

BLOSSOM & ROOT

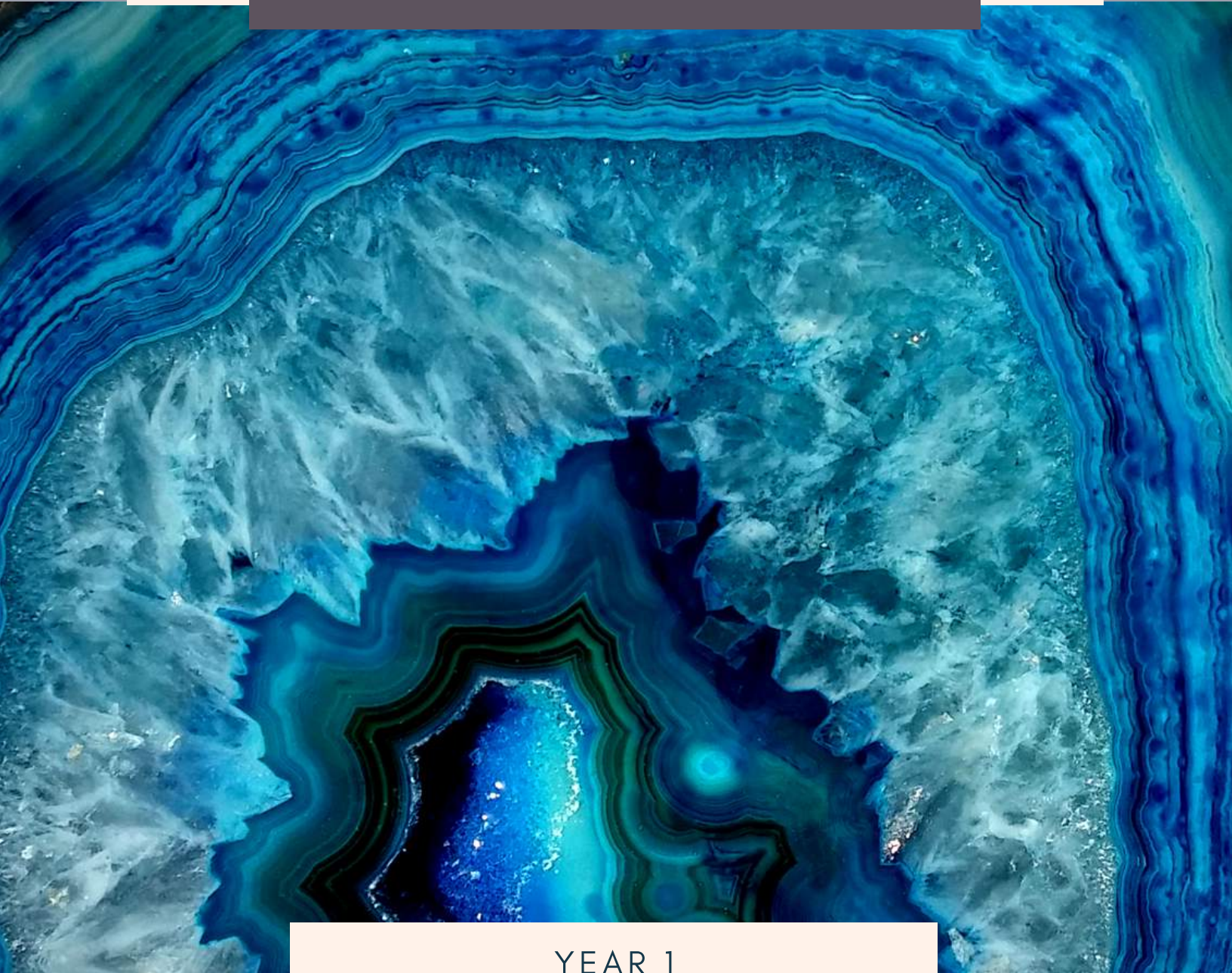
ELEMENTARY SCIENCE // YEAR 1

# *Wonders of the Earth & Sky*

PARENT GUIDE

YEAR 1

Exploring Geology, Weather, and Seasons





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*Blossom & Root*

Elementary Science,  
Year 1:

*Wonders of the Earth & Sky*

A Complete, Hands-On Secular Science Curriculum

Grades 1 – 4

**Blossom & Root Elementary Science  
Year 1: Wonders of the Earth & Sky**

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# Welcome to a Year of Wonder

## A Relaxed, Hands-On, and Adventurous Approach to Science in the Early Grades

When I decided I wanted to homeschool my daughters, one of the most difficult tasks I faced was finding a science curriculum that suited our needs. We wanted curriculum that was completely secular, hands-on, and full of opportunities to take our learning outside. We wanted books, and lots of them! We wanted permission to explore, dig deeper, and go off to explore rabbit trails from time to time. But we also wanted structure--just enough to build concepts upon one another in a linear way without the pressure of a rigid schedule. When it came to recording our discoveries, we wanted freedom from the worksheets, tests, and time-consuming lap books that seemed to dominate most of our options--something more akin to a scientist's field journal.

When I couldn't find this particular unicorn, I decided to do what I had done for my early years and kindergarten curriculum--I created it. Since I knew we couldn't be the only family looking for such a thing, I put my heart, soul, and complete focus into crafting a solution for those families too.

*Wonders of the Earth and Sky* is the first of six planned years of science curriculum, brought to you by Blossom and Root. It is designed to be flexible, adaptable, inspiring, and gentle. My fondest hope is that it will provide discovery, joy, and wonder for the families that use it.

Thank you for your support of Blossom and Root. Please feel free to reach out to me at any time--I am always happy to help!

Kristina Garner

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## Options for Scheduling This Curriculum:

### Traditional Schedule:

Aim to complete one unit per week, in order, for a 36-week school year. If you do science once a week, this may mean reading one of the suggested books, completing one of the activity options, and ending with your child recording their experience in the student notebook. If you do science twice a week or more, you may wish to incorporate multiple books and video links, and more of the optional activities per unit.

### Relaxed Schedule:

Begin at the beginning and spend as much or as little time in each unit (or "wonder," as we call them) as desired. You can even split this curriculum into two year's worth of science by doing half of it in the first year, and half in the second. This will allow ample time for families that like to incorporate lots of field trips and projects, without added pressure to complete the entire curriculum in one school year.

### Scheduling for Seasonal Relevance:

If you'd like to complete each of the seasonal units (Wonders 32 - 35) during the season as it happens, you may wish to begin the year by completing "Wonder No. 31: The Reason Behind the Seasons" first, followed by the unit that corresponds with your current season (e.g. "Wonder No. 34: The Autumnal Equinox.") Once you complete that initial seasonal unit, move on to Wonder No. 1 and proceed through the curriculum as scheduled, pausing at the change of the seasons to spend a week (or more) completing the relevant seasonal unit. Then resume with the curriculum as planned. This will allow you to explore the seasons as they are happening (if you live in a temperate climate.)

### How to Plan Out Each Unit (the Simple Way):

A few weeks before you begin a unit, look over it and decide which books or video links you'd like to use and which projects you'd like to do. Highlight them in the teacher's guide here or write them into a separate planner. Refer to the Laboratory Guide for specific supplies you'll need to gather for the activities you'd like to include.



# Make It Yours

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## How to Teach This Curriculum



This curriculum is designed to provide support and inspiration to the parent educator. Above all else, please make it *yours*!

### **Step One: Wonder**

Each unit begins with an introduction to the wonder at hand--whether that is igneous rocks, earthquakes, or the summer solstice. Together, you and your child will delve into the topic through engaging literature, short videos, and guided conversations.

### **Step Two: Explore**

The next step is to explore the topic through hands-on activities, projects, demonstrations, and experiments. Our curriculum is flexible, providing several options for each wonder so that you may tailor it to your budget, time available, personal preferences, and your child's learning style.

### **Step Three: Record**

The final step is to allow your child to record their experiences. Once again, our curriculum allows for maximum flexibility. Children who are already eager, confident writers may use the student notebook to employ written narration. Others may wish to draw or color a picture of their experience, below which their parent can dictate their oral narration. Still others may prefer to tape or paste in photographs taken of their adventures and activities during that unit--the choice is yours!

### **Permission to Go Off the Grid**

One of the greatest gifts of homeschooling is the ability to follow rabbit trails, and to delve deeper when inspiration calls. We fully encourage this, and promise that the curriculum will be here, waiting for you when you're ready to come back and move on to the next wonder!

# Step One: Wonder

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Setting the stage for discovery

*"Wisdom begins in wonder."*

*Socrates*

## The Main Goal

You will begin each unit (or "wonder" as we call them) by introducing the topic to your child through books, short videos, and guided conversations. **The primary goal of this stage is simply to introduce the topic and inspire curiosity.**

## Options for Step One

As with the rest of this curriculum, we focus on providing multiple options for you to choose from, unit by unit:



### Category 1: For the Minimalists

If you're pressed for time, short on resources, or simply not as excited about a specific unit, stick with Category 1: For the Minimalists to introduce the topic. This category is designed to touch on the main points with as few resources and as little of time as possible.



### Category 2: For the Book Basket Folks

This category will provide a rich list of engaging literature to pick and choose from for your initial introduction. **You absolutely do not need to provide all of these books, every week.** This list is meant to provide *options* for families that prefer a literature-based approach to learning.



### Category 3: For the Visual Learners

Some children prefer a more visual model for receiving information, and some topics can be difficult to explain without a visual demonstration. Therefore we provide suggested video links, most of which are hosted on YouTube, to help introduce each topic. **Please screen them ahead of time to be sure they are in line with your family's values and developmental appropriateness for your child.**

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For each unit,  
choose from one  
or multiple  
categories to  
introduce the  
topic and inspire  
curiosity.

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# Step Two: Explore

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Choose your own adventure

## The Main Goal

The next step for each unit is to explore the topic through hands-on activities, demonstrations, projects, and experiments. **The primary goal of this stage is to allow your child the opportunity to make discoveries about the topic at hand.**

## Options for Step Two

As with the rest of this curriculum, we focus on providing multiple options for you to choose from, unit by unit:

### Category 4: For the Outdoor Learners

This category was designed for families that prefer to do their learning outdoors. If you and your children love to explore, take field trips, and get your hands good and muddy, this is the category for you!



### Category 5: For the Table-Lab Crowd

For families that love "table science" we have designed activities that can be done indoors using (mostly) common household objects. These activities and demonstrations can bring big ideas closer to home and provide hands-on fun for children of multiple ages.



### Category 6: For the Crafts-and-Projects Families

Some families really love projects--hand-made exploration of a topic through art projects, crafts, and writing activities. For these families, we have provided suggested projects that are designed to be "on display."



## Mix and Match to Choose Your Own Adventure!

Pick and choose from any of these categories to design a unit of science for your family. If you're short on time, one activity will do--you can even stick to the "minimalist" category in step one and call it a week. If you're loving a topic, you may wish to combine multiple categories for exploration and extend your learning for several weeks.

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For each unit,  
choose from one  
or multiple  
categories  
to provide rich  
and engaging  
opportunities for  
discovery.

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# Step Three: Record

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Documenting the journey



The presentation of the topic belongs to you, the parent educator. What your child takes from that presentation belongs to them.

## The Main Goal

The final step for each unit is to give your child a chance to document their experiences through the student notebook. **The primary goal of this stage is to allow your child to record whatever they are inspired to, concerning the topic you investigated together during the previous two steps.**

## Options for Step Three

As with the rest of this curriculum, we focus on providing multiple options for you to choose from, unit by unit:

### Oral Narration



For this option, your child will give a brief oral narration of what they have learned. You, the parent, may choose to take dictation of their words into the student notebook. They may wish to draw or color something before or after the oral narration in the student notebook. This can also be done in the form of casual conversations together.

### Written Narration



If your child is already confidently writing, and enjoys doing it, they may wish to record their own written narration, with or without a drawing, in their student notebook.

### Scrapbooking with the Student Notebook



You may wish to treat the student notebook as a scrapbook instead, allowing your child to tape or glue photographs into it that you (or they) take during your activities together. They may wish to add brochures or postcards from field trips, make drawings or notes in the margins, or have you take dictation.

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For each unit, have your child document their experiences using one of these options for the student notebook.

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# Permission to Go Off-Grid

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*"Curiosity is the wick in the candle of learning."*  
*William Arthur Ward*

Follow those rabbit trails



## **It's All About the Journey, NOT the Map!**

As you move through the following "wonders," you will naturally come across forks in the road where your child wants to stop and dig deeper (e.g. what is it like to be a storm-chaser?) or follow a rabbit trail that springs up (e.g. learning about fossils makes them excited to investigate dinosaurs.) These side-trails can provide some of the richest learning opportunities there are--curiosity-driven, interest-led investigations--so don't ignore them if you can help it.

Many of us feel nervous about "veering off the path" of a curriculum. The thought of learning gaps and self-imposed deadlines can keep us awake at night. We are here to assure you that it is 100 percent a-okay to follow your child's curiosity. This curriculum will be here when you are ready to come back and continue on.

It is also 100 percent a-okay to hurry through a topic that is not very interesting to you, or skip it entirely. We want this curriculum to be yours, so take the liberty to mold it the way you want it and be sure to indulge in those rabbits trails! *(We love them so much that we even flag you down in places where side-voyages may feel natural! If you see the rabbit icon, it means there's an opportunity for a possible rabbit trail.)*

# Bringing Big Ideas Closer To Home

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## Where Nature Study Fits Into This Curriculum



*"We all have the need to be trained to see, and to have our eyes opened before we can take in the joy that is meant for us in this beautiful life."*

*Charlotte Mason*

### **Why a Coordinating Nature Study?**

With the exception of a stand-alone purchase of *Nature Study, Year One: Wonders of the Earth and Sky*, our science and nature study programs for year one are meant to be done together. This does not mean that you always must be on the same unit number in the science program as the corresponding week number in the nature study program. It just means that these two programs were designed to be done throughout the same year.

We believe that science in the early grades should largely concern the natural and physical world of the child: the rocks and the trees and the worms that they can see and touch first-hand. However, many of the concepts in Earth science, geology, biology, meteorology, etc. can be lofty and abstract for the young mind. Nature study--the investigation and observation of the intimate landscape immediately surrounding a child--can help to bring these big ideas closer to home. For example, a child in the first grade may not be able to wrap their mind around the different qualities and origins of several rocks or minerals, but if given the opportunity to collect and curate their own rock collection from the local landscape, they will begin to notice the varying traits from specimen to specimen, connections between these traits and where the rocks were found, and ultimately that the concepts they learned in the related science unit are very much present in *their* world. Therefore, *they* are part of those big ideas too.

# *Contents*

Wonder / Unit

Wonder No. 1: Born From  
Stardust

Wonder No. 2: Layers of the  
Earth

Wonder No. 3: Ever-Moving  
Plates

Wonder No. 4: Mountains  
and Rifts

Wonder No. 5: Earthquakes

Wonder No. 6: Volcanoes

Wonder No. 7: Crystals and  
Minerals

Wonder No. 8: Igneous Rock

Wonder No. 9: Metamorphic  
Rock

Wonder / Unit

Wonder No. 10: Weathering  
and Erosion

Wonder No. 11: Sedimentary  
Rock

Wonder No. 12: The Rock  
Cycle

Wonder No. 13: Identifying  
Rocks and Minerals

Wonder No. 14: How We Use  
Rocks and Minerals

Wonder No. 15: Fossils

Wonder No. 16: Putting the  
Puzzle Together

Wonder No. 17: Landforms

Wonder No. 18: Bodies of  
Water

# *Contents*

Wonder / Unit

Wonder No. 19: Layers of the Atmosphere

Wonder No. 20: Weather and Climate

Wonder No. 21: Reading Nature's Signs to Predict the Weather

Wonder No. 22: Using Science to Predict the Weather

Wonder 23: Clouds and Wind

Wonder 24: The Water Cycle

Wonder 25: Rain

Wonder 26: Snow and Ice

Wonder 27: Thunderstorms

Wonder / Unit

Wonder No. 28: Tornadoes

Wonder No. 29: Hurricanes

Wonder No. 30: Rainbows

Wonder No. 31: The Reason Behind the Seasons

Wonder No. 32: The Spring Equinox

Wonder No. 33: The Summer Solstice

Wonder No. 34: The Autumnal Equinox

Wonder No. 35: The Winter Solstice

Wonder No. 36: Being a Scientist in Your World



# Book list

Please note: Supply lists for each activity, project, demonstration, or lab suggested in this parent guide can be found in the laboratory guide. Since the supplies you will need will depend on which activities you select for each unit, there is not one comprehensive supply list for this curriculum. Please refer to the laboratory guide for supplies needed according to each option in each unit.

## Required Books:

There are no required books for this curriculum. Theoretically, you could complete this curriculum without using any books at all, simply by using our "big picture" messages listed in each unit and our suggested video links. However, we do have several books that are highly recommended (see below) to help truly bring each topic to life in a visual way for your child.

## Highly Recommended Books:

Wonder #	Book
Most	<i>Smithsonian Super Earth Encyclopedia</i> by DK
Most	<i>Nature Anatomy: The Curious Parts and Pieces of the Natural World</i> by Julia Rothman

**The following books would be used for approx. 1 week each, so borrowing would be best:**

- |         |  |
|---------|--|
| 15 - 16 | <i>Mary Anning and the Sea Dragon</i> by Jeannine Atkins                   |
| 19      | <i>Air is All Around You</i> by Dr. Franklyn M. Branley                    |
| 20      | <i>Weather Words and What They Mean</i> by Gail Gibbons                    |
| 22      | <i>What Will the Weather Be?</i> By Lynda DeWitt                           |
| 23      | <i>Clouds</i> by Anne Rockwell   |
| 23      | <i>Feel the Wind</i> by Arthur Dorros                                      |
| 25      | <i>Down Comes the Rain</i> by Dr. Franklyn M. Branley                      |
| 26      | <i>Snow is Falling</i> by Dr. Franklyn M. Branley                          |
| 27      | <i>Flash, Crash, Rumble, and Roll</i> by Dr. Franklyn M. Branley           |
| 28      | <i>Tornadoes</i> by Gail Gibbons   |
| 29      | <i>Hurricanes</i> by Gail Gibbons  |
| 31      | <i>The Reason for the Seasons</i> by Gail Gibbons                          |
| 32      | <i>A New Beginning: Celebrating the Spring Equinox</i> by Wendy Pfeffer    |
| 33      | <i>The Longest Day: Celebrating the Summer Solstice</i> by Wendy Pfeffer   |
| 34      | <i>We Gather Together: Celebrating the Harvest Season</i> by Wendy Pfeffer |
| 35      | <i>The Shortest Day: Celebrating the Winter Solstice</i> by Wendy Pfeffer  |

# Wonder No. 5: Earthquakes

Welcome to Wonder No. 5: Earthquakes.

In this unit, you will be exploring earthquakes. Earthquakes can happen anytime two plates move into, away from, or against each other.

If you live in an area prone to earthquakes, this is a great time to review earthquake safety and to practice what to do if a quake occurs.

Be sure to review all video links and book recommendations before sharing them with your child. Since this topic can be scary to younger children, use your best judgement regarding your child and their sensitivities.

**There are three "big picture" messages to focus on during this unit:**

**1) Earthquakes occur when plates move into, away from, or against each other.**

**2) Earthquakes happen all of the time. Most are too small for us to feel them, but some are very large and cause a lot of damage.**

**3) Earthquakes can cause large waves called tsunamis to form.**



Possible Rabbit Trail: If your child is demonstrating curiosity around this unit's topic, you may want to explore the science behind seismographs. Here is a video that shows you how to make your own seismograph at home:

Copy & Paste

Link: <https://www.youtube.com/watch?v=KnocP26HL5M>

## **1. For the Minimalists:**

Look at pages 24 - 25 in the *Smithsonian Super Earth Encyclopedia* and talk about how earthquakes occur.

## **2. For the Book Basket Folks:**

*Earthquake in the Early Morning* (Magic Tree House #24) by Mary Pope Osborne, *Earthquakes!* (TIME FOR KIDS® Nonfiction Readers)--not a living book, but helpful for explaining earthquakes; *Planet Earth Inside Out* by Gail Gibbons; *Earthshake: Poems from the Ground Up* by Lisa Westberg Peters; *Thunder Underground* by Jane Yolen; *Why Do Volcanoes Blow Their Tops?: Questions and Answers About Volcanoes and Earthquakes* by Melvin and Gilda Berger

## **3. For the Visual Learners:**

From SciShow Kids: What Causes Earthquakes?

Copy & Paste Link: [https://www.youtube.com/watch?v=AArne-wh\\_Uc](https://www.youtube.com/watch?v=AArne-wh_Uc)

From Peekaboo Kidz: What is an Earthquake? Copy & Paste Link: <https://www.youtube.com/watch?v=dJpIUrSOFY&t=16s>

\*\* Be mindful of other videos you may encounter--some can be very frightening for early grades.\*\*

## **From the Laboratory Guide:**

### **4. For the Outdoor Learners:**

Wonder No. 5 "Shake and Quake Rock Demo"

### **5. For the Table-Lab Crowd**

Wonder No. 5 "Gelatin Quake Demo"

### **6. For the Crafts-and-Projects Families:**

Wonder No. 5 "STEM Challenge: Make a Quake-Resistant Structure"

## **From the Student Notebook:**

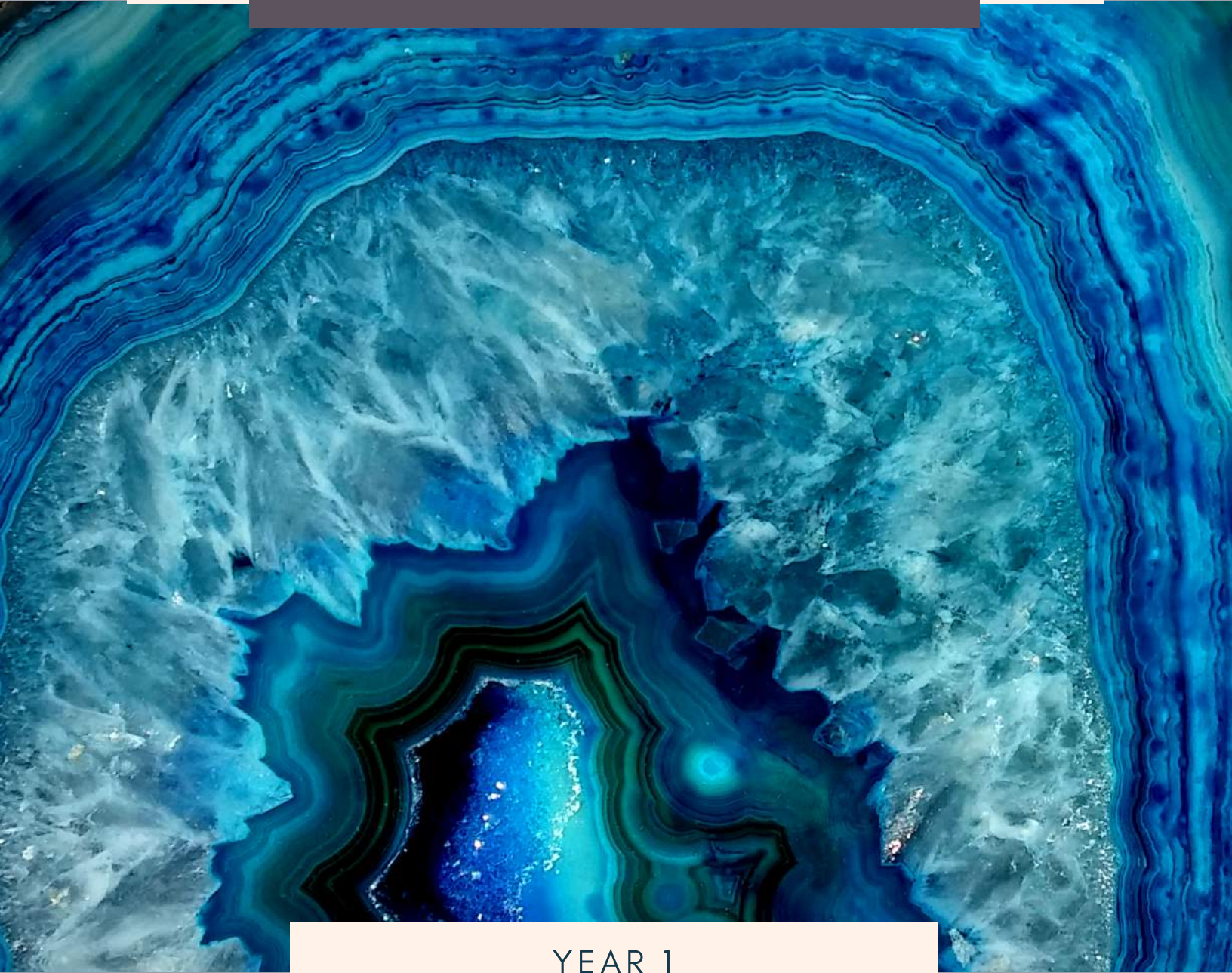
Complete Wonder No. 5 Entry

BLOSSOM & ROOT

ELEMENTARY SCIENCE // YEAR 1

# *Wonders of the Earth & Sky*

LABORATORY GUIDE



YEAR 1

Exploring Geology, Weather, and Seasons

# Wonder No. 5: Earthquakes

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## For the Outdoor Learners:

### Shake and Quake Rock Demo

#### What You'll Need:

- Two large rocks, each with one relatively straight edge that you are able to lift, push, etc.
- Several small rocks and pebbles to scatter and stack on top of the two large rocks.
- Optional: access to an area with lots of squishy mud (you may need to bring your own water and shovel to create good mud)

#### What to Do:

1. This activity will produce a very simplified demonstration of an earthquake. If you choose to use mud, it will get messy, so choose your clothes and workspace accordingly.
2. Remind your child of the material you covered when you began to explore this unit / wonder. Remind them that earthquakes can happen when two large plates move against each other in a transform boundary.
3. If you have decided to use mud, prepare a good, squishy "mantle" about half an inch thick, wide enough for both rocks to sit on, and long enough for them to slide in opposite directions for several inches.
4. Set the two large rocks on the "mantle", with their straightest edges lined up where they meet. Push them as close together as possible. Scatter and stack the smaller rocks and pebbles on top of the large rocks.
5. With or without your child's help, push the two rocks against each other, moving them in opposite directions. The pebbles and smaller rocks will bounce and wobble as the large rocks catch and slide against each other. This is like what happens in an earthquake. Allow your child to play freely.

## For the Table-Lab Crowd:

### Gelatin Quake Demo

#### What You'll Need:

- A square pan of gelatin, already prepared the night before. You will want to prepare it on top of a large amount of plastic wrap, so it will be easy to lift out of the pan.
- Wax paper
- A knife and scissors
- Several small toys--animals, action figures, etc.

#### What to Do:

1. Carefully lift your prepared gelatin out of the pan onto a large sheet of wax paper. Using the knife, cut the square of gelatin in half. Carefully cut the wax paper in half as well. One half of the gelatin should now be resting on one half of the sheet of wax paper, with the other half of the gelatin on the other half of the wax paper. The gelatin should be right on the edge of the wax paper on both halves.
2. Line the two halves up, with no space between them. Allow your child to place their small toys on the top of the gelatin.
3. Remind them that earthquakes can happen when two plates move against each other in a transform boundary. Explain that, in this demonstration, the gelatin will be the plates.
4. With or without your child's help, move the two gelatin "plates" past each other in opposite directions, very slowly. The gelatin will shake and quake, toppling the small toys. This is like what happens in an earthquake.
5. Allow your child to repeat the demonstration if they'd like, then enjoy a tasty treat together.



# Wonder No. 5: Earthquakes

**For the Crafts-and-Projects Families:**

## **STEM Challenge: Make a Quake-Resistant Structure**

### **What You'll Need:**

- A sturdy book, covered with a sheet of paper to protect it
- A bag of mini-marshmallows
- A box of toothpicks
- A ruler

### **What to Do:**

1. Tell your child that they will be completing a STEM challenge today, using only the marshmallows and the toothpicks. They will make a building on top of the sturdy book as it rests on a table.

2. Tell your child they must build a quake-resistant structure. Many places on the planet have regular earthquake activity, and these places have learned to adapt the way they build their homes and offices so that they don't topple and crumble in a quake.

3. The two requirements of the challenge are that they must make a building at least 8 inches tall (higher for older children) and that it must stay upright when you slide the book around on the table.

4. Provide the sturdy book, the marshmallows, the toothpicks, and the ruler. Show them how to measure 8" (or more) from the surface of the book using the ruler, so they will be able to test their structure as they build.

5. Once they finish their structure, gently slide their book around on the table to see if the structure holds. If it does, hooray! It's time to eat marshmallows and celebrate. If it topples, it's back to the drawing board!



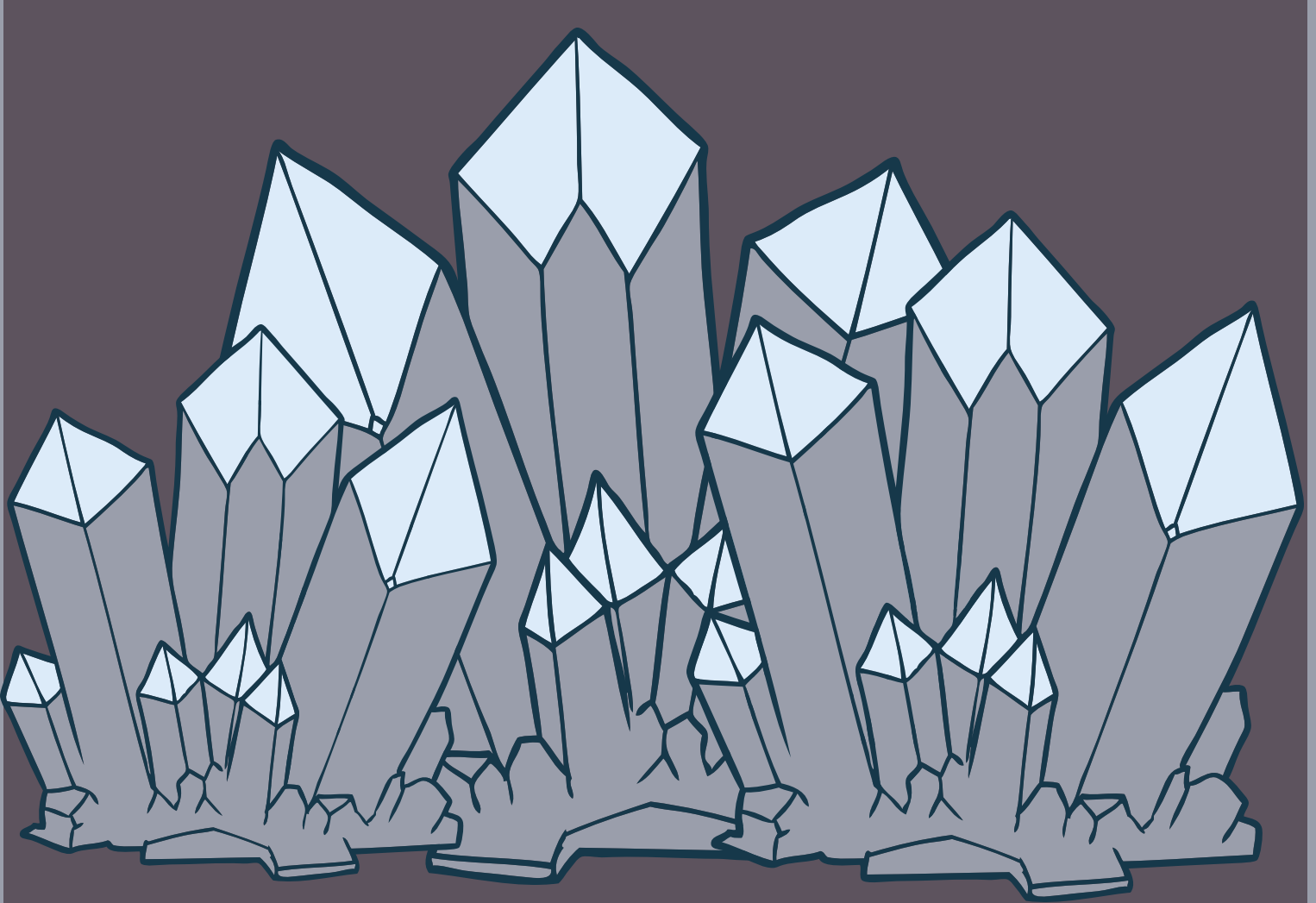


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ELEMENTARY SCIENCE // YEAR 1

# *Wonders of the Earth & Sky*

STUDENT NOTEBOOK

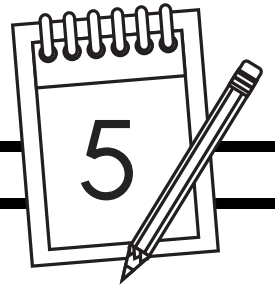


This book belongs to:

YEAR 1

Exploring Geology, Weather, and Seasons

# Earthquakes



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