

Science

Nature Walks & Scouting
General Science
Labs
Natural History
Nature Notebook

SAMPLE





About the Course

In level 8, learners study science in its historical, political, and cultural context with a growing understanding that science is an ever-changing process rather than a static body of knowledge. Reading level and expectations increase from previous levels.

This course includes the following topic(s): General Science: Grade 8, Natural History: Grade 8, Labs: Grade 8, Nature Notebook: Grade 8, 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 8

This is the second of a two-year Physical Science course (i.e., introductory physics and chemistry). The fullness of the course includes topics in earth science, history, politics, and more. The completion of this course provides a gentle yet robust transition into the high school disciplines. The lab component is required for this course. Coordinating afternoon activities are provided in Outdoor Work.

About Labs: Grade 8

This is the required lab component for level 8 General Science. This course includes our custom laboratory book which will build foundational and progressive skills and habits.

About Natural History: Grade 8

Learners explore considerations from the history of microbiology and infectious disease. Coordinating afternoon activities are provided in Outdoor Work.

About Nature Notebook: Grade 8

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 8

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. In Form 1, students became acquainted with this area of knowledge, science. Form 2 students extended their scope and began to encounter science as an active part of society. Form 3 students extend their relationship with science in a new direction (time) and consider science as a process by which man seeks Truth within Creation. They begin to situate science in its historical, political, and cultural context with all of the complexities of man's own story. In this way, students are prepared to think about science with a complete and holistic perspective.

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 8

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 8

For eighth-grade students or possibly hungry seventh graders or ninth 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 8

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 8

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

Nature Notebook: Grade 8

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+	
8	General Science: Grade 8 3 times/week 30 min	The Story of Science: Einstein Adds a New Dimension The Story of Science: Newton At the Center
8	Labs: Grade 8 1 time/week 45 min	Science: Grade 8 Lab Book
8	Natural History: Grade 8 1 time/week 30 min	Invincible Microbe
8	Nature Notebook: Grade 8 1+ time/week 20 min+	

Sample Weekly View

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



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 8

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, except where the suggestion is to collect some Thing for a lesson.
- 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 8

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

Special Topics & Field Trips

Science: Grade 8

Encourage students to choose their own special topic and to notice its ecological relationships. What or who are they curious about or interested in getting to know better? Teachers can choose their own special study, too!

- Learn a few of your local species or varieties in connection with special topics.

General Science: Grade 8

- Term 1: A science museum with motion exhibits
- Term 2: A science museum with chemistry exhibits
- Term 3: A planetarium or local astronomy club event

Natural History: Grade 8

- Any term: a science museum with an exhibit on microbes

Term Prep & Teacher Tips

General Science: Grade 8

- Gather household items, typically easy for students to scavenge or teachers to obtain locally:
 - 5 Starburst candies or similarly-shaped manufactured item
 - sturdy wooden board at least 2-3" wide and 3.5' long to construct marble ramp
 - anything to create rails for the ramp, more scrap wood, old pool noodles, etc.
 - whatever is needed to attach the rails: bar clamps, hammer and nails, glue, etc.
 - books or wood blocks to adjust height
 - 3 smaller blocks to act as stops
 - 1-6 eggs (Term 1)
 - water
 - large sheet pan or flat location outside
 - 2 plastic cups, 1 smaller and 1 larger
 - various objects to test for sliding on ramp, such as small objects made of wood, plastic, metal, etc
 - various Lego-type blocks that can be used to build a small box, roughly 1-2" dimensions
 - a larger bouncy ball, such as a basketball
 - a location to bounce balls
 - 1/2 c small solid fill material, such as cat food or rice
 - 2 locations at 2 different temperatures, such as a sunny window and a chilly basement
 - plastic wrap
 - wire cutters, such as those on many pliers
 - hammer
 - at least 2 different light sources, including bright sunlight and at least 1 type of artificial light
 - microwave
 - microwave-safe casserole dish, at least 9"
 - marshmallows to cover the bottom of the dish, Peeps or jumbo work best
 - stopwatch, such as found on most electronic devices
 - calculator, such as found on most electronic devices
 - printables
 - computer
 - optional: hot glue gun
 - optional: long forceps
 - optional: matches
 - optional: glass jar that is taller than a tea light candle
 - optional: hard boiled egg (Term 2)

Natural History: Grade 8

- Gather household items, typically easy for students to scavenge or teachers to obtain locally:
- 8 Tbsp cornstarch
- 1-2 c milk (Term 1)
- 3-5 c white vinegar
- paper towels
- water
- 1 egg (Term 1)
- 3 antimicrobial agents used at home (e.g., soap, hydrogen peroxide, rubbing alcohol, essential oils, etc.)

Reminders

General Science: Grade 8

- Note that Lab in week 6 of Term 1 calls for fresh eggs and Lab in week 2 of Term 2 includes an optional activity that uses a hard-boiled egg. Make a note on your calendar if you will need to purchase these closer to the appropriate dates. Refer to the lab book for more details.

Natural History: Grade 8

- Note that the first lesson of Natural History is an activity, so be prepared with these materials and any others from the supply lists on day 1.
- Any type of milk is needed for Week 5. Make a note on your calendar if you will need to purchase this closer to the appropriate time.



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 8

General Science: Grade 8



The Story of Science: Einstein Adds a New Dimension



The Story of Science: Newton At the Center

Labs: Grade 8



Science: Grade 8 Lab Book

Natural History: Grade 8



Invincible Microbe



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 8

 Alveary Grade 8 Science Kit

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 8



Household Items - General Science: Grade 8

Labs: Grade 8



Small Collection Containers



Scale/Balance

Natural History: Grade 8



Prepared Microscope Slides



Household Items - Natural History: Grade 8



Slides and Coverslips



Student Microscope



Quick Links

Science: Grade 8

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

General Science: Grade 8

- ∞ [AmScope key for slide IDs](#)

Labs: Grade 8

- ∞ [Grade 8 Lab Book](#)
- ∞ [Lab Notebook Examples](#)

Click THIS text
or scan the QR
code for links.



SAMPLE

Science: Grade 8

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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SAMPLE

Science: Grade 8

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 30m Natural History: Grade 8 - Lesson 1

Cell Activity

Materials: toothpick, glass slide and cover slip, candle, methylene blue stain, water, paper towel, microscope, egg, cup/glass, white vinegar

→ INTRO

Most of your experience in natural history has been with Things that you can see around you. The invention of the microscope led to the discovery of a whole new world. This world of microscopic life is our focus this year. We begin by better understanding the microscopic cells from which you are made. First, you will make a slide of your cheek cells. Then you will set up an egg as a simple model of the cell.

→ ACTIVITY

- Using a toothpick, gently rub the inside of your cheek.
- Now rub the toothpick on the surface of a glass slide, keeping the smear near the middle of the slide. Let this dry for a moment on a paper towel while you light your candle.
- Heat fix your slide by passing the slide through the flame 3-4 times. The underside of the slide should pass through the flame, but never stop. This will help your sample stick to the slide better. When you are finished, you can blow out the candle.
- Using protection, squeeze a drop of methylene blue stain onto your cheek smear. This stain will stain everything, so you **MUST** protect your clothing and anything else you do not want to be stained! Let the slide with the drop of stain sit for about 2 minutes.
- Gently rinse from the back of the slide with a little clean water and carefully blot dry. Do not rub your smear.

→ OBSERVE & NARRATE

- Set a cover slip on your slide and examine it under the microscope, slowly increasing the power as you want to see more. Draw or diagram what you see in your science notebook.

→ ACTIVITY

- Now, place an egg inside a cup or glass and cover with vinegar. Replace the vinegar every day for three days. Once the shell has been dissolved, the egg can be left on a paper towel until your next lesson.

• OUTDOOR WORK

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

WEEK 1 30m General Science: Grade 8 - Lesson 1

Setting the Stage

Materials: Newton at the Center

PREP: Read Teacher Tip

→ INTRO

This book tells the story of how physical science developed from the Renaissance into the 1800s. As you move through the story, notice how ideas and knowledge about the world around us changed through a combination of imagination and experimentation. There are many interesting sidebars and tangents in the text, but read the main text first and then explore them, as desired. Watch the course introduction video: ∞ Video Link: Form 3 Science Intro (5:04)

→ READ, NARRATE, & DISCUSS

★ TEACHER TIP

Watch the course introduction video with your student(s).

★ TEACHER TIP

As we will begin some notebooking next week, help students notice the author's structure and purpose this week during discussion.

• IMPORTANT DATES

Beginning of the Renaissance (c.1453)

Term 1

Ch.1 p.1-6 "For centuries" - "good place to start."

- What do you gather so far about the author's purpose for this chapter?

WEEK 1 30m General Science: Grade 8 - Lesson 2

Setting the Stage

Materials: Newton at the Center

→ RECAP

Briefly recall what you read last time.

→ READ, NARRATE, & DISCUSS

Ch.1 p.6-13 "Imagine yourself" - "familiar landmarks."

- This chapter sets the scene for Copernicus. Describe that scene.
- Consider the relationship between church and state in Copernicus' time. Was a singular church and state good for either the church or the person? If so, in what ways? In what ways was it bad for both the church and the person? Is a separate church and state bad for either the church or the person? If so, in what ways? In what ways is it good for both?

★ TEACHER NOTE

A simplified contrast between medieval philosophical and theological beliefs and modern scientific beliefs is presented on the p.10 sidebar. Teachers might allow it to pass by the way, engage students in discussion, or skip this one (the larger ongoing picture takes shape over the year).

WEEK 1 30m General Science: Grade 8 - Lesson 3

Copernicus

Materials: Newton at the Center

→ RECAP

Briefly recall what you read last time.

→ READ, NARRATE, & DISCUSS

Ch.2 p.14-20 "Copernicus" - "defines the age."

- Tell about Copernicus' life.
- Describe the shift in ideas observed by the author.

• IMPORTANT DATES

Nicolaus Copernicus (1473-1543)

WEEK 1 45m Labs: Grade 8 - Lesson 1

Measuring Starburst Candy

Materials: Grade 8 Lab Book and materials listed within

PREP: Read Teacher Tip

→ LAB DAY

Complete day 1 of Measuring Starburst Candy, as directed in the Lab Book.

Suggested day 1: Students complete the Introduction and Procedure this week.

★ TEACHER TIP

Students measure manufactured candy to learn about metric, accuracy, and precision. Remember the most important objective is always building skills and habits. Pacing is only a suggestion. Students should engage with lab at a pace that is appropriate for their abilities and interest.

WEEK 2 30m Natural History: Grade 8 - Lesson 2

Cell Activity

Materials: egg from last week, Prepared Microscope Slide Set, microscope, image link

PREP: Read Teacher Tip

→ INTRO

Today, you will compare your egg model to the cheek cells that you observed under the microscope, compare these to a variety of animal cells, and then to some bacterial cells.

★ TEACHER TIP

If needed, be sure to pour your agar plates for next week according to the package instructions.

∞ **Video Link:** Pouring Agar Plates (2:51)

• OUTDOOR WORK

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



Term 1

→ OBSERVE, NARRATE, & DISCUSS

- Notice that your egg model has an outer membrane and a well-formed internal structure (the yolk) that is suspended in a matrix (the egg white). Compare to your cheek cells from last week. How are they similar? How are they different?

- This same basic structure is used to accomplish a great number of tasks. View slides 14-20 from your Prepared Microscope Slide Set. Try to identify these basic parts in each slide. Look carefully at slide 15. Red blood cells lose their nucleus so that they can carry oxygen more efficiently. You may also be able to find some white blood cells on this slide. How do they look different?

- View the Cellular Diversity Slides at the link to see a variety of bacterial cells. What do you notice about the bacterial cells in comparison? Can you still identify the same basic parts? How do the cells compare in size? Draw or diagram your observations in your science notebook
∞ Link: Cellular Diversity Slides

WEEK 2 30m General Science: Grade 8 - Lesson 4

Copernicus in the Renaissance

Materials: Newton at the Center

PREP: Read Teacher Tip

→ INTRO

Recall what you read about Copernicus' life and the Renaissance setting for our story. As you continue reading, begin taking notes, jotting down the ideas that stand out to you in words, pictures, or diagrams. Record any questions or connections you make along the way, too. If you'd like to see a few examples, watch the Notebooking video:
∞ Video Link: Notebooking? (1:39)

→ READ, NARRATE, & DISCUSS

Ch.2 p.20-31 "Since we have" - "and the earth."

- Describe the contradictions observed in Renaissance society.
- Discuss the scientific and religious ideas on Copernicus' mind.

★ TEACHER TIP

Remember to engage students in their reading through natural discussion. If you need help, use the bulleted prompts. Invite them to share their notebook entries to improve the discussion!

● NATURE NOTEBOOK

Prompt for General Science in Outdoor Work Quick Link.

WEEK 2 30m General Science: Grade 8 - Lesson 5

Leonardo da Vinci

Materials: Newton at the Center

→ RECAP

Briefly recall what you read last time.

→ READ, NARRATE, & DISCUSS

Ch.2 p.32-35 "What's to be" - "and the Arno."

Note ideas that stand out to you in words, pictures, or diagrams. Record any questions or connections you make along the way, too.

- Tell about Leonardo da Vinci.

WEEK 2 30m General Science: Grade 8 - Lesson 6

Copernicus Has a Problem

Materials: Newton at the Center

→ RECAP

Briefly recall what you read last time.

● IMPORTANT DATES

Copernicus published *On the Revolutions of the Heavenly Spheres* (1543).



Term 1

→ READ, NARRATE, & DISCUSS

Ch.3 p.36-43 "Copernicus is" - "move the earth."

Note ideas that stand out to you in words, pictures, or diagrams. Record any questions or connections you make along the way, too.

- What does the author mean by "thought experiment"?
- Discuss some of Copernicus' questions.
- Explain Copernicus's conflict over his ideas.

WEEK 2 45m Labs: Grade 8 - Lesson 2

Measuring Starburst Candy

Materials: Grade 8 Lab Book and materials listed within

PREP: Read Teacher Tip

→ LAB DAY

Complete day 2 of Measuring Starburst Candy, as directed in the Lab Book. Be sure to narrate the lab to your teacher by showing them your lab notebook.

Suggested day 2: Students complete the Analysis and Conclusions today.

★ TEACHER TIP

Inviting students to share their lab notebooks is a great way to engage discussion and keep up with their learning! They should be able to discuss the science and explain what they did.

WEEK 3 30m Natural History: Grade 8 - Lesson 3

Microbe Activity

Materials: agar plates

→ INTRO

Because bacteria are so small, humans were unaware of their existence or their place in our world for a very long time. One way to see them more easily is to grow a colony of them. You will use petri dishes with a kind of food, called agar, to do this. The dishes will be left open at various locations for several hours to see what kinds of microorganisms are in the environment at each location.

→ ACTIVITY

- Choose three locations that you would like to test for the presence of bacteria. These might be your classroom, the bathroom, the kitchen, the playground, etc.
- Take four of your agar plates and, keeping them closed, turn them upside down on your work surface. Label the bottom of each plate using a permanent marker. One plate will be labeled "control," while the remaining three will be labeled with your three locations.
- Leave the control plate closed and where it is while taking the three experimental plates to their locations. For each experimental plate, open the lid and leave the plate right-side-up in that location. You will leave it there for about three hours.
- After several hours exposed, collect each plate, replacing the lid. You may want to secure all of the plates with tape. Then leave them in a warm (but not hot) place for the next week.

• OUTDOOR WORK

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

WEEK 3 30m General Science: Grade 8 - Lesson 7

Tycho Brahe Observes

Materials: Newton at the Center

→ RECAP

Briefly recall what you read last time.

• IMPORTANT DATES

Tycho Brahe (1546-1601)



Term 1

→ READ, NARRATE, & DISCUSS

Ch.4 p.44-48 "The movement" - "is going on?"

Note ideas that stand out to you in words, pictures, or diagrams. Record any questions or connections you make along the way, too.

- Tell about Tycho's early life.
- Explain why Tycho's approach was such an important development in thought.
- Why did people think that "perfect" meant "unchanging"? Discuss the implications of this idea.

WEEK 3 30m General Science: Grade 8 - Lesson 8

Tycho Brahe Observes

Materials: Newton at the Center

→ RECAP

Briefly recall what you read last time.

→ READ, NARRATE, & DISCUSS

Ch.4 p.48-57 "Only once" - "sending up sprouts."

Note ideas that stand out to you in words, pictures, or diagrams. Record any questions or connections you make along the way, too.

- Tell about this episode in Tycho's life.
- Compare the models of Ptolemy, Copernicus, and Tycho using words, drawings, or diagrams.

★ TEACHER NOTE

The timescale of traveling light is mentioned on p.51: "It has taken 20,000 years..." Teachers might choose to allow it to pass by the way or to consider alternative theories they would like to share.

• IMPORTANT DATES

Newton At the Center
Choose events from the timeline on p.56-57.

WEEK 3 30m General Science: Grade 8 - Lesson 9

What is Parallax?

Materials: Newton at the Center

→ RECAP

Briefly recall what you read last time.

→ READ, NARRATE, & DISCUSS

Ch.4 p.58-61 "When Tycho" - "a solar system."

Note ideas that stand out to you in words, pictures, or diagrams. Record any questions or connections you make along the way, too.

- Explain what parallax is and how it is used.

WEEK 3 45m Labs: Grade 8 - Lesson 3

Galileo's Falling Balls

Materials: Grade 8 Lab Book and materials listed within

PREP: Read Teacher Tip

→ LAB DAY

Complete day 1 of Galileo's Falling Balls, as directed in the Lab Book.

Suggested day 1: Students complete the Introduction. As time permits, they may begin steps 1-3 of the Procedure.

★ TEACHER TIP

Students work with velocity and acceleration while practicing with metric and use of a spreadsheet.