Lapbooking Guide At-A-Glance

Overview

1. Lapbook Overview

See how to put together the location lapbook on the lapbook overview sheet, plus the supplies needed for the demonstrations.

Chapter Lessons

2. Read

Know what to read each week in the corresponding Sassafras Science novel. Plus, get options for additional encyclopedia pages to read and for books to check out from the library. The novel contains the essential information for each week, but if you want to dig deeper, we've got you covered!

3. Write

Build your students' science vocabulary with words relevant to the topics the students are studying. Plus, get the directions for the mini-books that your students will be making to correspond to each location.

4. Do

Know what materials you will need to do a weekly hands-on science activity that coordinates with the topic. This section lists the supplies you will need, provides easy-to-follow steps, and explanations to make it a snap to complete the scientific demonstration.

5. Two Lessons Per Location

Find two lessons per location, each following the same format of read, write, and do.

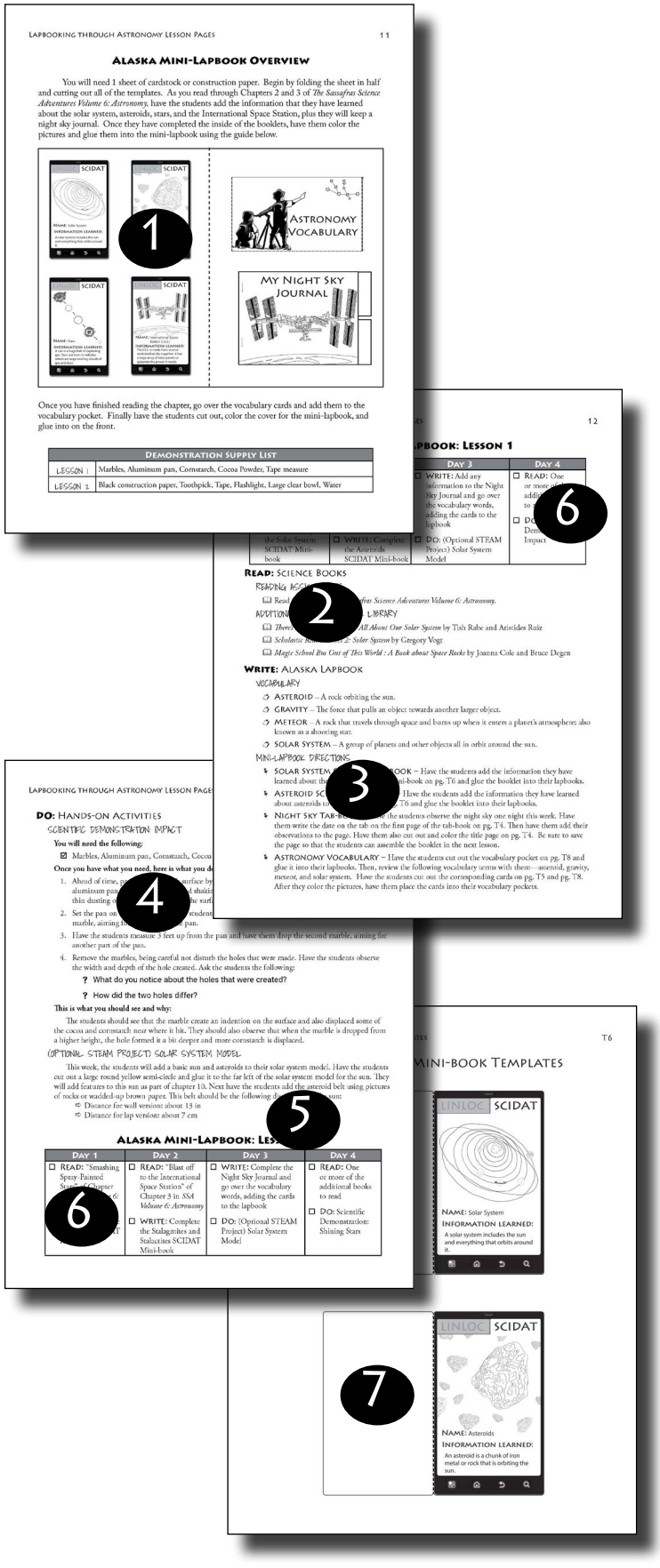
6. Optional Schedule

See how you could plan out each lesson over a week with the 4-day grid schedule. These schedules will make planning your weekly science adventure a snap!

The Rest

7. Templates and More

In the appendix, you will find project templates and a full glossary. At the back of this guide, you will find all of the mini-book templates for the lapbooks.



Lapbooking through Astronomy

Second Edition

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Quick Start Guide

Welcome to your super, scientific journey with the Sassafras Twins!! The information and activities in this guide will help you turn a simple adventure novel into a simple science program for your early elementary students. Let's start by answering three pressing questions!

What will we learn?

Students will learn about astronomy, which is the study of space. See p. 9 for a list of the topics explored in this program.

What do I need?

In addition to this lapbooking guide, you will need the following materials:

1. **Novel –** All the main reading assignments are from *The Sassafras Science Adventures Volume 6: Astronomy*. You can get the paperback novel, the Kindle version, or the audiobook.
2. **Demonstration Supplies –** See a full list on p. 10, or save yourself time and purchase the *Sassafras Science Year 3 Experiment Kit*, which includes the materials for both volume 5 and volume 6.

What will a week look like?

Each week you and your students will do the following activities:

- **Read** scientific information from an adventure-filled novel, also known as a living book, and discuss what you read.
- **Write** down what the students have learned on the journey in the coordinating mini-book.
- **Do** hands-on science through demonstrations using the directions found in this guide.

For a more detailed explanation of the components in each lesson, we highly recommend checking out the peek inside this guide on p. 6 and reading the introduction on pp. 7-9. The chapter lessons begin on p. 11.

THE SASSAFRAS SCIENCE ADVENTURES

As the author and publisher of *Lapbooking through the Astronomy with the Sassafras Twins,* I encourage you to contact me with any questions or problems that you might have concerning this program at support@elementalscience.com. I, or a member of our team, will be more than happy to assist you. I hope that you will enjoy creating memories using *Lapbooking through the Astronomy with the Sassafras Twins*!

~ Paige Hudson

Lapbooking through Astronomy
Table of Contents

Introduction

Lapbooking through Astronomy with the Sassafras Twins is a unique and versatile program that leads you through a survey of planets and stars using a series of eight mini-lapbooks to document the journey. The program is centered around the living book, *The Sassafras Science Adventures Volume 6: Astronomy*. It is designed to be a gentle approach to homeschool science education based on the Unit Study method suggested in *Success in Science: A Manual for Excellence in Science Education* by Bradley and Paige Hudson.

What is a lapbook?

Lapbooks are educational scrapbooks that fit into the lap of a students. Typically they are a collection of related mini-books on a certain subject that have been glued into a file folder for easy viewing, but they can also include pictures or projects that the students have completed. In the same way that notebooking does not require regurgitation of facts; lapbooking causes the students to interact with the materials instead of just responding to comprehension questions. To learn more about lapbooking, you can read the following articles:

- **What are lapbooks? –** This article shares what lapbooks are and how you can use them.
  - https://elementalscience.com/blogs/news/what-are-lapbooks
- **3 Common Misconceptions about Lapbooks –** This article looks at three of the most common mistaken beliefs about lapbooks.
  - https://elementalscience.com/blogs/news/3-misconceptions-about-lapbooks

What is included in this program?

Lapbooking through Astronomy with the Sassafras Twins includes all of the basic components of elementary science education that are explained in *Success in Science*.

1. **{Read}** Science Books – Elementary students are an empty bucket waiting to be filled with information and science-oriented books are a wonderful way to do that. These books can include appropriate children's science encyclopedias, living books for science and/or children's non-fiction science books. In this program, the reading assignments are from the living book, *The Sassafras Science Adventures Volume 6: Astronomy.* I have also included a list of additional books from the library.
2. **{Write}** Lapbooks – The purpose of the written component for elementary science education is to verify that the students have placed at least one piece of information into their knowledge bucket. You can use notebooking sheets, lapbooks, and/or vocabulary words to fulfill this requirement. This unit includes all the templates and pictures you will need to complete a series of mini-lapbooks as well as vocabulary words to coordinate with each lesson.
3. **{Do}** Hands-on Activities – Scientific demonstrations, observations, and STEAM* projects are meant to spark the students' enthusiasm for learning science, to work on their observation skills and to demonstration the principles of science for them. This component of elementary science education can contain scientific demonstrations, hands-on projects and/or nature studies.

Each lesson in this guide includes suggested hands-on science activities to fulfill this section of elementary science instruction.

*STEAM: Science, Technology, Engineering, Art, and Math

These concepts are more fully developed in our book, or you can read the following articles from to learn more:

- **10 Posts you must read about living books –** This article shares links to 10 different articles that will help you to gain a clear picture of what living books are.
  - https://elementalscience.com/blogs/news/10-posts-you-must-read-about-living-books
- **The Basics of Notebooking –** This article details the basic components of notebooking along with how a few suggestions on what notebooking can look like.
  - https://elementalscience.com/blogs/news/what-is-notebooking
- **Scientific Demonstrations vs. Experiments –** This article explains the difference between scientific demonstrations and experiments along with when and how to employ these methods.
  - http://elementalscience.com/blogs/news/89905795-scientific-demonstrations-or-experiments

HOW TO USE THIS PROGRAM

Each lesson is designed to be completed over several days or up to one week. The lesson contains reading assignments from *The Sassafras Science Adventures Volume 6: Astronomy*. You can choose to break each chapter up over two days or read it all at once. If you are using this program with younger students, read the selected chapters to them. If you are using this program with older students, you can choose to have them read the assigned chapters on their own or you can read the selected pages to them. (NOTE—Chapter 1 and 18 of *The Sassafras Science Adventures Volume 6: Astronomy* are not scheduled as a part of this program. You will need to read chapter 1 before beginning and chapter 18 after you finish.)

After you complete the reading assignment, have the students tell you what they have learned about the topics and the continent from the selection. This can simply be what they found to be the most interesting or something new that they have learned from the reading. You can choose to write the sentences for them or have them copy the words into the mini-book. Once the students have finished writing, have them color the related pictures. When the mini-book is complete, glue it into the lapbook using the overview sheet as a guide.

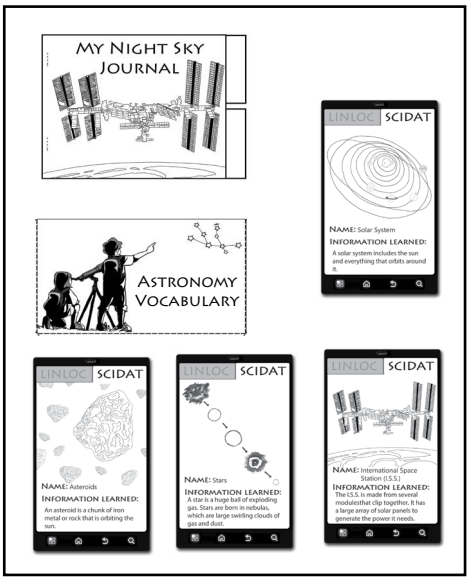
At another time during the week, review the vocabulary words with the students. You can have them memorize each one or just go over the words with the lesson. I have included a set of blank vocabulary cards in the Appendix on pp. 58-60. If you use the blank vocabulary cards, have the students look up the vocabulary words in the science encyclopedia of your choice or the glossary included in the Appendix on pp. 61-62.

Finally, you can finish the lesson by doing the related scientific demonstration. If you would like to have your students write a lab report, I have included a template for you in the Appendix on pp.

47-48. After you finishing the demonstration, you can finish the week by reading to the students one of the related books from the additional book list. If you would like to record what they have learned from these books, I have included a book narration sheet in the Appendix on p. 49.

How long it should take

I have included possible schedules for completed each mini-lapbook. These schedules spread the work for each lesson out over 4 days. If you choose to complete the program in this manner, each mini-lapbook will take you two weeks to complete, which means that this program will provide you about a semesters worth of material.



Options - 8 mini-lapbooks or 1 full lapbook

If you would like to create one full lapbook instead of a series of eight mini-lapbooks, simply arrange the interior components of each onto one full sheet of construction paper or one side of a file folder like below. We have included a cover for a full lapbook in the Appendix on p. 46. See a sample of a full lapbook in the following video:

https://www.youtube.com/watch?v=4LMhkVcXYfk&t=3s

Topics Covered

The Sassafras Science Adventures Volume 6: Astronomy covers a variety of aspects of astronomy, such as:

- Our Solar System
- Night Sky Spotting
- The Lunar Cycle
- The Space Race
- People in Space
- Stars

In the process, you will learn about the following specific topics:

- Asteroids
- Stars
- International Space Station
- Mercury
- Mars
- Venus
- Earth
- Jupiter
- Saturn
- Uranus
- Neptune
- Galaxies
- Telescopes
- Satellites
- Space probes
- Sun
- Day and night
- Moon
- Eclipses
- Astronauts
- Space shuttles
- Comets
- Ancient astronomers
- Spacewalks
- Rockets
- Dwarf planets
- Black holes
- Constellations (Orion, Ursa Major, and Ursa Minor)

Supply List

The following supplies will be needed to complete the scientific demonstrations suggested in this guide.

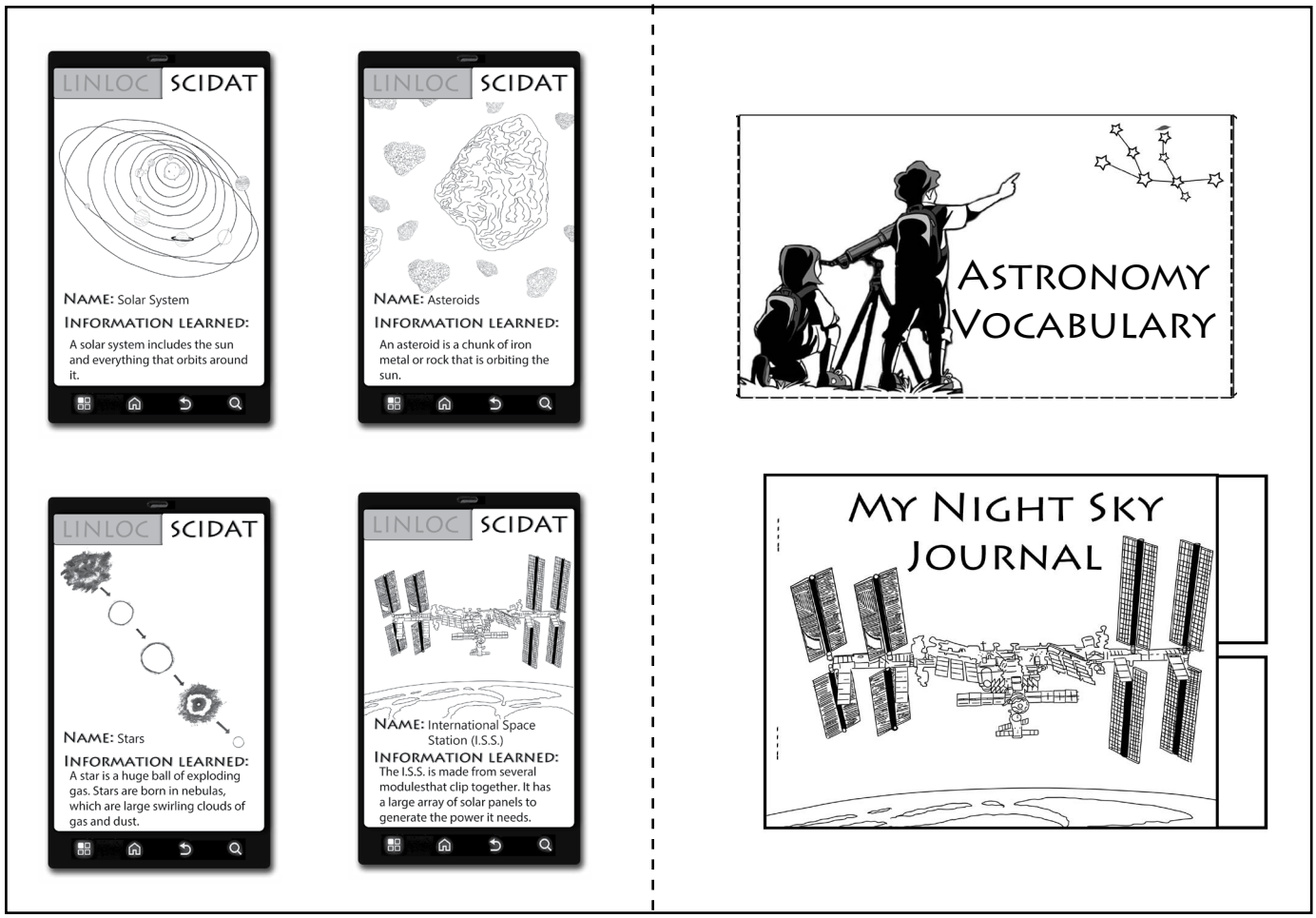
Chapter	Supplies Needed
2: IMPACT	Marbles, Aluminum pan, Cornstarch, Cocoa Powder, Tape measure
3: SHINING STARS	Black construction paper, Toothpick, Tape, Flashlight, Large clear bowl, Water
4: TRAPPED HEAT	2 Thermometers, Cutting board, Clear glass bow
5: SOLAR ROVER	A solar-powered mini-car kit (OR a DC motor, Solar panel with wires, 2 Sets of wheels with axles or steel wires, Cardboard, Hot glue, Plastic tubing)
6: STORMY SWIRLS	Bowl, Milk, Food Coloring, Liquid soap, Toothpick
7: PLANETARY ORBIT	Marble, Smooth pie plate or cake pan
8: MAGNIFY	Glass bowl, Cooking oil, Piece of paper with words on it, Magnifying glass
9: REFLECTION DIRECTION	Small mirror, Small flashlight, A dark room
10: SOLAR S'MORES	Large marshmallows, Chocolate squares, Graham crackers, Foil, Cardboard box, Plastic wrap
11: MOON COOKIES	8 Sandwich-style cookies, Picture of the phases of the moon (Appendix p. 135)
12: SPACE TASKS	Thick yellow rubber gloves or work gloves, LEGO bricks, Several bolts, washers, and nuts
13: SIMPLE ASTROLABE	Thin wooden dowel or a straw, String (about 12" long), Heavy metal nut or washer, Protractor, Tape
14: BALLOON ROCKET	Straw, String (5 feet), Scissors, Large balloon, 2 Chairs, Tape
15: SUCKED IN	Hard-boiled egg, Warm water, Bottle with large-mouth (i.e., sports drink bottle), Access to a freezer
16 : FLASHLIGHT PLANETARIUM	Foil, Toilet Paper Tube, Pin, Small flashlight Constellation pictures (Appendix p. 138), Rubber band Sharpie marker
17: FLASHLIGHT PLANETARIUM	

*Note—There are no suggested activities for chapters 1 and 18 in the lapbooking guide.

Lesson Pages

Alaska Mini-Lapbook Overview

You will need 1 sheet of cardstock or construction paper. Begin by folding the sheet in half and cutting out all of the templates. As you read through Chapters 2 and 3 of *The Sassafras Science Adventures Volume 6: Astronomy,* have the students add the information that they have learned about the solar system, asteroids, stars, and the International Space Station, plus they will keep a night sky journal. Once they have completed the inside of the booklets, have them color the pictures and glue them into the mini-lapbook using the guide below.



Once you have finished reading the chapter, go over the vocabulary cards and add them to the vocabulary pocket. Finally have the students cut out, color the cover for the mini-lapbook, and glue into on the front.

Demonstration Supply List	
LESSON 1	Marbles, Aluminum pan, Cornstarch, Cocoa Powder, Tape measure
LESSON 2	Black construction paper, Toothpick, Tape, Flashlight, Large clear bowl, Water

Alaska Mini-Lapbook: Lesson 1

Day 1	Day 2	Day 3	Day 4
☐ Read: "Rocketing in the Solar System" of Chapter 2 in *SSA Volume 6: Astronomy* ☐ Write: Complete the Solar System SCIDAT Mini-book	☐ Read: "Summer's Spaceship and Asteroid-sharing Robots" of Chapter 2 in *SSA Volume 6: Astronomy* ☐ Write: Complete the Asteroids SCIDAT Mini-book	☐ Write: Add any information to the Night Sky Tab-book and go over the vocabulary words, adding the cards to the lapbook ☐ Do: (Optional STEAM Project) Solar System Model	☐ Read: One or more of the additional books to read ☐ Do: Scientific Demonstration: Impact

Read: Science Books

Reading Assignments

- 🕮 Read Chapter 2 of *The Sassafras Science Adventures Volume 6: Astronomy*.

Additional Books from the Library

- 🕮 *There's No Place Like Space: All About Our Solar System* by Tish Rabe and Aristides Ruiz
- 🕮 *Scholastic Reader Level 2: Solar System* by Gregory Vogt
- 🕮 *Magic School Bus Out of This World : A Book about Space Rocks* by Joanna Cole and Bruce Degen

Write: Alaska Lapbook

Vocabulary

- Asteroid – A rock orbiting the sun.
- Gravity – The force that pulls an object towards another larger object.
- Meteor – A rock that travels through space and burns up when it enters a planet's atmosphere; also known as a shooting star.
- Solar System – A group of planets and other objects all in orbit around the sun.

Mini-Lapbook Directions

- Solar System SCIDAT Mini-book – Have the students add the information they have learned about the solar system to the mini-book on p. T6 and glue the booklet into their lapbooks.
- Asteroid SCIDAT Mini-book – Have the students add the information they have learned about asteroids to the mini-book on p. T6 and glue the booklet into their lapbooks.
- Night Sky Tab-book – Have the students observe the night sky one night this week. Have them write the date on the tab on the first page of the tab-book on p. T4. Then have them add their observations to the page. Have them also cut out and color the title page on p. T4. Be sure to save the page so that the students can assemble the booklet in the next lesson.
- Astronomy Vocabulary – Have the students cut out the vocabulary pocket on p. T8 and glue it into their lapbooks. Then, review the following vocabulary terms with them—asteroid, gravity, meteor, and solar system. Have the students cut out the corresponding cards on p. T5 and p. T8. After they color the pictures, have them place the cards into their vocabulary pockets.

DO: Hands-on Activities

Scientific Demonstration: Impact

You will need the following:

☑ Marbles, Aluminum pan, Cornstarch, Cocoa Powder, Tape measure

Once you have what you need, here is what you do:

1. Ahead of time, prepare the planet's surface by pouring a layer of cornstarch on the bottom of the aluminum pan about ½ inch deep and shaking lightly so that the surface is smooth. Then, sprinkle a thin dusting of cocoa powder so that the surface of the cornstarch is mostly covered.
2. Set the pan on the floor and have the students measure 1 foot up from the pan. Have them drop the marble, aiming for the center of the pan.
3. Have the students measure 3 feet up from the pan and have them drop the second marble, aiming for another part of the pan.
4. Remove the marbles, being careful not disturb the holes that were made. Have the students observe the width and depth of the hole created. Ask the students the following:

   ? What do you notice about the holes that were created?

   ? How did the two holes differ?

This is what you should see and why:

The students should see that the marble create an indention on the surface and also displaced some of the cocoa and cornstarch near where it hit. They should also observe that when the marble is dropped from a higher height, the hole formed it a bit deeper and more cornstarch is displaced.

(Optional STEAM Project) Solar System Model

This week, the students will add a basic sun and asteroids to their solar system model. Have the students cut out a large round yellow semi-circle and glue it to the far left of the solar system model for the sun. They will add features to this sun as part of chapter 10. Next have the students add the asteroid belt using pictures of rocks or wadded-up brown paper. This belt should be the following distance from the sun:

⇨ Distance for wall version: about 13 in
⇨ Distance for lap version: about 7 cm

Alaska Mini-Lapbook: Lesson 2

Day 1	Day 2	Day 3	Day 4
☐ Read: "Smashing Spray-Painted Stars" of Chapter 3 in *SSA Volume 6: Astronomy*	☐ Read: "Blast off to the International Space Station" of Chapter 3 in *SSA Volume 6: Astronomy*	☐ Write: Complete the Night Sky Tab-book and go over the vocabulary words, adding the cards to the lapbook	☐ Read: One or more of the additional books to read
☐ Write: Complete the Caves SCIDAT Mini-book	☐ Write: Complete the Stalagmites and Stalactites SCIDAT Mini-book	☐ Do: (Optional STEAM Project) Solar System Model	☐ Do: Scientific Demonstration: Shining Stars

Read: Science Books

Reading Assignment

- 🕮 Read Chapter 3 of *The Sassafras Science Adventures Volume 6: Astronomy*.

Additional Books from the Library

- 🕮 *The Sky Is Full of Stars (Let's-Read-and-Find-Out Science 2)* by Franklyn M. Branley and Felicia Bond
- 🕮 *Jump Into Science: Stars* by Steve Tomecek
- 🕮 *Stars! Stars! Stars!* by Bob Barner
- 🕮 *If You Were a Kid Docking at the International Space Station* by Josh Gregory and Jason Raish
- 🕮 *International Space Station (Let's-Read-and-Find-Out Science 2)* by Dr. Franklyn M. Branley

Write: Alaska Lapbook

Vocabulary

- Space Station – A man-made structure that is launched into space and orbits around the sun-orbiting earth.
- Star – A huge ball of exploding gas out in space.
- Universe – The collection of all the matter, space, and energy that exists.

Mini-Lapbook Directions

- Stars SCIDAT Mini-book – Have the students add the information they have learned about stars to the mini-book on p. T7 and glue the booklet into their lapbooks.
- ISS SCIDAT Mini-book – Have the students add the information they have learned about the International Space Station to the mini-book on p. T7 and glue the booklet into their lapbooks.
- Night Sky Tab-book – Have the students observe the night sky one night this week. Have them write the date on the tab on the second page of the tab-book on p. T5. Then have them add their observations to the page. Then, have the students assemble the tab-book and glue it into their lapbook.
- Astronomy Vocabulary – Review the following vocabulary terms with the students—space station, star, and universe. Have the students cut out the corresponding cards on p. T8. After they color the pictures, have them place the cards into their vocabulary pockets.
- Alaska Mini-lapbook Cover – Have the students cut out the cover page on p. T3, color it, and glue it on the front of their mini-lapbooks.

Do: Hands-on Activities

Scientific Demonstration: Shining Stars

You will need the following:

- ☑ Black construction paper, Toothpick, Tape, Flashlight, Large clear bowl, Water

Once you have what you need, here is what you do:

1. Have the students begin by using the toothpick to poke holes in the paper. These are the stars in the night sky. As they create the stars in their night sky, fill the bowl about three-quarters full of water; this will serve as the atmosphere.

2. When the students are done, tape their night sky to the back of the bowl and head into a room without windows. Set the bowl on a flat surface and wait for the water to settle.
3. Turn on the flashlight before turning off the lights in the room. Shine the flashlight on the back of the paper so that the light shines through the star holes and into the atmosphere bowl.
4. Gently tap the bowl so that the water begins to move and let the students observe what happens to the light.

This is what you should see and why:

The students should see that when you tap the bowl the light moves and their "stars" appear to twinkle. The light is being refracted, or bent, by the water. The same thing happens when light rays from the stars enter Earth's atmosphere, which is why the stars appear to twinkle at night!

(Optional STEAM Project) Solar System Model

This week, there is nothing specific to add to the model. However, if you creating the smaller, lap-sized model you can have the students use silver crayon, paint, or glitter to add stars to their model.

Templates

Alaska Mini-Lapbook Cover Page

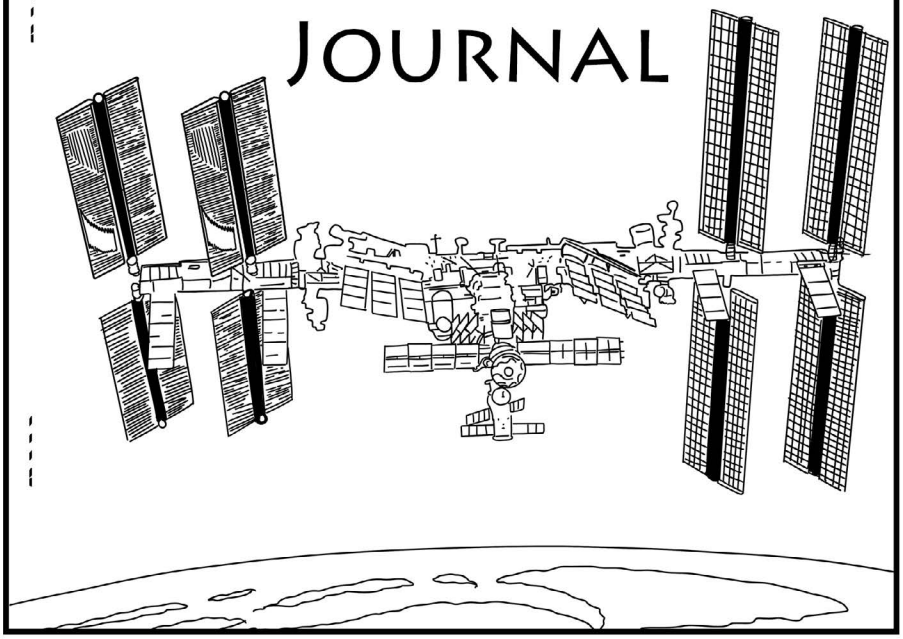
My Guide to Astronomy in Alaska

By: _____

& The Sassafras Twins

Alaska Night Sky Tab-book Templates

My Night Sky Journal

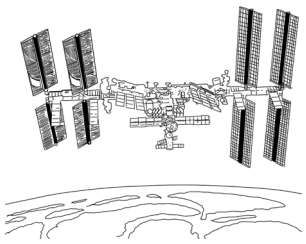


What I Observed...

Date: _____

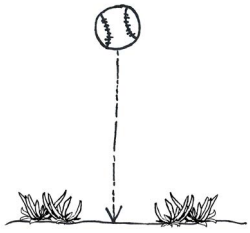
Alaska Night Sky Tab-book Templates

What I Observed...

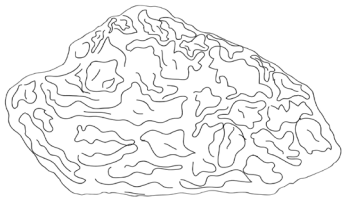


Date: _____

Asteroid – A rock orbiting the sun.



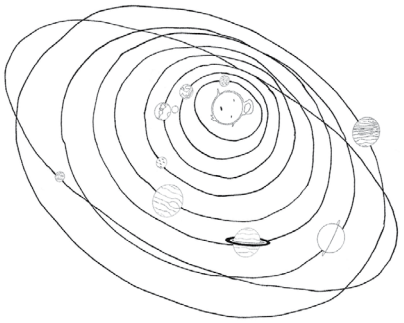
Gravity – The force that pulls an object towards another larger object.



Meteor – A rock that travels through space and burns up when it enters a planet's atmosphere; also known as a shooting star.

Alaska SCIDAT Mini-book Templates

LINLOC SCIDAT

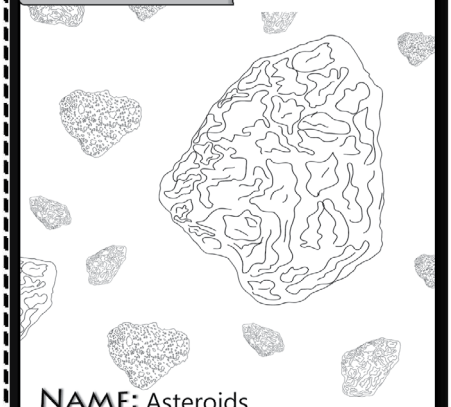


Name: Solar System

Information learned:

A solar system includes the sun and everything that orbits around it.

LINLOC SCIDAT



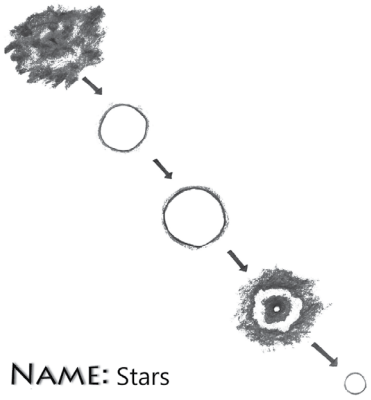
Name: Asteroids

Information learned:

An asteroid is a chunk of iron metal or rock that is orbiting the sun.

Alaska SCIDAT Mini-book Templates

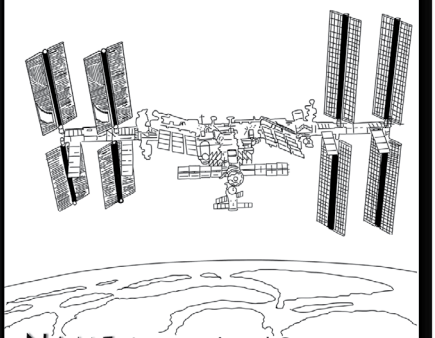
LINLOC SCIDAT



Name: Stars

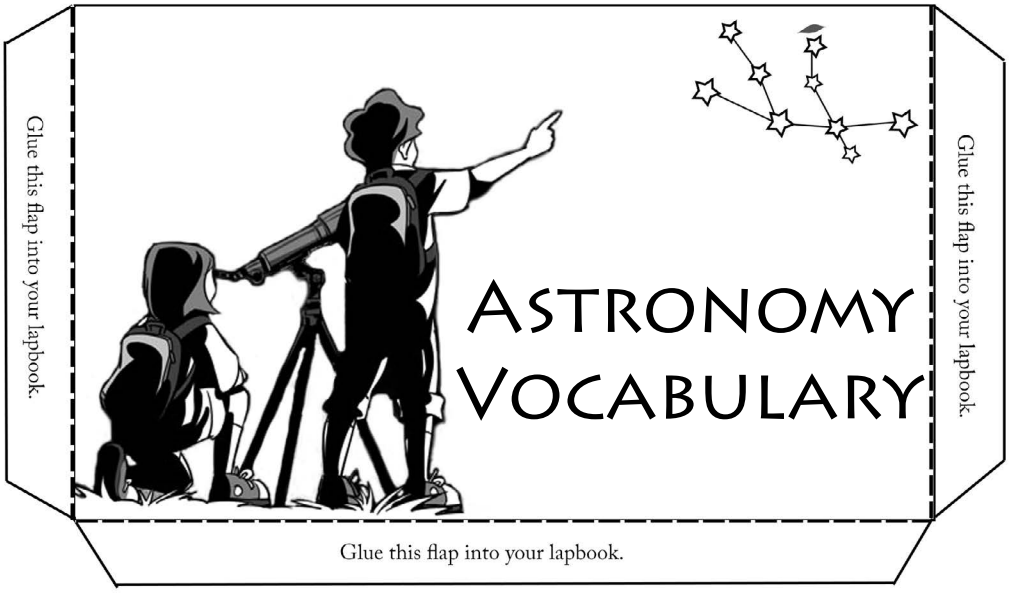
Information learned:
A star is a huge ball of exploding gas. Stars are born in nebulas, which are large swirling clouds of gas and dust.

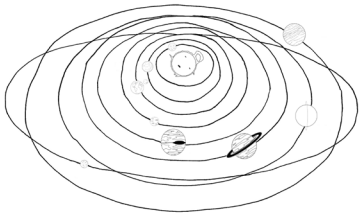
LINLOC SCIDAT



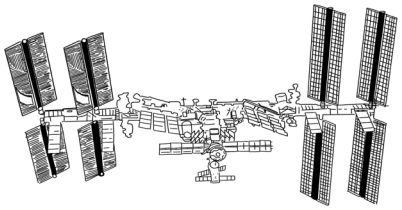
Name: International Space Station (I.S.S.)

Information learned:
The I.S.S. is made from several modulesthat clip together. It has a large array of solar panels to generate the power it needs.

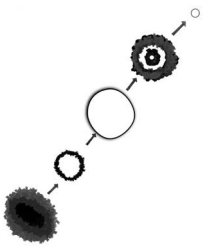




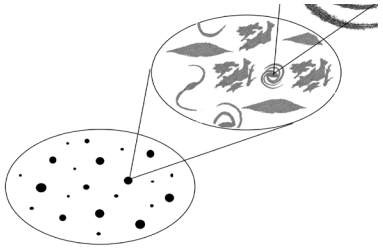
Solar System – A group of planets and other objects all in orbit around the sun.



Space Station – A man-made structure that is launched into space and orbits around the sun-orbiting earth.



Star – A huge ball of exploding gas out in space.



Universe – The collection of all the matter, space, and energy that exists.