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#### Apologia Co-op Kickstart

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#### Dear Co-op Leader,

We recognize that you have options, and we are grateful that you have chosen to use Apologia in your co-op. Thank you! It is an honor and a blessing to be able to partner with you.

This co-op kickstart is a basic guide designed with you in mind. There are many creative ways to teach an Apologia course in a co-op setting, giving you the flexibility to adjust the course to fit your teaching style. And while we list some options within this guide for your consideration, know that we fully encourage you to customize Apologia courses to reflect your needs.

We hope that you find the materials in this guide helpful in getting started. Keep in touch with us as we expand on the materials we're making available for co-ops. And if you have any ideas or suggestions, we'd love to hear from you. Contact us at customerservice@apologia.com.

It is our prayer at Apologia that you and your students enjoy the journey as you explore creation together. We pray that your students enthusiastically say, "So, that's how God did it!" May you be blessed with a year that is peace-full, wonder-full, beauty-full, and full of God's love for you and your students.

Warmly,

The Apologia Co-op Committee

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# WHY Apologia?

e are so grateful and humbled that your co-op has chosen to use Apologia in its classrooms. Looking through typical school textbooks, many families might think that our world has already been neatly categorized, explained, and fundamentally understood. But you know that isn't really the case.

Take science, for example. For each scientific discovery, there are thousands more breakthroughs still waiting to happen. Men and women of science have progressed in knowledge through the centuries by traveling a road paved by those who came before them, adding more detail to the map of uncharted territory as it is discovered. But one of the greatest gifts humans have ever received is that of faith. We know by faith that the universe—indeed, everything that exists, both visible and invisible—was created by God's command.

We take comfort from the knowledge that the workings of life, galaxies, and the whole universe are understood and upheld by the Creator. And while every scientific discovery is new to us, it merely represents our understanding more fully what God already knows. We know by faith that the universe—indeed, everything that exists, both visible and invisible—was created by God's command.

Apologia believes that our loving Father created all things and gives us the gift of discovery so that we might come to know Him through His creation. It's incredible to live in a world of delightful mystery! Every breath we take should remind us that we are a part of the community of creation; every color, sound, touch, and taste we experience should connect us with our Creator. Together, we can guide students on their journey of discovering the world. We have the joy and honor to provide learning environments for students that help them become rooted and firmly established in faith by recognizing God's signature throughout all of creation. In this way they can see something of the length, width, height, and depth of God's love and understand that their lives and the entirety of creation are His magnificent works of art.

With Apologia, children will walk with God through all their studies and know that His handiwork—everything visible and invisible, in their backyard or the farthest reaches of the universe—is connected throughout all of creation and all of time. How blessed they will be to know that they do not live in a world of chaos, but that the laws of nature are consistent throughout all the universe and, most importantly, that they are truly loved by the One who made it all.

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# SUGGESTED OPTIONS for Teaching Apologia in a Co-op Setting

There are multiple ways to set up a successful co-op using Apologia materials, and we fully support your creativity and customization of our curriculum. Here are a few ideas for your consideration.

# Classical

APPROACH Students read assigned materials before coming to class. Preselected activities are conducted, discussed, and documented in the co-op setting. This approach works well with students of all ages.

## Socratic

#### APPROACH

Students read assignments, conduct activities/experiments, and bring their completed notebooks to class. Socratic discussion happens in class, where students talk about what they learned. Typically, the teacher directs the discussion and adds new content that expands on the discussion materials (our Book Extras web page is useful for this purpose). This format works best with older students.

# Field Trip

APPROACH Co-op families complete the entire course on their own at home. The co-op class meets in different places so that field trips can expand knowledge with real-world encounters. This works well with students of all ages. This is also a good method if multiple families are willing to participate in the planning and execution of field trips.

# Downaling

APPROACH Students complete the assignments at home, and the co-op class works on completing the notebook activities together. Documenting knowledge and findings is a skill all students need to learn. This is a way to gently introduce the skill in a fun group setting. This approach limits the supplies needed for classes, yet it allows for discussions and fun.

# Artistic

APPROACH Co-op families complete the entire course on their own at home. The coop class encourages creativity in the students by providing the means to explore guided illustration, design, and modeling—all important aspects of life! Multiple Apologia titles have projects that wrap through the curriculum. This approach could also be used to construct those projects in a fun group setting.

## EASY STEPS to Establishing Co-op/Family EXPECTATIONS

efore the first day of class, Apologia recommends that as the co-op instructor you create an initial letter to send to all families participating in your co-op class. For a full coop day, we recommend opening with Bible, following with core subjects—science, math, grammar, etc.—and closing with worldview. There are 10 easy steps to establishing co-op/family expectations, and we've broken them down for your consideration. Feel free to adapt them to your needs. Numbers 1–5 focus on the actual class, and numbers 6–10 focus on co-op policy, behavioral expectations, and other guidelines.

The Course



Consider an introduction to the course that you will be teaching.

- What title will the class be studying?
- What can the student expect to learn in the co-op class?

A detailed **materials list** lets parents know exactly what to purchase. Sometimes coops charge a **fee** for the course because the co-op instructor provides the necessary materials needed for the activities.

- Provide a detailed list that itemizes what the family is expected to buy, such as the textbook, notebook, and activity supplies.
- Let parents know what, if anything, you will be providing.



A syllabus should discuss what you will be covering in each class.

- Include materials and supplies that students are expected to bring to each class.
- Make sure your families know which calendar days are marked for holidays, breaks, or field trips.



#### **Communication** is the key to any good relationship.

- Can students/parents email/call/text you? How often?
- How often will you communicate with co-op families?



Class expectations are important for everyone involved—teacher, students, and parents. A well-prepared class can practically run itself.

- Are students required to read the materials assigned before the class?
- Are students expected to have done some activities at home?
- Will you be helping students with notebook assignments or using them for review during class time?
- Will you require parents to participate/rotate/help in your classroom at any time?



# The Co-op



**Time** is probably the biggest item to master in a co-op setting. It is important to remember that any co-op is a cooperative effort on the part of parents, their children, and instructors. A co-op cannot continue to exist if one of these elements is missing or late.

- Be sure to have a policy for absences.
  - Families are responsible for attending each class for which they are registered. Even if there is no charge for the class, the instructor has made a commitment and has spent time preparing for each student who is registered. Consider that a certain number of absences, without valid excuses, could result in forfeiture of a family's privilege to participate in the co-op program in the future.
  - Absences of instructors must also be addressed so that families know that you are committed to the course too.
- Establish a set time for your co-op class to begin and end and have an **early drop-off**, **late pickup**, **and tardy policy** in place.



Volunteering is a critical part of a successful co-op.

- At the time of registration, consider if parents will be required to sign up to help each week in the co-op as needed in the different areas. Volunteer positions might include coteacher, assistant, or nursery helper.
- In addition, will families be assigned cleaning duties each week to ensure that the co-op building space is put back in order following co-op sessions?



Discipline and student conduct should be addressed before your co-op starts.
All students should be held responsible for their actions and should conduct themselves in keeping with their level of maturity, showing regard for established authority and the rights and welfare of others. Ask that students seek excellence,

- be honest, use clean speech, and be courteous and kind to all.Parents should monitor their children's behavior. Appropriate disciplinary
- measures should be taken when needed, privately. Uncooperative or disruptive children should be removed from activities.
- Respect for and obedience to authority should be expected.



**Expectations** should be decided and communicated before your co-op starts.

- Will each child attending the co-op be accompanied by a parent or designated chaperone who must remain on site for the entire time during the co-op?
- Do you want a clause for your co-op families that says that clothing must be modest, clean, and neat?
- Sadly, you should consider addressing that any student found with possession of any type of firearm, knife, tobacco, alcohol, or drugs will be asked to leave the premises immediately and proper authorities will be notified. Any such possession should result in immediate and permanent suspension from further participation in the co-op without a refund.



Lastly, consider what you will do for **guideline and policy violations**. Some co-ops have family committees that decide how to handle violations.

# APOLOGIA SUPPORTS the HSLDA

Discover How HSLDA's Group Services Program Can Help You

#### Consult with an HSLDA attorney

regarding homeschool group issues

- Policies, statements of faith, codes of conduct, etc.
- Financial issues
- Homeschooling in your state

**Discount Group program**, with streamlined online processing and roster access

- The Update Rewards program provides benefits for updating your roster and website info annually.
- HSLDA Group Connections provides financial rewards for referring members to HSLDA.

Group Grants program with HSLDA Compassion

Brochures for your welcome table

Newcomer packets on preschool, high school, struggling learners, youth programs, and more

**24/7 online access** to your group's roster and support group listing on HSLDA's website

**Group insurance discounts** through NCG Insurance for your group and/or co-op

HSLDA Speakers Bureau with a variety of speakers and topics available

Workshops developed just for leaders

Homeschool group-specific legal and financial articles and resources

**Practical leadership helps,** including ideas for statements of faith and codes of conduct

Growing & Connecting Newsletter for leaders

**Brainstorming session(s)** with HSLDA's Director of Group Services

Grants for your group's families in need (military, children with special needs, widows, and more)

For more information, visit the HSLDA's Group Services page at www.hslda.org/groupservices or email groupservices@hslda.org.



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## Exploring Creation Together



on't forget about your youngest co-op family members! You can engage them in fun science activities. Recommended for students aged 3–5, *Preschool Science: Exploring Creation Together* is a Godhonoring science curriculum that is full of hands-on, mindson, and hearts-on activities that develop the most vital learning tools a child possesses—unique God-given talents and abilities!

Even the youngest explorers can learn that their world is discoverable. At the preschool and kindergarten level, science is all about exposure, not memorization of facts. Through guided exploration of their world, young children learn how to naturally incorporate all aspects of language (expanding vocabulary), math (counting and recording), science (observing and experimenting), and art (drawing out ideas) into their understanding of how their world works. This course is divided into 7 lessons, with each lesson having multiple hands-on activities, worksheets that engage young minds in an ageappropriate manner, and even art projects that progress with the curriculum.

# Suggested Weekly Co-op Rhythm

ith 7 lessons in the course, *Exploring Creation Together* could easily be adapted to your coop's schedule. Each lesson could be covered in about a month's time, leaving plenty of time for holidays and breaks.

Every family should have a copy of *Exploring Creation Together* so that parents and children can read the stories together in their home setting and have access to all the worksheets. Co-op teachers can inform parents which activities, worksheets, experiments, field trips, and/or projects will be covered in class.

#### Week 1 DAY ONE: @ HOME

Activity 1.1 – What's Alive in Your House? Parents read the story materials (pages 10–16) with their child at home and complete the first part of the activity and worksheet (pages 206–207) in their home.

#### DAY TWO: @ CO-OP MEETING

The co-op class discusses what the children discovered in the home setting, and the class does the "Things That Are Alive" worksheet (page 208) together.

#### Activity 1.2A - Observe Living Things

Set up this activity (pages 209–211 *before*) in the coop class so that it can be taken home and completed. Parents help their child complete the worksheet (page 211 *after*) for the activity.

#### Week 2 DAY ONE: @ HOME

Parents read the story materials (pages 16–18) with their child at home and discuss with their child how some things are sorted in their home.

#### DAY TWO: @ CO-OP MEETING

The co-op class discusses what the children discovered in the home setting, and the class does the "Learning to Sort" worksheets from Activity 1.3 (pages 221, 223–226) together. An option is to have children bring their mason jars (Activity 1.2A) back to class so that the class can share and discuss what they learned.

#### Week 3 DAY ONE: @ HOME

Parents review materials as fits in the natural home setting.

#### DAY TWO: @ CO-OP MEETING

Activity 1.2B can be done as multiple field trips with the co-op class. Spacing the adventures throughout the year helps to reinforce lessons to help children remember concepts learned.

#### Week 4 DAY ONE: @ HOME

Parents review materials as fits in the natural home setting.

#### DAY TWO: @ CO-OP MEETING

The course project begins with creating shutters on a trifold poster as a "Window to My World." This project could be incorporated into the co-op as a fun wrap-up at the end of each lesson. Parents could even be invited to join the class to share in the fun. As the year progresses, more details get added to the project. Eventually, each child's window will reflect all the knowledge gained in the co-op.

Going Forward



Our Home Planet Earth covers land, air, and water while discussing landforms like mountains and different types of places, such as deserts and oceans. Children track the weather, dig in the dirt, learn about the water cycle,

and add air, land, water, land formations, and habitats to their course projects.

#### **Our Solar System**

introduces the concepts of outer space. It covers the sun, moon, stars, and planets. There are lots of games, worksheets, and activities, like building a milk jug rocket. Additionally, young



minds learn what makes day and night and create a tree that shows all 4 seasons for their project boards.



**God's Garden** introduces the basic parts of plants. Children become nature detectives in this lesson, collect seeds, and examine plants up close. They even create an alphabet flower garden to use in extra activities. A creation connection

activity provides a great way for the children to make gifts for others. And the project progresses as children add plants to their boards.



**Created in God's** 

**Image** teaches about the human body and emphasizes that we are all unique and special with God-given talents. Children learn about their senses, parts of their bodies, and healthy habits. Children can



All God's Creatures

covers the variety and the basics of animals.

Children learn about

There are plenty of worksheets and activ-

ities that can be done

in the co-op setting.

Children add animals

to their project boards.

life cycles and habitats.

add family photos or colored images to their project boards.



**God's Toolbox** is the introductory science behind how things work. Children learn how to talk like a scientist, measure, and record descriptions. They are introduced to energy, fuel, buoyancy, waves, rainbows, and mo-

tion. The project boards wrap up with adding motion, like a kite flying in the sky.





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## Exploring Creation Heaven and Earth



pologia's *Exploring Creation with Astronomy* and *Exploring Creation with Earth Science* titles can help your science co-op create a solid foundation for students. Right from the start, the tone in our science courses lets students know that they are going to study science as a tool to help them understand their unique place in all the universe. At Apologia, we not only see the beautiful truth in Romans 1:20, but we design our curriculum to be faithful to this truth.

For ever since the world was created, people have seen the earth and sky. Through everything God made, they can clearly see his invisible qualities—his eternal power and divine nature. So they have no excuse for not knowing God. Romans 1:20 (NLT)



# Exploring Creation Plants and Animals



pologia's *Exploring Creation with Botany* and *Exploring Creation with Zoology* titles can help your science co-op expand students' knowledge to the plants and animals that share life with us on our wonderful planet. Exploring our world and our place in it, along with all the life found on Earth, is a wonderful way to expand and grow in understanding God's plan to prosper us.

How countless are your works, LORD! In wisdom you have made them all; the earth is full of your creatures. Psalm 104:24



# Exploring Creation Intricate Designs



pologia's Exploring Creation with Human Anatomy and Physiology and Exploring Creation with Chemistry and Physics titles can help your science co-op create an atmosphere that helps students gain a deeper appreciation for the intricate designs found within the science of creation.

God, you have taught me from my youth, and I still proclaim your wondrous works. Psalm 71:17



# Introducing a Young Explorer Course to Gover Co-op Families

A pologia recommends that, before the first day of class, you send a letter to all families to let them know what title you will be studying and what students can expect to learn. Below are descriptions of our course titles that you are welcome to use in your letter. You can also send your students one of the word searches we've provided on the following pages to get them excited to begin!

Our co-op class in *Exploring Creation with Astronomy* will venture into the farthest reaches of creation. We'll study our sun, the planets



in our solar system, the asteroid belt, dwarf planets, and the Kuiper belt. Then, we'll set off across the stars to explore galaxies, nebulae, and even black holes as they reveal the marvel and might of our loving Creator.



Our co-op class in *Exploring Creation with Earth Science* will help your young explorer understand that in the entire universe, there is only one known

planet that supports life, and we call it home. Together, we'll discover the science that God put into place to make the Earth capable of sustaining life in all its rich forms throughout all of history. From the highest mountain peaks to the depths of the ocean, we'll journey through the atmosphere, the geosphere, the hydrosphere, and the biosphere as we discover that God established the perfect framework in which we live our lives.

Our co-op class in *Exploring Creation with Botany* will cultivate a love of learning as your young explorer's knowledge about plants blossoms. Students will



study the development of plants from seeds, the reproduction processes in plants, the way plants make food, and how plants get their water and nutrients. Most importantly, young scientists will begin to understand the beauty of our world as they see the fingerprints of our Creator throughout their scientific studies.



Our co-op class in Exploring Creation with Zoology 1: Flying Creatures of the Fifth Day will let your young explorer's imagination soar as we

study birds, bats, and flying insects. Together, we'll investigate the dynamics of flight, learn classification skills, and explore how the design we see in flying creatures points us toward our Creator. Our co-op class in Exploring Creation with Zoology 2: Swimming Creatures of the Fifth Day will dive right into

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an underwater adventure. We'll make a big splash as we study whales and dolphins, spy on seals and manatees, and explore the depths of God's creation with sea turtles, snakes, and salamanders. We'll also uncover the hidden world of crustaceans, sea snails, clams, and soft-bodied friends like the octopus, squid, and nautilus. From the microscopic to the massive, we'll leave no reef unexplored.



Our co-op class in Exploring Creation with Zoology 3: Land Animals of the Sixth Day will be an adventure as we explore

jungles, deserts, forests, and farms. We'll examine the incredible variety of enchanting creatures God made to inhabit the Earth. Our co-op class in *Exploring Creation with Human Anatomy and Physiology* will encounter God's design for the human body.



Young explorers will discover the incredible world of cells. Together, we'll learn about the skeletal, muscular, respiratory, digestive, circulatory, immune, and nervous systems. And we'll study the importance of nutrition and a healthy lifestyle as we proclaim that we are fearfully and wonderfully made.



Our co-op class in *Exploring Creation with Chemistry and Physics* will introduce your young explorer to the properties of matter and

the basic building blocks of life—atoms and molecules. Together, we'll learn about the laws of motion and study energy in its many forms. We will bond as we investigate God's design for the states of matter and magnetism. And we'll finish our studies with a closer look at simple machines.



Pag Activity Pages to Introduce Your Elementary Science Co-op

Word Searches



| Apo<br>Astr<br>Crea<br>Eart<br>Gala | ologia<br>onau<br>ation<br>ch<br>axy | a<br>ut | 1. | Jupit<br>Mars<br>Merc<br>Mooi<br>Navig | er<br>ury<br>n<br>gatic | on |   | Veptu<br>Vight<br>Vlane<br>Saturi<br>Solar | une<br>Sky<br>ts<br>n<br>Syste | em | St<br>U<br>Ve<br>Yo | ars<br>ranu<br>enus<br>oung | s<br>Exp | lorer |
|-------------------------------------|--------------------------------------|---------|----|--|-------------------------|----|---|--|--------------------------------|----|---------------------|-----------------------------|----------|-------|
| С                                   | Ι                                    | R       | F  | М                                      | Е                       | Т  | S | Y  | S                              | R  | А                   | L                           | 0        | S     |
| Е                                   | А                                    | Т       | U  | R                                      | А                       | Ν  | U | S  | Т                              | U  | С                   | А                           | Ν        | D     |
| Ν                                   | J                                    | Μ       | 0  | 0                                      | Ν                       | R  | W | Е  | А                              | Ν  | R                   | Κ                           | S        | Ν     |
| U                                   | 0                                    | Ν       | Κ  | G                                      | Μ                       | U  | D | Υ  | R                              | L  | Е                   | R                           | J        | А     |
| т                                   | Ρ                                    | L       | А  | Ν                                      | Е                       | т  | S | U  | S                              | Μ  | А                   | U                           | L        | V     |
| Ρ                                   | W                                    | Е       | G  | А                                      | L                       | А  | Х | Υ  | А                              | D  | Т                   | L                           | А        | I     |
| Е                                   | Μ                                    | V       | J  | Ρ                                      | Т                       | S  | R | W  | Ν                              | 0  | Ι                   | J                           | Ρ        | G     |
| Ν                                   | 0                                    | А       | K  | 0                                      | Ν                       | Ι  | D | Μ  | Q                              | U  | 0                   | R                           | Ν        | А     |
| W                                   | Ι                                    | Y       | В  | L                                      | R                       | S  | L | А  | V                              | Е  | Ν                   | U                           | S        | Т     |
| А                                   | S                                    | т       | R  | 0                                      | Ν                       | А  | U | Т  | I                              | Μ  | Т                   | V                           | Е        | Ι     |
| Y                                   | 0                                    | U       | Ν  | G                                      | Е                       | Х  | Ρ | L  | 0                              | R  | Е                   | R                           | K        | 0     |
| Х                                   | Μ                                    | А       | J  | Ι                                      | U                       | W  | Y | R  | U                              | С  | R                   | Е                           | Μ        | Ν     |
| С                                   | Y                                    | S       | Е  | А                                      | R                       | т  | Н | W  | Н                              | А  | Ρ                   | Μ                           | А        | D     |
| I                                   | Н                                    | G       | I  | K                                      | Ρ                       | S  | J | U  | Ρ                              | I  | Т                   | Е                           | R        | 0     |
| Ν                                   | 0                                    | Y       | K  | S                                      | Т                       | Н  | G | Ι  | Ν                              | J  | R                   | 0                           | S        | Т     |

Explore Apologia's notebooking journals for more hands-on activities, coloring Pages, journaling prompts, and more!

Earth Science WORD SEARCH

| Apo<br>Atm<br>Bios<br>Clim<br>Con | logia<br>iosp<br>sphe<br>nate<br>tine | a<br>here<br>re<br>nts | E<br>E<br>F | Creat<br>Earth<br>Ecosy<br>Equat<br>Forec | ion<br>rstem<br>tor<br>ast | าร | Ge<br>Ha<br>Hy<br>La <sup>-</sup><br>Lo | osph<br>bital<br>dros<br>titud<br>ngitu | nere<br>ble Zo<br>pher<br>le<br>ude | one<br>e | M<br>O<br>Se<br>M<br>Ya | appi<br>cean<br>easor<br>/eath<br>oung | ng<br>s<br>ns<br>ier<br>Exp | lorer |
|-----------------------------------|---------------------------------------|------------------------|-------------|---|----------------------------|----|---|---|-------------------------------------|----------|-------------------------|--|-----------------------------|-------|
| Y                                 | 0                                     | U                      | Ν           | G   | Е                          | Х  | Ρ                                       | L                                       | 0                                   | R        | Е                       | R                                      | S                           | L     |
| R                                 | н                                     | М                      | А           | Ρ   | Ρ                          | Ι  | Ν                                       | G                                       | R                                   | А        | Т                       | М                                      | Κ                           | Е     |
| М                                 | А                                     | S                      | Т           | I   | R                          | 0  | Т                                       | А                                       | U                                   | Q        | Е                       | R                                      | С                           | М     |
| 0                                 | В                                     | Ρ                      | J           | W   | Е                          | D  | U                                       | Т                                       | Ι                                   | Т        | А                       | L                                      | L                           | В     |
| Ν                                 | Ι                                     | R                      | Е           | н   | т                          | А  | Е                                       | W                                       | S                                   | R        | K                       | J                                      | Ι                           | G     |
| L                                 | Т                                     | R                      | R           | А   | W                          | В  | С                                       | Y                                       | V                                   | Т        | U                       | L                                      | Μ                           | Е     |
| K                                 | А                                     | S                      | Е           | Ι   | Ρ                          | Ι  | S                                       | Ν                                       | А                                   | Е        | С                       | 0                                      | А                           | 0     |
| Т                                 | В                                     | Е                      | Н           | J   | С                          | 0  | Ν                                       | Т                                       | Ι                                   | Ν        | Е                       | Ν                                      | Т                           | S     |
| S                                 | L                                     | А                      | Ρ           | Υ   | С                          | S  | L                                       | Y                                       | В                                   | L        | А                       | G                                      | Е                           | Ρ     |
| А                                 | Е                                     | S                      | S           | Е   | т                          | Ρ  | R                                       | 0                                       | W                                   | С        | R                       | Ι                                      | G                           | Н     |
| С                                 | Ζ                                     | 0                      | 0           | L   | W                          | Н  | Ι                                       | S                                       | G                                   | L        | Т                       | т                                      | С                           | Е     |
| Е                                 | 0                                     | Ν                      | R           | Ν   | G                          | Е  | С                                       | F                                       | Ρ                                   | I        | Н                       | U                                      | K                           | R     |
| R                                 | Ν                                     | S                      | D           | В   | K                          | R  | Ν                                       | Н                                       | т                                   | Ζ        | А                       | D                                      | Ν                           | Е     |
| 0                                 | Е                                     | С                      | Y           | С   | R                          | Е  | А                                       | Т                                       | Ι                                   | 0        | Ν                       | Е                                      | С                           | В     |
| F                                 | L                                     | W                      | Н           | Х   | А                          | т  | М                                       | 0                                       | S                                   | Ρ        | Н                       | Е                                      | R                           | Е     |

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| А                                   | Ν                                  | 0 | Ι           | Т                               | А                      | Е | R                        | С  | Е          | R | U                          | Т                                 | А                   | Ν    |   |
| Ρ                                   | R                                  | L | А           | Ρ                               | 0                      | L | 0                        | G  | Ι          | А | W                          | V                                 | R                   | В    |   |
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| Ν                                   | U                                  | С | V           | А                               | Т                      | Y | Μ                        | Ν  | Е          | R | R                          | G                                 | 0                   | Ρ    |   |
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| R                                   | L                                  | I | G           | Κ                               | Ν                      | Т | Ν                        | Ρ  | S          | J | Υ                          | А                                 | R                   | Т    |   |
| Е                                   | Н                                  | G | 0           | т                               | Е                      | L | Х                        | Ν  | А          | F | R                          | В                                 | 0                   | Ν    |   |
| W                                   | А                                  | Ν | I           | С                               | R                      | Е | Μ                        | Y  | D          | А | Н                          | L                                 | S                   | А    |   |
| 0                                   | J                                  | U | Ν           | R                               | G                      | S | G                        | Κ  | L          | С | W                          | Е                                 | Ν                   | L    |   |
| L                                   | R                                  | F | Е           | Ν                               | Υ                      | Y | Х                        | U  | Q          | Е | Κ                          | S                                 | Е                   | Ρ    |   |
| F                                   | Ι                                  | S | U           | W                               | D                      | Ι | С                        | Ρ  | Т          | G | Μ                          | S                                 | D                   | L    |   |
| Т                                   | А                                  | 0 | F           | Е                               | Т                      | S | 0                        | Ρ  | Μ          | 0 | С                          | Ν                                 | R                   | А    |   |
| Ζ                                   | Y                                  | L | S           | Ν                               | А                      | Н | Т                        | U  | L          | R | Е                          | J                                 | А                   | Т    |   |
| V                                   | А                                  | S | С           | V                               | Ι                      | Ι | S                        | Е  | Е          | D | S                          | Ι                                 | G                   | Μ    |   |

Explore Apologia's notebooking journals for more hands-on activities, coloring Pages, journaling prompts, and more!

## Zoology 1 WORD SEARCH

| Ants<br>Apol<br>Bats<br>Bees<br>Beet | ogia<br>s<br>les |   | E<br>E<br>C<br>E | Birds<br>Butte<br>Creat<br>Echol<br>Eggs | erflies<br>ion<br>locat | s<br>ion | E)<br>Fe<br>Fl<br>G<br>In | koské<br>eath<br>ying<br>rassł<br>isect | eleto<br>ers<br>nopp<br>s | n<br>per | Lif<br>Ne<br>Re<br>Yo<br>Zo | e Cyc<br>est<br>eptile<br>ung<br>olog | cles<br>s<br>Expl<br>y | orer |
|--------------------------------------|------------------|---|------------------|--|-------------------------|----------|---------------------------|---|---------------------------|----------|-----------------------------|---------------------------------------|------------------------|------|
| S                                    | Y                | U | F                | S  | E                       | L        | С                         | Y                                       | С                         | E        | F                           | I                                     | L                      | С    |
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| Ν                                    | U                | 0 | U                | Н  | А                       | L        | R                         | Е                                       | Ρ                         | т        | Ι                           | L                                     | Е                      | S    |
| А                                    | С                | W | Т                | Ν  | Y                       | т        | С                         | Т                                       | J                         | Е        | М                           | Ρ                                     | U                      | Ζ    |
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| Κ                                    | С                | Μ | Ι                | Е  | G                       | т        | L                         | С                                       | L                         | K        | R                           | Н                                     | Т                      | G    |
| Е                                    | R                | т | R                | Ν  | J                       | Ι        | С                         | Т                                       | Т                         | 0        | G                           | Ν                                     | Ι                      | Y    |
| L                                    | S                | L | D                | U  | А                       | н        | А                         | F                                       | Е                         | S        | R                           | А                                     | 0                      | L    |
| Е                                    | G                | J | S                | Е  | Е                       | В        | С                         | R                                       | Μ                         | Е        | т                           | Е                                     | Ν                      | R    |
| Т                                    | G                | R | 0                | Ν  | Μ                       | R        | С                         | G                                       | U                         | W        | В                           | А                                     | R                      | J    |
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| Ν                                    | G                | R | А                | S  | S                       | н        | 0                         | Ρ                                       | Ρ                         | Е        | R                           | Т                                     | Е                      | А    |

Zoology 2 WORD SEARCH 6)

| Amp<br>Apo<br>Biva<br>Cnic<br>Crak | ohib<br>logia<br>Ilve<br>daria<br>o | ian<br>a<br>ns |   | Dolp<br>Dugo<br>Echir<br>Herp<br>Inver | hin<br>ong<br>node<br>s<br>tebr | erms<br>ate | N<br>F<br>F | ∕lana<br>⁄lollu<br>Pinniµ<br>Plank<br>Reef | tee<br>sk<br>oed<br>ton |   | Re<br>Se<br>St<br>W<br>Yo | eptile<br>ea Tu<br>harks<br>/hale<br>bung | es<br>Irtle<br>5<br>2<br>9<br>1 Expl | orer | Ő |
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| Ρ                                  | Ι                                   | Ν              | Ν | 1                                      | Ρ                               | Е           | D           | I  | F                       | R | S                         | L   | А                                    | С    |   |
| R                                  | А                                   | Е              | R | М                                      | V                               | С           | Т           | D  | 0                       | L | Ρ                         | Н   | Ι                                    | Ν    |   |
| Ι                                  | Μ                                   | W              | В | L                                      | А                               | S           | Ρ           | F  | R                       | D | R                         | L   | K                                    | Е    |   |
| Т                                  | Ρ                                   | Н              | А | Н                                      | L                               | 0           | Е           | Н  | F                       | Е | Е                         | S   | А                                    | R    |   |
| U                                  | Н                                   | V              | S | Μ                                      | R                               | Е           | D           | 0  | Ν                       | Ι | Н                         | С   | Е                                    | Ρ    |   |
| W                                  | Ι                                   | Ν              | V | Е                                      | R                               | Т           | Е           | В  | R                       | А | Т                         | Е   | W                                    | S    |   |
| В                                  | В                                   | А              | Н | Ρ                                      | С                               | В           | W           | Μ  | А                       | Ν | А                         | Т   | Е                                    | Е    |   |
| R                                  | Ι                                   | L              | S | Κ                                      | R                               | А           | Н           | S  | Н                       | 0 | D                         | В   | Н                                    | А    |   |
| Е                                  | А                                   | W              | Н | Ν                                      | А                               | В           | А           | R  | С                       | L | U                         | S   | Ι                                    | Т    |   |
| Ρ                                  | Ν                                   | S              | Е | Н                                      | K                               | 0           | L           | Е  | D                       | U | G                         | G   | L                                    | U    |   |
| Т                                  | J                                   | Y              | 0 | U                                      | Ν                               | G           | Е           | Х  | Ρ                       | L | 0                         | R   | Е                                    | R    |   |
| I                                  | А                                   | F              | В | L                                      | Ρ                               | Ι           | S           | А  | Ν                       | L | Ν                         | R   | Κ                                    | Т    |   |
| L                                  | 0                                   | L              | Ζ | Κ                                      | S                               | U           | L           | L  | 0                       | М | G                         | Н   | 0                                    | L    |   |
| Е                                  | Ν                                   | 0              | Т | K                                      | Ν                               | А           | L           | Ρ  | Ν                       | Х | Н                         | В   | Ρ                                    | Е    |   |
| S                                  | Н                                   | Κ              | С | Ν                                      | Ι                               | D           | А           | R  | Ι                       | А | Ν                         | S   | L                                    | S    |   |

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|     | L                                    | н                         | С   | F   | D                                       | R             | В         | S                | Т  | С                                | А | Т                          | S                                    | L                     | Y    |                |
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|     | S                                    | U                         | W   | R   | L                                       | K             | L         | А                | D  | R                                | L | Ζ                          | Y                                    | Ν                     | Κ    |                |
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|     | Ι                                    | U                         | Ρ   | Е   | R                                       | Ι             | Х         | Ρ                | 0  | Е                                | А | Y                          | А                                    | Ν                     | Ι    |                |
|     | Ν                                    | S                         | I   | С   | G                                       | Ρ             | S         | Н                | Ν  | G                                | 0 | D                          | Т                                    | I                     | G    |                |
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## Human Anatomy & Physiology WORD SEARCH

| Ana<br>Apo<br>Bloc<br>Bon<br>Brea | tomy<br>logia<br>od<br>es<br>athin | g |   | Cell I<br>Crea<br>Dige<br>DNA<br>Hear | Mem<br>tion<br>stior<br>t | ibran<br>า |   | mmu<br>Aitoc<br>Ausc<br>Nervo<br>Nucle | unity<br>hono<br>les<br>bus Sy<br>eus | dria<br>/stem | N<br>Pl<br>Rl<br>n Sł<br>Yc | utriti<br>nysic<br>NA<br>kelet<br>oung | on<br>ology<br>on<br>I Exp | lorer |
|-----------------------------------|------------------------------------|---|---|---------------------------------------|---------------------------|------------|---|--|---------------------------------------|---------------|-----------------------------|--|----------------------------|-------|
| Ρ                                 | R                                  | G | Ν | I                                     | Н                         | Т          | А | Е                                      | R                                     | В             | S                           | L                                      | 0                          | А     |
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| Ι                                 | J                                  | Х | R | Н                                     | Ι                         | Q          | K | 0                                      | Е                                     | Ρ             | Е                           | J                                      | V                          | L     |
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| L                                 | 0                                  | А | С | R                                     | Е                         | А          | Т | Ι                                      | 0                                     | Ν             | 0                           | D                                      | U                          | Е     |
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| G                                 | Т                                  | G | R | U                                     | н                         | Μ          | G | R                                      | Н                                     | А             | С                           | R                                      | S                          | В     |
| Y                                 | S                                  | 0 | U | Ρ                                     | С                         | W          | Μ | L                                      | В                                     | L             | D                           | Ρ                                      | Υ                          | R     |
| K                                 | Е                                  | L | А | R                                     | Е                         | L          | Н | U                                      | Е                                     | 0             | С                           | Н                                      | S                          | А     |
| Н                                 | G                                  | 0 | J | D                                     | K                         | Ι          | Е | S                                      | Ν                                     | U             | R                           | Κ                                      | Т                          | Ν     |
| R                                 | I                                  | Ρ | В | L                                     | 0                         | 0          | D | U                                      | R                                     | Ι             | Х                           | Ι                                      | Е                          | Е     |
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| А                                 | Ι                                  | R | D | Ν                                     | 0                         | Н          | С | 0                                      | Т                                     | Ι             | Μ                           | Y                                      | Ι                          | Н     |

Chemistry & Physics WORD SEARCH

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| Y                                   | Ι   | Т      | С                     | I   | R                                 | Т | С                | Е                                      | L                    | Е | R                         | Μ                            | 0             | Т          |
| S                                   | 0   | В      | L                     | D   | В                                 | R | Е                | L                                      | А                    | Ν | Ι                         | А                            | R             | S          |
| Е                                   | Ν   | U      | 0                     | I   | С                                 | R | А                | Х                                      | н                    | Е | А                         | т                            | F             | Ι          |
| Ν                                   | Е   | 0      | Ν                     | Ρ   | R                                 | Т | Е                | Ι                                      | W                    | R | Ι                         | т                            | R             | Y          |
| Ι                                   | F   | Y      | D                     | G   | S                                 | А | S                | Т                                      | 0                    | G | А                         | Е                            | Х             | 0          |
| н                                   | Ι   | А      | С                     | Y   | Е                                 | U | S                | J                                      | Μ                    | Y | J                         | R                            | Κ             | Ρ          |
| С                                   | 0   | Ν      | R                     | G   | R                                 | Х | А                | Y                                      | Т                    | Ι | S                         | Ν                            | Е             | D          |
| А                                   | W   | С      | W                     | 0   | G                                 | Ν | Ρ                | Κ                                      | А                    | Н | L                         | 0                            | L             | S          |
| Μ                                   | Ρ   | Y      | Ι                     | R   | D                                 | F | Μ                | L                                      | Т                    | С | В                         | I                            | Е             | Е          |
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| L                                   | V   | 0      | L                     | U   | Μ                                 | Е | С                | Κ                                      | Μ                    | R | 0                         | А                            | Т             | U          |
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| Μ                                   | J   | А      | G                     | Е   | G                                 | Κ | Е                | R                                      | т                    | Μ | Y                         | R                            | 0             | Х          |
| Ι                                   | Y   | U      | Н                     | F   | R                                 | I | С                | Т                                      | Т                    | 0 | Ν                         | С                            | Ν             | Ι          |
| S                                   | Т   | Е      | т                     | М   | А                                 | G | Ν                | Е                                      | т                    | Ι | S                         | М                            | S             | М          |

Explore Apologia's notebooking journals for more hands-on activities, coloring Pages in the prompts, and more! Pages, journaling prompts, and more!

## Suggested Weekly Co-op Rhythm for

here are 8 titles in the Young Explorer Series, and any of them can be adapted to fit the rhythm of your co-op. Apologia suggests you review the title of your choice and adapt home assignments to coincide with your co-op activities. A typical day at the co-op could follow a schedule that includes the following:

#### **Arrival Activity**

Elementary students can have a lot of energy. Having a consistent format for your class can help maintain structure. We recommend having plenty of colored pencils available and instructing students to work on their notebooking journals. Students can color, add images, take notes, complete vocabulary crossword puzzles, and much more. This activity gets students to their seats before you start teaching. Once everyone arrives, you can begin your class.

#### **Class Connection**

Give your students an opportunity to share science-related stories or experiences to help them bond with their classmates. You should have a topic prepared in case you need to get a conversation started. This activity helps warm up your students and get them ready to contribute to your class.

#### **Previous Lesson Review**

It's always helpful to offer the "Big Picture" to your students. Take time to discuss how previous lessons build into the next one. Give students the opportunity to make connections that they see forming.

#### **This Week's Lesson**

Students should come prepared for class. This means that they should have read the assignment before co-op. Set aside some time to discuss the new material and answer any questions. It's also a good idea for you to look through Apologia's Book Extras before co-op so that you can expand on the concepts students learned from their book

#### Activity

Most time in an elementary co-op is typically set up for activities. This portion of class can be dedicated to doing any of the Young Explorer activities or projects, such as creating the globe in *Exploring Creation with Earth Science* or building the animals in any of the *Exploring Creation with Zoology* titles.

As always, Apologia supports your efforts and encourages you to adapt the Young Explorer Series to fit your co-op's needs and schedule.



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AP

Mathematics





+ apologia.

## **Introduction to** Exploring Creation with Mathematics

any math options are available to homeschoolers, and I do not take your choice to use our curriculum lightly. I am particularly glad you chose this program for your co-op because I wrote it with co-ops in mind. My goal in providing this co-op guide is to pave the way to a great year of math for your class.

This series presents math in an engaging and fun way. The concepts are tied to the real world, and the games prove to kids that practicing math facts can be the highlight of their day. Even better, learning this math as a class provides a dynamic environment where kids can playfully compete and collaborate to solve problems. Community is a great environment for mathematicians, and your co-op class will give your students a taste of that experience.

That said, I am also aware of the limitations and challenges you might be facing. I teach math at my own co-op, and inevitably my students arrive at my class with a wide range of math backgrounds. Presenting the content at an accessible level for all students can be difficult. Additionally, I know that co-op teachers are always trying to make the most of the limited class time they have with their students.

I wrote this guide to take the burden off you in preparing. I've highlighted the components of *Exploring Creation with Mathematics* that I think are best suited for co-op day. I've also added suggestions for pacing and even a sample schedule to help you prepare for a successful year.

My prayer is that your class will be a tremendous support to the families at your coop. May your class in the year ahead bring joy to the students, encouragement to the parents, and an incredibly rewarding experience to you.

I'm cheering for you. You've got this!

Kathryn Gomes

Apologia Math Author

## REASONS to Choose Apologia's Exploring Creation with MATHEMATICS

pologia's *Exploring Creation with Mathematics* is specifically designed for homeschoolers. Each level corresponds to that grade level, Level 1 includes traditional 1st-grade material, and so on. A typical student will finish one level in 1 year.

This curriculum was designed around 5 key characteristics essential to a successful elementary math program:



**Fun!** As you flip through the all-in-one student text and workbook, you'll notice color, photos, hands-on activities, engaging projects, and lots and lots of games. The design of each lesson and the carefully crafted activities present math as an accessible and exciting subject. If kids are flipping ahead to see what's next, they will bring enthusiasm and openness to each new math lesson. These positive emotions make it easier for their brains to soak up the content. If kids are engaged and happy about math, they will be positioned to tackle these new challenges. You want to bring this spirit of fun into your co-op class as well.

**Carefully crafted conceptual content.** This program will take students through a solid and thorough year of math. Complex concepts are included, but the lessons build up to these ideas gradually. The progression of each chapter and unit is carefully mapped out to offer just the right level of challenge each day. Kids can master a great deal of math if they are taught it in manageable chunks. It will be important that you work through the book in order as the lessons build on each other.

Skills practice. At the elementary level, a sizeable part of the content includes the math facts that must be memorized. Other skills must be rehearsed over a longer period of time for mastery to occur. Students are introduced to new skills in the daily lessons, but they will continue to practice them strategically in the skills practice. This gradual practice takes about 5–10 minutes before or after each lesson. The specifics of the skills practice vary from level to level, but this is one of the key components of the course that you can include in your class. You want to make sure you are reinforcing the skills practice in your assignments and in class. It is essential that families do not skip this.



Ease of use. From the very beginning, Apologia has striven to create curriculum that is easy for families to use, and that commitment hasn't changed with this math program. This series is set up very simply and will be easy for your families to follow. You'll move through the all-in-one cover to cover, although you can adjust the pace based on your co-op's yearly schedule. Most activities in this math course use common household items. A complete supply list for each level is found on the last page of the teaching guide. Please note that families will need to purchase both the student book and the teaching guide for your class. The teaching guide contains the answers, teacher's notes, suggestions for each lesson, and of the consumable pages needed for the games and activities.



Christian connections. We don't study math to

pass a test, excel in school, or advance in our careers. The true purpose and call behind mathematics is to learn more about the God who created it.

Math is a part of creation, and as such, it mirrors aspects of God's character. His beauty, faithfulness, and love can all be seen as we study numbers. To truly capture the imagination and passion of young mathematicians, we must highlight these divine reflections. This is the heart behind the unit introductions. The unit introductions can also be used as a springboard for discussions or additional projects in class.



## Introducing Exploring Creation with Mathematics to Gove Co.op Families

pologia recommends that, before the first day of class, you send a letter to all families to let them know what mathematics title you will be studying and what students can expect to learn. You are welcome to use any of the following descriptions in your letter to introduce your families to the class:



In Exploring Creation with Mathematics, Level 1, students will learn addition, subtraction, place value, measurement and data, and geometry.



In *Exploring Creation with Mathematics,* Level 4, students learn multiplication on a higher level, along with division, geometry, measurements, fractions, and decimals.

In *Exploring Creation with Mathematics*, Level 2, students will dig deeper into place value, patterns, addition, subtraction, money, time, measurement, data and graphs, and geometry.



In Exploring Creation with Mathematics, Level 5, students will learn about whole numbers, fractions, decimals, geometry and measurement, percents, and graphing.





Exploring Creation with Mathematics, Level 3, students will grow more proficient in addition, subtraction, multiplication, and division, and learn

more about data collection and graphing, begin fractions and jump deeper into geometry.



In *Exploring Creation with Mathematics*, Level 6, students will learn all about fractions and ratios, rates and probability,

and negative numbers. They'll also receive an introduction to algebra to prepare them for higher-level math courses.

## Suggested Weekly Co-op Rhythm for Teaching Exploring Creation with Mathematics

#### **OPTION #1:** COORDINATED SCHEDULE

In this model, all students will be completing the same lessons each week. Follow the suggested pacing guide at the beginning of the teaching guide, adjusting to fit your co-op's calendar where needed. On average, students will be completing 4 lessons per week.

#### **OPTION #2:** ASYNCHRONOUS SCHEDULE

This option is ideal for homeschool families that need more flexibility in their pacing. Instead of assigning daily lessons, you will allocate a certain number of weeks for each unit. Families need to complete the unit during that time but can choose their own pace. The disadvantage of this option is you will not be able to go over specific homework assignments during class time because not all students will be in the same place.

All students need to be done with the unit by the date you set so that you can work on the unit project together in class. You will also be working on that unit's skills practice throughout the weeks allotted for the unit. Here is what a sample asynchronous schedule for Level 4 might look like:

- Unit 1: September 4th–September 30th
- Unit 1: Project to be completed in class on September 30th
- Unit 2: October 3rd–November 18th
- Unit 2: Project to to be completed in class on November 18th
- Unit 3: November 28th–January 6th
- Unit 3 Project to be completed on January 6th
- Unit 4: January 9th–February 24th
- Unit 4: Project to be completed on February 24th
- Unit 5: February 27th–March 17th
- Unit 5: Project to be completed on March 17th
- Unit 6: March 20th–May 12th
- Unit 6: Project to be completed on May 12th

Several components of our math courses are especially suited for a group setting:

Possible

chedule

- Skills practice games
- Projects
- Problem-solving lessons (Levels 4–6)

Class

You may want to plan time for these components and then fill in with other activities as you have time.

| SUGC       | GESTED 1-HOUR CLASS SCHEDULE FOR LEVELS 1–3                                       |
|------------|---|
| Time       | Activity  |
| 10 minutes | Review previous lessons   |
|            | <ul> <li>Answer questions about the homework*</li> </ul>                          |
| 30 minutes | • Preview upcoming concepts*  |
|            | • Complete activities from previous or upcoming lessons that may be more involved |
|            | Complete unit projects  |
| 20 minutes | Play games from the current unit  |
|            | Play games from the unit skills practice  |

| SUGG       | ESTED 1-HOUR CLASS SCHEDULE FOR LEVELS 4–6  |
|------------|---|
| Time       | Activity  |
| 10 minutes | Review previous lessons   |
|            | <ul> <li>Answer questions about the homework*</li> </ul>                          |
| 30 minutes | Preview upcoming concepts*  |
|            | • Complete activities from previous or upcoming lessons that may be more involved |
|            | Complete unit projects  |
|            | • Work on the problem-solving lessons as a group                                  |
| 20 minutes | Play games from the current unit  |
|            | Play games from the unit skills practice  |

\*These items can only be included if you use the coordinated schedule option.



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# The Middle School

A t Apologia, we call the time spent in middle school the transitioning period. In 2 short years, students transition out of elementary science and begin to learn more independence, which they'll need for high school. Your middle school co-op has a big job ahead. What do your students know? Are there any gaps in their scientific knowledge? How can you be sure you're best preparing them for high school science courses? Apologia is honored to partner with you as you help your students navigate this time of transition.

Apologia offers 2 science titles that are typically covered in 7th and 8th grade. Our *Exploring Creation with General Science* course was designed specifically to take the guesswork out of science preparation. You can have a lot of fun teaching Apologia's general



science course because we touch on every science topic and gently guide students toward bigger thoughts and more responsibility.

Topics covered in *Exploring Creation with General Science* include the following:

- The History of Science
- Scientific Inquiry and the Scientific Method
- Documenting and Interpreting Experimental Results
- Scientific Analysis
- Astronomy
- Geology and Paleontology

- Meteorology and Oceanography
- General Chemistry
- General Physics
- Life Science
- General Biology
- Marine Science
- Environmental Science
- Science and Creation



In *Exploring Creation with Physical Science*, we cover the basics so that your students are prepared for the rigors of high school courses like biology, chemistry, and physics.

Using our award-winning student notebooks along with the textbooks will help you guide students with their notetaking so that they can become more structured, logical, factual, and, most importantly, independent thinkers.

Finally, one of the most important skills you will impart to your students is the ability to document scientific discovery. In both of our middle school titles, we'll work with you to ensure your students are properly prepared to create lab reports.



## Suggested Weekly Co.op Rhythm for Teaching MIDDLE SCHOOL SCIENCE

iddle school is unique because it transitions students from the elementary years but doesn't come with the pressure of having to document grades for a high school transcript. As a co-op teacher, you have some flexibility to really bring out the fun in a science course while teaching skills that will be necessary for future science course success.

Each of our titles can be adapted to fit the rhythm of your co-op. Apologia suggests you review the title of your choice and adjust home assignments to coincide with your co-op activities.

*Exploring Creation with General Science* can be completed in 33 weeks. *Exploring Creation with Physical Science* can be completed in 34 weeks. Depending on how often your co-op meets, you can choose your co-op's area of concentration. Here are 2 unique options for your consideration:

#### Learning the Importance of Taking Effective Notes

Learning to take effective notes is a skill that is often overlooked, but it is crucial to a student's future success. Taking good notes from a science text can mean the difference between a student mastering the concepts and not quite understanding them. Having a class devoted to helping students learn the art of notetaking would be a wonderful addition to any co-op, as students would gain a lifelong skill.

In this co-op scenario, students would typically follow the suggested schedule listed in their Student Notebook. The co-op class would be a time to review the materials in the Student Notebook and give the students time to add any missing notes.

Giving students time to discuss what they thought was relevant and why they thought it so gives your class a Socratic style that builds confidence in speaking about scientific matters. The ability to articulate comfortably is another skill that is often overlooked. When students can confidently speak in front of others and share knowledge in their own words, they have truly mastered the material. While middle school is typically only 2 short years, a lot of independence can be learned and confidence can be gained.

We recommend you consider using the study guides included with each course as a way to measure progress in your co-op class. This could be a fun group activity! Allow students to do a first pass

through a Study Guide with the knowledge they've gained and retained. Can they complete it without assistance? During a second pass through the Study Guide, students can use their notes to fill in any blanks. Did someone capture a crucial piece of data that everyone else missed? Celebrate it! If students still cannot answer some questions, they can review their textbooks to find the missing materials. Are they good at hunting down data? Once the Study Guide is complete, you can take the time to review the overall process to learn where students can improve. Then, your students will be ready for their test.

#### Learning the Importance of Experimentation and Creating an Effective Lab Report

While reading about science is important, *doing* science is always more fun. A co-op class that does experiments together would be a class that teaches students that their world is discoverable!

All of the experiments in both *Exploring Creation with General Science* and *Exploring Creation with Physical Science* are designed to progressively build confidence in a student's understanding of the scientific method. Richard P. Feynman, a Nobel Prize winner in physics, said, "Scientific knowledge is a body of statements of varying degrees of certainty—some most unsure, some nearly sure, none absolutely certain." If the scientific method is used correctly, however, scientists can draw reliable conclusions. Offering a co-op class that teaches students confidence in conducting and recording experiments is instructing students in the best method that allows them to formulate consistent conclusions about their natural world.

In this co-op classroom scenario, students would come together to do the experiments found in their textbook. These could be done in small groups, or the instructor could demonstrate with student assistance. In the remaining class time, students could complete the lab report forms in their Student Notebook or practice writing a formal lab report using the provided template.

As a final note, we encourage your co-op to consider sponsoring a science fair. It doesn't have to be complicated; you can even encourage students to present an experiment done in your co-op class. Students could even do a poster presentation on the experiment they liked the most. The point of the activity would be to help your students gain confidence in presenting their findings to others.







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## The High School Jears

Students who graduate high school with an Apologia science background successfully enter university studies of medicine, astrophysics, computer science, engineering, chemistry, and much more. But the difference between them and their secular peers is a deeper understanding of not only their universe but also their unique place in that universe. Apologia high school science courses are:

• **Designed** to help students acquire logical, life-applicable skills from an intellectual activity that is based on observation, research, and experimentation.

These skills don't stop when a textbook is closed; rather, they extend into everyday life circumstances.

• **Designed** to help students understand the order of the universe.

The cosmos is not chaos, and understanding that grand concept can help students grasp that their lives are also meant to be structured and purposeful.

• **Designed** to help students understand, evaluate, and participate in the discoveries that occur during their lifetime.

Not all scientific and medical advancements are beneficial. With an Apologia science background, students will become competent adults capable of making wise decisions for themselves, their families, and their communities.

Science is everywhere in today's world. It is part of our daily lives, from cooking and gardening, to recycling and comprehending the daily weather report, to reading a map and using a computer. Advances in technology and science are transforming our world at an incredible pace, and our children's future will surely be filled with leaps in technology we can only imagine. Being "science literate" will no longer be just an advantage but an absolute necessity. We can't escape from the significance of science in our world.

—Nancy Atkinson in *Universe Today* 

## Suggested Weekly Loop Rhythm for Teaching HIGH SCHOOL SCIENCE

he outcome of a student's studies is determined from the beginning by the curriculum. In other words, the curriculum we choose to use in our co-ops affects the outcome of our students' learning before they even begin their studies. How we fill their hearts and minds will also determine the type of people our students will become. At Apologia, we are honored that you have chosen our high school science curriculum for your

co-op. We do not take our responsibility lightly.

### Your students should be doing the following:

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Apologia will be with you and your students every step in the journey to ensure your success. Our textbooks and student notebooks take all the guesswork out of science. And however you choose to teach the course, we support you. Some co-ops like to have students read the material at home and conduct the lab work in class. Others may have students do the labs at home and come together to discuss the results and fill in the lab report forms. But no matter what you choose, there are plenty of discussion questions and labs to use in all our high school titles. Do what works for you in the time that your co-op permits. And don't forget the extra content that we make available in our Book Extras for each title. You may even choose to have a Socratic discussion using the content that we make easily available for you so there's no guesswork.

For ever since the world was created, people have seen the earth and sky. **Through everything** God made, they can clearly see his invisible qualities—His eternal power and divine nature. So they have no excuse for not knowing God.

-Romans 1:20 (NLT)



## Have a Fun Science Class and Host a Co-op Science Fair

o-ops are the perfect place to host a science fair! What does that entail? Not a whole lot on your end as the coordinator! Here are 5 tips for creating a thought-provoking co-op science class that will generate excitement for hosting a science fair.



Teach students to wonder about the world around them. This takes a science concept and places it in their world, encouraging exploration.

Too many students think that science is only a compilation of rigid facts that need to be memorized for a test, and we couldn't blame them for calling science hard and boring if that were the truth. A great statement to start a class with is, "I wonder why..." Introduce a class topic with something like, "I wonder why I can walk through water but not a wall." Then pause. Don't be afraid of the silence while your students ponder your statement.



Encourage your students to explore. We only remember the things that we understand. Coops are wonderful places to encourage guided exploration.

Start by encouraging the stu-

dents in your co-op class to use some time set aside for further exploration of a topic that they enjoy. Much of this exploration will also be done at home. When they are in class, set aside some time to discuss what they are researching. From the youngest explorers who like to play with the mixing of colors to the oldest students who enjoy microscopy work, all ages will be enthusiastic to share what they are learning. And if a student has found a great resource that you have previewed, allow the student to present it to the class.



Allow your students to test their ideas and learn from their successes and failures.

So, you set up the co-op experiment and it failed. Now what? Model for your students how you

analyze what could have gone wrong and what you could do differently next time. If time and materials are still available, repeat the experiment. Sometimes it isn't the experiment itself that went wrong but that an incorrect hypothesis was made at the beginning. Looking at all aspects teaches students that failure is knowledge when we analyze what we gained from the experience. There's always a take-home message to absorb.

The purpose of experimenting is to have students understand the scientific process and fully participate in all that it involves. To do this, they need to be capable of getting to the next step on their own. They don't always choose the correct next step, but eventually, with guidance, they get there. Give your students the space to fail and contemplate. 4

Rather than always responding to questions with direct answers, consider asking questions that will lead the students to seek their own answers.

As a co-op science teacher, you should never put

the pressure on yourself to have all the answers. What you can teach, however, is how to reframe a question that allows the student to discover information. If you are dissecting a heart and a student asks what a valve does in a certain location, allow the student to follow the pathway of blood to see if he or she can determine the answer. And if you honestly don't know an answer, don't guess. Tell your students that you don't know. If you have access to the internet during your class, don't be afraid to show your class

how to properly search for information from trusted resources. Proper internet searching is a skill that all students need to learn. If you don't have internet access, tell your students to come back to the next class with an answer, and then take it upon yourself to find the answer before the next class. Open your next class with a discussion on what everyone learned.

When we teach our students science and give them time to explore, we help them to understand their world. It is a gift that one generation gives to the next.

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Give your students a chance to show everyone what they did and what they learned by hosting a science fair!

If you are considering a science fair, be sure to let the families in

your co-op know well ahead of time, and then

also give your students time to prepare within your scheduled class time. Science fairs are a chance for students to step out of directed studies and into an in-depth study of something that fascinates them. The scientific process invites everyone in so that they can say, "I own this knowledge."

Your science fair doesn't have to be extravagant. Doing poster presentations is scholarly and permits the students to explain to attendees what knowledge they gained.

Younger students can do a simplified version of the scientific method and show what they did and what they learned. Older students can present their hypotheses, research, results, and conclusions.

If you decide to host judges and give awards, please be sure that every participant gets some words of support. The goal of a science fair should never be to win a trophy or a certificate. It should be to encourage students to explore their world and share their knowledge.

When we teach our students science and give them time to explore, we help them to understand their world. It is a gift that one generation gives to the next.

Younger students can participate with a simplified "What I did" and "What I learned" format.

Middle school OLCANO ANATOMY

students can participate with presentations on what they learned in co-op this year.

> **High school** students can present more in-depth research.

# Enter Apologias Homeschool SCIERCE BAIR

LEARN MORE AT APOLOGIA.COM/SCIENCEFAIR



Apologia offers multiple ways to teach and learn science, and your co-op can use these tools to think outside the box.





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## Titles Available BIBLE, APOLOGETICS, AND WORLDVIEW



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## Building a Biblical Foundation with The Word in Motion

Apologia's mission is to publish curriculum and resources and provide services that help homeschooling students and families learn, live, and defend the Christian faith. In addition to science and math, we publish Bible and Christian worldview resources. At Apologia, we believe in publishing materials that build the mind and a strong, firm foundation for the Christian faith.



*The Word in Motion*, for grades K-8th, is a Bible curriculum that tells the story depicted in Scripture in an easy-to-follow, mostly chronological format. Students *can* know the Bible! Teach them to know, love, and live God's Word by showing them how the books of the Bible fit together to tell the grand story of God's love for His people. Once they see and know this, they will be able to read the Word with purpose, passion, and real understanding.

Doing *The Word in Motion* Bible curriculum in a co-op is a perfect way to learn the biblical narrative and the keywords in each of the books of the Bible. The co-op provides a setting where students can learn, practice, and discuss the central lessons the Bible teaches. A co-op also offers a place where students can share their memory work and other projects that showcase all they're learning.

Weekly Co.op Rhythm

### for Teaching The Word in Motion

#### DAY ONE: @ CO-OP MEETING

- Discuss the review questions from the previous week's lesson.
- Allow students to recite the previous lesson's memory verse.
- Watch the video for the next lesson.
- Practice the motions together.
- Introduce the new lesson's memory verse.

#### DAY TWO: @ HOME

- Read the narrative in the textbook.
- Practice and write the memory verse in the Notebooking Journal.
- Read the sidebar article.
- Practice the motions.

#### **DAY THREE: @ HOME**

- Read the character sketch and the doctrine articles.
- Do the additional activities in the Notebooking Journal.
- Practice the memory verse and the motions.

#### DAY FOUR: @ HOME

- Read the assigned Psalm and Proverb (OT) or Parable or Miracle (NT).
- Read the prayer and pray together.
- Discuss/answer the Let's Talk About It questions in the Notebooking Journal.
- Practice the memory verse and the motions.

## Learning About the Faith and What We Believe



pologia also publishes the *What We Believe* Series as a part of our mission to produce materials that aid families in learning about and defending their faith, and this series can also be easily implemented in a co-op setting.

Children encounter messages with ideas about life, truth, morality, beauty, identity, faith, and so much more in songs, books, movies, cartoons, streaming content, blogs, vlogs, and games. Many of these messages and ideas are misleading and even destructive. Our children must be ready to discern these competing ideas and stand firm in the truth by seeing everything through the lens of Scripture.

We were made for fellowship with God and with each other. Learning about how to see the world through the lens of Scripture is the focus of the *What We Believe* Series. The truths discovered and discussed in these books are well-suited for a co-op context. Each of the lessons in the 4-book series is designed to be covered over 2 weeks.

Suggested Co.op Rhythm for Teaching the

What We Believe Series

#### Week 1 DAY ONE: @ HOME

- Read/Teach/Discuss "The Big Idea" and "What You Will Do."
- Read the short story and discuss the "Think About It" questions.
- Discuss the "Words You Need to Know" and record them in Notebooking Journal.

#### DAY TWO: @ CO-OP MEETING

- Read/Teach the first half of the main lesson.
- Do the "Make a Note of It" activity in the Notebooking Journal.
- Do the word find or crossword puzzle in the Notebooking Journal.

#### DAY THREE: @ HOME

- Introduce the lesson's memory verse and write it in the Notebooking Journal.
- Read the sidebar articles and do the corresponding notebooking activities.
- Make the minibook.

#### Week 2 DAY ONE: @ HOME

- Review the "Hide It in Your Heart" verses.
- Review the first half of the main lesson.
- Discuss and do the "I Spy!" activity in the Notebooking Journal.

#### DAY TWO: @ CO-OP MEETING

- Read/Discuss the second half of the main lesson.
- Do the corresponding activity in the Notebooking Journal.

#### DAY THREE: @ HOME

- Read the prayer at the end of the lesson and write a prayer about what you've learned.
- Review and answer the "Do You Remember?" section in the Notebooking Journal.
- Review the "Hide it in Your Heart" verses.

# BOOK EXTRAS

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#### ACCESS FREE BONUS CONTENT WITH BOOK EXTRAS

id you know that with each Apologia textbook, you receive access to a FREE Book Extras web page packed with incredible bonus content and resources? The curated resource links within Book Extras can save coop leaders hours of research time by providing additional videos, visual charts, and extra content to share with students during co-op meetings.

Visit **apologia.com/book-extras** to learn more about Apologia's free Book Extras content.

#### PREVIEW APOLOGIA'S CURRICULUM FOR FREE!

As a homeschool co-op leader or parent, you have both the challenge and blessing of selecting the best curriculum fit for your co-op. Apologia is used in homeschool co-ops throughout the U.S., and our goal is to provide co-op leaders with the resources they need to effectively teach students and foster a lifelong love of learning.

Visit <u>apologia.com/co-ops</u> to learn more about Apologia's co-op resources and access a free 30-day digital curriculum preview.