILL FOCUS: Planning Investigations

**INSTRUCT:** Explain that the students in this article share all the different ways they plan and carry out investigations to learn about their local creek. Assign students one section of the article to study: Along the Banks/Streambed (pages 14–15), What's in the Water (pages 16–17), or What Lives in Water (page 17). They will use the *Stream Investigation Planner* graphic organizer to record the steps and equipment used to study the water features and life in and along the creek.

**ASSESS:** Students discuss the graphic organizer with a group of three (so all three article sections are represented) to share the evidence they recorded. Ask them to discuss which evidence would be easiest to observe and which evidence would take more work to collect. Combine the groups' graphic organizers into one investigation planner.

## EXTEND

**Language Arts: Write Informative Text**

Review page 18 and the poster example made by students. Ask students how the poster communicated information about the stream and what the students were trying to accomplish. Then have students design their own stream poster to communicate information about the importance of rivers.

## Stream Investigation Planner

Study the section you are assigned to add to this planner. You will want to find out what is being investigated, what the students used to learn about this feature, and the steps they took in their investigation. You will share and review each other's planner and put them together as an investigation that could be conducted with any stream.

Page	Investigation	Equipment	Steps
14	The course the river takes from its source to end point.	Maps	<ol style="list-style-type: none"> <li>1. Locate maps that show the river being studied.</li> <li>2. Trace the route from the source to where it ends.</li> </ol>