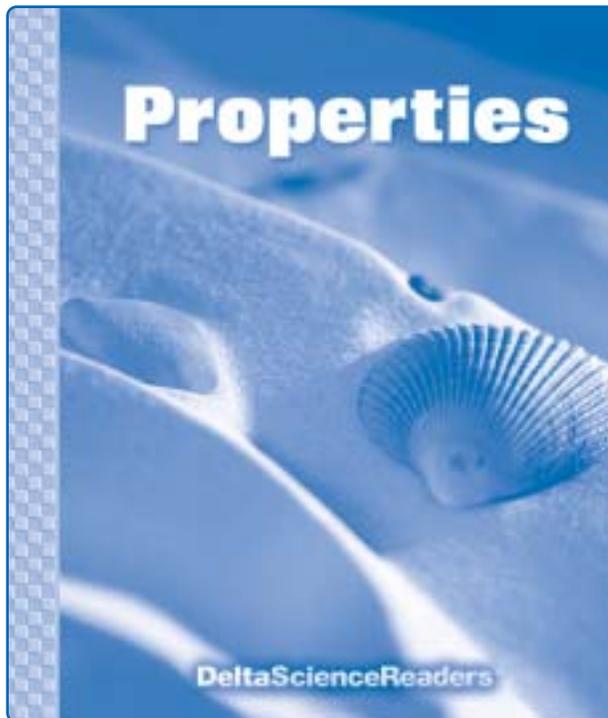


# Properties



*Delta Science Readers* are nonfiction student books that provide science background and support the experiences of hands-on activities. Every **Delta Science Reader** has three main sections: *Think About . . .*, *People in Science*, and *Did You Know?*

Be sure to preview the reader Overview Chart on page 4, the reader itself, and the teaching suggestions on the following pages. This information will help you determine how to plan your schedule for reader selections and activity sessions.

Reading for information is a key literacy skill. Use the following ideas as appropriate for your teaching style and the needs of your students. The After Reading section includes an assessment and writing links.

## OVERVIEW

In the Delta Science Reader *Properties*, students are introduced to the concept of matter and read about some of the properties that distinguish one object from another. Students explore the properties of solids, liquids, and gases. They discover that some objects sink while others float and that some objects are magnetic while others are not magnetic. The book describes how a geologist uses properties in working with rocks. Students also find out that water can be a liquid, a solid, and a gas.

### Students will

- ▶ identify common properties
- ▶ sort objects by property
- ▶ observe and predict whether objects sink or float, or are attracted to a magnet
- ▶ explore the properties of water in various states
- ▶ recognize parts of a book: title, front cover, and back cover
- ▶ discuss the function of a table of contents, headings, and a glossary
- ▶ complete a vocabulary chart

## READING IN THE CONTENT AREA SKILLS

- Compare and contrast objects
- Use properties to classify and categorize objects
- Draw conclusions based on observations
- Make inferences about objects based on their properties
- Predict outcomes based on properties of objects
- Use background knowledge to support comprehension
- Use illustrations and photographs to support comprehension
- Use phonics, context clues, and picture clues to decode words
- Demonstrate critical thinking
- Summarize information

## NONFICTION TEXT ELEMENTS

*Properties* includes a title, a table of contents, headings, illustrations, photographs, labels, boldfaced terms, and a glossary.

## CONTENT VOCABULARY

The following terms are introduced in context and defined in the glossary: *balance, float, gas, liquid, magnet, mass, matter, properties, senses, sink, solid.*

## BEFORE READING

### Build Background

Access students' prior knowledge of properties by holding up two objects that have one or two properties in common, for example, a red block and a red ball. Ask, *What can you tell me about these two objects? How are they alike? How are they different?*

Begin a class chart of words that students use to describe the objects. Group the words according to the properties they describe, such as color, shape, or size, but do not give the groups labels or headings at this time.

red	round	big	
	square	small	

Note a property that the objects have in common, for example, their red color. Ask, *Suppose I wanted to make a group of red objects. What other objects in our room might I put in this group?* If the objects students suggest can be moved, place them next to the original objects.

To stimulate additional discussion, ask questions such as these: *Do you ever sort things into groups at home? How many of you have helped sort the laundry or put away the silverware? Have you ever sorted your toys? What kinds of groups did you make?*

### Preview the Book

Ask students to look at the picture on the front cover of the book. Ask, *What do you see in this picture?* (shell, rock, sand) *What are some words you might use to tell about these things?* Repeat several of the words students use to describe the objects. Tell students that these words tell about the *properties* of the objects shown on the cover. Explain that properties tell how something looks, smells, tastes, feels, or sounds. Point to and read aloud the title.

Ask, *What are some words that you think we might find in this book?* (Answers will vary.)

Flip through the book and briefly discuss a few of the photographs. Remind students that the title of the book is *Properties* and that properties tell how something looks,

smells, tastes, feels, or sounds. As students look at the illustrations, ask, *What words might you use to tell how this object looks, smells, tastes, feels, or sounds?*

Have students turn to the table of contents. Explain that the table of contents is a list that tells what is written in the book. Ask, *What do you notice about this page?* Give students a few minutes to share their observations. Point to the headings in color and explain that the book is divided into three main parts: Think About . . . , People in Science, and Did You Know? Read aloud the headings listed in the Think About . . . section and note that they are in the form of questions. Ask, *Where do you think you might find the answers to these questions?* Point to the page numbers listed after each heading. Explain that each number tells the page on which they will find information about each heading.

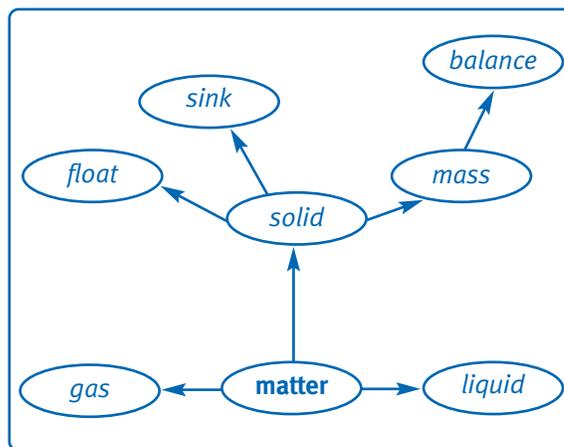
Point to the word *Glossary* at the bottom of the page and read it aloud. Tell students that a glossary is a list of words and their meanings. Have students turn to the glossary at the back of the book. Explain that the words in the glossary are important words that they will need to learn in order to understand the information in the book. Tell them, *In the book, these words are printed in dark print. The dark print tells you that you can find out what the word means by looking in the glossary.* Suggest that students watch for these words as they read the book *Properties*. Choose one word and have students find its definition in the glossary.

### Preview the Vocabulary

You may wish to preview some of the vocabulary words before reading, rather than waiting to introduce them in the context of the book. One possibility is to have students draw pictures of words that they think they know. Discuss students' drawings, briefly clarifying any misconceptions. You may also need to point out that some words, such as *sink* and *matter*, have more than one meaning.

Explain that students will learn more about each word as they read the book.

Other possibilities include creating a word wall, vocabulary or picture cards, sentence strips, or a concept web. For example, you might ask students to help you develop a web showing how different words are related, such as the following:



▲ A concept web for *matter*.

### Set a Purpose

Discuss with students what they might expect to find out when they read the book, based on their preview. Ask, *What kinds of things do you think you will learn about as you read this book?* Use students' predictions to set an overall purpose for reading.

## GUIDE THE READING

Preview the book yourself to determine the amount of guidance you will need to give for each section. Depending on your schedule and the needs of your class, you may wish to consider the following options:

- **Whole Group Reading** Read the book aloud with a group or the whole class. Encourage students to ask questions and make comments. Pause as necessary to clarify and assess understanding.
- **Shared Reading** Pair readers with nonreaders and have them read the book together. Pause students after each

text section to clarify as needed and to discuss any questions that arise or have been answered.

- **Independent Reading** Some students may be ready to read independently. Instruct them to pause at designated stopping points, and have them rejoin the class for discussion. Check understanding by asking students to explain in their own words what they read.

### Tips for Reading

- If you spread out the reading over several days, begin each session by reviewing the previous day's reading and previewing what will be read in the upcoming session.
- Begin each text section by reading or having a volunteer read aloud the heading. Discuss what students expect to learn, based on the heading. Have students examine any illustrations, read the labels, and identify any unfamiliar objects.
- Help students locate context and picture clues to the meanings of words in boldface type. Remind them that these words are defined in the glossary. Provide help with words that may be difficult to pronounce, and help students read their meanings.
- As appropriate, model reading strategies students may find helpful for nonfiction: adjust reading rate, ask questions, paraphrase, reread, visualize.

### Think About . . . (pages 2–13)

#### Page 2 *What Is Matter?*

- Have students study the photograph on page 2. Ask, *What do you see in this photograph?*
- Read aloud the heading on page 2. Ask, *Has anyone ever heard this word matter before?* If students refer to other meanings, such as the phrase “What’s the matter?” tell them that the word *matter* can have more than one meaning. Explain that the word has a special, scientific meaning in this book.
- Invite students to find out the meaning of the word *matter* by listening as you read page 2 aloud.
- After you read the text, name several objects in the photograph. Ask, *Are trees made of matter? Is smoke made of matter? Is water made of matter?* Ask the same question about several items in the classroom, and confirm that everything around you is made of matter.

#### Pages 3, 4 *What Are Properties?*

- Read aloud the heading on page 3. Repeat the word *properties* and ask, *Where have you heard a word like this one?* (in the book title) Write the word *properties* on the board and ask, *Do you remember what properties are?* Suggest that students listen as you read to find out if their ideas are right.
- Read aloud the body text. Have students look at the photographs on the page as you read aloud the heading next to each pair of items. Ask about each item, for example, *What is the shape of this ball? What are some other things that have a round shape?*
- Direct students’ attention to the chart of words you started on the board. Add to the chart the descriptive words from page 3, grouping them by property and adding new columns as necessary. Read aloud the words in the “color” column. Ask, *What property do all these words tell about?* Write the heading *Color* at the top of the column. Follow the same procedure for the other columns.

Color	Shape	Size	Texture
red	round	big	soft
blue	square	small	hard

- Ask students to look at the pictures on page 4 as you name each item. Read the text aloud, pausing after each question to give students a chance to respond.
- Tell students that they can sort the objects into two different groups: things that are soft and things that are hard. On the board, draw two circles labeled *soft* and *hard*. Ask, *Which objects on this page belong in the “soft” circle? Which belong in the “hard” circle?* Draw simple pictures or write the names of the items in the appropriate circles. Point to the circle labeled *soft* and ask, *Can you think of other soft things we could put in this circle?* Do the same for the circle labeled *hard*. (Accept all reasonable responses. Students may suggest cotton balls, kitten, and pillow for *soft*, and hammer, pencil, brick, or anything metal or glass for *hard*.)
- Tell students that *hard* and *soft* are properties of the items in the pictures. Add the words to the chart on the board. Explain that how something feels is called *texture*. Write the heading *Texture* at the top of the column.

#### Page 5 *What Is a Solid?*

- Have students look at the picture on page 5. Ask, *What do you see in this picture?* Confirm that the girl is playing with blocks. Ask, *Do you think blocks are made of matter? What can you tell me about the properties of these blocks? What shapes are they? What color are they? Do you think they are hard or soft?*
- Have students listen as you read the heading and text aloud. Point to the word *solid* in the heading and ask,

*Where else on this page do you see this word?* Have students point to the word and read it aloud with you.

- Ask, *What do you notice about this word?* (It's printed in dark print.) *Do you remember what is special about the words that are printed in dark print?* Have students turn to the glossary and find the word *solid*. Read aloud the word's meaning.
- Have students look again at the picture on page 5. Ask, *Look at the block that the girl is holding. Does it have its own shape? What shape is that? If the girl moved the block, would the shape of the block change?*
- Invite students to look around the room and to name other objects that are solids.

#### Page 6

- Have students look at the picture on page 6. Explain that the object in the picture is called a *balance*. Ask, *Have you ever seen or used a balance before? What do you think it does?* Explain that a balance shows which of two things is heavier and which is lighter. Ask, *Which object in the picture do you think is heavier?* (nectarine) *Which one is lighter?* (strawberry) *How do you know?* If necessary, explain that when two objects are put in the pans of a balance, the heavier object makes its pan go down.
- Read aloud the text on the page. Point to the word *mass* and explain that mass is the amount of material there is in an object. Point out that the more mass an object has, the heavier it is. Ask, *Which object in the picture has more mass? How do you know?* (The nectarine has more mass because it is heavier. It makes the pan go down.)
- Have students turn back to page 3 and look at the pictures of the elephant and the mouse. Ask, *Which animal do you think has more mass? Which one has*

*less mass?* (Students will probably recognize that the elephant has more mass, the mouse less.)

- Add the words *light* and *heavy* and the heading *Mass* to the chart on the board.
- Read the last sentence on the page and write *property* on the board, next to the word *properties*. Have students compare the letters in the two words. Explain that people use the word *properties* when they are talking about more than one *property*.

### Page 7

- Before reading page 7, have students look at the pictures of the berries on page 3. Ask, *How are these alike?* (They are both berries. They are both in square containers.) *How are they different?* (They are different colors. They are different kinds of berries.) *Look at the other pictures on this page. What are some other ways you can compare two objects?* (You can compare their shapes or sizes.)
- Have students turn to page 7 and read along as you read the body text aloud. Ask, *What do you see on this page?*
- Read aloud the word *texture* and remind students that texture is how something feels. Ask, *How does a pinecone feel?* (rough) *How does a tomato feel?* (smooth) Confirm students' responses by reading the labels aloud. Follow the same procedure with the other two pictures on the page.
- Add the terms *rough* and *smooth* to the *Texture* column of the chart on the board. Review all the words in the chart and remind students: *All of these words are property words. They tell how something looks, smells, tastes, feels, or sounds.*

### Page 8

- Tell students that they are going to learn about another property of solids. Read aloud the first sentence on page 8 and

have students look at the pictures. Ask, *What material do you think the train is made of?* (wood) Do the same for each object shown. If you wish, add a *Material* heading to the chart, and write *wood* and other materials students suggest in the column. (Suggestions might include paper, metal, glass, plastic, or cloth.)

- Read aloud the rest of the text. Point to the word *magnet*. Read it aloud and write *magnet* on the board. Ask, *Have any of you ever used a magnet? What does a magnet do?* Explain that a magnet is a material that sticks to or pulls other things. Point out that magnets only stick to or pull things that are made of certain materials. Ask, *What kinds of things have you seen a magnet stick to?* Help students reach the conclusion that magnets attract only objects that are made of iron or steel.
- On the board, draw a circle and label it *magnetic*. Cover the *-ic* with your fingers. Ask, *What word do you see in this bigger word?* (*magnet*) Explain that a material is *magnetic* if it can be pulled by a magnet. Draw another circle labeled *not magnetic*. Tell students that they can sort the objects on page 8 by telling which are magnetic and which are not magnetic. Ask, *Which objects do you think are magnetic? Which are not magnetic?* Write the names of the objects in the appropriate circles on the board. (The watering can, horseshoe magnet, screw, and paper clips are magnetic. The wooden train, plastic truck, and die are not magnetic.)
- Add the terms *magnetic* and *not magnetic* in a new *Magnetic* column to the chart on the board.

### Pages 9, 10 What Is a Liquid?

- Ask students to look at the containers on page 9. Ask, *What do you think is in each of these containers?* (milk)
- Tell students that milk is a liquid. Ask, *What words might you use to describe*

*milk?* (Students might say it is white or wet or pours easily.) Remind students that the words they suggest tell about the *properties* of milk. Tell students that they will learn more about the properties of milk and other liquids as they read the next few pages.

- Have students look at the pictures on page 9. Point to the baby bottle and ask, *What is the shape of the milk here?* (the shape of the baby bottle) Do the same with the measuring cup, the pitcher, and the glass. Point out that one property of milk and other liquids is that they don't have a shape of their own. Instead, they take the shape of their containers. Ask, *Have you ever spilled a glass of milk or water? What happened? Did the milk keep its glass shape or did it spread out all over the table or floor?* (It spread out flat on the floor.) Read aloud the text on page 9.
- Have students look at the pictures on page 10. Ask, *How is glue like milk?* (It is white. It is a liquid. It pours.) *How is it different?* (Milk is good for you to drink. Glue isn't. Glue is sticky. Milk isn't.) Have students compare glue and syrup in the same way.
- Read aloud the text on the page. Explain the term *flow* by telling students: *When liquids move, we say that they flow. Liquids flow when we pour them.* Ask, *Which of the liquids on this page are easy to pour? Which ones are hard to pour? What other liquids do you know? Are they easy or hard to pour?*
- To check comprehension, draw a tall, narrow glass and a round fishbowl shape on the board. Ask, *Let's say this glass is full of water. What would happen to the shape of the water if I pour it into this fishbowl?* (It would change to take the shape of the fishbowl.)

#### Page 11

- Identify the pictures on page 11. Ask, *Where is the lifesaver ring? Is it on top of the water or at the bottom of the*

*water?* (on top) *Where are the coins in the water tank?* (falling to the bottom)

- Read aloud the first sentence on the page. Point to the word *float* and ask, *What do you think the word float means?* Remind students that words in dark print are listed with their meanings in the glossary. Have them turn to the glossary and find the word *float*. Read the meaning aloud to confirm students' definitions.
- Read aloud the second sentence and use the same procedure to confirm the meaning of *sink*.
- Point to the rock on the cover of the book. Ask, *Do you think this would float or sink in water?* (sink) Ask, *What are some things besides a lifesaver ring that float on water?* (Students may suggest a boat, beach ball, feather, leaf, or wooden stick.)

#### Pages 12, 13 *What Is a Gas?*

- Help students identify the pictures on pages 12 and 13, and briefly discuss their experiences with balloons.
- Ask, *What do you think is inside a balloon?* Read aloud the text on pages 12 and 13 to confirm students' ideas.
- Ask, *Can we see air? How do we know it's there?* If necessary, explain to students that they can tell that air exists by feeling it move or by seeing the shape of a balloon change when air fills it.

#### People in Science (page 14)

##### A Geologist

- Point to the pictures of the rocks on page 14. Review facts about properties by asking, *What are these? Are these solid, liquid, or gas? How are these rocks alike? How are they different?*
- Ask, *Have you ever picked up a rock that looked interesting? How many of you have had a rock collection?* Tell

students that they will be reading about someone who collects and sorts rocks—a geologist. Read aloud the body text on page 14.

- Point to the picture of the geologist. Write the word *geologist* on the board. Help students pronounce the word (jee-OL-uh-jist). Ask, *What is a geologist?* (a person who studies Earth or rocks) Explain that geologists study not only rocks, but also other aspects of Earth, such as mountains, volcanoes, and earthquakes, in order to find out what Earth is made of and how it has changed over time.
- Invite students to speculate about how this geologist might sort rocks in her work. Point out that geologists test rocks for properties like hardness or magnetism or whether they sink or float to find out what materials the rocks are made of. Explain that finding out what rocks are made of helps scientists know how old the rocks are. Geologists also study how forces like volcanoes and earthquakes have moved rocks from one place to another over time.

### Did You Know? (page 15)

#### Water Can Change

- Ask students to look at the pictures on page 15. Ask, *What do you see?* (a glass of water, an ice cube, a teapot with steam coming out of it) *What do all of these pictures have in common?* If necessary, point out that each picture shows some form of water.
- Read aloud the heading on the page. Ask, *Which picture shows water as a liquid?* Have students point to the appropriate picture. Follow the same procedure for water in its solid and gas states. Explain that when water is a

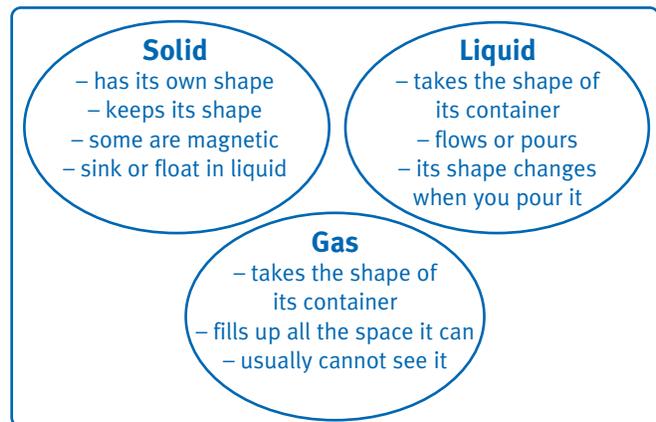
liquid, we call it *water*. When it is a solid, we call it *ice*. And when water is a gas, we call it *steam* or *water vapor*.

- Discuss how students think water changes from one form to another. Some may know that when liquid water gets very cold, it freezes and changes to a solid. If it gets warm again, it melts and changes back to liquid. If it gets very hot, it boils and changes to a gas.

## AFTER READING

### Summarize

To help students summarize the properties of solids, liquids, and gases, write each word in a circle on the board. Let students use the chart on the board and the text and pictures in the book to suggest properties of solids, liquids, and gases to add to each circle. Write each property in the appropriate circle or circles.



▲ A summary of the properties of solids, liquids, and gases.

## Review/Assess

Use the questions that follow as the basis for a discussion of the book or for an oral assessment.

1. Hold up a small object, such as a wooden block, and ask students to name at least three properties of the object. (Students might describe the block's color, size, shape, or texture.) Is this object a solid, a liquid, or a gas? (a solid)
2. Look at the photograph on page 2. Name some of the solids you see. (rocks, wood, mountain, trees) Can you point to a liquid in the picture? (water in the river) Can you point to a gas? (air in the sky)
3. What is one way you could sort the objects shown on page 4? What is a different way you could sort them? (Accept all reasonable answers. Possible answer: Toys, Not Toys.)
4. What could you do to find out if an object is magnetic or not magnetic? How could you find out if the object sinks or floats? (You could hold a magnet next to it to see if the magnet sticks. You could place the object in water to see if it floats.)

## Writing Links/Critical Thinking

Present the following as writing assignments. Provide help as needed.

1. Hold up an object or point to the picture of one in the book. Say, Pretend that you are from outer space. You have never been to Earth before. How would you describe this object to your friends back home? What words will you use to tell about its properties? Make a list of the words.

2. Help students cut out pictures of foods and drinks from grocery store advertisements to make a set of picture cards. They can label each card with the name of the object. Encourage students to sort the cards by various properties. Pairs of students can also use the cards to play a guessing game in which one partner describes properties of an object shown on a card and the other names the object.

**Science Journals:** You may wish to have students keep the writing activities related to the reader in their science journals.

## References and Resources

For trade book suggestions and Internet sites, see the References and Resources section of this teacher's guide.