



# Teacher's Guide

# Water

## Dear Educator,

Your students will float with the current as they page through this issue of **KIDS DISCOVER**. Your young scientists will explore the topics at the right in *Water*.

This Teacher's Guide is filled with activity ideas and blackline masters that can help your students understand more about water, the water cycle, and water's importance to all life. Select or adapt the activities that suit your students' needs and interests best.

Thank you for making **KIDS DISCOVER** a part of your classroom agenda.

Sincerely,

**KIDS DISCOVER**

P.S. We would love to hear from you. E-mail your comments and ideas to [teachers@kidsdiscover.com](mailto:teachers@kidsdiscover.com)

## Meeting the Standards

### Earth and Space Science

- ✓ Structure of the Earth System
- ✓ Science in Personal and Social Perspectives
- ✓ Types of Resources
- ✓ Visit [www.kidsdiscover.com/standards](http://www.kidsdiscover.com/standards) to find out more about how **KIDS DISCOVER** meets state and national standards.

PAGES	WHAT'S IN WATER
2-3	<b>Water, Water Everywhere</b> The Ancient Mariner has an ocean of water and nothing to drink.
4-5	<b>The Super Powers of Water (A Substance ... Worth Saving)</b> Through its super powers, water makes salt disappear and reappear.
6-7	<b>Rain, Rain, Go Away Come Again Another Day</b> Water rides the cycle of evaporation, condensation, and precipitation.
8-9	<b>Ice Lands</b> Ice is on the move in glaciers and icebergs.
10-11	<b>The Ice Was All Around</b> The Ancient Mariner hears ice cracking up.
12-13	<b>The Clean Water Challenge</b> Pollutants settle out of water.
14-15	<b>Water Survivors</b> A variety of creatures thrive in watery homes.
16-17	<b>Water Works</b> Water helps get the job done.
18-19	<b>Game Pages</b> Review content with a puzzle and extend content through experiments and reading.

## • IN THIS TEACHER'S GUIDE •

### 2 Prereading Activities

### 3 Get Set to Read (Anticipation Guide)

### 4 Discussion and Writing Questions

### 5-6 It's in the Reading (Reading Comprehension)

### 7 Everything Visual (Graphic Skills)

### 8 Cross-Curricular Extensions

### 9-12 Answer Keys to Blackline Masters

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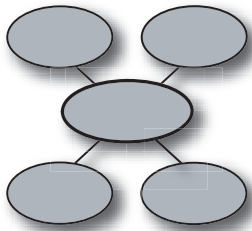
# PREREADING ACTIVITIES

**B**efore distributing **KIDS DISCOVER Water**, activate students' prior knowledge with these activities.

## Discussion

To get students thinking about how this topic relates to their interests and lives, ask:

- ✓ How have you used water today?
- ✓ Where does your community get its water?
- ✓ How can you help conserve water?



## Concept Map

Explain to students that they will be reading *Water*. Ask: *What are some words related to water?* List students' responses on the board. (See box below for some terms they may

suggest.) After creating a list, ask students to group the words into categories, such as **Water Cycle**, **Ice**, and **Uses**. Create a concept map by writing *Water* on the board and circling it. Write the categories around the circle and draw lines between the ideas to show the connections. Then list examples and write the words from the list around the appropriate categories. Encourage students to add more words to the concept map as they read *Water*.

### KEY TERMS

- |             |             |             |
|-------------|-------------|-------------|
| ✓ ocean     | ✓ evaporate | ✓ glacier   |
| ✓ capillary | ✓ condense  | ✓ pollutant |
| ✓ action    | ✓ raindrop  | ✓ filter    |
| ✓ nutrients | ✓ drought   | ✓ aerate    |
| ✓ cohesion  | ✓ monsoon   | ✓ distill   |
| ✓ super-    | ✓ whirlpool | ✓ sludge    |
| ✓ solvent   | ✓ rime      | ✓ current   |
| ✓ currents  | ✓ iceberg   | ✓ aquifer   |

## Get Set to Read (Anticipation Guide)



Copy and distribute the **Get Set to Read** blackline master (page 3 of this Teacher's Guide).

Explain to students that this **Anticipation Guide** will help them find out what they know and what misconceptions they have about the topic. **Get Set to Read** is a list of statements—some true, some false. Ask students to write whether they think each statement is true or false in the **Before Reading** column. Be sure to tell students that it is not a test and they will not be graded on their answers. The activity can be completed in a variety of ways for differentiated instruction:

- ◆ **Have students** work on their own or in small groups to complete the page.
- ◆ **Assign pairs** of students to focus on two statements and to become "experts" on these topics.
- ◆ **Ask students** to complete the **Before Reading** column on their own, and then tabulate the class's answers on the chalkboard, on an overhead transparency, or on your classroom computer.
- ◆ **Review the statements** orally with the entire class.

If you predict that students will need assistance finding the answers, complete the **Page Number** column before copying **Get Set to Read**.

## Preview

Distribute *Water* and model how to preview it. Examine **titles, headings, words in boldface, pictures, charts, and captions**. Then have students add new information to the **concept map**. If students will only be reading a few pages at one sitting, preview only the selected pages.

## BE WORD WISE WITH POWER VOCABULARY!

**Y**ou have exclusive access to additional resources including Power Vocabulary blackline masters for every available KIDS DISCOVER title! These activities introduce students to 15 specialized and general-use vocabulary words from each KIDS DISCOVER title. Working with both types of words helps students develop vocabulary, improve comprehension, and read fluently. Follow the links from your Teacher's Toolbox CD-ROM and find your title to access these valuable resources:

- ◆ Vocabulary cards
- ◆ Crossword puzzle
- ◆ Word find
- ◆ Matching
- ◆ Cloze sentences
- ◆ Dictionary list

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Name \_\_\_\_\_ Date \_\_\_\_\_

# Get Set to Read

What do you know about water and its uses? In **Before Reading**, write *true* if you think the statement is true. Write *false* if you think the statement is not true. Then read **KIDS DISCOVER Water**. Check back to find out if you were correct. Write the correct answer and its page number.

**CHALLENGE:** Rewrite each false sentence in a way that makes it true.

Before Reading	After Reading	Page Number
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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_____	_____	_____
_____	_____	_____
_____	_____	_____

# DISCUSSION & WRITING QUESTIONS

Use the following questions as discussion starters or as writing prompts for journals. For additional in-class discussion and writing questions, adapt the questions on the reading comprehension blackline masters on pages 5 and 6.

## Cover

Before students read *Water*, have them look at the cover. Ask:

- ✓ What topics do you think will be discussed in *Water*?
- ✓ What do you think "Heavy-Metal H<sub>2</sub>O" refers to?

## Pages 2-3

Most of Earth's water is in the oceans. Ask:

- ✓ About what percent of Earth's water is not in the oceans?
- ✓ What is capillary action?
- ✓ How can there be water everywhere but no drop to drink?

## Pages 4-5

Water is a super-solvent. Ask:

- ✓ Why is water called a super-solvent?
- ✓ What is surface tension of water and how can it be broken?
- ✓ What are whirlpools? Why don't they usually form near the shore?

## Pages 6-7

The water cycle is a closed system. Ask:

- ✓ What is the water cycle?
- ✓ How do hydrologists classify water?
- ✓ What water problems does Bangladesh have because of its location?

## Pages 8-9

Ice is the solid form of water. Ask:

- ✓ What is a glacier?
- ✓ How are icebergs related to glaciers?
- ✓ How does rime differ from most other ice?

## Pages 10-11

Lines from *The Rime of the Ancient Mariner* are quoted. Ask:

- ✓ What do you think the ice referred to in the poem is?

- ✓ Where do you think the two people shown in the picture are? What do you think they are doing?

## Pages 12-13

Before it is used, water is cleaned to remove contaminants. Ask:

- ✓ What kinds of contaminants can be found in water?
- ✓ How is water "cleaned"?
- ✓ Why is keeping water clean a challenge?

## Pages 14-15

Some organisms can survive in even extreme water conditions. Ask:

- ✓ Why might bogs be considered extreme water environments? What organisms can survive in bogs?
- ✓ What makes water "hard"?
- ✓ How does the moloch lizard get the water it needed to survive?

## Pages 16-17


People use water in many different ways. Ask:

- ✓ What is a water clock? How does it work?
- ✓ How are water mills and windmills alike and different?
- ✓ How does water power steam-powered ships?

## All Pages

After students read the issue, ask:

- ✓ Identify three facts have you learned about water in this issue of KIDS DISCOVER.



**Have students make vocabulary cards for words defined in context. They can write each definition on one card and its word on another. Students can use the cards to play a match game.**

Name \_\_\_\_\_ Date \_\_\_\_\_

## It's in the Reading

After reading **KIDS DISCOVER Water**, choose the best answer for each question.  
Fill in the circle.



Find your answers on the pages shown in the book icon next to each question.

**1. What would happen to a white carnation when its stem is left in water with red dye?**

- A. The flower will dry out.
- B. The flower will be colored red.
- C. The petals of the flower will fall off.
- D. Nothing will happen to the flower.



**2. Which term means “ability of components to stick together”?**

- A. currents
- B. whirlpool
- C. solvent
- D. cohesion



**3. What happens to water when it evaporates?**

- A. Liquid water becomes water vapor.
- B. Water vapor becomes liquid water.
- C. Liquid water becomes ice.
- D. Ice becomes liquid water.



**4. Which of the following is another name for *hurricane*?**

- A. monsoon
- B. tsunami
- C. typhoon
- D. aquifer



**5. Where are you most likely to see an iceberg?**

- A. in the northern Atlantic Ocean
- B. in the Rocky Mountains
- C. near the equator
- D. close to Florida



**6. Which of these statements is an opinion?**

- A. An ice-covered ocean surrounds the Arctic.
- B. The polar regions of the Earth are unusually beautiful places.
- C. Near the coast, glaciers crawl down the mountains and flow into the ocean.
- D. The ice cover shrinks in summer and expands in winter.



**7. Why do some water treatment plants distill water?**

- A. to kill bacteria
- B. to remove salt and other minerals
- C. to encourage the growth of helpful bacteria
- D. to make the water tasteless



**8. Which of these steps in the water-cleaning process takes place before aerating?**

- A. sludge removal
- B. filtering
- C. coagulation
- D. settling and skimming



**9. What determines the hardness of hard water?**

- A. the kinds of minerals in the water
- B. the hardness of the materials in the water
- C. the amount of dissolved materials in the water
- D. the temperature of the materials in the water



**10. Where does the oxygen used by fuel cells come from?**

- A. from the air
- B. from coal
- C. from oxygen tanks
- D. from water



**11. How can you conserve water?**

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Name \_\_\_\_\_ Date \_\_\_\_\_

## Everything Visual

Diagrams provide information visually. Study the diagram on pages 6–7. Then answer the questions.

1. What does the diagram show?

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2. When does the raindrop vaporize?

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3. How does the vaporized raindrop get to Spain?

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4. What causes the vaporized raindrop to condense?

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5. What do you think happens to the raindrop after it falls to the ground in Spain?

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6. Do all raindrops go through each of the steps of the cycle as shown in the diagram?  
Explain your answer.

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7. Use what you understand about the water cycle to explain how dew forms.  
Explain your answer.

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# CROSS-CURRICULAR EXTENSIONS

**H**ave students try these activities to expand their knowledge and interest in water.

## Science

- ◆ Have students observe or take part in these water-related activities demonstrating the water cycle. Pour several cups of water in a pan. Cover the pan with a glass-top lid. Have students observe from a safe distance as the water boils and vapor condenses on the lid. Ask students to place a saucer of water in a sunny window and to observe the saucer at the beginning and end of the day. Suggest that students fill a glass with ice water and watch as water condenses on the outside of the glass. Encourage students to explain what takes place in each activity in terms of the water cycle.

## Language Arts/Social Studies/Art

- ◆ The highest waterfalls, the deepest lakes, the first person to ski-walk across an ocean—the water story is filled with record-breaking events and extremes. Have students prepare a Water Records Book. They can record all kinds of water-related records. Encourage them to include graphics in their record books.

## Language Arts/Music

- ◆ Have students choose poems or songs that have water as their topic. They might choose, for example, nursery rhymes such as “Rain, Rain, Go Away,” poems such as Coleridge’s *The Rime of the Ancient Mariner*, and songs such as “Row, Row, Row Your Boat.” They can perform the songs and read the poems for the class.

## Social Studies/Language Arts

- ◆ Jacques Cousteau, Robert Ballard, and Sylvia Earle explored the ocean depths. Have students do research to learn more about these oceanographers and their contributions to underwater research. Have students prepare brief profiles of one of these or other well-known oceanographers.

## Language Arts

- ◆ Multiple-meaning words are words with more than one meaning. Homographs are words that are spelled alike but have different meanings and derivations. Some homographs are also pronounced differently. Have students identify words in *Water* that have multiple meanings or are homographs. Ask them to give the meaning of each word. For example, they can define *rime* as in *The Rime of the Ancient Mariner* and *rime* as in “Rime is frozen water vapor.” Other examples of multiple-meaning words and homographs are *compact*, *desert*, *bog*, *concrete*, and *point*.

## Science/Art

- ◆ Suggest that students prepare a three-dimensional graphic depicting the water cycle. They can use cotton balls for clouds and shreds of plastic wrap for rain. They might use watercolors to color clear plastic shelf liner for bodies of water.

## Social Studies

- ◆ Have students prepare a Water map of North America. The map can show the continent’s major river systems and lakes. You may want to review how cartographers use color and lines to show bodies of water on a map. Remind students to provide a map title and a key for their maps.

## Art

- ◆ Have students find examples of artwork that features water. They might display prints of Hudson River School landscape painters or seascapes by Winslow Homer and others. Ask students to provide the name of the painting and information about the artist as they show the prints they present.

**HELPING HAND**  
**Have interested students read KIDS DISCOVER Oceans and Rain & Snow for more information about water.**





Name **ANSWER KEY** \_\_\_\_\_ Date \_\_\_\_\_

## Get Set to Read

What do you know about water and its uses? In Before Reading, write *true* if you think the statement is true. Write *false* if you think the statement is not true. Then read KIDS DISCOVER *Water*. Check back to find out if you were correct. Write the correct answer and its page number.

**CHALLENGE:** Rewrite each false sentence in a way that makes it true.

Before Reading		After Reading	Page Number
_____	1. About <del>half</del> <b>three-fourths</b> of Earth is covered by water and ice.	<i>False</i>	<i>p. 3</i>
_____	2. Soap <del>increases</del> <b>breaks</b> the surface tension of water.	<i>False</i>	<i>p. 4</i>
_____	3. When salt water evaporates, the salt in the water remains behind.	<i>True</i>	<i>p. 5</i>
_____	4. Water becomes a liquid when it condenses.	<i>True</i>	<i>p. 7</i>
_____	5. All snow crystals are <del>five-sided</del> <b>six-sided</b> figures.	<i>False</i>	<i>p. 8</i>
_____	6. Icebergs are large masses of floating ice that have broken off glaciers.	<i>True</i>	<i>p. 9</i>
_____	7. At treatment plants, chemicals may be used to kill harmful organisms in water.	<i>True</i>	<i>p. 12</i>
_____	8. Wastewater is aerated to <del>discourage</del> <b>encourage</b> the growth of bacteria that eats waste material.	<i>False</i>	<i>p. 12</i>
_____	9. Brine shrimp can live in the very salty waters of the Great Salt Lake in Utah.	<i>True</i>	<i>p. 15</i>
_____	10. The world's highest waterfall is <del>Niagara Falls in North America</del> <b>Angel Falls in South America.</b>	<i>True</i>	<i>p. 17</i>

Name **ANSWER KEY** \_\_\_\_\_ Date \_\_\_\_\_

## It's in the Reading

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Fill in the circle.



Find your answers on the pages shown in the book icon next to each question.

**1. What would happen to a white carnation when its stem is left in water with red dye?**

- A. The flower will dry out.
- B. The flower will be colored red. (*cause and effect*)
- C. The petals of the flower will fall off.
- D. Nothing will happen to the flower.



**2. Which term means “ability of components to stick together”?**

- A. currents
- B. whirlpool
- C. solvent
- D. cohesion (*word meaning*)



**3. What happens to water when it evaporates?**

- A. Liquid water becomes water vapor. (*cause and effect*)
- B. Water vapor becomes liquid water.
- C. Liquid water becomes ice.
- D. Ice becomes liquid water.



**4. Which of the following is another name for *hurricane*?**

- A. monsoon
- B. tsunami
- C. typhoon (*word meaning*)
- D. aquifer



**5. Where are you most likely to see an iceberg?**

- A. in the northern Atlantic Ocean (*inference*)
- B. in the Rocky Mountains
- C. near the equator
- D. close to Florida



**6. Which of these statements is an opinion?**

- A. An ice-covered ocean surrounds the Arctic.
- B. The polar regions of the Earth are unusually beautiful places.  
*(fact and opinion)*
- C. Near the coast, glaciers crawl down the mountains and flow into the ocean.
- D. The ice cover shrinks in summer and expands in winter.



**7. Why do some water treatment plants distill water?**

- A. to kill bacteria
- B. to remove salt and other minerals *(cause and effect)*
- C. to encourage the growth of helpful bacteria
- D. to make the water tasteless



**8. Which of these steps in the water-cleaning process takes place before aerating?**

- A. sludge removal
- B. filtering
- C. coagulation
- D. settling and skimming *(sequence)*



**9. What determines the hardness of hard water?**

- A. the kinds of minerals in the water
- B. the hardness of the materials in the water
- C. the amount of dissolved materials in the water *(details)*
- D. the temperature of the materials in the water



**10. Where does the oxygen used by fuel cells come from?**

- A. from the air *(details)*
- B. from coal
- C. from oxygen tanks
- D. from water



**11. How can you conserve water?**

*Essay: Answers will vary. Suggestions may include turning tap water off when brushing the teeth and using cooled cooking water that has not been salted to water plants.*



Name **ANSWER KEY** \_\_\_\_\_ Date \_\_\_\_\_

## Everything Visual

Diagrams provide information visually. Study the diagram on pages 6–7. Then answer the questions.

**1. What does the diagram show?**

*the water cycle illustrated through the path of one raindrop*

**2. When does the raindrop vaporize?**

*The raindrop vaporizes after it reaches the ocean.*

**3. How does the vaporized raindrop get to Spain?**

*Winds blow the cloud the raindrop is in across the ocean.*

**4. What causes the vaporized raindrop to condense?**

*When the cloud cools, the vaporized raindrop condenses and falls to the ground as liquid water.*

**5. What do you think happens to the raindrop after it falls to the ground in Spain?**

*The raindrop goes through a similar cycle of evaporating, condensing, and falling as rain or snow.*

**6. Do all raindrops go through each of the steps of the cycle as shown in the diagram?**

Explain your answer.

*No, some raindrops will evaporate before they soak into the ground or from lakes and rivers.*

**7. Use what you understand about the water cycle to explain how dew forms.**

Explain your answer.

*Water vapor in the air cools, comes in contact with the surface of a leaf, for example, condenses, forming a drop of dew on the leaf.*