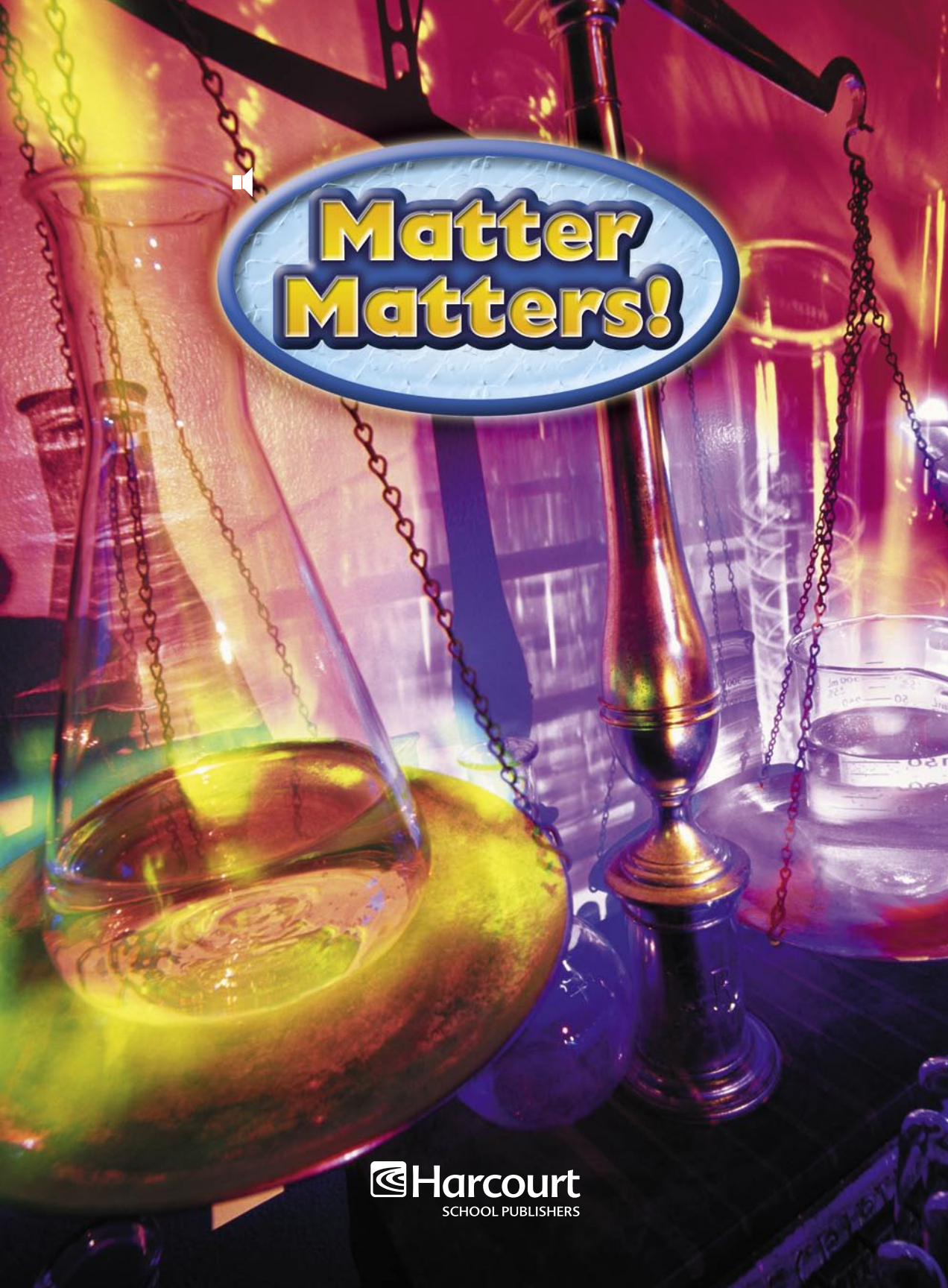
Matter Matters!
Harcourt
SCHOOL PUBLISHERS

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Printed in the United States of America

ISBN 0-15-343918-1

1 2 3 4 5 6 7 8 9 10 039 10 09 08 07 06 05

Harcourt
SCHOOL PUBLISHERS

Orlando Austin New York San Diego Toronto London

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This Is Matter

Matter is what all things are made of. Everything in the world is made of matter. Matter is everywhere!

This book is made of matter. The water you drink is made of matter. Even the air you breathe is made of matter.

Everything in this picture is made of matter.

The bottle is a solid. It contains a liquid and a gas.

Matter has three forms. The three forms of matter are solid, liquid, and gas.

Matter can be a solid, like a chair in the classroom. Matter can be a liquid, like the water in a lake. Matter can be a gas, like the air inside a balloon.

Focus Skill

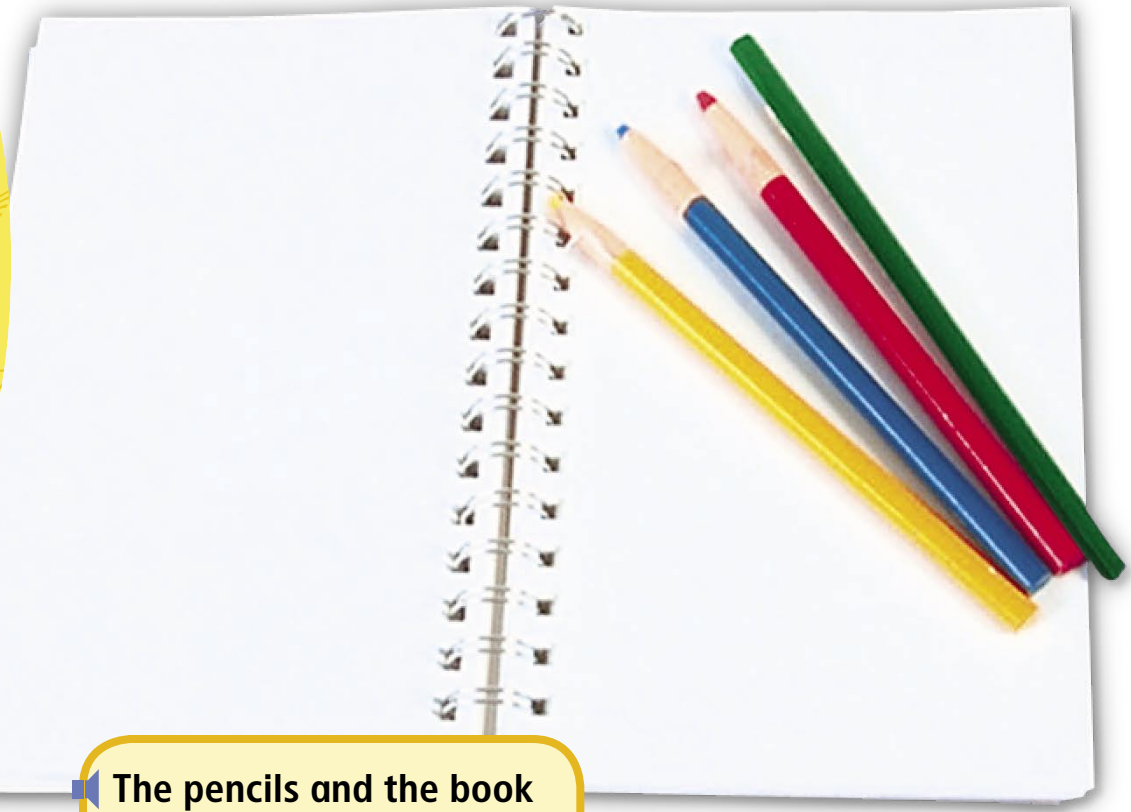
MAIN IDEA AND DETAILS

What are the three forms of matter?

Properties of Matter

Matter has properties. A **property** is one part of what something is like.

Is the bike you like red, or is it blue? Is it big or small? What is the shape of the seat? Color, size, and shape are all properties of matter.



The pencils and the book are both made of matter. But their properties are different.

These rocks are made of matter. They each take up space. They each have mass.

All matter has two main properties. The first property of matter is that it takes up space. A desk, the juice in a glass, even the air in a balloon—they all take up space.

The second main property is mass. All matter has mass. **Mass** is the amount of matter in an object.

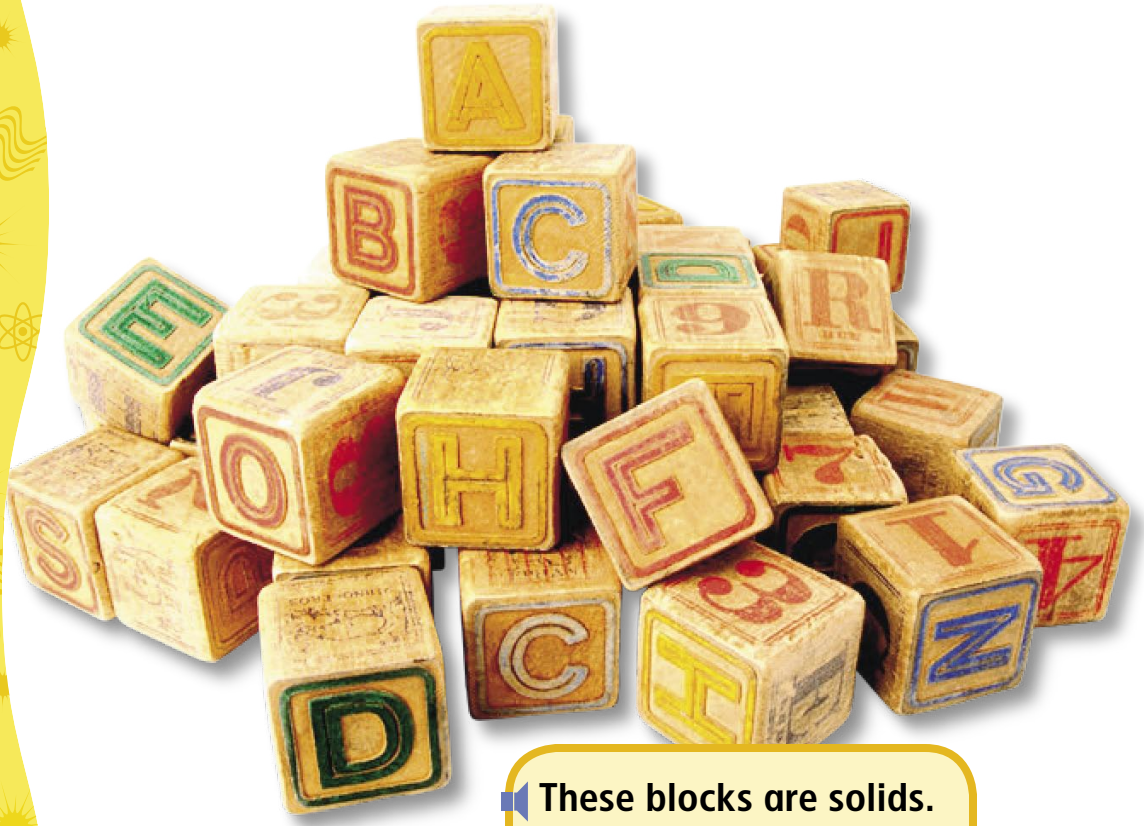
Focus Skill

COMPARE AND CONTRAST **How is a skateboard the same as the water in a swimming pool? How is it different?**

Solids

A **solid** is the only form of matter with its own shape. The shape of a solid will not change unless you cut it, bend it, break it, or change it in some way.

Solids have different properties. Solids can be different colors, sizes, and shapes. Some are hard, and some are soft.



These blocks are solids. Turn them over. Their shapes don't change.

Solids do not all have the same mass. You can use a balance to measure the mass of a solid.

You might measure the mass of an object in grams. This is a metric measurement. You might measure an object in ounces. This is a standard English or customary measurement.

Fast Fact

The mass of a solid does not change if it is broken. A pencil in two pieces has the same mass as the same pencil in one piece.

Focus Skill

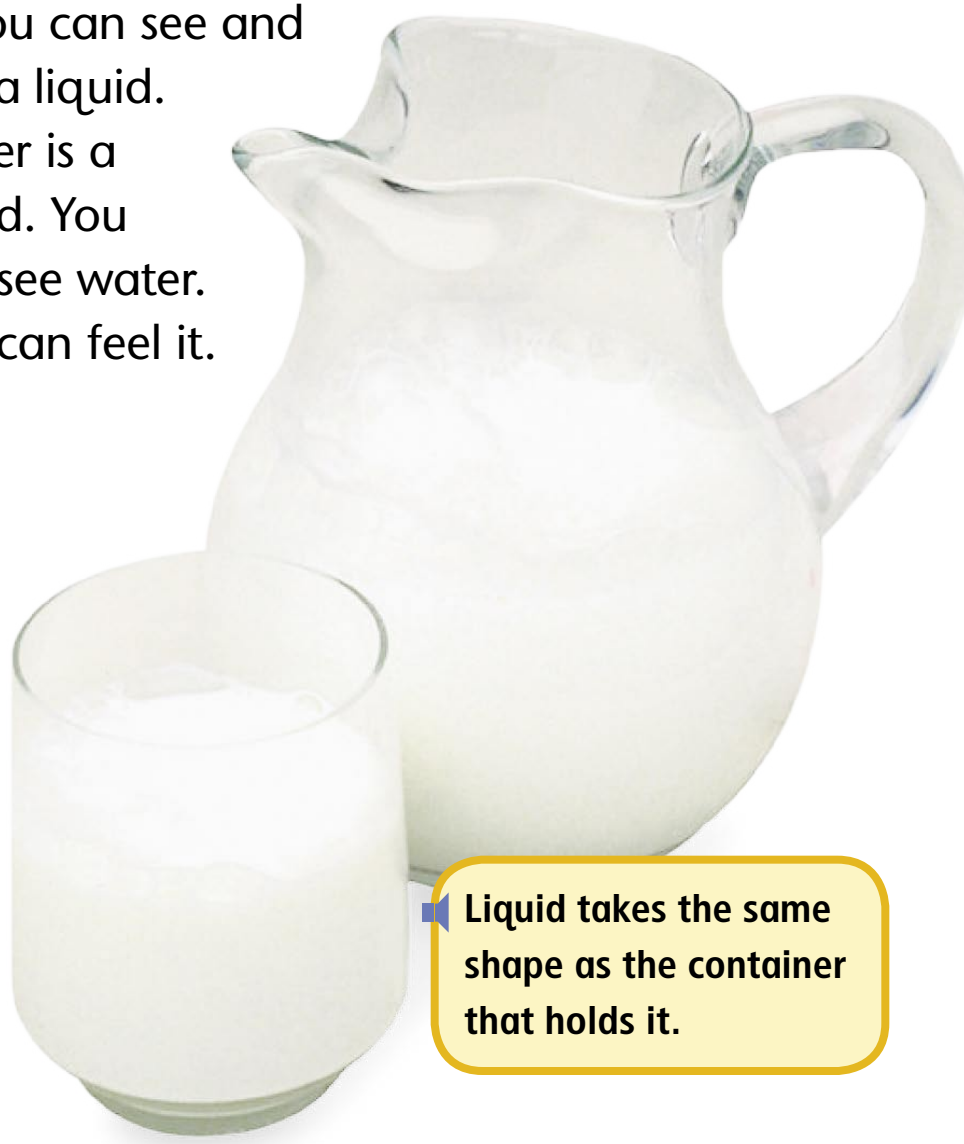
COMPARE AND CONTRAST **How is a baseball bat the same as a baseball? How are they different?**

This balance tells us the mass of an object.

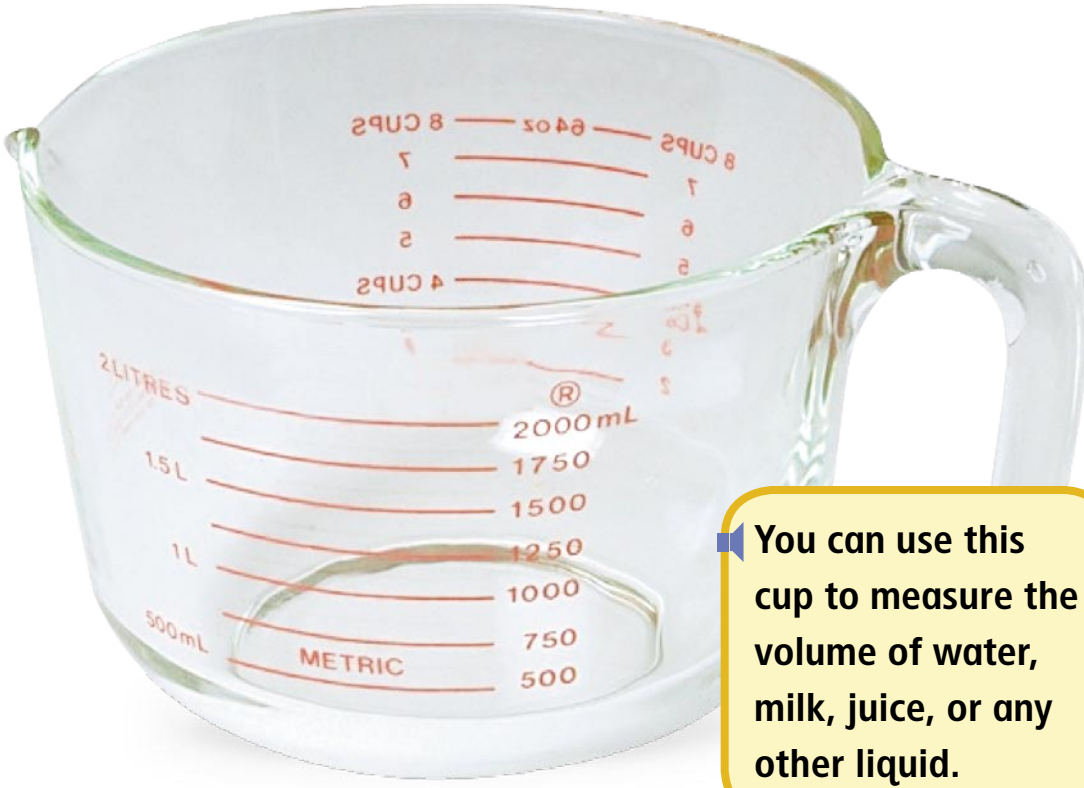
Liquids

A **liquid** is a form of matter. It has mass and takes up space. But a liquid does not have its own shape. A liquid takes the shape of the container that holds it.

You can see and feel a liquid. Water is a liquid. You can see water. You can feel it.



Liquid takes the same shape as the container that holds it.



You can use this cup to measure the volume of water, milk, juice, or any other liquid.

You can measure the amount of a liquid. The amount of space a liquid takes up is called **volume**.

You can measure a liquid using milliliters. A **milliliter** is a unit of volume for liquids. An ounce is another unit of volume for liquids.

Focus Skill **MAIN IDEA AND DETAILS** **What happens to the shape of milk when it is poured out of a carton and into a glass?**

Gases

A **gas** is also a form of matter. Gases take up space and have mass. Gas is the only kind of matter that spreads out and fills all the space in its container.

Air is made up of many gases. It is all around you.

Air fills up each ball. In each ball, air takes a different shape!

Fast Fact

A flying kite looks like it is held up by nothing. Air is holding it up! Like all matter, air takes up space.

Usually you cannot see, smell, or feel air. But you can see how it blows leaves!

Focus Skill **MAIN IDEA AND DETAILS** When you put air into a bike tire, how much space does it take up?

Summary

Everything is made of matter. Matter has properties. Matter has mass and takes up space. Solids, liquids, and gases are the three forms of matter.

Glossary

- **gas** The only form of matter that fills all the space in its container (3, 10, 11)
- **liquid** A form of matter that takes the shape of its container (3, 8, 9, 11)
- **mass** The amount of matter in an object. Mass can be measured using a tool called a balance. (5, 7, 8, 10, 11)
- **matter** The material that all things are made of. Matter can be a solid, a liquid, or a gas. (2, 3, 4, 5, 6, 10, 11)
- **milliliter** A unit used to measure the volume of a liquid. Milliliters are marked on many measuring cups. (9)
- **property** A description of what part of something is like (4, 5, 6, 11)
- **solid** The only form of matter that has its own shape (3, 6, 7, 11)
- **volume** The amount of space a liquid takes up (9)

Think and Write

1. Find three solids in your classroom. Write about their properties.

2. **COMPARE AND CONTRAST** How is the air inside a balloon like water in a swimming pool? How are the two things different?

3. **MAIN IDEA AND DETAILS** What happens to the shape of a glass of milk when it is poured into a bowl?

4. A wooden block is a solid. Explain what a pan balance can tell you about the wooden block.

Hands-On Activity

Work with a partner. Gather a small collection of objects from your classroom. Tell about their properties.

School-Home Connection

Work with a family member. Discuss the different forms of matter in your kitchen.