

# Labs

SAMPLE





## About the Course

This is the required lab component for level 4 General Science. This course includes our custom laboratory book which will build foundational and progressive skills and habits.

This topic is included in the following course(s): Science: Grade 4

About Science: Grade 4

In level 4, learners begin to notice science in their community and begin to develop their own interests as they discover a variety of topics from the microscopic world, physical science, and more. A mixture of more and less challenging books is included in this course.

Science: Grade 4

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

About Science: Grade 4

In level 4, learners begin to notice science in their community and begin to develop their own interests as they discover a variety of topics from the microscopic world, physical science, and more. A mixture of more and less challenging books is included in this course.

Labs: Grade 4

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.



## Scheduling

GRADE	SCHEDULE INFO.	BOOKS
4	Labs: Grade 4 1 time/week 30 min	Science: Grade 4 Lab Book

### Sample Weekly View

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



## 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 4

- 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.

### Labs: Grade 4

- Preview science labs and purchase materials, or have students gather them. Print or shortcut any links, as desired.

## Special Topics & Field Trips

### Science: Grade 4

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:

## Term Prep & Teacher Tips

### Science: Grade 4

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:



## Books & Resources

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

∞ [View Book List Details](#)

## Labs: Grade 4



Science: Grade 4 Lab Book



## 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](#)

### Labs: Grade 4



Hand Lens



Small Collection Containers



Slides and Coverslips



Safety Goggles



## Quick Links

### Labs: Grade 4

∞ [Grade 4 Lab Book](#)

∞ [Lab Notebook Examples](#)

Click THIS text  
or scan the QR  
code for links.



### Related Course Quick Links

∞ [Outdoor Work](#)

∞ [Microscope Coloring Book](#)

∞ [Seek app from iNaturalist](#)

∞ [SkyView Lite for iOS](#)

∞ [SkyView Lite for Android](#)

∞ [Foundations \(See Section 13: Science\)](#)

# Labs: Grade 4

## 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 repellents 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

# Labs: Grade 4

[Click THIS text or scan the QR code for links.](#)



## Term 1

### WEEK 1 ☐ 30m Labs: Grade 4 - Lesson 1

*Lab: Meeting the Microscope*

☐ Materials: Grade 4 Lab Book and materials listed within

PREP: Read Teacher Tip

#### → LAB DAY

Complete day 1 of Meeting the Microscope, as directed in the Lab Book.

Suggested day 1: Students read the Introduction and then compose the prelab narration in the lab notebook. These need not be more than 1-3 sentences at first, and teachers should feel free to scribe for students, as necessary. Spend remaining time gathering materials for next week.

#### ★ 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 ☐ 30m Labs: Grade 4 - Lesson 2

*Lab: Meeting the Microscope*

☐ Materials: Grade 4 Lab Book and materials listed within

#### → LAB DAY

Complete day 2 of Meeting the Microscope, as directed in the Lab Book.

Suggested day 2: Students conduct the Procedure today, drawing, diagramming, or dictating in their lab notebook what they observe, just as they would in their nature journals.

### WEEK 3 ☐ 30m Labs: Grade 4 - Lesson 3

*Lab: Meeting the Microscope*

☐ Materials: Grade 4 Lab Book and materials listed within

#### → LAB DAY

Complete day 3 of Meeting the Microscope, as directed in the Lab Book.

Suggested day 3: If students have a few last observations to make before completing their notebook, give them a few minutes to do so. Complete the postlab narration, as directed in the Analysis and Conclusion section of the lab. Teachers may scribe, journal in tandem, provide digital tools, or provide any other support as needed. If time remains, students may add a diagram of their microscope.