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Chemistry and Physics Notebooking Journal

for

**Exploring Creation with
Chemistry and Physics**

by
Jeannie Fulbright

Exploring Creation with Chemistry and Physics Notebooking Journal

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Note from the Author

Welcome to the wonderful learning adventure of notebooking. This notebooking journal correlates with the Apologia textbook, *Exploring Creation with Chemistry and Physics*. It provides a place for students to complete the assignments in the text, as well as many optional activities, and will serve as their individual notebook. You only need to provide scissors, glue, colored pencils, a stapler, and a few brass fasteners.

Notebooking is not new. In fact, keeping notebooks was the primary way the learned men of our past educated themselves, from Leonardo da Vinci and Christopher Columbus to George Washington, John Quincy Adams, and Meriwether Lewis. These men and many others of their time were avid journal keepers or notebookers. They were also comparatively much more advanced in their knowledge—even as teens—than we are today. George Washington was a licensed surveyor during his teenage years, and John Quincy Adams graduated from law school at age seventeen.

It makes sense to emulate the methods of education of these great men rather than to use failing modern methods such as fill-in-the-blank and matching worksheets that do not fully engage students' minds. Studies show that individuals remember only 5 percent of what they hear, 50 percent of what they see and hear, and 90 percent of what they see, hear, and do. When students participate in activities that correspond with learning, retention increases exponentially. This is exactly what the *Chemistry and Physics Notebooking Journal* is designed to do—offer engaging learning activities to increase your students' learning and retention.

In addition to academic achievement, notebooking offers many benefits to students, parents, and teachers. It provides students an opportunity to express themselves uniquely as they learn and becomes a treasured keepsake of everything they have learned about chemistry and physics. For parents and teachers, it becomes a record of the year's studies that can easily be transferred to a portfolio if needed.

This journal will make notebooking easier for both you and your students by supplying an abundance of templates, hands-on craft suggestions, projects, additional experiment ideas, and many activities that will engage students in learning. Remember that *everything in this notebooking journal is optional*. Every child is different, learns differently, and responds differently to the array of activities provided here. Your goal is not to complete every activity but to make learning a joy. Use discernment to decide what activities and assignments will truly enhance your students' learning experience, encourage a love for learning, and build their confidence in science. If something is a drudgery, it will not increase your students' retention; it will only discourage their enjoyment of science and may also result in unmotivated learners. Because this notebooking journal will serve as a student's own unique record, you may customize it by simply tearing out the activity pages that you choose not to use.

It is my hope and prayer that you and your students will benefit from your studies this year, grow closer to God as you learn about His creation, and find joy in the learning process.

Warmly,



How to Use This Book

This notebooking journal provides a suggested schedule for studying *Exploring Creation with Chemistry and Physics*, as well as a variety of activities to enhance students' learning. The first three activities explained below are taken directly from the coursework contained in the textbook; the other activities are additional options that coordinate with the textbook.

Suggested Schedule

The suggested schedule includes reading the *Exploring Creation with Chemistry and Physics* text and completing the activities contained in the textbook and in this journal. Though not everyone will choose to use the schedule, those who do may find it very beneficial. Some parents and teachers will appreciate having their students' daily reading and assignments organized for them. Older students will find it easy to complete the work by following the schedule on their own. The suggested schedule provides for the course to be completed in twenty-eight weeks, two days per week, but it can be adapted to fit your goals. You can expedite the course by studying science three or four days per week or lengthen it by studying science only one day per week. If you wish to do the extra activities found in the "Test It Out" pages (which are not included in the schedule), still another day of science can be added. Above all, use the suggested schedule in a way that best suits your family.

Fascinating Facts

Exploring Creation with Chemistry and Physics contains many facts, ideas, and interesting notions. Although oral narration is an effective means to increase retention, students may wish to record some of the information through drawing or writing. The "Fascinating Facts" pages can be used for written narrations. If your students are avid writers, you can access more "Fascinating Facts" pages to print (free of charge) on the Apologia website. Go to www.apologia.com/bookextras and type in this password: godmadeitall. Add pages to this notebooking journal by stapling them onto one of the existing "Fascinating Facts" pages.

Notebooking Assignments, Activities, and Projects

Exploring Creation with Chemistry and Physics includes suggested notebooking assignments, activities, and projects—typically at the end of each lesson. This journal provides templates (blank pages with lines for writing or space for drawing) that students can use for completing these activities. Colored pencils can be used to encourage creative, high-quality work.

What Do You Remember? Narrative Questions

These review questions are the same questions asked in the "What Do You Remember?" section at the end of each lesson in *Exploring Creation with Chemistry and Physics*. They can be answered orally or, for older students, used as a written narration assignment. For co-ops or classroom use, these questions may also serve as a way to evaluate how much the students have retained from the reading. However, I encourage you to review the material with students before giving the questions as a written narration assignment. This will encourage better retention of the material and increase students' confidence and ability to restate their learning. An answer key is provided in the back of the textbook.

Vocabulary Crosswords

If you desire to expand your students' studies, the vocabulary crosswords can be used to review the new words and concepts mentioned in the lesson. Remember, working with the vocabulary in this manner is not a test of students' knowledge but should be viewed as a reinforcement and reminder of what they have learned.

Scripture Copywork

Incorporating the Word of God in your science studies through Scripture copywork will provide many benefits to your students. It will encourage stronger faith and memorization of Scripture, as well as better writing, spelling, and grammar skills. Each lesson has a corresponding verse for students to copy; they may print or write in cursive.

Cut-and-Fold Miniature Books

At the back of this journal, you will find cut-and-fold miniature book craft activities that correspond with the reading and review the concepts learned in each lesson. Writing lines are provided on the minibooks so your students can record the information they have learned. Some books ask for specific information; others allow students to record whatever facts they found most interesting. Students will cut out the pattern, write what they have learned in the designated places, then assemble the books according to the directions. Paste pages throughout this journal provide a place for students to preserve and display their minibooks. As with all the notebooking activities, the minibooks are entirely optional. Some students thrive with the hands-on approach, while other students do not benefit academically from this type of activity. Allow your students to try the minibooks to see if they enjoy learning in this way.

Test It Out

The “Test It Out” suggestions are designed to give students additional ideas and activities that might enhance their studies, such as experiments, hands-on activities, recommended research and living books, and audio and video resources. Please be aware that some books may contain evolutionary content. Be sure to provide adult supervision for all “Test It Out” activities, projects, and experiments.

Project Pages

Many of the projects and experiments in *Exploring Creation with Chemistry and Physics* are hands-on and therefore cannot be preserved in a notebook. Each lesson in this notebooking journal provides project pages where students can write about what they did and learned from the various projects and experiments. Be sure to take pictures of the finished products and glue them onto the project pages. Students will enjoy looking back and remembering the fun they had learning chemistry and physics!

Field Trip Sheets

Your family may wish to further enhance your studies by visiting a science museum. Field trip sheets are provided at the back of this notebooking journal to record your visits. You can make a pocket on the back of these sheets to hold any brochures or additional information you receive. Simply glue three edges (sides and bottom) of a half-sheet of construction paper to the bottom of the field trip sheet.

Final Review

At the end of this journal are 50 questions that review the entire course. They can be answered orally or in writing. This is an optional activity; however, I believe your students would be pleasantly surprised to see how much they know about chemistry and physics after answering the questions.

Daily Schedule

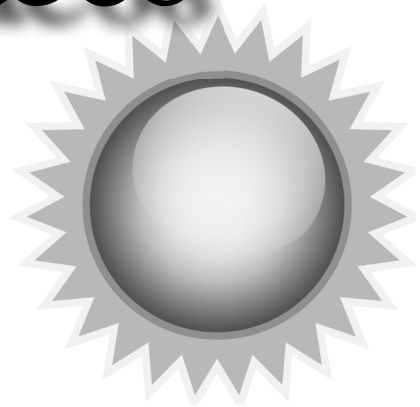
Week	Day 1	Day 2
1	<p style="text-align: center;">Lesson 1 Chemistry and Physics Matter</p> <p>Read text pp. 15–17 & narrate Begin working on Fascinating Facts about Chemistry and Physics, NJ pp. 12–13 Try This! text p. 17 Read text pp. 18–20 & narrate Try This! text p. 19</p>	<p>Read text pp.20–23 & narrate Try This! text pp. 20, 22, 23 Read text pp. 24–27 & narrate Try This! text pp. 25, 26, 27</p>
2	<p style="text-align: center;">Lesson 1 Chemistry and Physics Matter</p> <p>Notebooking Activity: Archimedes Play, text p. 28, NJ pp. 14–15 Vocabulary Crossword, NJ p. 16</p>	<p>Scripture Copywork, NJ pp. 17–18 Creation Confirmation Minibook, NJ p. A1, Extra Miniature Books, NJ p. A5, Matter Flap Book, NJ p. A7 Project: Lava Lamps, text p. 29, NJ pp. 21–23 What Do You Remember? text p. 28, NJ p. 24</p>
3	<p style="text-align: center;">Lesson 2 Moving Matter</p> <p>Read text pp. 30–32 & narrate Begin working on Fascinating Facts about Moving Matter, NJ pp. 25–26 Try This! text p. 32 Read text pp. 33–35 & narrate Try This! text pp. 33, 34, 35</p>	<p>Read text pp. 36–37 & narrate Try This! text p. 37 Read text pp. 38–41 & narrate Try This! text pp. 38, 41</p>
4	<p style="text-align: center;">Lesson 2 Moving Matter</p> <p>Notebooking Activity: Matter Pockets, text p. 41, NJ pp. 27–29 Vocabulary Crossword, NJ p. 30</p>	<p>Scripture Copywork, NJ pp. 31–32 States of Matter Wheel, NJ p. A9 Experiment: Earth’s Water Cycle, text p. 42, NJ pp. 35–36 What Do You Remember? text p. 41, NJ p. 37</p>
5	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]

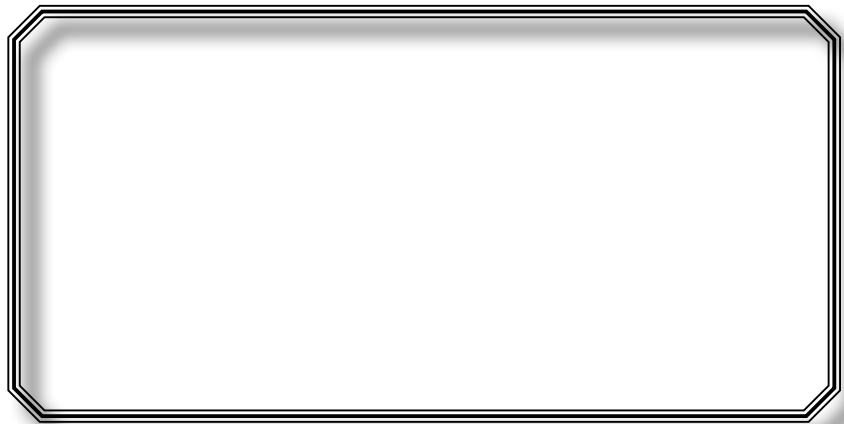
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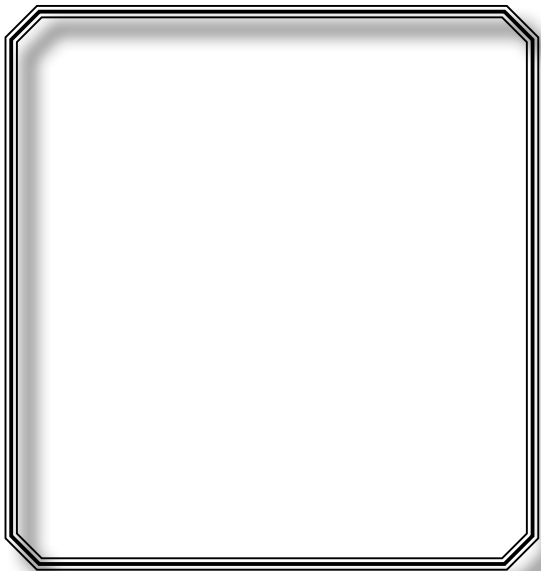
Fascinating Facts



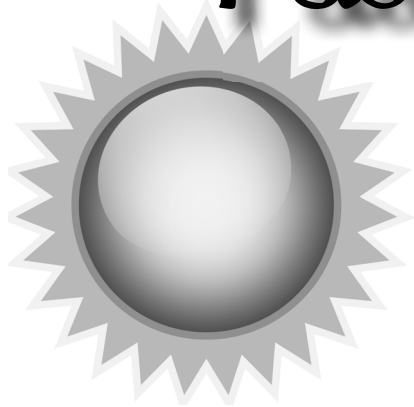
about
Matter
Lesson 1







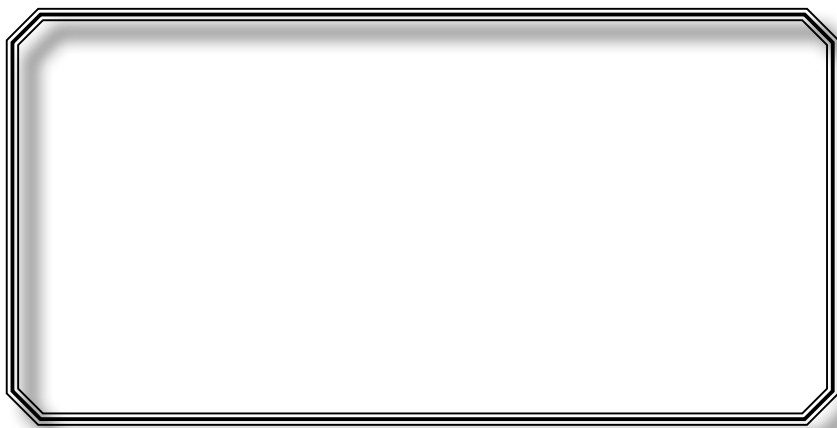
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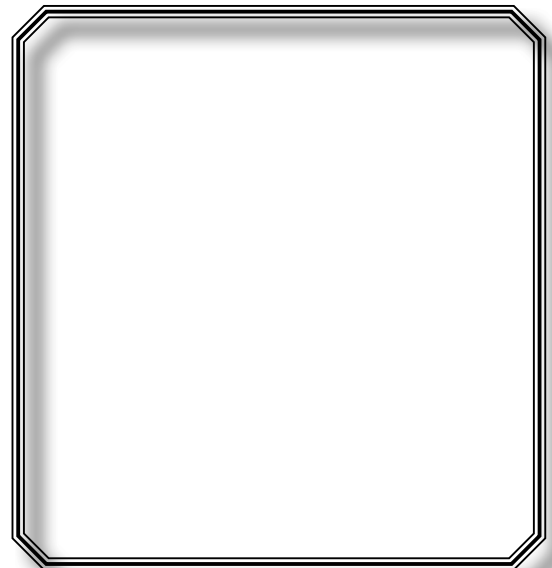


about
Matter



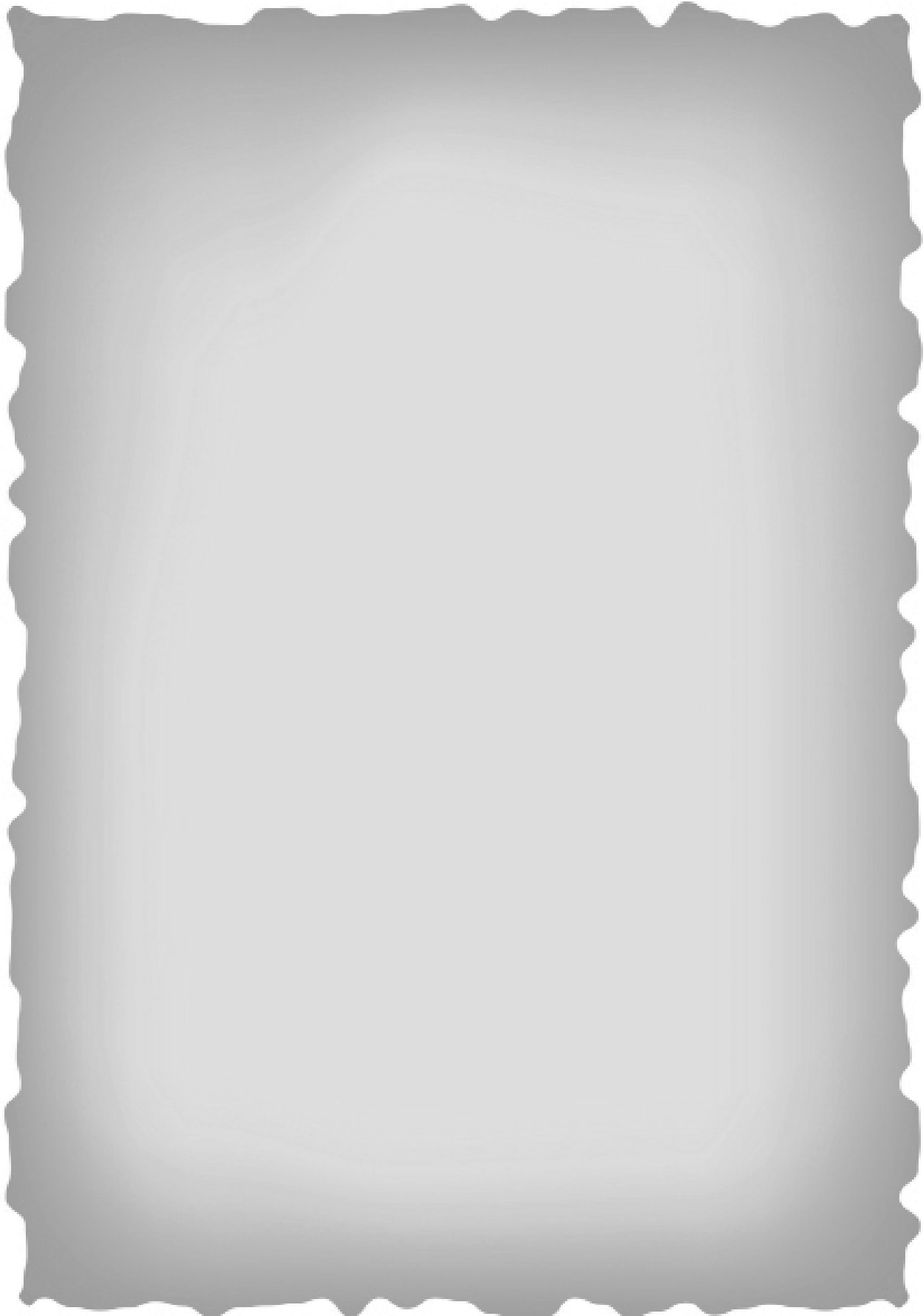
Lesson 1





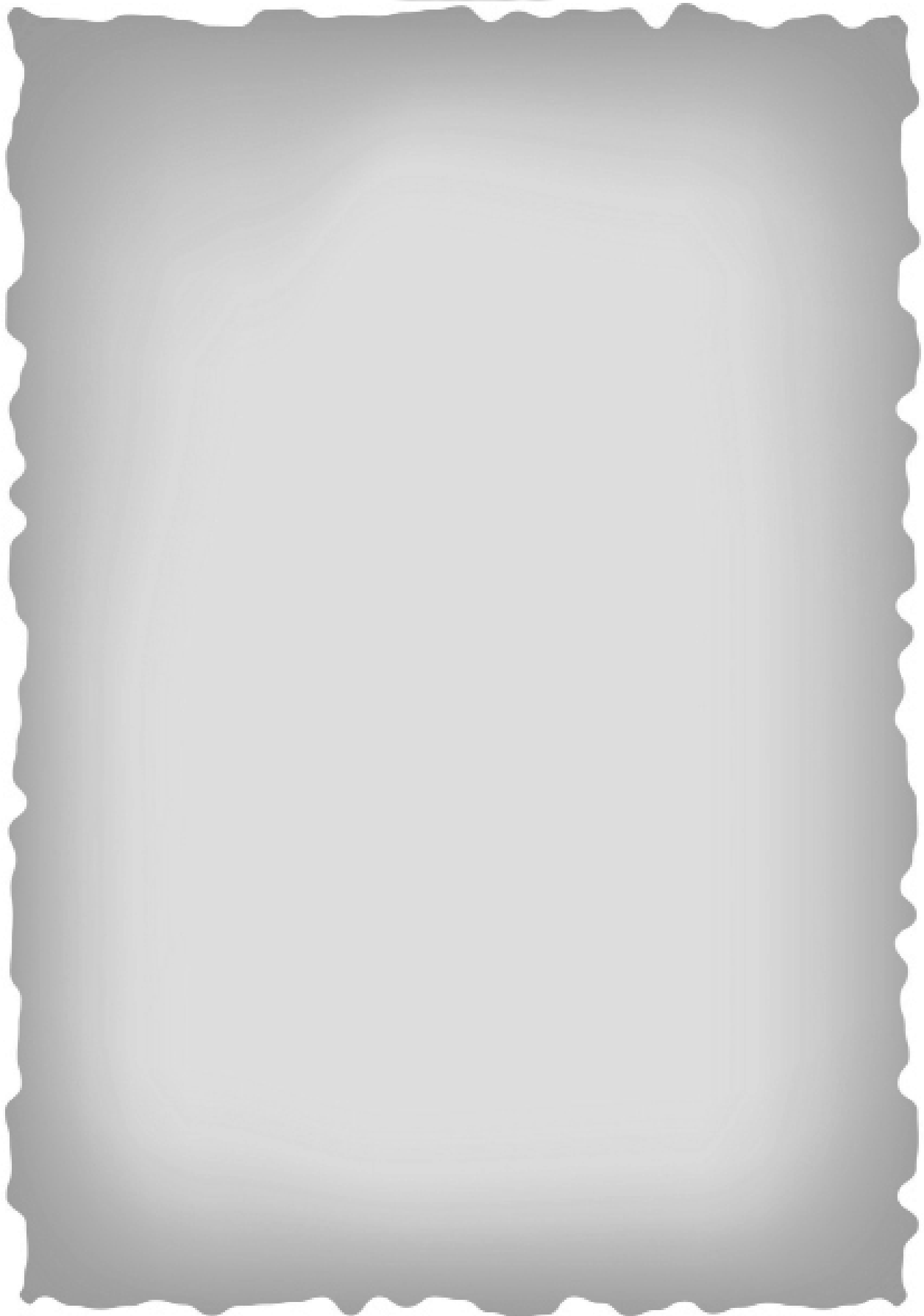
Archimedes Play

Lesson 1



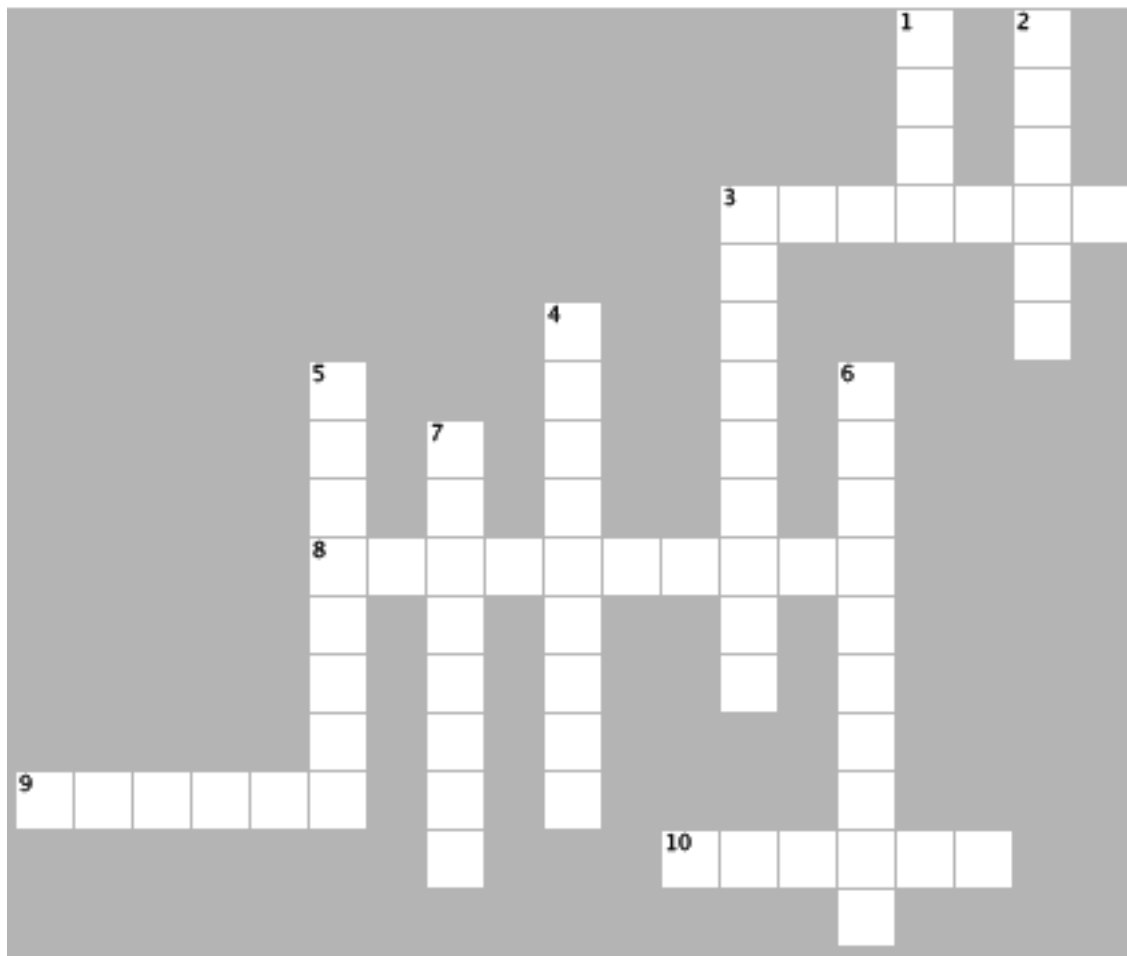
Archimedes Play

Lesson 1



VOCABULARY CROSSWORD

LESSON 1



properties
ductility
plasticity
density

matter
malleable
volume
displace


luster
mass
buoyancy

Across

3. How much mass is in a certain volume of matter
8. The special features, traits, or attributes of material found in the universe
9. The amount of space something takes up
10. The amount of shine something has

Down


1. Tells us how much matter is inside something
2. Anything that has volume and mass
3. The ability of an object to be made into a wire
4. What we call something that's bendable
5. To replace matter with another kind of matter or to move matter
6. When a material can be changed into a different shape without breaking
8. The ability of something to float



Copywork

He is before all things, and in him
all things hold together.

Colossians 1:17



Copywork

He is before all things, and in
him all things hold together.

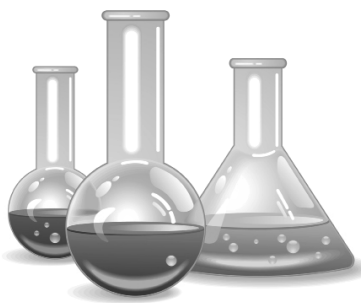
Colossians 1:17

Matter Flap Book

Lesson 1

Paste your Matter Flap
Book onto this page.





Test It Out

Lesson 1



Coke Float

We talked a lot about density. Which do you think is more dense: Coke or Diet Coke? For this activity, you'll need an adult's supervision and a can of each type of soda. Fill an aquarium, a large bucket, or even the kitchen sink with water. Now place both cans in the water. What happens? Why do you think that is?

Overflow Beans

Here's an activity on water displacement. You'll need an adult's supervision, a bowl of water, a small cup, a tablespoon, and some beans. Using a tablespoon, count how many tablespoons of water it takes to fill the cup. Now remove several tablespoons of water to make room for some beans. How many beans do you think you can place in the cup before the water overflows? Make a guess! Now put the beans in the water to see if you are correct. You have just estimated water displacement based on volume!

Boating Basics

Let's experiment with buoyancy. You'll need an adult's supervision, a piece of clay, a sink, and water. Fill your sink with water. Now split a piece of clay into two equal-sized pieces. Shape one piece into a ball and the other into a boat. Place the clay pieces into the water. See if you can explain what happens. (If the area of the object that makes contact with the water is large enough, the object floats. The object must make room for its own volume by pushing aside, or displacing, an equivalent volume of liquid.)

A Gallon a Day

This experiment will help you appreciate how much water you use everyday and understand how vital water is to your daily existence. Fill a 1-gallon container with water and try to get through the entire day using water only from the container. Use the water for hand washing, tooth brushing, face washing, dish rinsing, and drinking. Remember to use the water sparingly. See if you can make it last the whole day! Hint: Some of the water you can recycle, and some you can't. You wouldn't want to drink the water you used to wash your hands (or anything else, for that matter) or brush your teeth. But you could wash your hands with the water you used to wash your face.

Book Suggestions

What's the Matter in Mr. Whiskers' Room? by Michael Elsohn Ross. Mr. Whiskers encourages his students to use all their senses to discover matter. K–3rd.

How to Think Like a Scientist: Answering Questions by the Scientific Method by Stephen P. Kramer. Humorous and appealing pictures help teach students to use the scientific method and think like a scientist. 3rd–6th.

What's Chemistry All About? by Alex Frith and Lisa Gillespie. This book's conversational style explains chemistry in a fun and informative way. Comic strips, fact boxes, "nerdy notes," and fun experiments teach kids complicated topics. 3rd–6th.

Physics: Why Matter Matters! by Dan Green. Wacky characters invite you into the world of physics using visual interpretations to teach complex concepts. 3rd–6th.

My Matter Projects

Lesson 1

What I did:

What I learned:

What I did:

What I learned:

My Matter Projects

Lesson 1

What I did:

What I learned:

What I did:

What I learned:

My Matter Projects

Lesson 1

What I did:

What I learned:

What I did:

What I learned:

WHAT DO YOU REMEMBER?

LESSON 1



1. Physics and chemistry are both the studies of _____ and _____.
2. Matter is defined as anything that has _____ and _____.
3. What is mass?
4. Why is mass not always measured by weight?
5. How can we measure volume?
6. Which is denser—a cube of wood or the same size cube of gold? Why?
7. Name as many properties of matter as you can recall.