

Science

Nature Walks & Scouting
General Science
Labs
Natural History
Nature Notebook

SAMPLE





About the Course

In level 5, learners expand their knowledge of science in their world and continue building personal connections as they discover a variety of topics from botany, astronomy, and more.

This course includes the following topic(s): General Science: Grade 5, Natural History: Grade 5, Labs: Grade 5, Nature Notebook: Grade 5, Nature Walks & Scouting: Grades 1-8

About Nature Walks & Scouting: Grades 1-8

Students spend time once each week on a longer excursion. Prompts can be found in Outdoor Work, if desired. This digital resource is provided with all science lessons.

About General Science: Grade 5

Learners engage with the chemical nature of Things, meteorology, space exploration, and robotics as they practice beginning lab skills and expand their use of graphs. The lab component is required for this course. Coordinating afternoon activities are provided in Outdoor Work.

About Labs: Grade 5

This is the required lab component for level 5 General Science. This course includes our custom laboratory book which will build foundational and progressive skills and habits.

About Natural History: Grade 5

Learners encounter botanical families, endangered species, invasive species, and secondary succession as they consider how man interacts with and thinks about the natural world. Coordinating afternoon activities are provided in Outdoor Work.

About Nature Notebook: Grade 5

Students spend time at least once each week recording their observations. Prompts that coordinate with curricular content can be found in Outdoor Work, if desired. This digital resource is provided with all science lessons.

Science: Grade 5

The Big Picture:

To accomplish the goal of supporting a relationship with the Things of the Universe, a Mason science program consists of nature lore, natural history, and general science. Nature immersion, inquiry, community connection, and supportive literature are woven into each of these three parts. Building on the familiarity and foundational knowledge of Form 1, Form 2 learners in grades 4-6 extend the scope of the Things they encounter and begin to notice that science is active in their world. Growing in their self-knowledge at this age, they may notice that they gravitate toward some of these Things more than others. This is a bit like noticing that you have a natural rapport with a particular friend because they seem to understand the way you think and share the same interests. This is wonderful and very typical, but we still want them to get to know more “friends” in science and try different Things, even though one might be their particular interest. Their sense of community is expanding, as well: who are the scientists in their world, and what are they doing? Special care has been taken to build vocabulary and conceptual knowledge “by the way” and to maintain the connection between scientific endeavors and the human experience. In Form 3, students will continue to build on this knowledge of what science is doing in the world when they examine science in its historical context.

Nature lore is timeless knowledge that is passed through a community, much like a grandmother passes on how to make that special bread when the dough just “feels right.” Like Mason, we strive to pass on this knowledge primarily through outdoor work. Group nature walks, seasonal readings, and topics in scouting are provided as an Outdoor Work resource in the Quick Links. If desired, literature suggestions to support lore can be found in the Community Read Alouds resource (in Citizenship Grades 4+).



Placement & Combining Tips

Science: Grade 5

For fifth-grade students or possibly hungry fourth-graders or sixth-graders taking their time. If combining grades is desirable: the combined grades may begin at the appropriate level and move forward together, learners may stay at their appropriate level for General Science while combining Natural History and Outdoor Work, or teachers can adapt the laboratory content and reading level to meet their needs.

Nature Walks & Scouting: Grades 1-8

Learners may be combined and share prompts or follow the plan of their local scouting troop or natural history club. Support accessibility and sensory development as appropriate.

General Science: Grade 5

For fifth-grade students or possibly hungry fourth-graders or sixth-graders taking their time. If combining grades is desirable: the combined grades may begin at the appropriate level and move forward together, or teachers can adapt the reading level and laboratory content to meet their needs.

Labs: Grade 5

The ideas and skills in this component are progressive, like math or grammar. Teachers should read the lab book thoroughly to understand what concepts might need to be supplemented should they choose a different sequence or a substitution.

Natural History: Grade 5

For approximately fifth-grade students based on a balance of complexity and reading level. However, learners may be freely combined, or sequence reordered based on needs and preferences.

Nature Notebook: Grade 5

Learners may be combined and share prompts or follow their own interests. Support through varied media, scribing observations, or notebooking in tandem.



Scheduling

GRADE	SCHEDULE INFO.	BOOKS
1-8	Nature Walks & Scouting: Grades 1-8 1 time/week 30 min+	
5	General Science: Grade 5 1 time/week 20 min	Mission to Pluto: The First Visit to an Ice Dwarf and the Kuiper Belt The Hive Detectives: Chronicle of a Honey Bee Catastrophe The Tornado Scientist
5	Labs: Grade 5 1 time/week 30 min	Science: Grade 5 Lab Book
5	Natural History: Grade 5 1 time/week 15 min	Beetle Busters Nature All Around: Plants Shanley's Quest Card Game The Bat Scientists The Forest in the Tree
5	Nature Notebook: Grade 5 1+ time/week 15 min+	

Sample Weekly View

Day 1	Day 2	Day 3	Day 4	Day 5
Science: Grade 5				
Natural History: Grade 5		General Science: Grade 5 Nature Walks & Scouting: Grades 1-8		Labs: Grade 5 Nature Notebook: Grade 5



Planning & Prep

Permission to print for non-commercial use. See Alveary group use policy to use lessons in a group context.

LINKS: Click text or scan the QR code in the top corner of the lesson plan pages to view online resources associated with the lessons.

Responsibility for previewing all links rests with the teacher. All links were checked at the time of publication; however, websites change frequently and may contain objectionable content. Please report broken links by contacting us through our website.

Science: Grade 5

- Obtain any supplies indicated on the science or grade-level supply lists.
- Download any apps and shortcut any desired links.

Nature Lore:

- Bookmark your Outdoor Work Quick Link, so that you have it available on your weekly outing. Outdoor Work is generally flexible for your location and season and can be moved around in the schedule to incorporate or substitute Natural History Club outings.
- Print or bookmark grade-specific nature notebook suggestions to support natural history and general science. Notebooking can be done on a walk, during occupations, or as a field trip, as appropriate.

Special Topics & Field Trips

Science: Grade 5

Encourage students to begin choosing their own special topic to observe, study, and research in their field guides. What or who are they curious about or interested in getting to know better? Teachers can choose their own special study, too! Suggested field trips include:

General Science: Grade 5

- Term 1: a beekeeper
- Term 2: a meteorologist or weather station
- Term 3: evening walks, a planetarium

Natural History: Grade 5

- Term 1: a botanical garden or plant conservatory
- Term 2: evening walks and/or a cave, a wildlife rehabilitator, or bat conservationist
- Term 3: a forestry museum or tour

Term Prep & Teacher Tips

Science: Grade 5

Object lesson prompts are woven into the lessons, as appropriate, but teachers are encouraged to read corresponding Handbook of Nature Study (HoNS) selections each term and/or any that support special topics chosen by students:

General Science: Grade 5

- Term 1: bees p.384-395
- Term 2: climate and weather p.780-783, the winds and storms p.791-799
- Term 3: stars p.815-821

Gather household items, typically easy for students to scavenge or teachers to obtain locally:

- honey
- food items suggested
- spoons
- small saucepan
- plant fertilizer of your choice (only a small amount)
- water
- flowers (Term 1)
- a strainer or sieve
- 1 c dry soil
- kitchen scale
- kitchen thermometer, any stick-type tool that can be placed into hot water and soil
- oven
- oven mitt

- clock
- chair or stepladder
- stopwatch, such as found on most electronic devices
- freezer
- stove
- 1-2 c white vinegar
- 1/2-1 c baking soda
- flat surface outside to launch rocket
- 10-20' height reference, such as the side of a building, a long piece of wood, or a flagpole
- various supplies by student design
- printables
- optional: barometer
- optional: computer

Natural History: Grade 5

- Term 1: one or more wildflowers from p.461-508
- Term 2: bats p.241-244
- Term 3: one or more trees from p.628-692, one or more insects from p.301-395

- Gather household items, typically easy for students to scavenge or teachers to obtain locally:
 - flower pot with soil, or place in the ground
 - trowel
 - globe/wall map

Reminders

General Science: Grade 5

- Note that Lab in week 1 begins with 5 "unknown" food substances (1-2 Tbsp) to include honey and any other various items, e.g. peanut butter, whole grain bread, white bread, raw egg white, cereal, applesauce, jelly, whole milk, milk substitute, juice, flavored yogurt, plain yogurt, etc. These will be provided to students in 5 similar-looking containers for study. Refer to the lab book for more details.

Natural History: Grade 5

- Note that term 1 of Natural History begins with planting a small garden, so be sure to have those supplies and any others indicated on the supply list ready. For indoor situations, the choices are many, provided there is a sunny window. For outdoors in a cooler season, some good options are parsley, carrots, or peas (may need a trellis). Basil, thyme, or beans (may need a trellis) are good options for outdoor planting in a warmer season. Note that some plants will not reach the flowering stage for a while.



Books & Resources

For book rationales and purchase options, click the Book List link or scan the QR code below.

∞ [View Book List Details](#)

Science: Grade 5

General Science: Grade 5



Mission to Pluto: The First Visit to an Ice Dwarf and the Kuiper Belt



The Hive Detectives: Chronicle of a Honey Bee Catastrophe



The Tornado Scientist

Labs: Grade 5



Science: Grade 5 Lab Book

Natural History: Grade 5



Beetle Busters



Nature All Around: Plants



Shanleya's Quest Card Game



The Bat Scientists



The Forest in the Tree



Supplies

For supply list details and basic supplies helpful to have on hand, click the links or scan the QR code below.

∞ [View Basic Supplies](#)

∞ [View Supply List Details](#)

Science: Grade 5



Alveary Grade 5 Science Kit



48 Prepared Microscope Slides for Beginner

Nature Walks & Scouting: Grades 1-8



Wild Bird Seed



Bird Feeder



Hand Lens



Small Collection Containers



Small Basin



Dip Net



Student Microscope

General Science: Grade 5



Household Items - General Science: Grade 5

Labs: Grade 5



Small Collection Containers



Slides and Coverslips



Safety Goggles



Scale/Balance



Robot-Building Kit



RC Car



Student Microscope

Natural History: Grade 5



Household Items - Natural History: Grade 5



Quick Links

Science: Grade 5

- ∞ [Extra Helpings](#)
- ∞ [Outdoor Work](#)
- ∞ [Seek app from iNaturalist](#)
- ∞ [SkyView Lite for iOS](#)
- ∞ [SkyView Lite for Android](#)
- ∞ [Foundations \(See Section 13: Science\)](#)

Labs: Grade 5

- ∞ [Grade 5 Lab Book](#)
- ∞ [Lab Notebook Examples](#)

Click THIS text or scan the QR code for links.



SAMPLE

Science: Grade 5

How To Teach



Introduce

- Begin each lesson with learners' existing knowledge. If the book or activity is new or unfamiliar, then look at the title, a picture, or guidance in the lesson plan to help discuss what students think, drawing on previous experience. If continuing or revisiting a topic or activity, then recap.
- Often, the introduction in the lesson plans or the title of the book's section can help learners to draw out the main idea. Use this to support learners, as appropriate.
- Some learners may benefit from using pictures or looking back briefly.
- Allow them time to share any concerns and come alongside, as needed.



Read

- Read or do, as instructed in the lessons, noting any Teacher Tips provided. Learners should always have their journal, notebook, or other paper available in case they need to draw or diagram during the lesson.
- Use supportive strategies and educational tools to reduce frustration and better engage the mind, as appropriate. These could include, but are not limited to, the use of eBooks, pictures, audio, read-aloud, buddy reading, colored reading strips, etc.
- If learners do not understand a word or concept, do not worry. Try to show them with a picture or connect the idea to something they have seen in real life. They are learning much by the way and will likely build understanding over the term, the year, and beyond.



Narrate

- Process the ideas of the lesson by retelling events, describing, explaining a concept, etc. Tips about helping learners deal with various types of passages are provided, but teachers can learn more in Charlotte Mason's School Education Chapter 16, especially p.180.
- Learners may use words, pictures, Legos, PowerPoint, etc, to process and convey ideas in their own way.
- Teachers may take turns to model.



Discuss

- Consider together any thoughts, confusion, or concerns about the passage, keeping in mind that oftentimes new concepts are not going to be 'mastered' on the first or even second introduction. Mastery is not necessarily the goal, but curiosity and thinking.
- Questions/topics for further discussion are often provided in the lesson plans (or even lab books) to help. There are no right or wrong answers to these. Alternatively, many of these can be used for composition, depending on the needs of the learner and the instructional goals of the teacher. If teachers want to keep ideas active in the mind, these can also be used at other times to keep the ideas in the working memory.
- Note that learners may need to spend more than the allotted time engaging with or even repeating a lesson before moving on or as reinforcement at a later time. Adjust the pace as needed to feed the learner.
- Notice if there were any dates that they want to keep for their Book of Centuries.



Connect

- Follow any extra links, examine any sidebars in the text, look at pictures, etc., depending on learner needs and interest.
 - These can be viewed as alternative ways to engage.
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Science: Grade 5

How To Teach Labs



Introduce

Regardless of how many days are required to complete a particular activity, every science lab has the same flow, which follows the scientific method and is guided by the lab book.

- On day 1, learners read an introduction in their lab book. How does this lab activity relate to what they have learned so far, as well as any previous experience? What will they learn from the lab? This is analogous to the conversation we might have when we begin something new in any subject, but they may need to dialogue as they learn to extend these skills to the laboratory.

- Once they have had a chance to think, they will compose a prelab narration to put these introductory ideas into their notebooks. The prompt in the lab is generalized and consistent, so they learn the habit. Eventually, they will learn to formulate this as a hypothesis. For example, a learner preparing for a lab about the use of insect repellent might write:

“I have read about some diseases that are spread by insects, like Lyme disease. I also know that my sister is allergic to some insect bites. Insect repellent contains pesticides to keep insects away. Some scientists worry about how pesticides affect wildlife. I am going to compare some different insect repellants in this lab to see if they really work.”

- Written narration and composition are skills that they will build over time. These prelab narrations may seem short and even incomplete at first, but that is okay. If learners have difficulty or are easily frustrated, then provide them with support. Teachers may act as scribes or allow students to keep a digital notebook to type or use assistive technology, as appropriate.

- After they complete their prelab narration, the listed materials are collected. This gives the learner some responsibility to let the teacher know if something is missing or to remind the teacher if something needs to be purchased at the store.

- If these activities on day 1 do not fill the scheduled time, that is fine. They might use the additional time to familiarize themselves with the procedure, draw a picture from their book, or catch up on any other work. Some labs may instruct the student to begin on the same day.



Lab Procedure

- Then, students begin and follow the procedure (whenever prompted by the lab book). Note that the lesson plans guide teachers as to which sections are completed each week, and the lab book instructs learners when to take a break.

- The lab gives instructions for using their notebooks to create tables and figures, as needed. Do not allow this to become an obstacle. Do it with them, first having them watch and then having them copy or help when ready.

- If teachers choose to have learners record directly in the lab book or on a photocopy, then cut out and tape these into their lab books, so that they can see how the record is built.

- Learners may feel unsatisfied with their results. This is often part of the process. Come alongside, help them learn to be okay with uncertainty and questions, and teach them what to do with it in the next step.



Analysis & Conclusions

- The last step in the lab is to analyze the data and observations and draw conclusions from them. For some simpler labs, learners will complete their analysis and concluding (or postlab) narration on the last day of the lab procedure. For labs that are more involved, a separate day has been built in to allow adequate time for this.

- Similar to the prelab narration, the concluding narration is a chance to think about and put into

words (or questions). This time, they are considering what they learned from the lab, what they could learn more about if they were to continue, and possibly how they would pursue that learning. Again, they might need support in the form of dialogue, a scribe, etc. For example, the above learner might write:

“It was clear that the Off and black pepper essential oil worked against ants because they would not even touch the line of repellent, but I wasn’t sure about the Skin So Soft because it ran all over the place. I could test this one again with different insects or on a different surface.”

- Depending on the interest of the learner and the priorities of the teacher, the student might be encouraged to spend more time on those ideas of what more they could learn, or it might be time to move on. Either way, it is an important part of the scientific method to reflect on what we could or would do next - our practice should help to clarify our thinking and teach that there is always more to be learned.

- Teachers should engage learners with this reflection by reviewing their lab notebooks with them, discussing the science used in the lab, and demonstrating curiosity about the lab themselves.

SAMPLE



Term 1

WEEK 1 ☐ 15m Natural History: Grade 5 - Lesson 1

My Own Garden

☐ Materials: Nature All Around: Plants, video links, seeds, pot with soil or place in the ground, trowel, water

PREP: Read Teacher Tip

→ INTRO

Did you ever think of all the world as a garden full of many different plants? What about plants stands out to you most? Look at the picture on the cover of this book. How many different plants do you see? Do you recognize any of them?

→ READ, NARRATE, & DISCUSS

p.4-6 "Do you have" - "four basic parts." Take a moment to diagram a plant with these 4 parts.

p.8 "Flowering plants start" - "They shrivel up."

→ VIEW

Let's watch the beginning of the plant life cycle, and then we'll begin our own gardens, choose one or both based on time:

∞ Video Link: Growing Basil Time Lapse (1:42)

∞ Video Link: Wildflower Garden Time Lapse (3:31)

→ ACTIVITY

Begin your own small garden in the ground or even in a single pot. Plant seeds according to the seed packet and plan to check on them and water them regularly. The soil should be moist, but not wet. If it seems wet, then don't add more water. If you gently blow across the surface and the soil has a dusty character, then give it some water. As seeds sprout over the next few weeks, make careful observations in your nature journal.

→ NARRATE & DISCUSS

Use a nature journal to record what you planted.

★ TEACHER TIP

The livingness of this book lies in its artwork, so read the assigned pages, but know that some students may learn more from reading only a part and instead exploring and spending time with the pictures. When students narrate, they are analyzing the "big idea."

● OUTDOOR WORK

Weekly walks and daily outdoor time are vital! Resources in Quick Links.

WEEK 1 ☐ 20m General Science: Grade 5 - Lesson 1

Visit a Hive

☐ Materials: The Hive Detectives

PREP: Read Teacher Tip

→ INTRO

Look at the cover picture and the main title. Have you watched bees before? What did you notice about them? What would you investigate if you were a "hive detective"? Read the subtitle. Do you know what a chronicle is? (a factual record) Do you know what a catastrophe is? (a great disaster) So, this is a story about scientists who are studying a disaster in a beehive to learn how it happened in the hopes that they can prevent it from happening again.

→ READ, NARRATE, & DISCUSS

p.1-3 "Put on your" - "home in Wisconsin."

→ SUPPLEMENTAL

∞ Video Link: Why do Honeybees Love Hexagons? (3:58)

∞ Video Link: Why Do Bees Build Hexagons? (2:34)

★ TEACHER TIP

Supplemental links for optional support are provided at the END of the lesson. They can be used at any point to help generate interest during the introduction, to enliven the lesson itself, or to add to the discussion later. They are NOT required and should NOT take away from the narration and discussion. Experiment and see what works best for your student(s).



Term 1

WEEK 1 ☐ 30m Labs: Grade 5 - Lesson 1

Lab: *What is Honey?*

☐ Materials: Grade 5 Lab Book and materials listed within

PREP: Read Teacher Tip

→ LAB DAY

Complete day 1 of *What is Honey?*, as directed in the Lab Book.

Suggested day 1: Students read the Introduction and then compose the prelab narration in their lab notebook. These need not be more than 1-3 sentences at first, and teachers should feel free to scribe for students, as necessary. Remaining time can be spent gathering materials and beginning steps 1-2 of the Procedure.

★ TEACHER TIP

Pacing is only a suggestion. Students should engage with the lab at a pace that is appropriate for their abilities and interests.

WEEK 2 ☐ 15m Natural History: Grade 5 - Lesson 2

We Depend on Plants

☐ Materials: Nature All Around: Plants, video links

→ INTRO

What do you recall from our last reading about plants? Why do you think plants are important to us? Plants make the air we breathe; they shape our communities and traditions; they even make many of our most important medicines. Let's find out how they do the first of these in our book.

→ READ, NARRATE, & DISCUSS

p.9 "A plant's green leaves" - "even at night."

• Add to last week's diagram or sketch a new one, showing how the plant releases oxygen into the air.

→ VIEW

∞ Video Link: Ethnobotanist (to 3:03)

∞ Video Link: Life-saving Medicines (to 4:13)

→ NARRATE & DISCUSS

● OUTDOOR WORK

Weekly walks and daily outdoor time are vital! Resources in Quick Links.

WEEK 2 ☐ 20m General Science: Grade 5 - Lesson 2

Know the Bees

☐ Materials: The Hive Detectives

→ INTRO

What did you read last time?

→ READ, NARRATE, & DISCUSS

p.4-9 "Mary begins" - "for their keeper."

• Describe the structure of the hive and the jobs of the bees. Draw or diagram, if helpful.

WEEK 2 ☐ 30m Labs: Grade 5 - Lesson 2

Lab: *What is Honey?*

☐ Materials: Grade 5 Lab Book and materials listed within

→ LAB DAY

Complete day 2 of *What is Honey?*, as directed in the Lab Book.

Suggested day 2: Students continue the Procedure today. They may

★ TEACHER NOTE

Be sure to determine local guidelines for chemical waste disposal.



Term 1

draw, diagram, or dictate in their lab notebook what they observe, just as they would in their nature journals. Finish whatever is comfortable and enjoyable today. Do not allow the testing to become tedious. Help them use the grid lines in their notebook to make tables. If not ready to do so, they may cut and paste, as needed.

WEEK 3 ☐ 15m Natural History: Grade 5 - Lesson 3

Getting to Know Flowering Plants

☐ Materials: Nature All Around: Plants, video link, Shanleya's Quest card game

→ INTRO

Recall what we learned in the last lesson. What do we call someone who studies plants? What do they actually do?

→ VIEW

∞ Video Link: What is a Botanist? (6:31)

→ READ, NARRATE, & DISCUSS

p.10-11 "Take a look" - "from the flowers."

- If you have the Shanleya's Quest card game, then explore the deck today. Notice differences in the 8 plant families presented and how the key characteristics are repeated in different plants in the family. If you do not have the card game, then refer to the link (about halfway down the webpage).

∞ Website Link: Shanleya's Quest Patterns in Plants

• OUTDOOR WORK

Weekly walks and daily outdoor time are vital! Resources in Quick Links.

WEEK 3 ☐ 20m General Science: Grade 5 - Lesson 3

Beekeeping Cross-Country

☐ Materials: The Hive Detectives

→ INTRO

What did you read last time? Some beekeepers manage thousands of bees. Who would need thousands of bees? Let's find out about what happened when one of these beekeepers visited his hives.

→ READ, NARRATE, & DISCUSS

p.11-14 "On November 12," - "a thankless job."

- Contrast how Mary and Dave keep their bees.
- What would it feel like to come upon the animals you care for to find them gone?

→ SUPPLEMENTAL

∞ Video Link: Honey Bee Shortage (2:34)

WEEK 3 ☐ 30m Labs: Grade 5 - Lesson 3

Lab: What is Honey?

☐ Materials: Grade 5 Lab Book and materials listed within

PREP: Read Teacher Tip

→ LAB DAY

Complete day 3 of What is Honey?, as directed in the Lab Book.

Suggested day 3: Students continue the Procedure today.

★ TEACHER TIP

It is fine if students do not have time or interest for all of the tests. They can simply move on next week. There is time to spend another week on the chemical testing, either now or to come back to it at the end of the term, but this should be done based on student interest.