

PREREADING ACTIVITIES

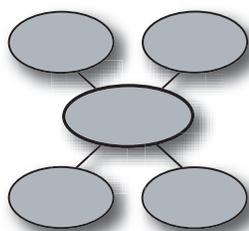
Before distributing **KIDS DISCOVER Chemistry**, activate students' prior knowledge with these activities.

Discussion

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

- ✓ *Have you had a fizzy drink that lost its fizz? Why did this happen?*
- ✓ *Have you watched fireworks on a summer night? What makes them so beautiful?*
- ✓ *When do you use sunscreen? Why?*

Concept Map



Explain to students that they will be reading *Chemistry*. Ask: *What are some words related to chemistry?* 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 **Makeup of Matter**, **State of Matter**, **Elements**, and **Scientists**. Create a concept map by writing *Chemistry* 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 *Chemistry*.

KEY TERMS

- | | | |
|------------|------------|------------|
| ✓ chemical | ✓ reaction | ✓ nitrogen |
| ✓ atom | ✓ formula | ✓ formula |
| ✓ element | ✓ chemist | ✓ physical |
| ✓ molecule | ✓ oxygen | ✓ gas |
| ✓ matter | ✓ hydrogen | ✓ solid |
| ✓ compound | ✓ carbon | ✓ liquid |

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, an overhead transparency, or 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 *Chemistry* and model how to preview it. Examine **titles, headings, words in boldface, pictures, diagrams, and captions**. Then have students add new information to the **Concept Map**. If students will be reading only 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

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Name _____ Date _____

Get Set to Read

What do you know about chemistry? 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 Chemistry**. Check back to find out if you were correct. Write the correct answer in the **After Reading** column and its page number.

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

Before Reading		After Reading	Page Number
_____	1. All matter is made up of atoms.	_____	_____
_____	2. Oxygen makes up almost 90 percent of the air we breathe.	_____	_____
_____	3. Carbon is the most plentiful element in the universe.	_____	_____
_____	4. The ripening of a banana is a chemical change.	_____	_____
_____	5. According to Dalton's modern atomic theory, all elements are made up of molecules.	_____	_____
_____	6. Different elements are used to produce the different colors of fireworks.	_____	_____
_____	7. Glow sticks light up when a chemical reaction takes place between two liquids in the sticks.	_____	_____
_____	8. Penicillin was the first antibiotic medicine.	_____	_____
_____	9. Only a few animals can produce pheromones, which are compounds that affect behavior of other members of their species.	_____	_____
_____	10. Investigators use a luminol solution to detect unseen fingerprints.	_____	_____

Name _____ Date _____

It's in the Reading

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



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

1. Why must investigators use the chemical ninhydrin to reveal fingerprints on paper?

- A. Paper can be crumpled.
- B. Paper is porous.
- C. Paper has a rough surface.
- D. Dusting powder will not stay on paper.



2. Which element is the most abundant and has the smallest atom?

- A. carbon
- B. hydrogen
- C. oxygen
- D. nitrogen



3. Which statement is true about molecules?

- A. All molecules are made up of two or more elements.
- B. All molecules form compounds.
- C. All molecules are made up of two or more atoms.
- D. A molecule may have a single atom.



4. What causes a carbonated drink to lose its fizz?

- A. Molecules of carbon dioxide in the drink separate into oxygen and carbon.
- B. Carbon dioxide from the air dissolves in the drink.
- C. Too much carbon dioxide is in the drink.
- D. Carbon dioxide leaves the drink and enters the air.



5. What kind of change results in a banana ripening?

- A. chemical change
- B. physical change
- C. change in the form of matter
- D. change in the shape of matter



6. What explains that when pressure on a gas decreases, the gas expands and its volume increases?

- A. conservation of matter
- B. radioactivity
- C. Boyle's law
- D. modern atomic theory



7. What happens when fluorescent dye and hydrogen peroxide mix in a glow stick?

- A. Nothing happens.
- B. The glow stick emits light.
- C. The glow stick loses light.
- D. The glow stick gets smaller.



8. How are bubble gum and liquid bandages alike?

- A. Both are made from tree sap.
- B. Both are liquids.
- C. Both are made out of polymers.
- D. Both are colorless.



9. What was the source of the first antibiotic, penicillin?

- A. the bark of a white willow tree
- B. the yew tree
- C. pheromones
- D. a mold



10. Which of the following is an example of green chemistry?

- A. the use of a luminol solution to detect bloodstains
- B. the development of bioplastics
- C. the use of antibiotic stitching thread
- D. the development of snack foods with nanoparticles of vitamins



11. What are some ways that chemists have helped to improve life?



Name _____ Date _____

Everything Visual

Labels and captions can help readers understand illustrations, diagrams, and photographs better.

Look at the diagram on pages 6–7.

1. What does the diagram show? How does the caption help you know what is being shown?

2. According to the diagram, what does water pass through to reach underground water chambers?

3. Why do you think a label is not used to identify what the dashed lines from the clouds mean?

Look at the pictures of chemists on pages 8–9.

4. What information is provided by the labels under each picture? How do the labels help you understand how the pictures were ordered?

Look at the key list of chemicals on page 11.

5. What chemicals may have been used to produce the fireworks shown?

6. Smoke trails can be seen in the picture. Which chemical produced the smoke?



Name **ANSWER KEY** _____ Date _____

Get Set to Read

What do you know about chemistry? 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 Chemistry**. Check back to find out if you were correct. Write the correct answer in the After Reading and its page number.

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

Before Reading		After Reading	Page Number
_____	1. All matter is made up of atoms.	<u>True</u>	<u>p. 2</u>
_____	2. Oxygen makes up almost 90 about 20 percent of the air we breathe.	<u>False</u>	<u>p. 4</u>
_____	3. Carbon Hydrogen is the most plentiful element in the universe.	<u>False</u>	<u>p. 5</u>
_____	4. The ripening of a banana is a chemical change.	<u>True</u>	<u>p. 7</u>
_____	5. According to Dalton's modern atomic theory, all elements are made up of molecules atoms .	<u>False</u>	<u>p. 8</u>
_____	6. Different elements are used to produce the different colors of fireworks.	<u>True</u>	<u>p. 11</u>
_____	7. Glow sticks light up when a chemical reaction takes place between two liquids in the sticks.	<u>True</u>	<u>p. 13</u>
_____	8. Penicillin was the first antibiotic medicine.	<u>True</u>	<u>p. 14</u>
_____	9. Only a few animals Many animals and some plants can produce pheromones, which are compounds that affect behavior of other members of their species.	<u>False</u>	<u>p. 14</u>
_____	10. Investigators use a luminol solution to detect unseen fingerprints bloodstains .	<u>False</u>	<u>p. 16</u>

Name **ANSWER KEY** _____ Date _____

It's in the Reading

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



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

1. Why must investigators use the chemical ninhydrin to reveal fingerprints on paper?

- A. Paper can be crumpled.
- B. Paper is porous. (*details*)
- C. Paper has a rough surface.
- D. Dusting powder will not stay on paper.



2. Which element is the most abundant and has the smallest atom?

- A. carbon
- B. hydrogen (*details*)
- C. oxygen
- D. nitrogen



3. Which statement is true about molecules?

- A. All molecules are made up of two or more elements.
- B. All molecules form compounds.
- C. All molecules are made up of two or more atoms. (*details*)
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4. What causes a carbonated drink to lose its fizz?

- A. Molecules of carbon dioxide in the drink separate into oxygen and carbon.
- B. Carbon dioxide from the air dissolves in the drink.
- C. Too much carbon dioxide is in the drink.
- D. Carbon dioxide leaves the drink and enters the air. (*cause and effect*)



5. What kind of change results in a banana ripening?

- A. chemical change (*details*)
- B. physical change
- C. change in the form of matter
- D. change in the shape of matter



6. What explains that when pressure on a gas decreases, the gas expands and its volume increases?

- A. conservation of matter
- B. radioactivity
- C. Boyle's law (*details*)
- D. modern atomic theory



7. What happens when fluorescent dye and hydrogen peroxide mix in a glow stick?

- A. Nothing happens.
- B. The glow stick emits light. (*cause and effect*)
- C. The glow stick loses light.
- D. The glow stick gets smaller.



8. How are bubble gum and liquid bandages alike?

- A. Both are made from tree sap.
- B. Both are liquids.
- C. Both are made out of polymers. (*comparison and contrast*)
- D. Both are colorless.



9. What was the source of the first antibiotic, penicillin?

- A. the bark of a white willow tree
- B. the yew tree
- C. pheromones
- D. a mold (*details*)



10. Which of the following is an example of green chemistry?

- A. the use of a luminol solution to detect bloodstains
- B. the development of bioplastics (*details*)
- C. the use of antibiotic stitching thread
- D. the development of snack foods with nanoparticles of vitamins



11. What are some ways that chemists have helped to improve life?

Essay: Answers will vary. Students may cite chemistry's role in producing medicines or the development of fun or useful products.



Name **ANSWER KEY** _____ Date _____

Everything Visual

Labels and captions can help readers understand illustrations, diagrams, and photographs better.

Look at the diagram on pages 6–7.

1. What does the diagram show? How does the caption help you know what is being shown?

The diagram shows how water filters under Earth's surface and settles into underground water chambers. The caption explains how sparkling water can be produced underground.

2. According to the diagram, what does water pass through to reach underground water chambers?

Water passes through the surface and layers of porous limestone, cracked marl, and pure white sand.

3. Why do you think a label is not used to identify what the dashed lines from the clouds mean?

A reader can easily infer that the dashed lines represent precipitation.

Look at the pictures of chemists on pages 8–9.

4. What information is provided by the labels under each picture? How do the labels help you understand how the pictures were ordered?

The labels provide the chemists' names, the dates when they lived, and their countries. The labels make it clear that the pictures are arranged chronologically.

Look at the key list of chemicals on page 11.

5. What chemicals may have been used to produce the fireworks shown?

The chemicals probably included lithium, sodium, and magnesium.

6. Smoke trails can be seen in the picture. Which chemical produced the smoke?

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