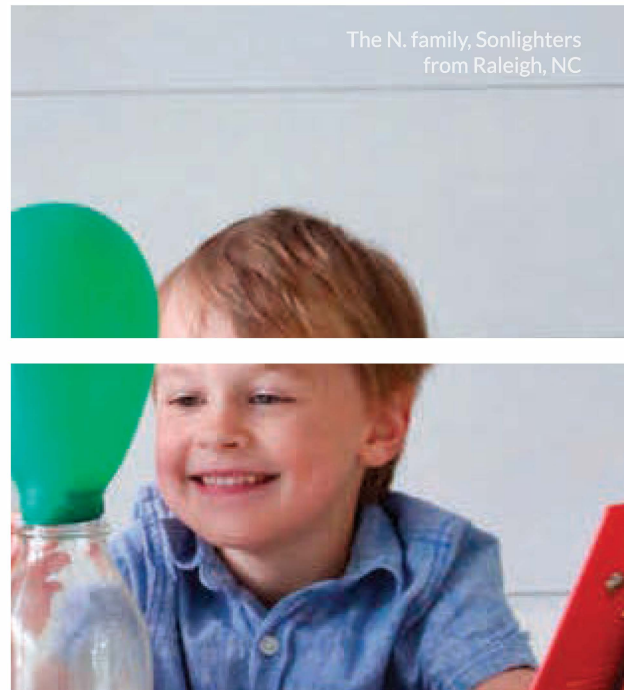
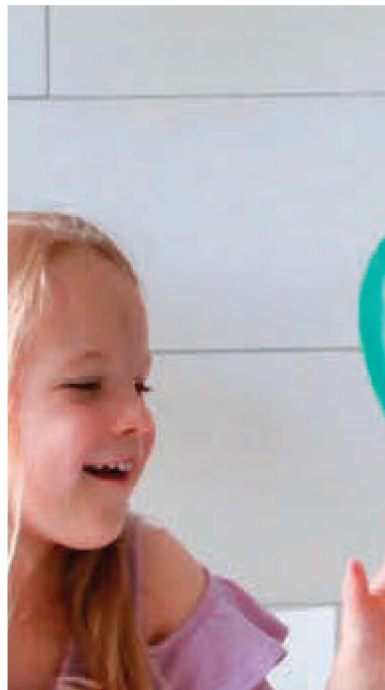


# K ECOSYSTEMS, METEOROLOGY, PHYSICS, & ENGINEERING DESIGN

The N. family, Sonlighters  
from Raleigh, NC



## FUN FACT

The sound of a rocket engine cannot be heard in outer space.





**Thank you** for downloading this sample of Sonlight's Science K Instructor's Guide (what we affectionately refer to as an IG). In order to give you a full perspective on our Instructor's Guides, this sample will include parts from every section that is included in the full IG.

*Here's a quick overview of what you'll find in this sample.*

- A Quick Start Guide **START HERE**
- A 3-week Schedule
- Activity Sheets and Parent Answer Keys
- A Scope and Sequence of topics and skills your children will be developing throughout the school year

#### SONLIGHT'S "SECRET" COMES DOWN TO THIS:

We believe most children respond more positively to great literature than they do to textbooks. To properly use this sample to teach your student, you will need the books that are scheduled in it. We include all the books you will need when you purchase a package from [sonlight.com](https://sonlight.com).

Curriculum experts develop each IG to ensure that you have everything you need for your homeschool day. Every IG offers a customizable homeschool schedule, complete lesson plans, pertinent activities, and thoughtful questions to aid your students' comprehension. It includes handy teaching tips and pointers so you can homeschool with confidence all year long.

If you need any help using or customizing our IGs, please reach out to our experienced homeschool advisors at [sonlight.com/advisors](https://sonlight.com/advisors).

We hope you enjoy using this sample. For even more information about Sonlight's IGs, please visit: [sonlight.com/ig](https://sonlight.com/ig). It would be our pleasure to serve you as you begin your homeschool journey. If you like what you see in this sample, visit [sonlight.com/science](https://sonlight.com/science) to order your Science package.

Blessings!

**Sarita Holzmann,**  
Co-founder and president  
of Sonlight Curriculum

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## Science

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Ecosystems, Meteorology, Physics, and Engineering Design

by the Sonlight Team

*“The heavens declare the glory of God; the skies  
proclaim the work of his hands.”*

Psalm 19:1 (NIV)

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“Do to others what you would have them do to you”  
(Matthew 7:12).

“The worker is worth his keep” (Matthew 10:10).

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Sonlight Curriculum, Ltd.  
8042 South Grant Way  
Littleton, CO 80122-2705  
USA

Phone (303) 730-6292 Fax (303) 795-8668

E-mail: [main@sonlight.com](mailto:main@sonlight.com)

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# INSTRUCTOR'S GUIDES SCIENCE

## Special features of Sonlight's Science Instructor's Guides:

### 1 Complete, Ready-to-Use Lesson Plans

All your science books and experiments are fully scheduled for the entire year. No need to create your own plans.

### 2 Detailed Teaching Notes

Notes explain each assignment and activity, point out fun facts about your reading, and provide extra information about important topics so you get the most from your materials.

### 3 Organizational Tools to Help You Plan Ahead

See at a glance the supplies you need for experiments this week and the following week. Know what supplies you'll find in the Sonlight Science Kits, and which household items you'll want to have ready.

### 4 Weekly Assignments and Engaging Activities

Simple, engaging experiments coordinate with your reading and provide hands-on learning. Sonlight's Science kits provide the key supplies . . . so you actually do the experiments.

Many experiments are intriguing, yet simple, activities—such as exploring taste buds using basic ingredients like lemon juice and sugar. Again, no planning necessary!

Your children will relish the discoveries they make throughout the year. And you'll love that they are actively exploring Science, Technology, Engineering, Math (STEM) concepts, and making their learning stick.

Science A					
Week 1					
Date:	Day 1	Day 2	Day 3	Day 4	Day 5
<i>Children's Encyclopedia</i>	pp. 8-9		pp. 10-11	pp. 12-13	pp. 14-15
Activity Sheet Questions	#1-2		#3-4	#5-7	#8-10
<i>Discover &amp; Do Level K DVD</i>		"Before You Begin" Tracks #1-3			
<i>Science Activities, Vol. 2</i>		"Air All Around" pp. 2-3			
Do Together				The Seasons at Your House	
Supplies	<b>You provide:</b> sheets of paper, 8" x 10" cardboard for each player (optional: crayons, thread or string or yarn) bottle, bowl, water.				
Shopping/Planning List	<b>For next week:</b> feather from any bird, plate, 10" x 10" paper, pencil, scissors, crayons, needle, thread or string or yarn, two dish cloths, plastic bag, plate, salt, bowl, water, plastic wrap, sugar, food color, spoons, saucers, glass, plate, very warm water, long-necked bottle, deep bowl or bucket, large coin, ice cubes, plastic bag, rolling pin or hammer or rock, plastic bottle with cap.				
Additional Subjects:					

#### Children's Encyclopedia

Day 1 pp. 8-9

Let your children know how amazing it is that so many

Notice the "Internet links" box at the top of the page. It is not necessary to visit all these links as part of your reading, but if you'd like to, just follow the link listed in the book for supplemental online material.

The book mentions what the Earth is made of, but doesn't properly label the layers. The outer layer is called

Day 3 pp. 10-11

Do you own a globe? If not, you can also use a ball, such as a basketball or soccer ball, to demonstrate the concept of day and night. All you need is a globe or ball and a flashlight. The flashlight, naturally, represents the Sun. Shine the flashlight on one side of the globe or ball. The part of the world facing the light is experiencing day, while the other areas are experiencing night. But the world rotates, so as it turns, day turns to night on one part of the globe, while night turns to day in other areas. [p. 10]

Day 4 pp. 12-13

The book refers to the northern and southern hemispheres but does not explain the concepts of western and eastern hemispheres. You might want to show your children a world map, noting the northern and southern hemispheres, as divided by the equator, while also pointing out the western hemisphere (North and South America and the Pacific and Atlantic Oceans) and the eastern hemisphere (Europe, Africa, Asia, Australia). [p. 13]

Day 5 pp. 14-15

Occasionally, you'll notice short experiment suggestions such as "Make a rainbow" on page 15. Please consider these activities as optional.

#### Activity Sheet Questions

Day 1 #1-2

**Note to Mom or Dad:** Find each week's Activity Sheets immediately after the notes and answer the questions assigned on the schedule page. Each Activity Sheet has a corresponding Answer Key page at the end of each week's notes.

- You do not have to do every question on the Activity Sheets.
- Feel free to adjust and/or omit activities to meet the needs of your children.
- We cover the same concepts repeatedly throughout the

challenge your children. Feel free to let your children do those activities they enjoy and simply talk through others.

We have provided space for you to fill in answers as your children respond verbally, or simply check off the items that you discuss.

**Suggestion:** your Activity Sheets might work more easily in a small binder for your children to keep and use as assigned. If you have more than one child using this program, extra Activity Sheets can be purchased for each child (Item #ASG1).

Occasionally we assign a "Cut-Out" activity. Please find these separate sheets in Section 3.

#### Discover & Do Level K DVD

Day 2 "Before you Begin" Tracks #1-3

We produced this fun and educational video so you and your children could watch "Professor Ike" perform each of the assigned experiments from *The Usborne Book of Science Activities, Vol. 2*. We recommend you gather your supplies, watch the DVD to see what to do, and then try each of these simple experiments yourself.

Or, if you prefer, you can do the experiment(s) on your own and then watch the DVD to see how it turned out on screen. You may want to mix and match to find out which works best. We hope this video makes your science experiments more enjoyable and more educational.

If your experiments don't happen exactly as you see in the video, it's OK! Watch the Outtakes in the Bonus section of the DVD and see how things didn't always happen perfectly for us, either.

**Note:** Please navigate your *Discover & Do Level K DVD* by using the DVD menu on your screen.

#### Science Activities, Volume 2

Day 2 "Air All Around" pp. 2-3

If you remember school science demonstrations without making for you and your children to try *Science Activities, Vol. 2*. Packed with simple

ter is the layers shell and talk you'll be, but neither top

ential Notes  
Week 1 | 1

**TRY BEFORE YOU BUY!**

Get a three-week sample of any Sonlight Instructor's Guide—FREE!  
sonlight.com/samples



**Instructor's Guides K-J also include:**

**5 Interactive Activity Sheets**

Your Activity Sheets—with hundreds of activities, illustrations, charts, and pictures—help your children remember what they've learned. A variety of activity options coordinate with your students' science studies and draw on a range of skills and interests.

Activities progress with your children's abilities: from cut-outs, matching, circle-the-answer, and dictation, to fill-in puzzles and sequencing analysis.

**6 Complete Answer Keys**

Separate Answer Keys mirror your Student Activity sheets for easy grading. No need to test—you have ongoing, reliable insight into your children's comprehension.

Science A: Week 1 Activity Sheet


4. **Challenge:** Make the statement true. (Please find Cut-Out #1 in the Appendix.) (p. 10)

The Sun rises in the  and sets in the .

5. Can you name the four seasons? (p. 12)

1) \_\_\_\_\_ 2) \_\_\_\_\_  
3) \_\_\_\_\_ 4) \_\_\_\_\_


6. Use the map to help you answer. (Please find Cut-Out #2) (p. 13)


North America  South America


When it is summer in:


...it is winter in:

7. During which two seasons does the Earth tilt toward or away from the Sun? Circle them. (p. 13)

  
winter

  
spring

  
summer

  
fall

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5

**Do Together**

**4 The Seasons at Your House**

Using a large piece of poster board, draw a line down the middle in each direction so as to divide it into four equal parts. Label the upper left corner "Spring," the upper right corner "Summer," the lower left corner "Fall," and the lower right corner "Winter." Now ask your children to use crayons, markers, paint, colored pencils, etc. to draw a picture of what each of the seasons looks like where you live. As they draw, discuss the seasons and what's different about each one. Ask them to think about how a stranger who just flew in from halfway around the world would be able to tell what season it is at any particular time. What clues would he find? Have fun with this activity, as your children learn more about how the seasons change in your particular area. When they're done, proudly display their work of art on the refrigerator or a wall where every one can see it.

**Supplies**

**All You Provide**

**Note to Mom or Dad:** When supplies are listed as "We provide," they are materials found in your course-specific (ASK) Supplies Kit. When supplies are listed as "You provide," they are materials you can generally find around your home. ■

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Science A: Week 1 Activity Sheet

**Children's Profile**

**4. How many continents does the Earth have? Count them.** (p. 6)

/

**On which continent do you live?** (Answers will vary.)

**2. Why is a day 24 hours long?** (Put an X next to the correct answer.) (p. 8)

Because that's how long it takes for the Earth to spin once on its axis.

Because that's how long it takes for the Earth to travel around the Sun.

**3. Discuss with Mom or Dad: Why is it daytime on only one side of the Earth at a time?** (p. 10)

On the Earth here, only one side faces the Sun, one side of the Earth is in light while the other side is in shadow.

Biology, Botany and Physics | 5-Day | Week 1 | 3

Science A: Week 1 Activity Sheet


4. **Challenge:** Make the statement true. (Please find Cut-Out #1 in the Appendix.) (p. 10)

The Sun rises in the  East and sets in the  West.

5. Can you name the four seasons? (p. 12)

1)  Spring 2)  Summer  
3)  Fall 4)  Winter


6. Use the map to help you answer. (Please find Cut-Out #2) (p. 13)


North America  South America


When it is summer in:


...it is winter in:

7. During which two seasons does the Earth tilt toward or away from the Sun? Circle them. (p. 13)

  
winter

  
spring

  
summer

  
fall

© 1. First Activity Sheet | 2. Day | Biology, Botany and Physics

6



“Sonlight keeps our family learning together,” shares Mackenzie B of Morrystown, AZ. “The beautifully illustrated books captures the attention of a wide age range of children and makes homeschooling more enjoyable for the parent as well. With Sonlight’s grab-and-go Instructor’s Guides, it’s so easy for Dad to do a quick lesson before bed. Sonlight is the perfect family curriculum.” Here, Dad is reading a science book to Corbin (6, Science B), Eden (2) and Ebban (6 months).

## Welcome!

In Science K, you will learn about wildlife and ecosystems, weather patterns and meteorology, simple machines and physics, and practice critical thinking with STEM-based experiments.

Sonlight Science programs include introductory studies in a range of experimental sciences. The main point of all the reading, activities, and experiments is to introduce your children to the scientific method and the joy of discovery.

We want children to be *introduced* to a lot of different subjects, *intrigued* by the concepts and ideas, and *enticed* to come back to the same themes again in the future. And so, you will find we follow a spiral pattern of education, touching on certain themes repeatedly this year and again in future years.

This way the basic *vocabulary* of science becomes ingrained not only in short-term, but also long-term memory. “Oh, yeah. I vaguely remember hearing about pistils and stamens earlier this year,” a child may say—late in the program. When the child studies biology again in future programs, the names and concepts will be vague, but recognizable, as the child gains deeper understanding. Please don’t expect mastery of the vocabulary at this age. That will come in time.

We want our children to *remember* what they have learned because they can’t help it; because they want to. We don’t want them merely to *memorize* what they are supposed to learn so they can pass a test.

The science experiments in this package, although not larger than life, work well.

As you do the experiments and demonstrate care in reading and following directions, recording data, and such, your children learn to follow your lead. An attitude of success—“Sure. We can do this!”—rubs off as well. These skills cannot be taught simply by reading books; they have to be modeled.

We have assigned one experiment each week that relates to the rest of the topics you read about that week. For example, when you’re reading about ants, you’ll explore ant tunnels in one experiment and how ants walk in another. When we use the reading as a springboard into an experiment, we provide a hands-on venue for your children to be curious, and allow them to explore a topic they’ve learned about all week for themselves. They are able to make more personal connections back to lessons from earlier in the week, and flesh out and solidify ideas for themselves in meaningful ways. *The Discover and Do Science: Kindergarten Experiment* book is structured so that each lesson helps you walk your children through the Scientific Method. The book provides introductory material for each other experiment, step-by-step procedures and notes to help you explain what’s happening and engage your children in a discussion at the end. This program also provides an introduction to the Engineering Design process, in which your children will design and build their own solutions to presented problems, test them and even

make improvements to their designs based on test results. We hope you enjoy the engaging time together the experiment days should provide.

### My Downloads

Find extra schedule pages, new user information (how to use a Sonlight guide) and further helpful information specific to the guide you have purchased from Sonlight on our website: [www.sonlight.com](http://www.sonlight.com). Go to Your Account and select the Downloads section to find all of the downloads for your guide.

## Evolution and the Age of the Earth

Two science-related issues require some special attention. The first has to do with evolution, while the second relates to the age of the Earth.

### Evolution

Some of the book selections in our science programs contain material supportive of evolution. Why do we include these books? First, we include them because the majority of the content in these resources is of high quality, offering visually and intellectually appealing material. Second, we don’t take an isolationist approach to knowledge. The subject of evolution is not something we want to teach children to avoid or put down without adequate understanding. Third, as the dominant perspective in contemporary science, evolution deserves mention and attention, even from those who disagree with its arguments. With that said, we do our best to provide balanced perspectives in relation to any potentially divisive content such as evolution.

When it comes to evolution, there are a few important points to keep in mind. In particular, differences between *macroevolution* and *microevolution* are crucial. These terms are sometimes used to clarify what is meant by evolution. *Macroevolutionists* accept evolution as the overarching explanation for all life, believing that evolution is responsible for significant changes in life forms such as a land-based mammal changing into an oceangoing mammal or dinosaurs allegedly evolving into birds. These supposed evolutionary changes are big, hence the term *macro*, meaning something very large in scale, is used in reference to this kind of evolution.

*Microevolution*, however, refers to small changes within different kinds of life. This approach grants the reality of changes within kinds such as birds or dogs. Obviously, there are many kinds and sizes of birds and dogs, but despite the variations, these creatures remain birds and dogs. As a result, someone can adhere to *microevolution* without embracing all the beliefs of *macroevolutionists*, who tend to accept the basic underlying principles of Darwinian evolution.

Religious objections to evolution tend to stem from the accusation that *macroevolution* leaves God out of the picture, instead leaving the entire process of the emergence and development of life to chance and time. Of course,



this means that evolution is undirected by any sort of intelligence, while Christians, for instance, believe in the reality of the existence of God as Creator. In other words, one approach to evolution is based on a worldview known as *naturalism*, while another is based on *theism*.

Naturalism here does not refer to enjoying nature, as in being a naturalist, but in a worldview that denies the existence of anything beyond the material world. In other words, anything supernatural, such as the existence of God, is rejected by naturalists.

Theistic evolutionists accept the existence of God but view Him as being active in the process of evolution. Christian theistic evolutionists may appeal to Scripture supporting God's active involvement in His creation (such as 1 Corinthians 8:6, Hebrews 1:3, etc.). In areas where a naturalist sees random processes and events, the theistic evolutionist argues that God is actively involved in directing matters.

Theism accepts that there is more to reality than the material world. There is a supernatural world and God exists as a personal being, active in His creation. By definition, naturalism excludes God. Christian theists who reject macroevolution and theistic evolution argue that God is Creator and Designer, having made all life without resorting to any macroevolutionary processes.

Scientific objections to *macroevolution* include, for instance, allegations that the fossil record lacks transitional forms, that genetic mutations are commonly harmful not helpful, and claims that life shows signs of intelligent design.

One goal we have at Sonlight is to present fair and balanced perspectives on issues, including science and evolution. As a result, some of the materials we choose to utilize will at times present evolutionary points of view, while other selections will not. As the parent, we encourage you to provide guidance for your children on these topics. In our assessment, it's better for your children to have some exposure to controversial topics at home, with intelligent and caring guidance, rather than have them be surprised by ideas they will eventually encounter anyway.

### **The Age of the Earth**

Another issue that will come up in the course of studying science has to do with questions about the age of the Earth. Secular books in some of our science programs will at times refer to "millions" or "billions" of years. For Christians who hold to a young Earth perspective, believing the Earth may only be several thousand years old rather than billions, such phrases pose a problem.

We suggest two solutions. First, whenever you encounter "millions" or "billions" in a science book, feel free to rephrase the sentences in question with phrases such as "a long time," "a very long time," or variations of this phrasing. Second, you may wish to state that although the book uses millions and billions of years, there are other perspectives on the age of the Earth and the age of the universe.

If your children ask why there is disagreement on the age of the Earth and/or universe, you can explain that not everyone interprets the data in the same way. In addition, not everyone employs the same research methods or believes

in the same data. Young Earth creationists, for example, include their interpretation of the Bible as a primary source of data. Those who hold to an old Earth view tend either to ignore the Bible (if they are non-Christian) or interpret the biblical creation account in such a way that allows for an old Earth without diminishing essential Christian doctrine. The Bible, from this old Earth perspective, may be a supplementary witness regarding the question of the age of the Earth, but traditional interpretations of it in reference to the age of the Earth need to remain open to reinterpretation.

You may also wish to add, "We aren't sure about how old the Earth is, but I happen to believe ..." then state your position on the matter.

Our goal here is not to present a definitive position on the age of the Earth or to present nuanced arguments for each side in the debate, but to leave it to you, as parent, to discuss with your children as you see fit.

Discussion and disagreement about the age of the Earth leads to another important point: is a particular view of the age of the Earth an essential Christian doctrine? Sometimes nonessential beliefs can lead to problems with essential beliefs, so this point needs to be approached carefully and thoughtfully. In general, however, we do well to follow the maxim, "In essentials unity, in nonessentials liberty, and in all things charity." In other words, we should foster Christian unity on essentials, rather than division about nonessentials.

## Student Activity Sheets

After each week's notes you will find Activity Sheets to reinforce what you are teaching and engage your student. Each Activity Sheet lists the week it is used at the top of the page. The questions coordinate with what you are reading and each activity is assigned on the schedule page.

It is not necessary to complete every activity provided. These are merely suggestions and you, as the teacher, can determine which are best suited for your children. You will find a variety of activities included in the Activity Sheets that are designed to draw on different skills and interests. Please feel free to assist your children by doing the hard work of handwriting the answers.

We have also included corresponding Instructions and Answer Key pages for all activities. You may want to file the Activity Sheets in a separate binder for your student's use.

**Note:** If you might reuse your Instructor's Guide and Student Activity Sheets in the future (for a younger child, for instance), we strongly suggest that you purchase an extra set of Activity Sheets when you buy the Instructor's Guide. That way, when we update our Instructor's Guides you will have matching Activity Sheets when you need them. Please contact us if you are looking for Activity Sheets from the past.

## Helpful Hints for Using the Cut-Out Sheets

We hope that the Cut-Out sheets included in Section 3 will be a wonderful resource for you and your children. They should provide your student with another avenue for demonstrating comprehension, even though they have not yet mastered the written language. Some of the questions on the Activity Sheets ask the student to write simple words (usually terms they are studying in the material at the time). We suggest your children practice forming letters to produce a word that grow familiarity with science concepts while minimizing the work involved. More importantly, these exercises also allow your children to practice their writing skills in a very practical way. By integrating handwriting and science skills, your children will begin to see how two separate subjects are related and how each is important to the other.

So why the dotted letters? This relates to an educational concept called “scaffolding.” When you “scaffold” knowledge, you give them a little information that they didn’t have before to get them to a higher level of comprehension than they might have been able to achieve on their own. For example: students are asked to label the four stages of an insect’s life. It would be very difficult for children to recognize the “pupa” stage, think of the word “pupa,” remember that the letters p-u-p-a spell “pupa,” and then get their pencil to actually write p-u-p-a without transforming a “p” to a “b” or a “q” in the process!

With the dotted letters, students are provided with the correct letters in the correct order, and as they trace them, they are helping to memorize how to form the letters correctly in the future. Be sure to talk with your children as they trace to help them read the word and recognize it as something you’ve been talking about—not just tracing.

## A Few Other Helpful Hints

1. Write or color first, then cut out. Small pieces of paper are hard to work with, even if your children have fully developed fine motor skills. Eliminate some frustration for your children (and mess for you!) by cutting out pieces last.
2. Assist with cutting! Always be sure to help your children with scissors. Safety scissors with the rounded tips are best (especially for younger children), but they can still cause damage to items you’d rather not cut, or even to children themselves. Cut with care as a pair! **Also:** a few of the pieces may be small or require a little fancier scissor-work. We recommend that an adult cut out these pieces (to save frustrating your children), or share the cutting project—give your children some to do (larger, more basic pieces) while you work on the harder ones.

3. Resist the temptation to do it all! No matter how prepared you’d like to be for a day of teaching, don’t think that you need to cut things out ahead of time. Your children will love to help! Not only will they achieve a sense of accomplishment when they have finished, but they are also learning a valuable life skill while developing their fine motor skills.

## A Practical Suggestion

As you work through the experiments, please remember that many variables like weather conditions, specific ingredients, etc. can alter the outcome of an experiment, so the results may not be “bigger than life”. The reality, we’ve found, is often less exciting. Often what you should be looking for is a very small change. The experiments suggested in your books are basic ideas. Try them; improve them! If you figure something out that works better than the instructions in your book, please tell us! Some experiments work every time, some may take several tries. Even the most famous scientists have had to try the same (or similar) experiments over and over. If an experiment does not work the first time, please try again.

## Corrections and Suggestions

Since we at Sonlight Curriculum are constantly working to improve our product development, we would love it if we could get you to help us with this process.

Whenever you find an error anywhere in one of our Instructor’s Guides, please check our updates page for the latest information at [www.sonlight.com/curriculum\\_updates](http://www.sonlight.com/curriculum_updates). Report new information by sending a short e-mail to: [IGcorrections@sonlight.com](mailto:IGcorrections@sonlight.com). It would be helpful if the subject line of your email indicated where the problem is. For instance, “Science A schedule pages” or “Introduction to World History, Part 1 Study Guide.”

If, while going through our curriculum, you think of any way we could improve our product, please e-mail your suggestions to: [IGsuggestions@sonlight.com](mailto:IGsuggestions@sonlight.com). If you know of a different book we should use, if you think we should read a book we assign at a different point in the year, or if you have any other ideas, please let us know.

## Summary

We hope that you enjoy your adventure this year and that it helps you learn more about the world we live in. If we can be of any assistance, please do not hesitate to e-mail us at [main@sonlight.com](mailto:main@sonlight.com), call us at (303) 730-6292, or better yet, join our Sonlight Connections Community ([sonlight.com/connections](http://sonlight.com/connections)), where you can chat with others who are going through this same program. You can ask questions, learn new ideas, share with others what you have learned, problem-solve, or just talk. Happy exploring! ■

## Science K—Sonlight Science Kit Supplies

KSK (Science Supplies Kit) Item	Week(s) Used
aluminum foil	#29, 30, 31
balloon, 5"	#18, 30
balloon, 9"	#3
bamboo skewers	#10, 32
binder clip, large	#32
bouncy ball	#32, 33
bubble wrap	#30
cardstock	#4
ceramic tile	#31
clay (3 colors)	#2, 13, 23, 28
clothes pins	#32
color-changing pigment	#6
construction paper	#10, 17
cork	#18
corrugated plastic tubing, 12 inches	#5
cotton balls	#10, 15, 18
cups, plastic	#17
cups, styrofoam	#30
eyedropper	#9, 14
felt	#31
flower seeds	#27
foam beads	#32
force meter	#35
glitter	#18
glue dots	#5, 32
googly eyes	#5
honey stick	#14
masking tape	#30, 32, 34, 36

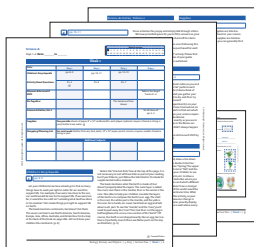
KSK (Science Supplies Kit) Item	Week(s) Used
orange cheese puffs	#15
packing peanuts	#30
paper clip, large	#4
paper clips, small	#10, 32
paper fasteners	#32
paper packet-K	used throughout
peat pots	#27
ping pong ball	#33, 34
pinto beans	#17
pipe cleaners	#1, 2
plastic canvas	#10, 24
plastic tubing, 3 feet	#36
popsicle sticks	#1, 6
potting soil	#27
push pins	#22
pvc pipe	#36
ribbon	#22
rubber bands	#32
sand	#1, 17
small straws	#30
sticker sheet - K	#15, 16, 20
straw, straight	#1
sugar cubes	#23
sun-sensitive paper	#10
thermometer	#21, 27
toothpicks	#23, 30
velcro, hook and loop tape	#18
yeast	#3

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## Quick Start Guide—Science

The Sonlight Instructor’s Guide (IG) is designed to make your educational experience as easy as possible. We have carefully organized the materials to help you and your children get the most out of the subjects covered. Subjects are interwoven to avoid redundancy and to get the most out of your day.

This IG includes an entire 36-week schedule, notes, assignments, readings, and other educational activities. Sonlight’s unique literature based approach to education promotes an enjoyable learning experience that will keep your children asking for “just one more chapter, please.” What helpful features can you expect from the IG?

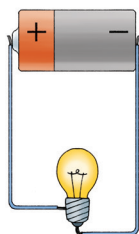
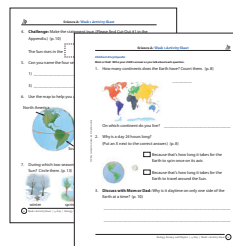


### Easy to use

Schedule pages are laid out so a quick glance will tell you exactly what to do each day. Check off each assignment as you go to create instant records. Notes for each book follow directly behind the schedule page.

### Activity Sheets

Engage your students with easy-to-follow Activity Sheets to express their growing knowledge as they explore and discover. Same-view answer keys make it easy to check your student’s work.



### Science Experiments

Truly explore with hands-on science experiments. Sonlight Science Supply kits contain the hard-to-find materials to complete science experiments.

### Notes

When relevant, you’ll find notes about specific books to help you know why we’ve selected a particular resource and what we hope children will learn from reading it. Keep an eye on these notes to also provide you with insights on more difficult concepts or content (look for “Note to Mom or Dad”).

Day 10

Disaster Relief

Discuss the various weather-related disasters that have occurred in your area in recent memory. Have there been tornadoes? Hurricanes? Floods? Drought? Talk with your children about how people are affected by these disasters. Also discuss what ways—if any—are available to avoid or lessen the effects of such disasters. Finally, brainstorm ideas of how your family might be able to help people affected by recent weather-related disasters (or ones yet to come). Could you donate money or supplies needed by



### Instructor’s Guide Resources and New User Information

Don’t forget to familiarize yourself with some of the great helps you get when purchasing a guide from Sonlight. In the **My Downloads** section of your Sonlight Account, you will find New User Information, extra schedule pages, field trip planning sheets and so much more. An overview of topics covered is located in **Section Three** of the guide.

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## **Section Two**

Schedule, Notes, and Activity Sheets



## Level K: Science

Days 1–4: Date: \_\_\_\_\_ to \_\_\_\_\_

Week Overview																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

### Week 1

Date:	Day 1	Day 2	Day 3	Day 4
<b>Ants</b>	pp. 3–5	pp. 6–7	pp. 8–9	
<b>Activity Sheet Questions</b>	#1–3	#4–5	#6–8	
<b>Discover &amp; Do Science: Kindergarten Experiments</b>				Experiment #1 Why Do Ants Build Tunnels?
<b>Do Together</b>	Exoskeleton			
<b>Supplies</b>	<b>Kindergarten Supplies Kit:</b> 1 ¼ cup sand, a pipe cleaner, a straw, a popsicle stick. <b>You Provide:</b> flat surface (like a cutting board or cookie sheet), plastic wrap, 2 books, a pencil, ¾ cup flour (or cornstarch), ¼ cup cooking oil (vegetable, canola, olive, etc.).			
<b>Shopping/Planning List</b>	<b>For next week:</b> scissors, ruler (optional).			
<b>Additional Subjects:</b>				

### Ants

Day 1  
pp. 3–5

Why do you think ants work together in large groups? By working together, ants can accomplish more than working alone. Plus, they are able to *specialize*. This means that different ants have different jobs. This allows them to get good at their job. We have specialized jobs now, too. For example, some people are farmers and grow large crops for others to eat. Some people are firefighters and help keep members of their community safe. Some people are teachers who help educate children, and others are doctors and nurses who keep the members of the community healthy. Learning one type of job has made individuals much better at doing the job they know how to do, and has allowed us to become more wealthy than at other points in history where people had to try to do everything on their own.

The book mentions that ants use feelers to *smell* things. That certainly sounds strange. But we smell when tiny bits of something in the air bump into sensors in our nose. For ants, those sensors are on their feelers.

Day 2  
pp. 6–7

#### To Discuss After You Read

Q: Do you remember the word for when things “all have different jobs to do”?

A: *specialization*

Do you have any siblings? If not, do you know a friend who does? Can you imagine having *thousands* of brothers and sisters? The book mentions that a queen ant can lay thousands of eggs in one day. To get a sense of how many a thousand is, see if you can get \$10 in pennies. Now try naming them all!

Insects are different from us, but they do things like sunbathing and opening windows.

Find pictures of houses from around the world either in books or on the Web. What materials do people use to build them? Can you find any examples of houses built underground?

### Discover & Do: Kindergarten Experiments

#### Experiment #1: Why Do Ants Build Tunnels?

**Note:** Before you begin this week's experiment, you can make the kinetic sand following the recipe in the **Appendix**, or make it with your children during the experiment.

## Do Together

### Exoskeleton

Your skeleton is made up of all your bones and is found inside your body. These bones give your body its shape and make it sturdy. Many bugs have a skeleton on the outside. This is called an exoskeleton. Ex is part of a word that means “out”, like Exit. Bug “bones” are on the outside of their bodies!

#### Activity

You don't have an exoskeleton. But you probably put on gear to protect your skin, organs, and bones. What you'll need:

- protective gear you own

What do you wear as an exoskeleton? Find as many items of protective wear as you can and put them on. When you're dressed, talk about how each thing you're wearing helps keep you safe and what part of your body it protects.

#### Bonus

A full suit of armor that knights wore is like a complete exoskeleton. Make your own exoskeleton out of cardboard. ■



**Ants**

Mom or Dad: Write your child's answer as you talk about each question.

1. Ants are a type of: (p. 3)

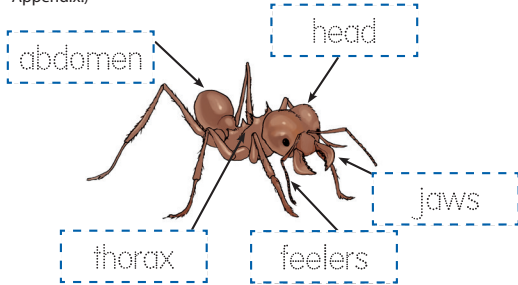


...who live and work:

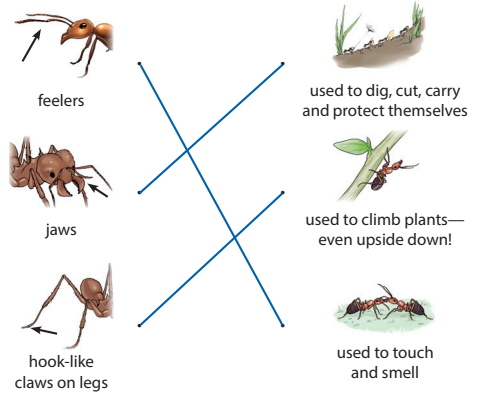
together in a group.

alone.

2. Label the parts of an ant (pp. 4–5). (Please find Cut-Out #1 in the Appendix.)



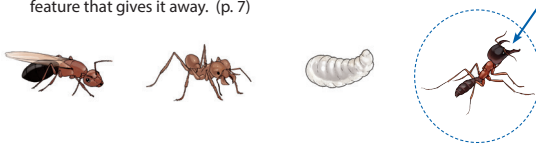
3. Why is an ant's body amazing? Match. (p. 5)



4. Ants in a colony have different jobs to do. Place the pictures to show who completes each job (pp. 6–7). (Please find Cut-Out #2.)

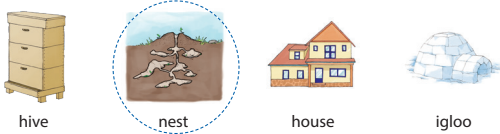


5. Which ant is the soldier ant? How can you tell? Draw an arrow to the feature that gives it away. (p. 7)



*(It has huge jaws to attack its enemies—and to chop up large pieces of food.)*

6. In which type of home do ants live? (p. 8)



7. How do wood ants keep their homes the right temperature? (p. 8)

To warm it up: (Ants warm their bodies in the sun and then go inside)

To cool it down: (Ants dig holes in the mound to let in cool air.)



8. Which materials do ants use to build homes? Circle them. (pp. 8–9)

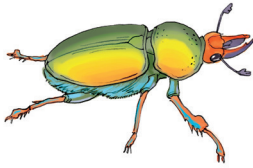




**Ants**

**Mom or Dad: Write your child's answer as you talk about each question.**

1. Ants are a type of: (p. 3)



insect



reptile



mammal



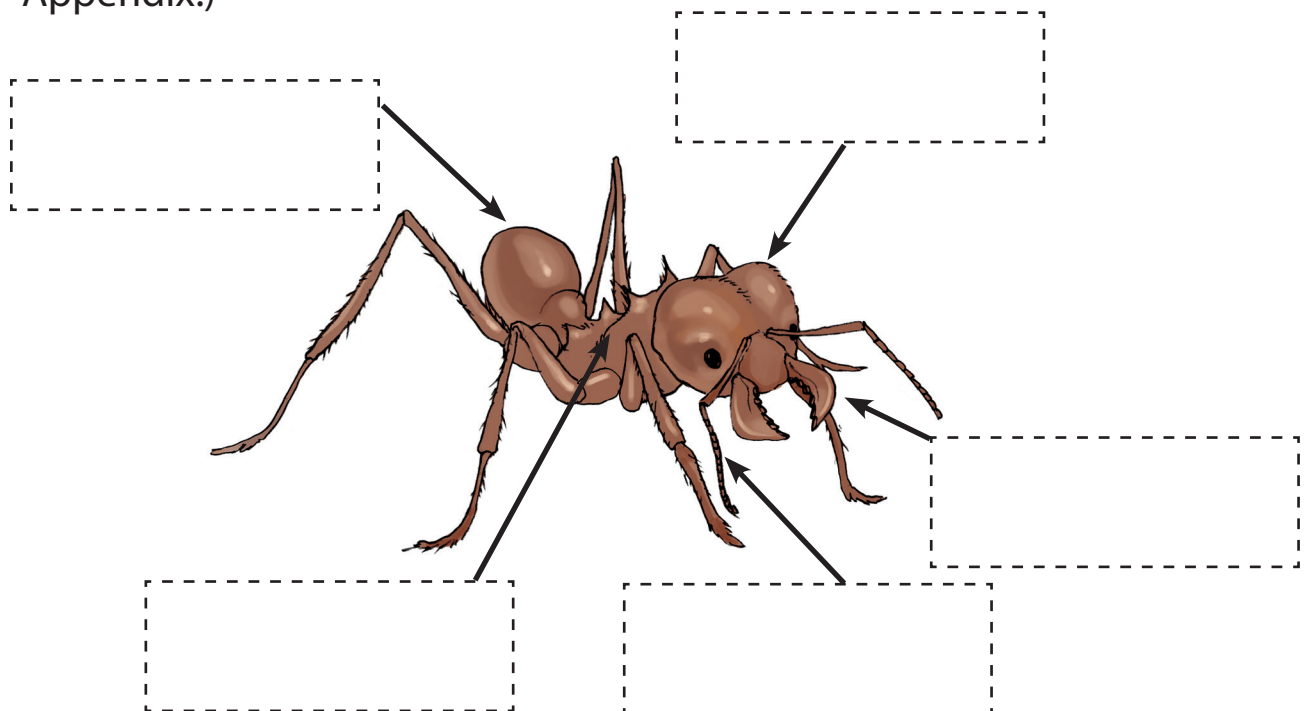
bird

...who live and work:

together in a group.

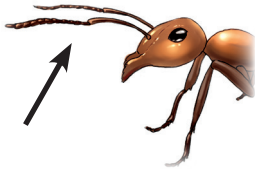
alone.

2. Label the parts of an ant (pp. 4–5). (Please find Cut-Out #1 in the Appendix.)





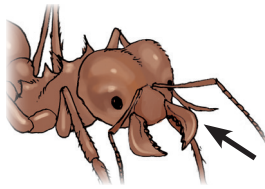
3. Why is an ant's body amazing? Match. (p. 5)



feelers



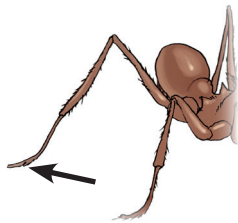
used to dig, cut, carry and protect themselves



jaws



used to climb plants— even upside down!



hook-like claws on legs



used to touch and smell

4. Ants in a colony have different jobs to do. Place the pictures to show who completes each job (pp. 6–7). (Please find Cut-Out #2.)



take care of other ants and brings food



mother of the colony who lays eggs



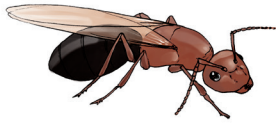
fighters off attackers

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5. Which ant is the soldier ant? How can you tell? Draw an arrow to the feature that gives it away. (p. 7)




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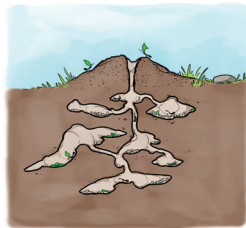


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6. In which type of home do ants live? (p. 8)



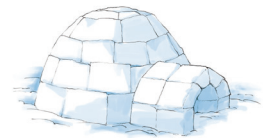
hive



nest

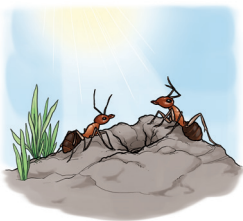


house



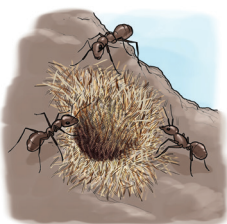
igloo

7. How do wood ants keep their homes the right temperature? (p. 8)



To warm it up: \_\_\_\_\_

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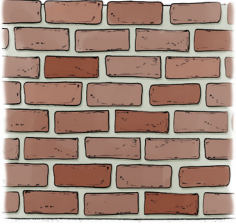


To cool it down: \_\_\_\_\_

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8. Which materials do ants use to build homes? Circle them. (pp. 8–9)



**bricks**



**wood**



**leaves**



**silk**

# Level K: Science

Days 5–8: Date: \_\_\_\_\_ to \_\_\_\_\_

Week Overview																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

## Week 2

Date:	Day 5	Day 6	Day 7	Day 8
<b>Ants</b>	pp. 10–13	pp. 14–15	pp. 16–17	
<b>Activity Sheet Questions</b>	#1–3	#4	#5–6	
<b>Discover &amp; Do Science: Kindergarten Experiments</b>				Experiment #2 How Do Ants Walk?
<b>Do Together</b>		Growing Up		
<b>Supplies</b>	<b>Kindergarten Supplies Kit:</b> clay (enough to make three quarter-sized pieces), 2 pipe cleaners. <b>You Provide:</b> scissors that can cut pipe cleaners, ruler (optional).			
<b>Shopping/Planning List</b>	<b>For next week:</b> 1 cup of warm water, 1 tsp sugar, a small clear plastic bottle with a narrow mouth.			
<b>Additional Subjects:</b>				

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### Ants

Day  
5

pp. 10–13

The natural world is very violent. It can be distressing to imagine defending yourself or being hurt by attackers. Now may be a good time to introduce personal safety and remind your students that God watches over them (Psalm 127:5-8).

Some people eat ants, too. Insects can actually be a great food source, we just don't tend to think about it. But remember: It's not wise to eat bugs or anything else that hasn't been properly cooked.

Day  
6

pp. 14–15

You are probably already familiar with the idea that caterpillars spin cocoons so they can turn into butterflies, but many ants do too! What stages of development have you gone through? (e.g. growing inside your mommy, baby, toddler, and now in school!)

There are special names for different stages in development. It's not important to memorize these now, but it's fun to introduce the words.

**For ants**

Egg → Larvae → Pupae → Nantitic → Ant

**For people**

Zygote → Embryo → Fetus → Baby → Toddler → Children → Teen → Adult

Reproduction can be an uncomfortable topic. Approach it from the standpoint that everything—plants and animals—reproduce. If pressed with specific questions, technical definitions with the proper medical terms is often the best approach. If you have not started practicing yet, you may want to start getting comfortable with terms like *reproductive organ*, *ovary*, *eggs*, and more.

A queen ant’s wings are designed to be removed, but she often has to pull them off herself so they don’t get in her way as she starts her life laying eggs. Her body will use the energy from her wing muscles to help her get her new colony started.

**Do Together**

While not every type of ant takes the same amount of time to grow up, they grow up much faster than we do as humans. Most ants will take 6 to 10 weeks to grow up into an adult. Humans will take 18 to 35 years.

**Activity**

Spend some time today talking about how much your children have grown since they were born. What you’ll need:

- Your children’s baby photos or photo album (if you have them)
- Their old clothes or toys (if you have them)
- Their height chart (if you are doing this)
- Anything that shows growth in your students

Some questions to consider when you talk about each stage of life together with your students. These can be answered by both the parent and the student in as much detail as the students can remember.

- What were you like at this age?
- What were your favorite activities to do?
- What were your favorite moments at this stage of life?

**Bonus**

Parents, find pictures of yourself when you were the same age as your children and answer the same questions for yourself. Compare how you were similar or different from your kids as best as you know. ■

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Science K: **Week 2 Activity Sheet**

**Ants**

- Describe some of the clever ways ants stay safe. (pp. 10–11)
  - (Use wide heads to keep attackers out of nest)
  - (spray smelly liquid)
  - (sting)
  - (explode and cover attacker in glue)
- Why do ants work so hard to stay safe? (pp. 12–13)
  - (Because many creatures eat ants for food)
- Which animals eat ants? (pp. 12–13)
 

bears

fish

anteater

antlion

Ecosystems, Meteorology, Physics, and Engineering Design | Week 2 Activity Sheet 5

Science K: **Week 2 Activity Sheet**

- Place the pictures in order to show how an ant grows to an adult (p. 14). (Please find Cut-Out #3).
 

1) Larvae hatch out of eggs. Adult ants care for them and feed them.
   
 2) Larvae spin cocoons out of silk around themselves and their bodies change inside.
   
 3) About three weeks later, adult ants break out of the cocoons.
- Why do some ants have wings? (p. 16)
 

They watch for enemies from the air.

They fly away to start a new colony.
- How do some ants start a new colony? Use the pictures in the book to help you explain. (p. 16)
 

(1. A male and female ant fly away and mate. 2. The new queen’s wings fall off and she finds a place to lay eggs. 3. Her eggs grow into workers in a new colony.)

Week 2 Activity Sheet | Ecosystems, Meteorology, Physics, and Engineering Design 6



**Ants**

1. Describe some of the clever ways ants stay safe. (pp. 10–11)



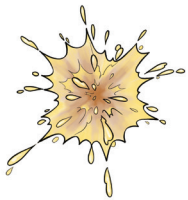
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\_\_\_\_\_

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2. Why do ants work so hard to stay safe? (pp. 12–13)



\_\_\_\_\_

\_\_\_\_\_

3. Which animals eat ants? (pp. 12–13)



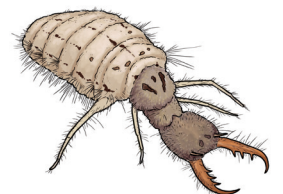
bears



fish



anteater



antlion





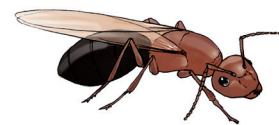
4. Place the pictures in order to show how an ant grows to an adult (p. 14).  
(Please find Cut-Out #3).

	1) Larvae hatch out of eggs. Adult ants care for them and feed them.
	2) Larvae spin cocoons out of silk around themselves and their bodies change inside.
	3) About three weeks later, adult ants break out of the cocoons.

5. Why do some ants have wings? (p. 16)

They watch for enemies from the air.

They fly away to start a new colony.



6. How do some ants start a new colony? Use the pictures in the book to help you explain. (p. 16)

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**Level K: Science**

Days 9–12: Date: \_\_\_\_\_ to \_\_\_\_\_

Week Overview																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

**Week 3**

Date:	Day 9	Day 10	Day 11	Day 12
<b>Ants</b>	pp. 18–19	pp. 20–21	pp. 22–23	
<b>Activity Sheet Questions</b>	#1–2	#3–4	#5–6	
<b>Discover &amp; Do Science: Kindergarten Experiments</b>				Experiment #3 Why Do Leafcutter Ants Need Leaves?
<b>Do Together</b>	Finding Food			
<b>Supplies</b>	<b>Kindergarten Supplies Kit:</b> a package of yeast, a balloon. <b>You Provide:</b> 1 cup of warm (not hot) water, 1 tsp sugar, a small clear plastic bottle with a narrow mouth.			
<b>Shopping/Planning List</b>	<b>For next week:</b> a pencil, scissors, medium-sized tub or bowl of water, wider dish or container of water, fork.			
<b>Additional Subjects:</b>				

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**Ants**

Day 9 pp. 18–19

Do you like to eat different kinds of food, or do you prefer to eat the same thing every day? Like ants, some people eat centipedes, have you? What kinds of seeds have you eaten?

Day 10 pp. 20–21

You will do more with fungus in your experiments. But some people take fungus with them, just like a queen ant. People use a piece of dough from their sourdough bread starter—a fungus—with every new batch.

Day 11 pp. 22–23

Sometimes things seem strange until we take a moment and think about it. Drinking honeydew from a bug sounds really weird, right? But what do you think honey is? You will learn more about honey when you study bees, but people take care of bees just like ants care for aphids (and for the same reason)!

**Do Together**

Day 9 Finding Food

Ants have some interesting abilities that help them get to a food source once it has been found. The ants that find the food are able to let off a smell that then marks out a trail for the other ants back at the colony to find their way to the food. That allows them to collect all the food as a team in as quick a way as possible.

**Activity**


Today, as a way for your kids to get to a meal or snack, create a specific trail that they can follow in much the same way as ants leave a scent. What you'll need:

- Yarn, String, Stickers, Sticky Notes or something else you can use to make a trail

It is easy to use food as the end goal of following the trail you make for your children, but small rewards of some kind will work as well. Have your children wait in a bedroom or playroom that is reasonably far from the goal. Use your chosen means to mark your trail as you walk from the reward to where your children are. Do not necessarily take


the quickest path or walk by the reward as you are making your trail. Go through different rooms and around furniture. When you reach your children explain that you are going to find the reward as the ants find their food. Assist them in staying on the path that you created. If you are using sticky notes you may also choose to have a different number or letter on each note as a way to review counting or the alphabet. ■

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Science K: **Week 3 Activity Sheet** 

**Ants**


1. Put the pictures in order to show how ants find food (pp. 18–19). (Please find Cut-Out #4.)



An ant finds food and leaves a scent trail back to the nest.



Other ants follow the smell to find food.



Ants use their strong jaws to carry food back to the nest.

2. **Challenge:** Why could it be a problem if you see even just one ant in the kitchen? (pp. 18–19)


*(If the one ant finds food and leaves a scent trail back to the colony, the entire colony might come to raid the kitchen!)*

3. Why do leaf cutter ants need fungus? (pp. 20–21)


They eat it for food.

They feed bites of the fungus to their larvae.

They build their nests with it.



Ecosystems, Meteorology, Physics, and Engineering Design | Week 3 Activity Sheet 7

Science K: **Week 3 Activity Sheet** 

4. Why are leaf cutter ants like farmers? (pp. 20–21)

*(Ants take care of the fungus by keeping it clean and healthy and by pushing chewed up leaves into it to help it grow.)*

5. How do aphids help ants? Finish the sentence (pp. 22–23). (Please find Cut-Out #5)

aphids make a sugary liquid called honeydew that ants like to eat.

6. Why do ants protect aphids? (p. 23)

*(So ants can collect honeydew all the time.)*

Ecosystems, Meteorology, Physics, and Engineering Design 8



**Ants**

- Put the pictures in order to show how ants find food (pp. 18–19).  
(Please find Cut-Out #4.)

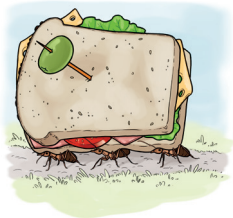


An ant finds food and leaves a scent trail back to the nest.

Other ants follow the smell to find food.

Ants use their strong jaws to carry food back to the nest.

- Challenge:** Why could it be a problem if you see even just one ant in the kitchen? (pp. 18–19)




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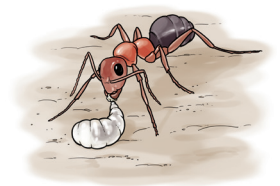
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- Why do leaf cutter ants need fungus? (pp. 20–21)

- They eat it for food.
- They feed bites of the fungus to their larvae.
- They build their nests with it.





4. Why are leaf cutter ants like farmers? (pp. 20–21)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



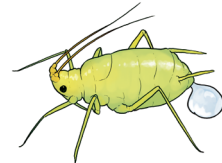
5. How do aphids help ants? Finish the sentence (pp. 22–23).

(Please find Cut-Out #5)

that \_\_\_\_\_ make a sugary liquid called \_\_\_\_\_  
\_\_\_\_\_ like to eat.

6. Why do ants protect aphids? (p. 23)

\_\_\_\_\_  
\_\_\_\_\_



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## Appendix 1: Science K—Weekly Subject List

Week	Subject
1	insects/parts of an ant/specialization of jobs/building nests/insect homes/exoskeleton
2	safety and protection/stages of development/starting a colony/ancestors
3	finding food/food sources/growing fungus/leaf cutter ants/aphids
4	ant species/amazing abilities/the five senses/body temperature
5	reptiles/warm-blooded/cold-blooded/body temperature/ reptile homes/adapting
6	shedding skin (molting)/reptile movement
7	hunting for food/ prey/venom/communication of chameleons/bacteria/dental health
8	protection from attacks/eggs and babies/reptile abilities
9	rainforests/humidity/canopy/predators/camouflage/roots
10	layers of the rainforest/herbivores/carnivores/night vision
11	survival/smelly plants/shape and usage of beaks/Amazon River
12	rainforest products/extinction/engineering/conservation/chocolate/endangered species
13	bees and wasps/body parts/ jobs and types of bees in a colony
14	worker bees/building nests/laying eggs/hatching/stages of growth
15	finding food/pollen/nectar/seeds/protection and defense/elevator mechanics
16	bee communication/honey makers/hives/nests/swarms
17	seeds/spores/pollination/sprouting/parts of flowers
18	traveling of seeds/germination/seed growth
19	necessities for plants to make food/weather/finding seeds
20	types of clouds/fog/snowflakes/working or therapy dogs
21	lightning/thunder/hail/wind/measuring temperature
22	tornadoes/weather prediction, tools and scientists/migration/animal responses to weather
23	weather and environmental conditions/cloud types/air layers/hurricanes
24	naming hurricanes/traits of hurricanes/wind curve/Coriolis effect/recycling/whales
25	facts about the sun/classification/photosynthesis/chlorophyll/water cycle/symbiotic relationships
26	gravity/force/water vapor/mass/weight/energy/nuclear fusion
27	uses of the sun/stars/telescopes/planting seeds for trees/mammals
28	defining science/states of matter/properties of materials
29	mixtures/reversible and irreversible changes/rainbows/water cycle
30	light/reflection/color/electricity/static electricity/simple circuits/conductors/insulators
31	magnetic materials/poles/attracting/repelling/living things
32	forces/movement/friction/gravity/effects of Earth's gravity
33	wind and water resistance/laws of motion/friction
34	simple machines/pulleys/gears/wheels and axles/wedges/levers/screws/slope
35	heat energy/convection/conduction/radiation/sound waves/light/shadows
36	human body/functions of systems and organs/scientists



## Appendix 2: List of Additional Items You Will Need

While some supplies can be found in the *Discover & Do Science: Kindergarten Supplies Kit*, other items can be found around your house or at a grocery store. Below is a list of items not found in the *Kindergarten Supplies Kit* that you may want to start collecting early, as they may take some time to collect. Throughout the experiments, you will also need: pencils, markers, pens, crayons, blank paper, water, ice, bowls, dishes, cutlery, scissors, and kitchen appliances.

Item	Experiment Used
2-liter soda bottles (2)	#10, 27
20 small items of two different colors, 10 of each for "nectar beads" (ex. dried beans, popcorn kernels, pony beads, small building blocks, etc.)	#15
aluminum foil	#29
baking chocolate	#12
baking cup liners	#25, 26
baking sheet / cutting board	#1, 24
boxes, blocks, books, plastic toy bricks, or other items	#1, 23, 31, 32, 33, 34
building materials (cardboard, cloth, plastic containers, and other various items from the recycle bin)	#26, 30
cardboard	#5, 32, 34
cardboard box	#17
chocolate chips	#12
clear adhesive tape	#10
cooking oil (vegetable, canola, olive, etc.)	#1, 6, 12
cream of tartar	#6
cupcake tin	#25
dark backdrop	#20
eggs (4)	#8, 12, 28
fabric square, handkerchief (about 9x9 in), or sock	#35
flour	#1, 6, 12
food coloring	#8, 14, 23, 36
fruit with seeds	#18
glass jar with lid	#20
glue	#7, 10
hairdryer	#22, 23
hairspray or a match	#20
hand towels, old (2)	#5, 24
honey	#14
iron (optional)	#24
jump rope or 10 feet of nylon rope/cord	#35
leaf from a plant	#11
magnifying glass (optional)	#24
medium jug with handle (about 1-2 liters is best)	#35
milk	#12
napkins or paper towels	#31
oatmeal or cooked hot cereal	#21
paper from recycling bin	#24

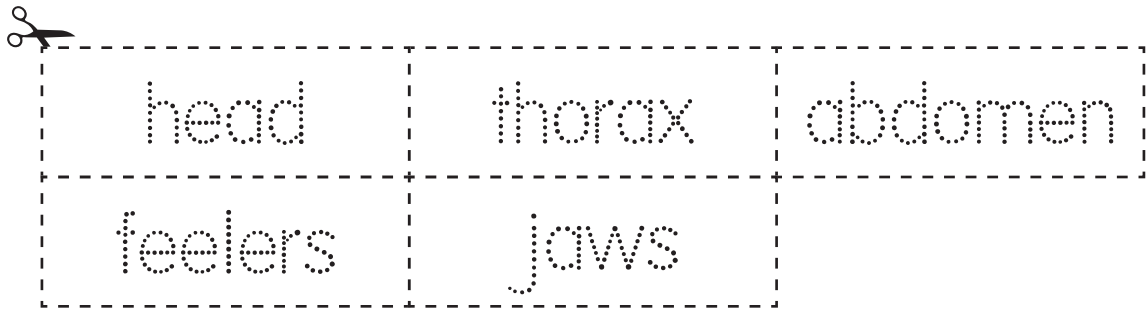
(cont'd)

<b>Item</b>	<b>Experiment Used</b>
paper plate	#20, 34
pebbles	#11, 23, 27
pennies (50)	#11, 29, 30, 35
pie tin	#23
plastic water bottles, empty lightweight (2)	#3, 21
plastic wrap	#1
portable timer (could be on cell phone)	#10, 15
ruler	#2, 13, 32, 34
salt	#6, 28
small funnel	#18
small mirror	#16
small plastic box with removable lid	#35
small toy or toy person	#25, 31
small zip-top plastic bags	#6
sock	#18
spray bottle	#27, 31
sticky notes (optional)	#25, 26
string (12 inches)	#35
styrofoam egg tray	#14, 27
sugar	#3, 12, 14
unsweetened cocoa powder	#12
vanilla extract	#12
various melting items	#25, 26
vinegar	#8
wooden spoon	#20

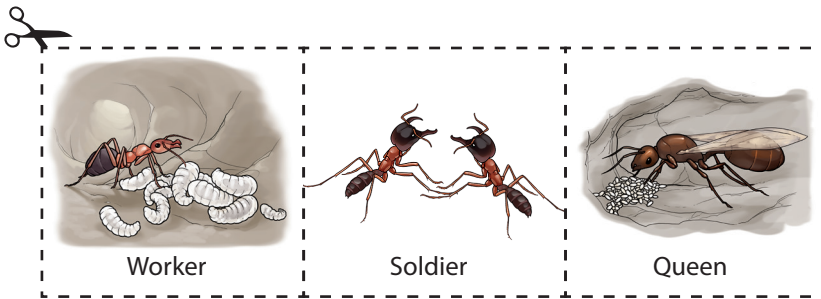
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## Appendix 3: Cut-Out Sheets

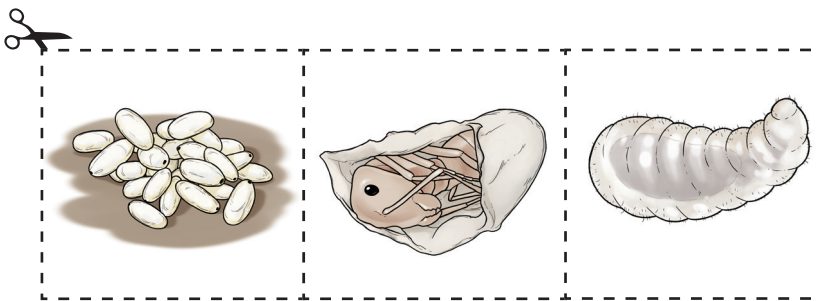
### Cut-Out #1



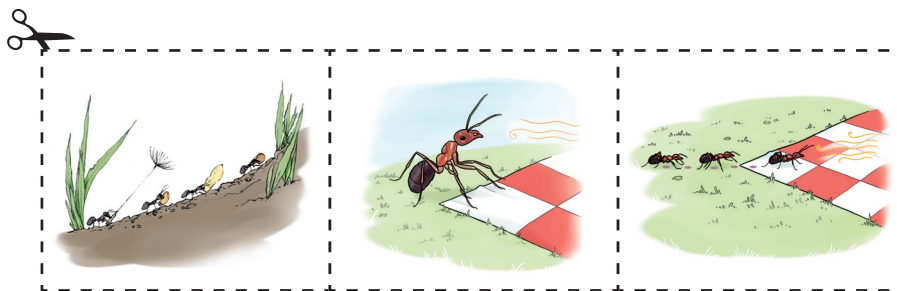
### Cut-Out #2



### Cut-Out #3



### Cut-Out #4



### Cut-Out #5





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