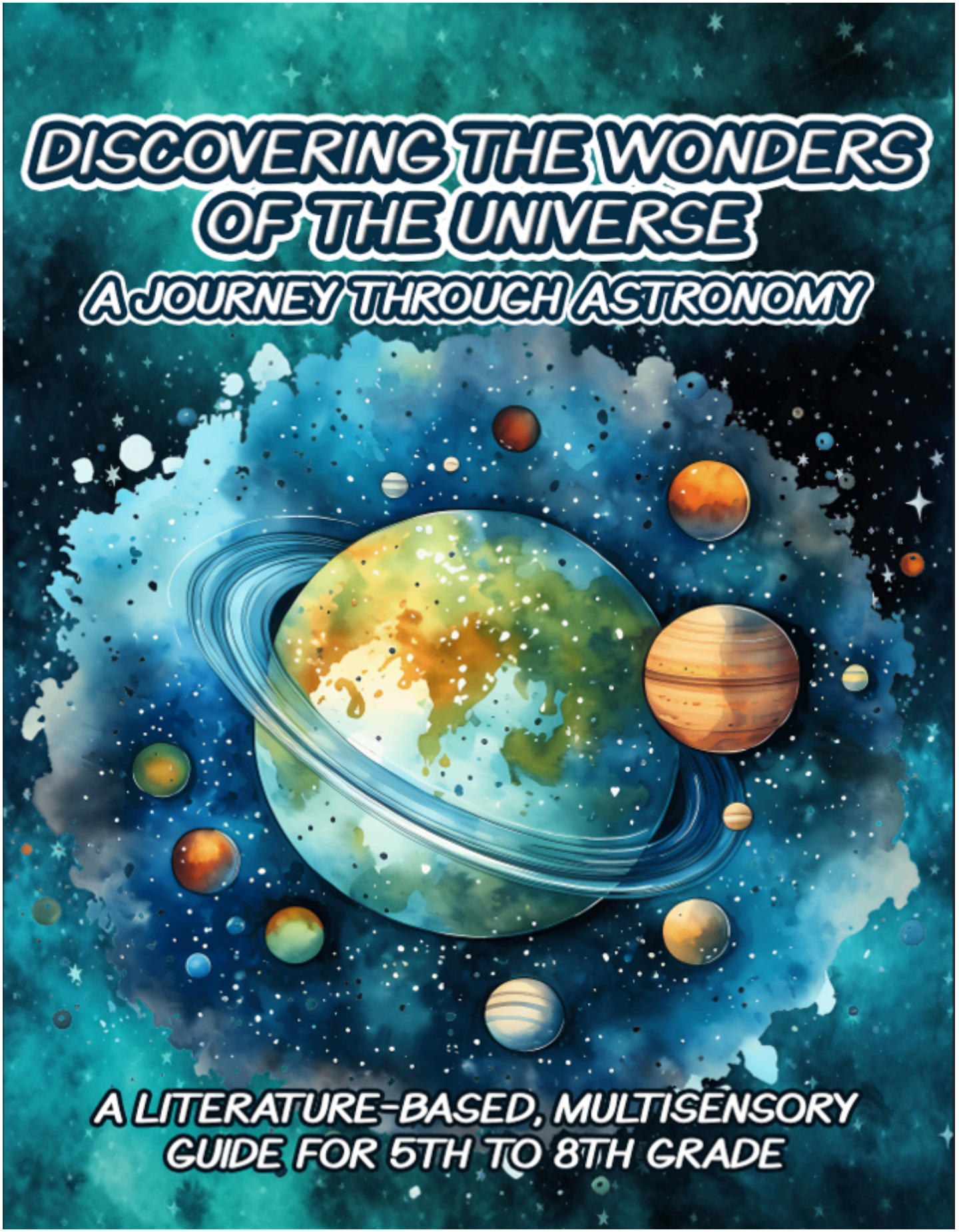
DISCOVERING THE WONDERS OF THE UNIVERSE

A JOURNEY THROUGH ASTRONOMY



A LITERATURE-BASED, MULTISENSORY GUIDE FOR 5TH TO 8TH GRADE

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Introduction

Discovering the Wonders of the Universe: A Journey Through Astronomy

"Discovering the Wonders of the Universe” is a curriculum guide designed for 5th to 8th graders and offers a comprehensive, multisensory approach to learning about the mysteries of the universe. Designed to span 84 days, it is structured to be completed over a semester or can be extended to take a full year, providing flexibility for varied pacing. Each day presents a selection of optional activities that teachers can utilize to cover the content, including captivating non-fiction books, engaging novels, hands-on experiments, and informative YouTube videos. This curriculum is primarily a secular or neutral resource, but optional books can be added to incorporate a Christian worldview.

Beginning with an exploration of what astronomy is and its historical roots, students delve into optical principles, observatories, and the pivotal figures who shaped our understanding of the universe.As the course progresses, students are guided through an exploration of the celestial bodies within our solar system, from the rocky terrain of Mercury to the icy depths of Neptune. They learn about the formation of planets, the dynamics of comets, asteroids, and meteors, and the exciting discoveries of exoplanets beyond our solar system. Through this course, students will be encouraged to cultivate a sense of wonder and inquiry, igniting a passion for exploration and discovery that extends far beyond the confines of their day to day life.

In the final stretch of the course, students embark on an exploration of space exploration, rocket science, and the human endeavor to reach beyond Earth's boundaries. From the historic milestones of the Space Race to the modern marvels of the International Space Station and Mars explorations, students gain insight into the challenges and triumphs of space travel. With a focus on both scientific understanding and the awe-inspiring beauty of the cosmos, this course aims to inspire a lifelong passion for astronomy and space exploration.

How to Use this Guide

In designing this course, my goal was to offer a diverse array of options for each day. I encourage you to curate your child's daily activities by selecting those that align best with their interests and learning style. While the spine resource books serve as the backbone of the curriculum, providing essential knowledge, the narration journal, experiments, novel suggestions, and YouTube videos are complementary resources that enrich the learning experience. Prioritizing the core readings will ensure a solid foundation, while incorporating additional activities fosters a more comprehensive understanding. Remember, the more varied the activities, the greater the opportunity for your child to engage deeply with the material.

Secular or Religious? - Although I am a Christian myself, I have primarily used secular and neutral resources in the creation of this guide. You will find “millions and billions of years” mentioned regularly throughout this course, both in the spine resource books, as well as the suggested YouTube videos. Skipping any particular days in this resource will not cause a disruption in your child’s learning, so feel free to skip any days or sections that you do not feel comfortable teaching. I have additionally included some Christian worldview resources that you can choose to “add” to this curriculum. I do not suggest you use this guide if you plan on only using the Christian worldview resources, however, as I do not feel like this would be a complete unit without the “spine resources”.

Spine Resources - These are the “spine” and most important components of this course. I do recommend that you find a way to purchase or borrow these resources (or very similar replacements). Each day a selection of sections or pages are scheduled from some of these resources. Each day students will cover certain topics relating to the study of astronomy.

Christian Resources (Optional): If you are wanting to add some more specifically Christian resources to this unit, I have included a few suggestions that will bring in a Christian worldview. I do NOT suggest that you use this unit SOLELY with these Christian resources as you will lose a lot of the information. However, if you want to include a Christian perspective, adding in some of the suggested resources is a great way to do this.

Additional Fiction and Nonfiction Books - Bringing living books into any course of study is always a fun way to really bring the subject to life and help the student create connections with the content being studied. While it might be overwhelming to include all the suggested resources, you can selectively add some to enrich your child’s understanding of the universe. This approach allows for flexibility; you can choose to go in-depth and extend the study over an entire year if desired.

Please review the suggested books and consider integrating a few to enhance your child’s educational journey. Be sure to pre-read all books to ensure they align with your family’s values and worldview.

Experiments and Activities - Experiments and activities have been thoughtfully planned throughout the year to enhance the learning experience. However, there's no pressure to complete every experiment, or even any at all. Feel free to choose based on your family's interests and what your children find enjoyable. The goal is to make learning fun and engaging for everyone.

Narration Journal - I suggest that you try to have your student complete this at least 2-3 times weekly (if not daily). This is your student's opportunity to show what they have learned from that day's reading or experiment. Depending on your student, you can choose to ask for only a written narration or an illustration along with a written narration. You can let your child choose to do their narration on the non-fiction books (spine books) being read, the literature book they are reading, or both! You can use any lined notebook or draw and write notebook for this. To see some that I have created especially for science narration, go here: https://amzn.to/3z25STH

Videos - This first section of YouTube videos are the ones that are a bit more succinct and to the point. These videos are chosen because they cover the same topic of the day's spine reading, or they expand upon that topic. Please review the YouTube videos to ensure that they are appropriate for your children.

Additional Videos - The videos in this section are the more optional videos. These videos are typically a bit more detailed and, sometimes, much longer. These videos are included in case you have an older student or a student who is extremely interested in the topic and wants to learn more.

Digital Copy Storage - Please ensure to back up this digital product to prevent loss of data. I strongly recommend creating at least two backups: one on a local device (such as an external hard drive) and another on a cloud storage service. Regular backups will help protect your purchase from accidental deletion, hardware failures, or other unforeseen issues.

Contact me:

Comments, questions, concerns? I would love to hear from you!

Email me at: calminthechaoshomeschool@yahoo.com
Join my Facebook community: https://www.facebook.com/groups/875160263177974
Follow me on Instagram: https://www.instagram.com/calminthechaoshomeschool/
Subscribe to my YouTube channel for more homeschooling content:
https://youtube.com/c/calminthechaoshomeschool
Buy Me a Coffee: https://www.buymeacoffee.com/calminthechaoshomeschool

Book List

* All links below are affiliate links. Using these links is another way you can support me in the creation of this resource. Thank you so much!

Spine Resource Books

The Planetarium: Welcome to the Museum by Raman Prinja	Weeks 1-13
https://amzn.to/4cV0a5r	Notes:
Welcome to the museum that is always open to explore. Step inside the pages of this beautiful book to discover galleries of galactic matter, expertly curated to bring you the experience of a fascinating exhibition in the comfort of your own home. Planetarium features all aspects of space, from the sun and our solar system to the lives of stars, the Milky Way, and the universe beyond. With stunning artwork from Dinosaurium illustrator Chris Wormell and informative text by Raman Prinja, a professor of astrophysics at University College, London, Planetarium is the perfect gift for budding astronomers and armchair stargazers alike.	☐

The New York Public Library Amazing Space: A Book of Answers for Kids by Ann-Jeanette Campbell	Weeks 1-16
https://amzn.to/3VWiUvd	Notes:
Travel to distant galaxies and explore awesome constellations. Discover mysterious planets and catch a comet by the tail. Find the answers to your questions about the wonders of space.	☐

DK Eyewitness Books: Astronomy: Discover the Mysteries of the World's Oldest Science—from Constellations to Moon by Kristen Lippincott	Weeks 1-7, 9, 11-13
https://amzn.to/4aUBU1z	Notes:
Featuring more than 200 colorful pictures and illustrations, Eyewitness Astronomy provides children with a perfect introduction to the world of astronomy. From describing how we viewed the stars and planets in the ancient times to the latest astronomical discoveries, this reference book presents all the key concepts of astronomy in simple language. Children will discover the host of planets and stars that occupy our Universe and can unearth fascinating insights into the Moon's connection to Earth's oceans. They can also read about how humans ventured into space and developed technology to see even beyond our own galaxy.	☐

Space Maps: Your Tour of the Universe by Lara Albanese	Weeks 3-9, 11-12, 14-17
https://amzn.to/4azDFBz	Notes: ☐
Do you want to go on a journey through space? Then all you have to do is look up at the night sky. What can you see? This super-sized book of maps takes you on a space adventure from the stars to the solar system, and far beyond! Marvel at the constellations, and learn what their names and patterns mean to different cultures. Then venture farther out, past what the naked eye can see, and hop from planet to planet to explore Earth's celestial neighbors. Discover how humans have used rockets, probes, and telescopes to explore space–and even stop off at the International Space Station to visit the scientists working there! Let Space Maps take you on a tour through the universe, with its 24 maps, stunning illustrations, and amazing facts. Grab your telescope and get ready for the intergalactic journey of a lifetime!	

DK Eyewitness Books: Space Exploration: Blast into Space and Hitch a Ride on the Earliest Rockets and the Latest Probes by Carole Stott	Weeks 13-17
https://amzn.to/4d90aiu	Notes: ☐
Have you been dreaming about exploring the great mysteries of space? Do you see yourself aboard the next space mission? Have you always wondered about what lies beyond our planet? Learn how rockets work, find out about the various missions to the Moon and Mars, and know about all the rovers and landers with Eyewitness Space Exploration. Train with the astronauts to find out about the equipment they use to work in space. Trace the evolution of spacesuits and know how many components they have and how much they weigh. Share a meal with the astronauts and see how they carry on their day-to-day tasks in zero gravity. Follow the various spacecraft in space – from distant explorers such as Voyager to sample-gathering rovers on Mars, such as Curiosity.	

****For those on a budget or with time constraints:** Although I think that all of these spine resources are absolutely amazing, if you are on a budget and you want to know which you might be able to do without, I believe that this course could still be very complete while skipping either *The Planetarium* or *Space Maps* (but NOT both). The other books listed as the spine resources have more of the meat of this course. Additionally, if you feel like you will be short on time towards the end of the course, you could skip *Space Explorations* and just get the bulk of that section's information from the linked YouTube videos.

Optional Christian Resources:

Exploring the World of Astronomy by John Hudson Tiner	Weeks 2, 3-9, 12
https://amzn.to/3V50Qy6	Notes: ☐
From the rugged surface of the moon to the distant and mysterious constellations, this book provides you an exciting, educational, and edifying tour! • Learn about a blue moon, the 400-year storm on Jupiter, and what is meant by "the zone of life." • Discussion ideas, questions, and research opportunities help expand this great resource on observational astronomy into an unforgettable educational resource! • Discover how to locate constellations like those near Orion the Hunter from season to season throughout the year • Find out how to use the Sea of Crises as your guidepost for further explorations on the moon's surface • Further investigate deep sky wonders, extrasolar planets, and beyond as the glorious vista of creation comes alive! *Exploring the World of Astronomy* will help you reach deep into space with this God-honoring title, a part of the best-selling Exploring Series.	

The Astronomy Book by Dr. Jonathan Henry	Weeks 1-3, 5-11, 13, 15, 17
https://amzn.to/3V4XpaP	Notes: ☐
One thing we have in common with ancients is that all of the human race has gazed at the night sky, and the bright morning, and wondered, "What's out there?" Our universe is so vast and awe-inspiring that to learn about it is to learn about ourselves. *The Astronomy Book* will teach you: • What long-ago astronomers thought about other worlds. • Solar system facts. • How constellations relate to astrology. • The history of space exploration. • Black holes - do they exist? • The origin and age of the moon. • Why Mars doesn't support life. • The composition of stars, supernova remnants, and the myth of star birth. • Asteroid legends and the extinction of the dinosaurs. • Are there planets outside our solar system, and could they be home to intelligent life? • What are UFOs? • The age of comets and meteor showers. Learning about the universe is huge fun! In the most infinite expanse above us, we can examine planets, galaxies, and phenomena so beautiful and complex that we never outgrow a childlike wonder. We see our own reflection in the moon, the stars, and in comet trails. The more we learn, the less we fear!	

Taking Back Astronomy: The Heavens Declare Creation and Science Confirms It by Jason Lisle	Weeks 1-6
https://amzn.to/4aqe2Ci	Notes:
Take a breathtaking look at the universe! *Taking Back Astronomy* is a comprehensive guide to the heavens! Sit back and explore the world at your fingertips in this book which: ● Explains the scale and size of the universe that is hard for our minds to imagine - yet can only indicate the Master's hand at work. ● Over 50 full-color, rarely seen photos of stars, nebulae, and galaxies. ● Filled with facts that challenge secular theories and models of the universe - how it began and how it continues to amaze the scientific community. ● Explores numerous evidences that point to a young universe: magnetic poles of planets, the spiral shape of galaxies, comets and how long scientists think they can last, and much more. With a doctorate in astrophysics from the University of Colorado, Dr. Jason Lisle is your guide to the universe beyond our world in this remarkable book. Step out among the stars and experience the truly awesome power of God through this glimpse of His vast creation.	☐

Experiments / Hands On Activity Resource:

Janice VanCleave's Astronomy for Every Kid	Weeks 2-16
https://amzn.to/4am0KXA	Notes:
Why do planets spin? How hot is the Sun? What keeps the Moon in orbit around the Earth? What are Saturn's rings made of? What's a black hole in space? Now you can discover the answers to these and other fascinating questions about basic astronomy. In Astronomy for Every Kid you'll learn about the constellations using a shoebox planetarium. You'll chart the movement of the stars with nothing but a string, a marker, and a nail. And you'll use a toy magnet to simulate the Earth's protective force field. Each of the 101 experiments is broken down into its purpose, a list of materials, step-by-step instructions, expected results, and an easy to understand explanation. Every activity has been pretested and can be performed safely and inexpensively in the classroom or at home.	☐

Narration Notebook

You can use any lined notebook or draw and write notebook for this. To see the astronomy science narration journals I have created to go specifically with this unit, go here: https://amzn.to/3z25STH

Additional Nonfiction and Fiction Selections:

You probably do not want to include ALL of these resources, as that could get to be A LOT. Unless, you really want to go in depth and make this a whole year course. But, take a look at these suggestions and consider adding in some of these in order to enrich your child's study of the universe. Please pre-read all books to ensure that the books are in line with your family's worldview.

Galileo and the Magic Numbers by Sidney Rosen	Weeks 1-3
https://amzn.to/3KpsVtV	Notes:
This "enjoyable" biography of the brilliant astronomer will intrigue young people who are "bored with the textbook approach to science" (The New York Times Book Review). Sixteenth century Italy produced Galileo, a genius who marked the world with his studies and hypotheses about mathematical, physical, and astronomical truths. His father, musician Vincenzio Galilei said, "Truth is not found behind a man's reputation. Truth appears only when the answers to questions are searched out by a free mind. This is not the easy path in life but it is the most rewarding." Galileo challenged divine law and the physics of Aristotle, and questioned everything in search of truths. And it was through this quest for truth that he was able to establish a structure for modern science.	☐

Destination Space by Seymour Simon * **See Note Below**	Week 1
https://amzn.to/3wZoeE3	Notes:
The Sun is just one of trillions of stars, and it's not even a big one. Our galaxy, the Milky Way, is so incredibly huge that it contains billions of stars bigger and brighter and older than the Sun. And outer space contains billions of galaxies. Now, acclaimed science writer Seymour Simon explores the vastness of the solar system, our galaxy, and beyond! Seymour Simon knows how to explain science to kids and make it fun. He was a teacher for more than twenty years, has written more than 250 books, and has won multiple awards.	☐

***NOTE:** All of the Seymour Simon books are short picture books. I have scheduled a lot of them, but you definitely don't need to include them all. You can probably find a lot of them at your local librar,y and you could just include the ones that you do find. I have included all of the Seymour Simon books because I really love the photography and the way he delves into the different topics in these books.

Our Solar System by Seymour Simon *	Week 3
https://amzn.to/4c3NQhW	Notes:
Join award-winning science writer Seymour Simon in this completely updated edition of Our Solar System, as he takes young readers on a fascinating tour through space! With beautiful full-color photographs and spacecraft images, including many taken by the Mars rovers and Hubble Space Telescope, this nonfiction picture book teaches young readers all about the solar system, including the sun, the eight planets, and their moons. Covering all the latest discoveries in space, young astronomers will be over the moon about the fun facts, fascinating science, and incredible photographs. A must-have for every child interested in outer space!	☐

George's Secret Key to the Universe by Stephen Hawking	Weeks 4-6
https://amzn.to/4e8qf1p	Notes:
In their bestselling book for young readers, noted physicist Stephen Hawking and his daughter, Lucy, provide a grand and funny adventure that explains fascinating information about our universe, including Dr. Hawking's latest ideas about black holes. It's the story of George, who's taken through the vastness of space by a scientist, his daughter, and their super-computer named Cosmos. George's Secret Key to the Universe was a New York Times bestseller and a selection of Al's Book Club on the Today show.	☐

What We See in the Stars by Kelsey Oseid	Weeks 4-12
https://amzn.to/3KwI9gH	Notes:
Combining art, mythology, and science, What We See in the Stars gives readers a tour of the night sky through more than 100 magical pieces of original art, all accompanied by text that weaves related legends and lore with scientific facts. This beautifully packaged book covers the night sky's most brilliant features--such as the constellations, the moon, the bright stars, and the visible planets--as well as less familiar celestial phenomena like the outer planets, nebulae, and deep space. Adults seeking to recapture the magic of youthful stargazing, younger readers interested in learning about natural history and outer space, and those who appreciate beautiful, hand-painted art will all delight in this charming book.	☐

The Skies Above My Eyes by Charlotte Guillain	Week 4
https://amzn.to/3KyjSqE	Notes:
Have you ever looked up and wondered what's going on high up in the skies above your eyes? Take a journey up into the air, through the atmosphere, way out into space, and back down to Earth in this richly illustrated concertina book. Zoom past the technology that fills our skies, from helicopters, fighter jets, weather balloons, to satellites, hang-gliders, and hot-air balloons. Discover the insects and animals that whizz through the skies, explore the layers of the atmosphere, and travel through the solar system and out to the galaxies far beyond. The follow up to The Street Beneath My Feet, which dug down to the center of the Earth, this expansive concertina book opens out to an impressive length of over 8 feet, perfect for inquisitive young minds. Begin your journey from the sidewalk of a busy city. Look up beyond the traffic lights, utility wires, and skyscrapers. Unfold the connected pages to reveal the incredible man-made sights that you would see 12 miles above (a weather balloon), 30 miles above (a rocket blasting a capsule into space), 62 miles above (a space plane and satellites), 250 miles above (the International Space Station), 235,000 miles above (the Moon), and through our Solar System.	☐

The Kids Book of the Night Sky by Ann Love and Jane Drake	Weeks 4-5, 8-10
https://amzn.to/4bnRvXZ	Notes:
NOTE: This book is a mix of information, activities, and myths and stories. I have not included a supply list for the activities in this book. In this book in the Family Fun series, boys and girls will discover all the secrets the night sky holds. They can play games like "Night Sky I Spy," keep an astronomer's log and read about night sky myths. Star maps are included for each season -- so kids will know what to look for, when and where. Then as the sun goes down and the sky goes dark, they'll be ready for the night sky's all-star show.	☐

Earth by Seymour Simon *	Week 4
https://amzn.to/3VpeaxH	Notes:
This intimate and beautiful study of Earth investigates the relationship between our planet, the sun, and the moon. Why are there seasons on Earth? How does day pass into night? What protects the Earth from the sun's intense heat? Why is the surface of the Earth constantly changing? The informative text reveals how Earth's unique position in relation to the sun makes it the only planet where life is possible. The stunning full-color photographs will mesmerize young readers about the mysteries of space.	☐

The Moon by Seymour Simon *	Week 5
https://amzn.to/3RxJPuD	Notes:
Why is there no weather on the moon? Is there sound on the moon? Is it ever day on the moon? Why do astronauts bounce around on the moon? How old is the moon? From Apollo 11's first landing to the mystery of moonquakes and the genesis of craters, this stunning introduction to our nearest neighbor in space describes the moon and its all-important relationship to Earth. Mesmerizing full-color photography and an informative text perfect this exciting and educational journey in space.	☐

Destination: Mars by Seymour Simon *	Week 6
https://amzn.to/3R4UsED	Notes:
Award-winning science writer Seymour Simon explores the Red Planet through fascinating facts and amazing full-color photographs. Readers will learn about the recent discovery of water, the Valles Marineris—the biggest valley on Mars—the ice caps, recent expeditions, and more.	☐

Destination: Jupiter by Seymour Simon *	Week 6
https://amzn.to/3KptjIT	Notes:
When the unmanned spacecraft Galileo landed on Jupiter in 1995, what mysteries did it uncover? Award-winning author Seymour Simon takes us on an incredible journey to Jupiter, offering magnificent photos and amazing facts about the largest planet in our solar system.	☐

Space Case by Stuart Gibbs	Weeks 7-8
https://amzn.to/3X8lBui	Notes:
It's a murder mystery on the moon in this humorous and suspenseful space adventure from the author of Belly Up and Spy School. Like his fellow lunarnauts - otherwise known as Moonies - living on Moon Base Alpha, twelve-year-old Dashiell Gibson is famous the world over for being one of the first humans to live on the moon. And he's bored out of his mind. Kids aren't allowed on the lunar surface, meaning they're trapped inside the tiny moon base with next to nothing to occupy their time - and the only other kid Dash's age spends all his time hooked into virtual reality games. Then Moon Base Alpha's top scientist turns up dead. Dash senses there's foul play afoot, but no one believes him. Everyone agrees Dr. Holtz went onto the lunar surface without his helmet properly affixed, simple as that. But Dr. Holtz was on the verge of an important new discovery, Dash finds out, and it's a secret that could change everything for the Moonies - a secret someone just might kill to keep.	☐

Comets, Meteors, and Asteroids by Seymour Simon *	Week 8
https://amzn.to/3RbFVHz	Notes:
Whether they appear as distant specks in an astronomer's telescope or shoot brilliantly across the evening sky, comets, meteors, and asteroids have fascinated sky gazers throughout history. But where do these racing celestial bodies come from, and what can they teach us about our universe? Join Seymour Simon for a look at the fiery mystery and wild wonder of these luminous bodies of night.	☐

Exoplanets by Seymour Simon *	Week 8
https://amzn.to/3Vm3dgi	Notes:
Award-winning science writer Seymour Simon explores the farthest reaches of space in the brand-new Exoplanets! There are thousands of exoplanets scattered throughout the Milky Way galaxy, and scientists are on a constant quest to find one just like Earth. In Exoplanets, Simon examines the planets outside of our solar system and uncovers what makes them habitable, our efforts to discover new life, and more. With clear, simple text and stunning full-color photographs, readers will explore the farthest reaches of space and explore the answer to the question: do aliens exist?	☐

Hidden Figures (Young Reader's Edition) by Margot Lee Shetterly	Weeks 10-11
https://amzn.to/4bCryEe	Notes:
Hidden Figures: Young Readers' Edition is a 2016 biography by Margot Lee Shetterly that tells the true story of four African American women who worked as "human computers" at NASA from the 1940s to the 1960s. The text was adapted for young readers from Shetterly's adult nonfiction book Hidden Figures: The American Dream and the Untold Story of the Black Women Who Helped Win the Space Race, also published in 2016.	☐

Stars by Seymour Simon *	Week 10
https://amzn.to/4dYkK5D	Notes:
Twinkling in the night sky, stars have inspired wonder and amazement in us since ancient times. They have guided our journeys and inspired our poetry and art, but until recently we have known very little about them. Now, through new instruments and technology, we are learning more about stars every day—from their dusty beginnings in nebulas to their spectacular ends as supernovas. Award-winning science writer Seymour Simon gives you a closer look at the stars.	☐

The Sun by Seymour Simon *	Week 11
https://amzn.to/45b3NRd	Notes:
In this completely updated edition of The Sun featuring beautiful full-color photographs, Seymour Simon presents a fascinating introduction to the star that is the center of our Solar System. Young readers will love exploring the wonders of the sun, from the constant nuclear explosions at its core to the sea of boiling gases that forms its surface.	☐

Space Explorers: 25 Extraordinary Stories of Space Exploration and Adventure by Libby Jackson	Weeks 12-14
https://amzn.to/3X5KDu5	Notes:
This beautifully illustrated anthology illuminates twenty-five extraordinary stories of space exploration, adventure, and human achievement, from a leading expert in human spaceflight. The universe has always fascinated humans, but only a few have been daring enough to travel beyond the surface of the Earth. From the first man and woman in space to the moon landings to building the International Space Station in orbit, the history of space exploration is filled with peril, bravery, and strokes of genius.	☐

Science Comics: Rockets: Defying Gravity by Anne Drozd	Week 13
https://amzn.to/4bI4bt5	Notes:
Blast off! Discover the history of rockets and their impact on the future with Anne and Jerzy Drozd in this volume of Science Comics, the action-packed nonfiction graphic novel series for middle-grade readers! Every volume of Science Comics offers a complete introduction to a particular topic—dinosaurs, coral reefs, the solar system, volcanoes, bats, flying machines, and many more. These gorgeously illustrated graphic novels offer wildly entertaining views of their subjects. Whether you're a fourth grader doing a natural science unit at school or a thirty-year-old with a secret passion for airplanes, these books are for you! This volume: In Rockets we explore the 2,000 years that rockets have been in existence. We dive into Newton's Laws of Motion—learning all about gravity, force, acceleration, and the history of rockets made in the past and rockets to be made in the future!	☐

The Universe by Seymour Simon *	Week13
https://amzn.to/452Wk6V	Notes:
Imagine the biggest thing you can think of—now imagine something bigger that hasn't even stopped growing. That is the universe. Our own galaxy, the Milky Way, though enormous, is a tiny speck among the 100 billion galaxies containing nebulas, planets, "space pods," billions of stars, and black holes that fill the cosmos. New stars, planets, and galaxies continue to form as the universe expands. Award-winning science writer Seymour Simon brings you deep into the universe to explore this immense topic.	☐

Rocket to the Moon!: Big Ideas That Changed the World by Don Brown	Week 14
https://amzn.to/45aL0FU	Notes:
Award-winning author/illustrator Don Brown explores the history of rocket building in this installment of the Big Ideas That Changed the World graphic novel series. “That’s one small step for man, one giant leap for mankind.” On July 20, 1969, Neil Armstrong said those iconic words when Apollo 11 landed on the moon. But it wasn’t just one man who got us to the moon—there was a whole team of people, plus centuries of discoveries and technologies that came before that made it possible. From ancient Chinese rockets to the first steps on the moon, Rocket to the Moon! Reveals which “bombs bursting in air” inspired the writer of “The Star-Spangled Banner,” why the Russians wanted to launch a dog into Earth’s atmosphere, and how exactly astronauts are able to go to the bathroom while in a rocket far off in space!	☐

Almost Astronauts: 13 Women Who Dared to Dream by Tanya Lee Stone	Weeks 15-17
https://amzn.to/3RaxZGB	Notes:
They had the right stuff. They defied the prejudices of the time. And they blazed a trail for generations of women to follow. What does it take to be an astronaut? Excellence at flying, courage, intelligence, resistance to stress, top physical shape — any checklist would include these. But when America created NASA in 1958, there was another unspoken rule: you had to be a man. Here is the tale of thirteen women who proved that they were not only as tough as the toughest man but also brave enough to challenge the government. They were blocked by prejudice, jealousy, and the scrawled note of one of the most powerful men in Washington. But even though the Mercury 13 women did not make it into space, they did not lose, for their example empowered young women to take their place in the sky, piloting jets and commanding space capsules. ALMOST ASTRONAUTS is the story of thirteen true pioneers of the space age.	☐

The Mighty Mars Rovers: The Incredible Adventures of Spirit and Opportunity by Elizabeth Rusch	Weeks 15-17
https://amzn.to/4bHkOFc	Notes: ☐
The Mighty Mars Rovers tells the greatest space robot adventure of all time—one of the most successful space explorations ever undertaken. On June 10, 2003, a little rover named Spirit blasted off on a rocket headed for Mars. A month later, a twin rover named Opportunity soared through the solar system with the same mission: to find out if Mars ever had water that could have supported life. They were expected to last no more than three months on the frigid, harsh planet. Instead, they explored the red planet for years. Packed with full-color photos, this 80-page book is a thrilling addition to the acclaimed Scientists in the Field series, told through the eyes—and heart—of Steven Squyres, the lead scientist on the mission. This suspenseful page-turner captures the hair-raising human emotions felt during the adventures with two tough rovers.	

Additional "Super-Cool, but Unscheduled" Resources:

This is Rocket Science: An Activity Guide by Emma Vanstone	Weeks: N/A
https://amzn.to/4bMitbX	Notes: ☐
Building a rocket and learning about science has never been easier with This Is Rocket Science: An Activity Guide. Fun experiments for kids and adults teach you how to build mind-blowing projects, each designed to show how mechanical science and astrophysics work from the inside out. Use everyday items like bottles, cardboard, glue and tape to build awesome rocket ships, paper spinners and mobile rocket launch pads, all while learning concepts like Newton's Third Law of motion (for every action there is always an opposite and equal reaction), speed, gravity and air resistance. Kids learn to make scientific observations, ask questions, identify and classify and find answers to their questions, all while investigating space. This book will feature 70 activities and 60 photographs.	

Eyewitness Space: Time and Space by John Gribbin	Weeks: N/A
https://amzn.to/3wNkFkc	Notes: ☐
Covers time, space, measurement, the structure of the universe, the theory of relativity, black holes, quantum mechanics, and string theory.	

The Mysteries of the Universe by Will Gater	Weeks: N/A
https://amzn.to/3VfGp0f	☐
Space is so much bigger than young minds can fathom and there is always more to learn. The Mysteries of the Universe is a stunning space encyclopedia for young readers to explore, with reference pages packed with fascinating information, little learners will be captivated as they journey through the vastness of the Universe. From planets and asteroids to black holes and galaxies, every page of this enthralling space book reveals the secrets behind more than 100 celestial objects, and will inspire youngsters as they journey through the vastness of the Universe. Each celestial body is shown both photographically and illustrated, and children will love poring over the detailed close-up images. Get ready to explore fun facts and exciting new scientific discoveries as this best-selling picture book will illuminate imaginations and spark curious minds to explore the vastness of space.	

Glow: A Family Guide to the Night Sky by Noelia González	Weeks: N/A
https://amzn.to/3VxGGxg	Notes: ☐
Glow: A Family Guide to the Night Sky is a lushly illustrated introduction to the wonders of the night sky, inviting young readers to explore stars, planets, and other celestial bodies and learn how to spot them. Get ready to explore the night sky! Observe the phases of the moon, navigate by the North Star, and peer into outer space from your own backyard. You'll find out about: The Moon, The Sun, Polaris and Ursa Minor, Mercury, Orion's Belt, Venus, Halley's Comet, Mars, Alioth and Ursa Major, Jupiter, Sirius and Canis Major, Satellites, including the International Space Station and James Webb Space Telescope, Acrux and the Southern, Cross, The Milky Way, and more! You'll also learn about some of the mythology and folklore associated with the night sky and uncover how humankind has its history woven into the constellations that light up our skies. With energetic, accessible text from NASA science writer Noelia González and stunning illustrations by Sara Boccaccini Meadows, this is a book the entire family will want to share.	

Space Dictionary for Kids: The Everything Guide for Kids Who Love Space by Amy and Brian Anderson	Weeks: N/A
https://amzn.to/4bJLx3U	Notes: ☐
Packed with hundreds of illustrated definitions about astronomy and space, Space Dictionary for Kids is certain to spark any kid's enthusiasm for the solar system and galaxy. Explore cosmology, stars and galaxies, the solar system, space exploration, and exoplanets and astrobiology. Hop on an astronomy timeline to learn the story of how primitive ancient beliefs evolved over centuries to become a high-technology science. Crack up over the humorous sidebars that expand on the topic of space with examples, explanations, diagrams, quizzes, and even short activities to enhance understanding. Use the references and further reading recommendations at the end to help find more information about astronomy, perfect for assignments or those just wanting to know more about the coolest topic in the galaxy! Divided into sections for quick access to the easy-to-understand definitions and amazing full-color illustrations, Space Dictionary for Kids is a must-have for any kid's home library!	

The Astronomy Book: Big Ideas Simply Explained by DK	Weeks: N/A
https://amzn.to/3VwnrUJ	Notes: ☐
Learn about planets, stars and black holes in The Astronomy Book. Part of the fascinating Big Ideas series, this book tackles tricky topics and themes in a simple and easy to follow format. Learn about Astronomy in this overview guide to the subject, great for beginners looking to learn and experts wishing to refresh their knowledge alike! The Astronomy Book brings a fresh and vibrant take on the topic through eye-catching graphics and diagrams to immerse yourself in. This captivating book will broaden your understanding of Astronomy, with: - More than 100 big astronomical ideas, theories and discoveries - Packed with facts, charts, timelines and graphs to help explain core concepts - A visual approach to big subjects with striking illustrations and graphics throughout - Easy to follow text makes topics accessible for people at any level of understanding The Astronomy Book is the perfect introduction to the story of our ideas about space, time, and the physics of the cosmos, aimed at adults with an interest in the subject and students wanting to gain more of an overview. Here you'll discover more than 100 of the most important theories and discoveries in the history of astronomy and the great minds behind them. If you've ever wondered about the key ideas that underpin the wonders of the universe and the great minds who uncovered them, this is the perfect book for you.	

DK Smithsonian Space: A Visual Encyclopedia	Weeks: N/A
https://amzn.to/3RgB9IQ	Notes: ☐
From the Moon, Sun, and planets of our Solar System to space exploration, black holes, and dark matter, this completely revised and updated children's encyclopedia covers all you need to know about the cosmos. The most up-to-date images from space agencies such as NASA and ESA combine with info panels, timelines, interviews, diagrams, and activities you can do at home to help you understand the majesty and wonder of space. Learn about the Space Race, the Apollo Moon Landings, the Voyager craft that first probed the outer planets, the Hubble telescope, and the International Space Station (ISS) – the state-of-the-art laboratory orbiting Earth. Find out about future missions, space tourism, and the latest discoveries in the furthest reaches of our galaxy. Discover how to find constellations and where to look for stars and planets, including Venus and Mars, in the night sky. Learn how galaxies such as our Milky Way were formed. Part of a series of best-selling encyclopedias for children, Space: A Children's Encyclopedia is a rocket ride from the beginning of time to the near future, and from planet Earth out to the furthest reaches of the Universe.	

Lonely Planet Dark Skies	Weeks: N/A
https://amzn.to/4cbbLfq	Notes:
Witnessing the sweep of the Milky Way, the remains of comets burning up in our atmosphere, or the shimmering aurora, we better understand the universe and our place in it. Lonely Planet's Dark Skies, the first world's guide to astro tourism, can help you experience all of this and more first-hand. Meticulously researched by dark sky expert Valerie Stimac, this comprehensive companion includes guides to 35 dark-sky sites and national parks, where to see the aurora, the next decade of total solar eclipses and how to view rocket launches, plus the lowdown on commercial space flight, observatories and meteor showers. Dark Skies is divided into sections to help you plan your dark sky tour: ● Stargazing focuses on the basics of appreciating the dark sky, with an overview on how to stargaze and what types of objects to look for, as well as tips for the urban stargazer. ● Dark Places is devoted to 35 of the best places around the globe for stargazing and experiencing the night sky, including sites designated by the Dark Sky Association. ● Astronomy in Action features some of the world's top research facilities and observatories,where you can get a closer look at space science. ● Meteor Showers has everything you need to know about the most consistent and impressive meteor showers that happen annually. ● Aurora is divided into two parts, one focusing on the aurora borealis in the northern hemisphere and the other on the aurora australis in the southern hemisphere. ● Eclipses follow the schedule of total solar eclipses over the next decade. If you've never experienced totality, here is your definitive guide to planning your trip. ● Launches help you experience a different side of astrotourism: rocket launches and the countries that allow you to travel to see them. ● Space Tourism discusses the future of humans in space - including you! The major players in the evolving space tourism market are detailed, plus the world's most common destinations and experiences.	☐

How Space Works: The Facts Visually Explained by DK	Weeks: N/A
https://amzn.to/3XmyaCh	Notes:
Embark on an awe-inspiring and informative journey through our Solar System and beyond in this illuminating astronomy book! Discover how big the Universe is, why our view of the sky is constantly changing, what came before the Big Bang, and so much more in 3... 2... 1.... Blast Off! Inside the pages of this comprehensive guide to astronomy for beginners, you'll discover: • Simple text and step-by-step graphics that make astronomy easy to understand • Fun facts and tip-of-the-tongue questions are presented through bite-sized factoids and question-and-answer features • Clear explanations demystifying more advanced topics such as cosmic rays, dark matter, and black hole collisions Take a peek at what lies beyond the stratosphere	☐

This out-of-this-world reference book about space introduces you to the weird and wonderful discipline of astronomy and space exploration. From the structure of the Milky Way to the Earth's nearest celestial body, the Moon, How Space Works takes you on an unforgettable tour through the stars and galaxies, and to the furthest reaches of space! Answering all your burning questions about space, from ancient white dwarf stars to the Mars Rover, this visual guide explains the essentials of astronomy through bold graphics and step-by-step artworks. It's the ultimate book for armchair astronomers and space-technology enthusiasts looking for reliable and up-to-date facts and explanations.	

DK Smithsonian: Space	Weeks: N/A
https://amzn.to/3KGhaPX	Notes: ☐
From the origin of the universe to the future of space rockets, this book about space for kids has it all. Did you know that the moon was once a piece of the Earth, and that a day on Venus is longer than one year? First published in 2015, Knowledge Encyclopedia: Space! has been completely revised and updated for 2020, with new images and information on all things space-related to send you rocketing to the furthest reaches of the cosmos. Newly updated with the latest scientific discoveries and innovation in space engineering, this new title will answer all your questions about what lies beyond the night sky. Discover how stars and galaxies are formed, take a trip through the Milky Way, and explore the innards of the International Space Station in this incredible book that uses the latest computer-generated 3-D imagery, eye-catching photographs, gripping information, and explanatory diagrams to bring the wonders of the cosmos to life.	

50 Things to See with a Telescope: A Young Stargazer's Guide by John A. Read	Weeks: N/A
https://amzn.to/3RkZvRt	Notes: ☐
Winner of the 2020 Simon Newcomb award for excellence in science communication, John A. Read covers everything needed to identify constellations, planets, stars, galaxies, nebulae and more. Inquisitive stargazers will find planet hunting and star hopping easy with clearly plotted routes and images of the sky both as seen by the naked eye and detailed views from a telescope. Many fascinating cosmic objects can be easily spotted with the help of this book including beautiful Cassiopeia, regal Leo, the plentiful Kemble's Cascade, the explosive Crab Nebula — even the rings of Saturn! This easy to read, fully illustrated reference book will enrich every young person's experience of the skies above. For those living south of the equator, a Southern Hemisphere edition of this book will be available in early 2021.	

Experiment Master Supply List

Although this list looks long, you will be able to find most of these items in your home. Also, see Appendix A for breakdown of supplies per week and per experiment, so you can easily pick and choose the experiments that will work best for your family.

- ☐ 1 metal washer
- ☐ 1 sheet of paper towel
- ☐ 2 sheets white construction paper
- ☐ 1 tea bag
- ☐ 1 white letter envelope
- ☐ 2 balloons, use a small, round size
- ☐ 2 Cardboard, 12in x 12in
- ☐ 2 Coffee cans, 1 lb.
- ☐ 2 Coins
- ☐ 2 drinking cups
- ☐ 2 drinking glasses large enough to hold the thermometer
- ☐ 2 empty metal food cans, same size
- ☐ 2 flashlights
- ☐ 2 flat mirrors
- ☐ 2 large-mouthed glass jars
- ☐ 2 magnifying lenses
- ☐ 2 Rubber bands
- ☐ 2 shiny pennies
- ☐ 2 straight pins
- ☐ 2 thermometers
- ☐ 3 sheets notebook paper
- ☐ 7 sheets blank paper
- ☐ 7 sheets black construction paper
- ☐ Aluminum foil
- ☐ 2 Round Balloons, 9 in.
- ☐ Bicycle reflector
- ☐ Black marking pen
- ☐ Block of wood
- ☐ Book
- ☐ Cellophane tape
- ☐ Clear drinking glass
- ☐ Compass
- ☐ Cotton handkerchief
- ☐ Desk lamp
- ☐ Double-sided tape
- ☐ Drinking straw
- ☐ Eye dropper
- ☐ Flat mirror
- ☐ Glass marble
- ☐ Glue
- ☐ Goose-neck desk lamp
- ☐ Hammer
- ☐ Heavy bolt
- ☐ Helper
- ☐ Index card
- ☐ Jar tall enough to hold the thermometers (and lid for the jar)
- ☐ Jar, 1 qt.
- ☐ Large nail
- ☐ Large plastic lid
- ☐ Large, empty 3-lb. coffee can
- ☐ Magnet, any size or shape
- ☐ Magnifying glass
- ☐ Marker
- ☐ Marking pen
- ☐ Masking tape
- ☐ Metal spoon
- ☐ Milk
- ☐ Mirror
- ☐ Modeling clay
- ☐ Nail
- ☐ Paper hole punch
- ☐ Pencil
- ☐ Photographic paper (sun print paper)
- ☐ Poster board
- ☐ Protractor
- ☐ Refrigerator
- ☐ Rubber glove
- ☐ Ruler
- ☐ Scissors
- ☐ Sealed bottle of cola
- ☐ Shoe box
- ☐ Small bowl that you can see through
- ☐ Spoon
- ☐ Steel air-gun shot, BBs
- ☐ String
- ☐ Styrofoam ball the size of an apple

- [ ] Television with a remote control
- [ ] Thread spool
- [ ] Umbrella, solid, dark color
- [ ] Washer
- [ ] Watch/Clock
- [ ] Water
- [ ] Wax paper
- [ ] White chalk
- [ ] White poster board
- [ ] White poster paper
- [ ] Wide-mouthed jar, 1 gal.
- [ ] Yardstick (meter stick)

Discovering the Wonders of the Universe: A Journey Through Astronomy

Daily Reading and Activity Guide

Week 1					
Topic	What is Astronomy?				History of Astronomy
Spine Resources	Day 1	Day 2	Day 3	Day 4	Day 5
Planetarium	Preface	p. 1-5			
Amazing Space	p. 1-3 (finish paragraph)		p. 18-22		
DK Astronomy	p. 6-7	p. 8-11	p. 12-13	P. 14-15	p. 18-19
Christian Resources					
The Astronomy Book	p. 5-7	p. 8-9	p. 10-11	p. 12-13	p. 14-15
Taking Back Astronomy	Read Introduction this week				
Fiction/Nonfiction Add-Ons					
Galileo and the Magic Numbers	Ch. 1	Ch. 2	Ch. 3	Ch. 4	
Destination Space	Read this week				
Narration Journal	☐ Done	☐ Done	☐ Done	☐ Done	☐ Done
Notes:					

Videos					
	Astronomy Explained (8:26) https://www.youtube.com/watch?v=XinkicMVzLs&list=PL_NRIaUvZ-J3SYUU1Amk18Jc3XT1y8dZm&index=3	Introduction to Astronomy (12:12) https://www.youtube.com/watch?v=0rHUDWjR5gg&list=PL_NRIaUvZ-J3SYUU1Amk18Jc3XT1y8dZm&index=1 *Says you are a "primate" towards the beginning and short picture of an unclothed "god" covered with a fig leaf.		Cycles in the Sky (9:28) https://www.youtube.com/watch?v=01QWC-rZcfE&list=PL_NRIaUvZ-J3SYUU1Amk18Jc3XT1y8dZm&index=3	History of Astronomy (10:06) https://www.youtube.com/watch?v=mBv1A8Kw3k4&list=PL_NRIaUvZ-J3oTUqj7AsWX6k-vClueV4Q&index=21

Week 2					
Topic	History of Astronomy (cont.)	Optical Principles, the Telescope, and Observatories			
Spine Resources	Day 6	Day 7	Day 8	Day 9	Day 10
The Planetarium		p. 8-9	p. 10-11		
Amazing Space	p. 3		p. 4-10	p. 11-13 (stop at Do radio waves have anything to do with radios?)	p. 13-17
DK Astronomy	p. 20-21	p. 22-23	p. 24-25	p. 30-31	p. 32-33
Christian Resources					
Exploring Astronomy		Ch. 8 - Telescopes			Ch. 9 - Breakthroughs in Astronomy
The Astronomy Book	p. 16-17	p. 18-19	p. 20-21	p. 22-23	p. 24-25
Taking Back Astronomy	Read Ch. 1 this week				
Experiments					
Astronomy for Every Kid		Ex. 74	Ex. 75	Ex. 76	Ex. 79
Fiction/Nonfiction Add-Ons					
Galileo and the Magic Numbers	Ch. 5	Ch. 6	Ch. 7	Ch. 8	
Narration Journal	☐ Done	☐ Done	☐ Done	☐ Done	☐ Done
Notes:					

Videos					
	Biography of Galileo Galilei for Kids (9:13) https://www.youtube.com/watch?v=W1UbjX64B8Q&list=PL_NRIaUvZ-J3oTUqj7AsWX6k-vClueV4Q&index=41	Optics (4:24) https://www.youtube.com/watch?v=fQ_wQSOHxrQ	Telescopes (7:11) https://www.youtube.com/watch?v=zkHIUbmC4Oc	The Science of Light and Color (4:37) https://www.youtube.com/watch?v=9Vsl0Iom3S0	What is radio astronomy? (1:35) https://www.youtube.com/watch?v=duVvbDxW7Sw
Additional Videos					
	The New Astronomy (12:34) https://www.youtube.com/watch?v=-FYvy3_egHw&list=PL_NRIaUvZ-J3oTUqj7AsWX6k-vClueV4Q&index=22		Telescopes (11:59) https://www.youtube.com/watch?v=mYhy7eaazIk&list=PL8dPuuaLjXtPAJr1ysd5yGIyiSFuh0mIL&index=8 Distances (11:20) https://www.youtube.com/watch?v=CWMh61yutjU&list=PL8dPuuaLjXtPAJr1ysd5yGIyiSFuh0mIL&index=26	Light (10:33) https://www.youtube.com/watch?v=jjy-eqWM38g&list=PL8dPuuaLjXtPAJr1ysd5yGIyiSFuh0mIL&index=26	Telescopes - Fresh Eyes on the Universe (10:07) https://www.youtube.com/watch?v=fpBzUShmDks&list=PL_pRx-DYZK58rgiXTOk_g-kF4WTlk-SVR&index=22 Radio Telescope (3:03) https://www.youtube.com/watch?v=mL-BYWkY6m0