



Properties of Matter Lessons

Websites

Metric Measurement

[How Many? A Dictionary of Units of Measurement](#)

An excellent reference for both teachers and students, this web site provides a dictionary of units of measurements. The section titled “The Metric System” is most relevant to Science Companion units.

(<http://www.unc.edu/~rowlett/units/>)

Properties of Matter

[Solids and Liquids](#)

Children can find the boiling and freezing points of different liquids on this interactive website. (http://www.bbc.co.uk/schools/ks2bitesize/science/materials/solids_liquids/play.shtml)

[States of Matter – Kids Science Videos, Games and Lessons that Make Learning Fun and Easy](#)

A website that offers pictures, videos, games and lessons to make learning about matter fun! (<http://www.neok12.com/States-of-Matter.htm>)

[Chem4Kids.com: Matter](#)

This website can be used as a resource to learn more background information about matter. (http://www.chem4kids.com/files/matter_intro.html)

[What is Matter? How does it change form?](#)

Specifically designed for fourth grade students, this site has links to several chapters on matter. Includes some pictures.

(<http://teacher.scholastic.com/dirt/matter/whatmat.htm>)

[What is Matter?](#)

Very simple text and descriptions of the three states of matter. Geared towards fourth grade. (<http://www.nyu.edu/pages/mathmol/textbook/statesofmatter.html>)



States of Matter

This site takes children on a tour of matter, starting with the phases of matter, working through solids, liquids, gases, and plasmas. It continues with a discussion of mixtures and solutions. This site is geared towards older students, but might give advanced or curious fourth grade children valuable early exposure to the subject.

(http://www.chem4kids.com/files/matter_states.html)

It all adds up

This is the online textbook for the Utah State Office of Education's 5th grade "Sci-ber text" curriculum. Children work through the links covering the three phases of matter, as well as chemical and physical changes. There are also opportunities for children to do some explorations on their own.

(<http://utahscience.oremjr.alpine.k12.ut.us/Sciber08/5th/matter/html/intro.htm>)

Flight

Dynamics of Flight

A kid-friendly resource that includes information about the dynamics of flight and the history of flight. Among other topics, it addresses what air is, how wings lift a plane, and early efforts of flight (including Leonardo da Vinci's "ornithopter" and the first hot air balloon). Students will enjoy the airplane cockpit simulator.

(<http://www.ueet.nasa.gov/StudentSite/dynamicsofflight.html>)

Cloud Seeding

This link leads to a two-page article written for kids called "What is Cloud Seeding?"

(<http://www.pitara.com/discover/5wh/42.htm>)



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Books

Children's Books

The Amazing Air Balloon

By Jean Van Leeuwen; illustrated by Marco Ventura. (2003, Phyllis Fogelman Books)

With beautiful oil paintings to illustrate, this tale is told through the eyes of 13-year-old Edward Warren, who in 1784 became the first person in America to go up in a hot-air balloon. This book is suitable for supplementing the lesson about gases.

Elementary Physics: Gases

Elementary Physics: Liquids

Elementary Physics: Solids

By Ben Morgan. (2003, Blackbirch Press)

Written for elementary-age students, these three reference books offer clear, color photographs and straightforward text. For solids, liquids, and gases, respectively, each book provides a definition and description, different examples, and an explanation of how it changes between states. At the end of each book, there is a very brief introduction to atoms and molecules.

Feathers, Flaps, and Flops: Fabulous Early Flyers

By Bo Zaunders; illustrated by Roxie Munro. (2001, Dutton Children's Books)

This picture book may be too easy to read for this grade level, but the stories of the brave, and often lucky, early fliers may inspire children to learn more about aviation. One chapter covers the inventors of the hot-air balloon. A bibliography is included for children who want to further explore the aviators' stories.

How and Why Science: Science in the Air

(1998, World Book Inc.)

This book focuses mainly on the work scientists undertake to understand air's role in the weather. Topics covered include the properties of air under pressure and when it is heated or cools. Simple instructions to help children build and use a barometer are included.



The Life and Times of Archimedes

By Susan Zannos. (2004, Mitchell Lane Publishers)

This biography tells about one of the greatest mathematicians and inventors of the ancient world. It includes rich information about the historical context of Archimedes's life, as well as accounts of Archimedes's many discoveries and inventions.

Matter (Eyewitness Science)

By Christopher Cooper. (1999, Dorling Kindersley)

With the numerous, detailed photographs that characterize the Eyewitness Science series, this book examines the elements that make up the physical world and the properties and behavior of different kinds of matter. While the first 12 two-page chapters are appropriate for elementary students, the remaining 17 chapters discuss the atoms, molecules, and subatomic particles.

Matter: See It, Touch It, Taste It, Smell It

By Darlene Stille; illustrated by Sheree Boyd. (2004, Picture Window Books)

Full of colorful illustrations, this book does a great job discussing the properties of all matter and matter in its three states. Also available in a Spanish language edition. Also available in a Spanish language edition.

Mr Archimedes' Bath

By Pamela Allen. (1998, HarperCollins)

This lighthearted book about Mr Archimedes taking a bath with several animal friends is fun, though not historically accurate.

The Mystery of the Hot Air Balloon

By Gertrude Chandler Warner; illustrated by Charles Tang. (1995, Albert Whitman & Co.)

One of the Boxcar Children Mysteries, this book contains accurate information about the sport of hot air ballooning. The story involves the Alden children befriending a young couple who are starting their own hot air balloon business, but someone wants to stop them. Use this book as a literary extension for the lesson about gases.



To Fly: The Story of the Wright Brothers

By Wendie C. Old; illustrated by Robert Andrew Parker. (2002, Clarion Books)

This middle grade biography is a National Science Teachers Association Outstanding Trade Book for Students K-12. Its clearly written passages provide insights into the inquiry methods and unique characters of the brothers, including their problem solving skills. Vivid watercolor illustrations capture the excitement of discovery revealed by the text.

What is the World Made Of? All About Solids, Liquids, and Gases (Let's-Read-and-Find-Out Science, Stage 2)

By Kathleen Wiedner Zoehfeld; illustrated by Paul Meisel. (1998, Collins)

This beginning reader introduces children to the differences between solids, liquids, and gases with examples from everyday life.

Books Containing Matter Investigations

Experiments with Air

By Salvatore Tucci. (2003, Children's Press)

Explores the properties of air and air pressure through ten simple experiments. Includes a short bibliography.

Experiments with Solids, Liquids, and Gases

By Salvatore Tucci. (2002, Children's Press)

Describes the properties of matter and provides simple experiments that illustrate the properties of each. The focus is primarily on liquids. Includes a short bibliography.

Hands-On Science: Matter and Materials

By Peter Mellett; illustrated by David Le Jars. (2001, Kingfisher Publications)

More than forty experiments enable children to further demonstrate and deepen their knowledge of matter and its properties. "What's Happening" sections and descriptions of how topics apply beyond the experiments help explain the science and connect it to the children's world. Includes a helpful Glossary and Index.



Science with Air (Usborne Science Activities)

By Helen Edom and Moira Butterfield; illustrated by Kate Davies. (2008, Usborne Publishing Ltd.)

The experiments and demonstrations in this book are designed to help young scientists explore the properties of air. Simple text and clear illustrations make the activities easy for children to carry out and understand, and notes provide scientific explanations for adults to help children.

Shazam! Simple Science Magic

By Laurence B. White, Jr. and Ray Broekel; illustrated by Meyer Seltzer. (1994, Albert Whitman and Company)

Through a playful approach using magic to hook children's interest, the authors present a series of science-based tricks for children to perform. Each trick is followed by a clear and solid explanation of the science involved. Most tricks deal with matter by using the particle theory, but there is also "magic" dealing with gravity and magnetism. Lots of humor is mixed into the serious science.

Solids, Liquids and Gases (Starting with Science)

By The Ontario Science Centre; photographs by Ray Boudreau. (1998, Kids Can Press)

Thirteen demonstrations help students explore the properties of the three common states of matter. A "What's Happening" section explains the science underlying each investigation. A section for parents and teachers extends the activities described in the book.