

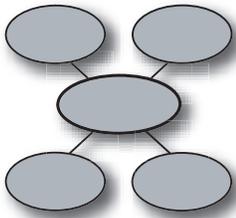
PREREADING ACTIVITIES

Before distributing **KIDS DISCOVER *Electricity***, activate students' prior knowledge with these activities.

Discussion

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

- ✓ *What is static electricity?*
- ✓ *How do you use electricity every day?*
- ✓ *Do you think it is necessary to conserve electricity?*



Concept Map

Explain to students that they will be reading *Electricity*. Ask: *What are some words related to electrical energy?* 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 **Generation of Electricity**, **Movement of Electricity**, and **Measures of Electricity**. Create a concept map by writing *Electrical Energy* on the board and circling it. Write the categories around the circle and draw lines between the ideas to show the connections. Then write the words from the list around the appropriate categories. Encourage students to add more words to the concept map as they read *Electricity*.

KEY TERMS

- | | |
|-----------------------|----------------------|
| ✓ atoms | ✓ negative |
| ✓ protons | ✓ electrical charges |
| ✓ electrons | ✓ insulator |
| ✓ static electricity | ✓ circuit |
| ✓ dynamic electricity | ✓ ampere |
| ✓ current | ✓ generator |
| ✓ conductor | ✓ transformer |
| ✓ positive | |

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 entire 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 *Electricity* 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!

You 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



Name _____ Date _____

Get Set to Read

What do you know about electricity? 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 Electricity**. 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. Electrical energy comes from the movement of tiny particles called protons.	_____	_____
_____	2. Electrical signals control nerves and muscles in the human body.	_____	_____
_____	3. Both copper and salt water are good electrical insulators.	_____	_____
_____	4. Dynamic electricity is used to run our appliances.	_____	_____
_____	5. Michael Faraday began the first serious study of electricity and magnetism.	_____	_____
_____	6. A watt is a measure of the amount of energy of each electron in a system.	_____	_____
_____	7. Nikola Tesla thought direct current was an inefficient means of delivering electrical power.	_____	_____
_____	8. An electrical current passing through pressurized gas lights neon lights.	_____	_____
_____	9. Brain waves are electrical signals that can be measured by an electroencephalogram.	_____	_____
_____	10. The United States uses 5 percent of the world's energy resources.	_____	_____

Name _____ Date _____

It's in the Reading

After reading KIDS DISCOVER *Electricity*, 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 are the negatively charged particles in an atom?

- A. electrons
- B. neutrons
- C. nucleus
- D. protons



2. In terms of electricity, how are rubber and air alike?

- A. Both are conductors.
- B. Both are insulators.
- C. Electricity flows easily through both.
- D. Both cause static electricity.



3. Which of the following is a conductor?

- A. wood
- B. porcelain
- C. sea water
- D. glass



4. Which of these events took place first?

- A. Thomas Edison invents an improved light bulb.
- B. Nikola Tesla invents a motor that produces alternating current.
- C. Samuel Morse invents the telegraph.
- D. Michael Faraday invents the generator.



5. What is the role of transformers in the path of electrical current from power plant to home?

- A. increase the voltage of a current
- B. decrease the voltage of a current
- C. either increase or decrease the voltage of a current
- D. neither increase nor decrease the voltage of a current



6. What measures the rate at which an electrical current can do work?

- A. watt
- B. volt
- C. ampere
- D. ohm



7. Who believed it was dangerous to fool around with alternating current?

- A. Nikola Tesla
- B. George Westinghouse
- C. Thomas Edison
- D. James Watts



8. Which of the following is needed by both batteries and fuel cells to produce electrical energy?

- A. carbon
- B. hydrogen
- C. zinc
- D. an acid



9. Which of these would be a good rule to add to a list of electrical safety rules?

- A. Keep electrical cords off the floor.
- B. Place plastic covers over unused outlets.
- C. Never unplug electrical appliances.
- D. Wear gloves when using a light switch.



10. What is an example of "green" energy?

- A. electricity produced by using coal
- B. electricity produced by wind
- C. electricity produced by using natural gas
- D. electricity produced by using wood as a fuel



11. Choose one use of electrical energy that you would not want to give up. Why is this use important to you?



Name _____ Date _____

Everything Visual

Graphs provide visuals of data, making the data easy to understand. The graphs on pages 16–17 show home use of energy and energy sources of electricity. Study the graphs. Then answer the questions.

1. For what year are energy sources for electricity given? Why might this information change from year to year?

2. Which of the energy sources of electricity might be considered “green” sources? Why?

3. What is the second largest source of energy for generating electricity?

4. What was the information source for the graph on Average Home Energy Use?

5. What accounts for the greatest amount of energy use in the average home?

6. How are the rectangular graph and circle graph alike? How are they different?



Name **ANSWER KEY** _____ Date _____

Get Set to Read

What do you know about electricity? 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 Electricity**. 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. Electrical energy comes from the movement of tiny particles called protons electrons .	<i>False</i>	<i>p. 2</i>
_____	2. Electrical signals control nerves and muscles in the human body.	<i>True</i>	<i>p. 2</i>
_____	3. Both copper and salt water are good electrical insulators conductors .	<i>False</i>	<i>p. 4</i>
_____	4. Dynamic electricity is used to run our appliances.	<i>True</i>	<i>p. 5</i>
_____	5. Michael Faraday William Gilbert began the first serious study of electricity and magnetism.	<i>False</i>	<i>p. 6</i>
_____	6. A watt volt is a measure of the amount of energy of each electron in a system.	<i>False</i>	<i>p. 8</i>
_____	7. Nikola Tesla thought direct current was an inefficient means of delivering electrical power.	<i>True</i>	<i>p. 10</i>
_____	8. An electrical current passing through pressurized gas lights neon lights.	<i>True</i>	<i>p. 12</i>
_____	9. Brain waves are electrical signals that can be measured by an electroencephalogram.	<i>True</i>	<i>p. 15</i>
_____	10. The United States uses 5 25 percent of the world's energy resources.	<i>False</i>	<i>p. 16</i>

Name **ANSWER KEY** _____ Date _____

It's in the Reading

After reading KIDS DISCOVER *Electricity*, 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 are the negatively charged particles in an atom?

- A. electrons (*details*)
- B. neutrons
- C. nucleus
- D. protons



2. In terms of electricity, how are rubber and air alike?

- A. Both are conductors.
- B. Both are insulators. (*compare and contrast*)
- C. Electricity flows easily through both.
- D. Both cause static electricity.



3. Which of the following is a conductor?

- A. wood
- B. porcelain
- C. sea water (*classification*)
- D. glass



4. Which of these events took place first?

- A. Thomas Edison invents an improved light bulb.
- B. Nikola Tesla invents a motor that produces alternating current.
- C. Samuel Morse invents the telegraph.
- D. Michael Faraday invents the generator. (*sequence*)



5. What is the role of transformers in the path of electrical current from power plant to home?

- A. increase the voltage of a current
- B. decrease the voltage of a current
- C. either increase or decrease the voltage of a current (*synthesis*)
- D. neither increase nor decrease the voltage of a current



6. What measures the rate at which an electrical current can do work?

- A. watt (*details*)
- B. volt
- C. ampere
- D. ohm



7. Who believed it was dangerous to fool around with alternating current?

- A. Nikola Tesla
- B. George Westinghouse
- C. Thomas Edison (*details*)
- D. James Watts



8. Which of the following is needed by both batteries and fuel cells to produce electrical energy?

- A. carbon
- B. hydrogen
- C. zinc
- D. an acid (*compare and contrast*)



9. Which of these would be a good rule to add to a list of electrical safety rules?

- A. Keep electrical cords off the floor.
- B. Place plastic covers over unused outlets. (*inference*)
- C. Never unplug electrical appliances.
- D. Wear gloves when using a light switch.



10. What is an example of “green” energy?

- A. electricity produced by using coal
- B. electricity produced by wind (*inference*)
- C. electricity produced by using natural gas
- D. electricity produced by using wood as a fuel



11. Choose one use of electrical energy that you would not want to give up. Why is this use important to you?

Essay: Answers will vary. Students may choose a particular appliance or a general usage such as indoor lighting. Their answers should explain the importance of the use to the students.



Name **ANSWER KEY** _____ Date _____

Everything Visual

Graphs provide visuals of data, making the data easy to understand. The graphs on pages 16–17 show home use of energy and energy sources of electricity. Study the graphs. Then answer the questions.

- 1. For what year are energy sources for electricity given? Why might this information change from year to year?**

2001. The information may change as the percentage of sources used to generate electricity changes. From year to year specific sources may be used more or less than in the past.

- 2. Which of the energy sources of electricity might be considered “green” sources? Why?**

Solar, wind, and others as well as hydropower can be considered green sources because they do not pollute.

- 3. What is the second largest source of energy for generating electricity?**

nuclear energy

- 4. What was the information source for the graph on Average Home Energy Use?**

The source was the U.S. Office of Energy Efficiency and Renewable Energy.

- 5. What accounts for the greatest amount of energy use in the average home?**

Heating and cooling account for 44 percent of the energy use in homes.

- 6. How are the rectangular graph and circle graph alike? How are they different?**

Both graphs show data as percentage of the whole. Both deal with energy-related topics. The circle graph divides the whole into wedges and provides data about energy sources used to generate electricity. The rectangular graph divides the whole into rectangular segments and provides data on the average home energy use.