Instructor's Guide Quick Start

The BookShark™ 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 students get the most out of the subjects covered. If you need help reading your schedule, see "How to Use the Schedule" in **Section Four**.

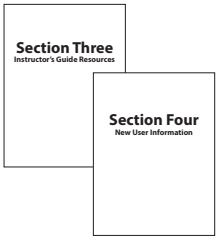
This IG includes a 36-week schedule, notes, assignments, readings, and other educational activities. For specific organizational tips, topics and skills addressed, and other suggestions for the parent/teacher, see **Section Three**. Here are some helpful features that you can expect from your IG.

Easy to use
Everything you need is located right after the schedule each week. If a note appears about a concept in a book, it's easy to find it right after the schedule based on the day the relevant reading is scheduled.

4-Day Schedule
Designed to save one day a week for music lessons, sports, field trips, co-ops, or other extra-curricular activities.

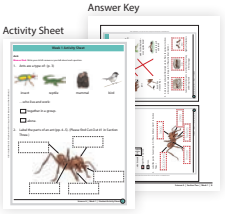
Notes
When relevant, you'll find notes about specific books to help you know why we've selected a particular resource and what we hope your children will learn from reading it. Keep an eye on these notes to also provide you with insights on more difficult concepts or content. **Notes** in pink indicate information a parent or teacher should read before beginning the lesson.

Note: What are the two kinds of poisonous lizards? The book only lists one – the Gila monster (*Heloderma suspectum*) native to the southwestern United States. The other kind is known as a beaded lizard (*Heloderma horridum*) and is found in Mexico and Guatemala. [p. 35]



Instructor's Guide Resources and **New User Information**
Don't forget to familiarize yourself with some of the great helps in **Section Three** and **Section Four** so you'll know what's there and can turn to it when needed.

Activity Sheets and **Answer Keys**
Activity Sheets follow each week's notes and are customized for each lesson to emphasize important points in fun ways. They are designed with different skills and interests in mind. You may want to file them in a separate binder for your student's use. Corresponding Answer Keys have been included within your weekly Notes.



How to Use the Schedule

More notes with important information about specific books.

The N symbol provides you with a heads-up about difficult content. We tell you what to expect and often suggest how to talk about it with your kids.

4-Day Schedule:

This entire schedule is for a 4-Day program. Designed to save one day a week for music lessons, sports, field trips, co-ops and other activities.

Find the **Activity Sheets** for students directly after the Notes. Students should complete only the questions assigned.

We schedule **optional assignments** to be used if desired.

Find all the supplies needed for <u>this</u> week as well as the supplies needed for <u>next</u> week here.

Additional space for writing extra assignments, activities, or notes.

Science A
Week 1 Schedule

Date:	Day 1	Day 2	Day 3	Day 4
The Usborne Children's Encyclopedia	pp. 8–9	pp. 10–11	pp. 12–13	
***Discover & Do Level K* DVD**				"Before You Begin" Tracks #1–3
Science Activities, Vol. 2				"Air All Around" pp. 2–3
Activity Sheet Questions	#1–2 N	#3–4	#5–7	
Optional: Do Together			The Seasons at Your House	
Supplies	**You provide:** sheets of paper, 8" x 10" cardboard for each player (optional: crayons, thread or string or yarn) bottle, bowl, water. N			
Shopping/Planning List	**For next week:** feather from any bird, plate, 10" x 10" paper, pencil, scissors, crayons, needle, thread or string or yarn.			

Other Notes

N Special Note to Mom or Dad

Biology, Botany, and Physics | Section Two | Week 1 | 1

Science D
Week 1 Schedule

Date:	Day 1	Day 2	Day 3	Day 4	Day 5
Did You Know? Science	pp. 6–9	pp. 10–13	pp. 14–17		
Activity Sheet Questions	#1–4 N	#5–8	#9–16		
Optional: Do Together	List It!	Sort It!			
BookShark™ Science D Experiments Book				#1 How Are Life Cycles Similar for All Organisms?	
Supplies	**We Provide (3SK):** yarn (3 ft), masking tape **Paper Packet:** How are Life Cycles Similar for All Organisms? Experiment Sheet, Organism Life Cycle Pictures **You Provide:** scissors, glue stick N				
Shopping/Planning List	**For Next Week:** scissors, a camera				

Other Notes

N Special Note to Instructors

Notes
Week 1

Day 1

Did You Know? Science | pp. 6–9

For the first part of the year, your students will study biology. The term "biology" comes from two Greek words: bio- means 'life' and -ology means 'study.' So, biology is the study of life. But biology does not just study things that are alive now; it also studies anything that ever was alive, including dinosaurs and other extinct animals and plants. Many different fields of study fall under the umbrella of biology, like zoology, ecology, and botany, and cover specific subjects like reproduction, cell division, and heredity. Because so much of our incredible world is alive, biology also has many sub-sciences where other science disciplines mix with biology. For example, biochemistry is the study of what chemicals make up living things. Biophysics focuses on understanding and solving biological problems with physics. [pp. 6–7]

Activity Sheet Questions | #1–4

Note: Find each week's Activity Sheets immediately after the notes and have your students 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.

Your students do not have to do every question on the Activity Sheet. Feel free to adjust and/or omit activities to meet the needs of your students. We cover the same concepts repeatedly throughout the year (and years to come!) to enable students to learn "naturally" through repetition and practice over time.

Any question marked **Challenge** or **Critical Thinking** will be just that—a challenge for your students or a chance for them to think beyond the page. While we believe the material covered in the challenge questions is worthwhile for your students to know, it may not be specifically explained in their reading assignment. As always, if you think any question is too difficult for your students, please feel free to skip it.

Remember: This program is designed for you to use to meet your students' needs. It is not meant to use you!

Suggestion: Your Activity Sheets might work more easily in a small binder for your students to keep and use as assigned. If you have more than one student using this program, extra Activity Sheets can be purchased for each student (Item # 3SB1).

Optional: Do Together | List It!

We have provided a variety of activities in the Optional: Do Together section to interest and challenge your students. Feel free to let your students do those activities that they enjoy and simply talk through others.

The book states that there are approximately 8.7 million different living things on Earth! How many can your students name? Today, allow your students to compose (or dictate to you) a list of as many living things as they can think of. Feel free to set a 3-5 minute time limit on this activity. You will use this list tomorrow!

Supplies

Note: When supplies are listed as **"We Provide:"** they are materials found in your Science D Supplies Kit **(3SK).** Items listed as **"Paper Packet:"** are included in the Extra Science D Experiments Paper Packet **(DSKP)**. When supplies are listed as **"You Provide:"** they are materials you can generally find around your home.

Shipping Restrictions

Due to strict import regulations, it is illegal to ship biological matter to certain countries (including New Zealand and Australia). If you requested your science supplies shipped to a country with such restrictions, we may have removed that kit from your order and reduced your charge accordingly.

Day 2

Did You Know? Science | pp. 10–13

The tardigrade is a fascinating organism that is often called a "water bear," although that term doesn't do it justice. This resilient microorganism has been found in the deep ocean, ponds and lakes, and even hot springs! It can survive boiling water to frozen water and everything in between. It withstands radiation, incredible amounts of pressure found in the deepest ocean trenches, and even the vacuum of space! [p. 11]

Activity Sheet Questions | #5–8

Optional: Do Together | Sort It!

Today, your students learned that all animals can be categorized into one of six groups. Review the list of living things that your students came up with yesterday and determine together which ones are animals. Circle all of the living things that are animals, eliminating plants and fungi. Then, work together to create a chart listing the six groups across the top (amphibians, fish, mammals, reptiles, birds, and invertebrates). Go through the list of the animals you and your students circled and categorize each one into its proper group. Can your students add any other animals?

Day 3

Did You Know? Science | pp. 14–17

While most bacteria do not make us sick, it is not fun when they do. Bacteria make people sick in several different ways. They can multiply and crowd out healthy tissue, release toxins that damage healthy tissue, and can cause the immune system to ramp up its defenses. Fever, aches, and/or rashes are possible signs that our immune system is fighting an infection and may not actually be symptoms of the infection itself. [pp. 14–15]

Activity Sheet Questions | #9–16

Day 4

BookShark™ Science D Experiments Book | #1 How Are Life Cycles Similar for All Organisms? ■

Week 1 Activity Sheet

Did You Know? Science

1. Why do we study science? (p. 6)

   Science helps us *(answer questions)*

   and understand *(how and why things work)*

2. Draw a line to match the scientific areas of study to the topics each studies. (pp. 6–7)

Physics

Biology

Chemistry

living things

materials, and what things are made from

movement and forces, like gravity, light, electricity, magnets, waves, and more

3. Someone who studies physics will learn about which of the following? (Draw an X to show your answer.) (p. 6)

X energy	_____ cells	X sound	X magnets
_____ atoms	_____ rocks	X light	_____ fossils

4. All things are made from: (p. 7)

water **atoms** **wood** **metal**

5. What basic things do you need to survive? (pp. 10–11)

(water)

(food)

(light)

(air)

(shelter)

Week 1 Activity Sheet

6. In what two ways does the sun help us survive? (p. 11)

(provides heat) *(provides light)*

7. For each animal, write the name of the group to which it belongs on the line. (pp. 12–13)

mammal	reptile	amphibian	bird	fish	invertebrate

duck

(bird)

spider

(invertebrate)

frog

(amphibian)

shark

(fish)

alligator

(reptile)

koala

(mammal)

8. Are all living things considered animals? (p. 13) **Yes** **No**

Explain: *(Plants and fungi are living things, but they are not animals)*

Week 1 Activity Sheet

9. Bacteria are made of one cell, and can be one of three different shapes. Label each shape below. (p. 14)

(rod-shaped)

(circular)

(spiral)

10. Check all that apply: Microorganisms are… (p. 14)

- [x] living things scientists can see with a microscope
- [ ] big
- [x] bacteria
- [x] viruses and some fungi

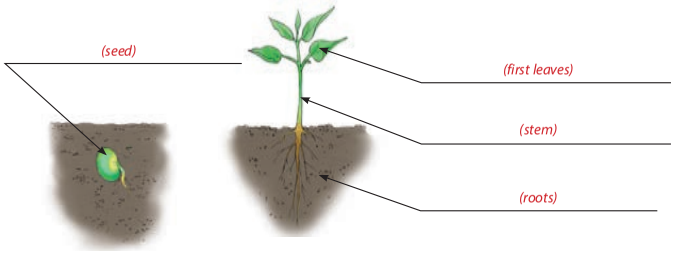
11. True or False: All bacteria are bad. (p. 14) **True** **False**

12. Why are new plants able to grow from seeds? (p.16)

(Seeds are little packets that contain everything a plant needs to start growing in the right conditions)

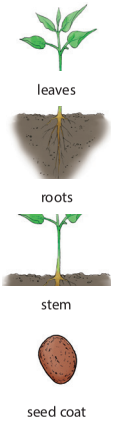
13. Label the parts of the seedling. (pp. 16–17)

first leaves	**roots**
seed	**stem**



Week 1 Activity Sheet

14. Draw lines to show how each plant feature helps the plant. (pp. 16–17)



Help anchor the plant. Supplies the plant with water and nutrients from the soil.

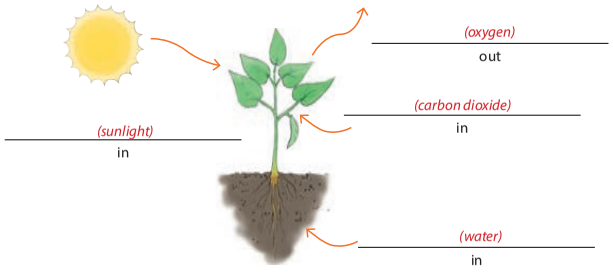
Protects the seed until it's ready to start growing.

Contain chlorophyll that absorbs energy from the sun. The energy helps the plant make food.

Brings water from the ground to the rest of the plant.

15. Label the plant to show how photosynthesis occurs. (pp. 16–17)

water	**oxygen**	**sunlight**	**carbon dioxide**



Why is photosynthesis important? *(It's how the plant makes glucose which it uses for energy to grow.)*

Week 1 Activity Sheet

16. It is a sunny but windy summer day, and you're playing in your yard. The flowers are swaying back and forth near your house. Several days later, you notice new flowers growing in the back edge of your yard, where flowers have never grown before. How could this have happened? (p. 17)

(The wind might have carried the seeds to another place in the yard where they were able to start growing.)

Week 1 Activity Sheet

Did You Know? Science

1. Why do we study science? (p. 6)

   Science helps us _____

   and understand _____

2. Draw a line to match the scientific areas of study to the topics each studies. (pp. 6–7)

Physics

Biology

Chemistry

- living things
- materials, and what things are made from
- movement and forces, like gravity, light, electricity, magnets, waves, and more

3. Someone who studies physics will learn about which of the following? (Draw an X to show your answer.) (p. 6)

_____ energy	_____ cells	_____ sound	_____ magnets
_____ atoms	_____ rocks	_____ light	_____ fossils

4. All things are made from: (p. 7)

water	**atoms**	**wood**	**metal**

5. What basic things do you need to survive? (pp. 10–11)

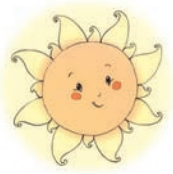
_____ _____

_____ _____

_____

Week 1 Activity Sheet

6. In what two ways does the sun help us survive? (p. 11)



_____ _____

7. For each animal, write the name of the group to which it belongs on the line. (pp. 12–13)

mammal	reptile	amphibian	bird	fish	invertebrate

duck

spider

_____ _____

frog

shark

_____ _____

alligator

koala

_____ _____

8. Are all living things considered animals? (p. 13) **Yes** **No**

Explain: _____

_____

Week 1 Activity Sheet

9. Bacteria are made of one cell, and can be one of three different shapes. Label each shape below. (p. 14)



_____ _____ _____

10. Check all that apply: Microorganisms are… (p. 14)

☐ living things scientists can see with a microscope
☐ bacteria
☐ big
☐ viruses and some fungi

11. True or False: All bacteria are bad. (p. 14) **True** **False**

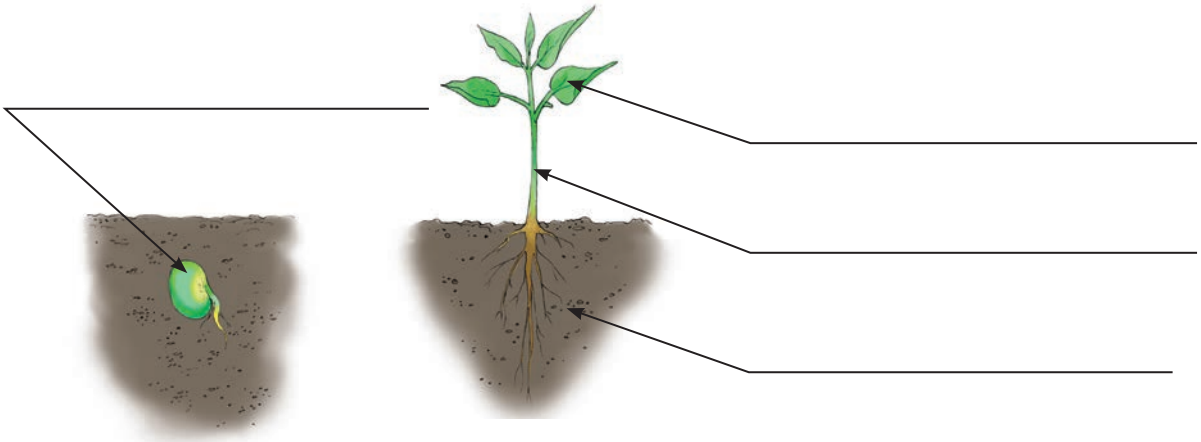
12. Why are new plants able to grow from seeds? (p.16)

_____

_____

13. Label the parts of the seedling. (pp. 16–17)

first leaves	**roots**
seed	**stem**



Week 1 Activity Sheet

14. Draw lines to show how each plant feature helps the plant. (pp. 16–17)

leaves

roots

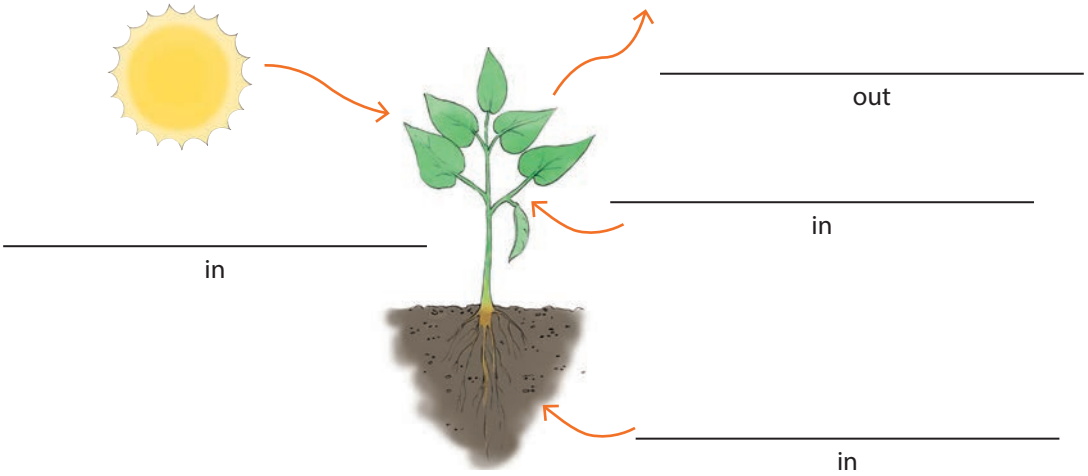
stem

seed coat

- Help anchor the plant. Supplies the plant with water and nutrients from the soil.
- Protects the seed until it's ready to start growing.
- Contain chlorophyll that absorbs energy from the sun. The energy helps the plant make food.
- Brings water from the ground to the rest of the plant.

15. Label the plant to show how photosynthesis occurs. (pp. 16–17)

water	oxygen	sunlight	carbon dioxide



Why is photosynthesis important? _____

_____

Week 1 Activity Sheet

16. It is a sunny but windy summer day, and you're playing in your yard. The flowers are swaying back and forth near your house. Several days later, you notice new flowers growing in the back edge of your yard, where flowers have never grown before. How could this have happened? (p. 17)

_____

_____

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Science D
Week 2 Schedule

Date:	Day 1	Day 2	Day 3	Day 4	Day 5
Did You Know? Science	pp. 18–21	pp. 22–25	pp. 26–29		
Activity Sheet Questions	#1–5	#6–10	#11–13		
Optional: Do Together	Velcro Hunt				
BookShark™ Science D Experiments Book				#2 Why Do Organisms Reproduce?	
Supplies	**We Provide (3SK):** None provided. **Paper Packet:** Why Do Organisms Reproduce? Life Cycle Stage Cards **You Provide:** scissors, a camera				
Shopping/Planning List	**For Next Week:** Nothing required.				

Other Notes

Special Note to Instructors

Notes
Week 2

Day 1

Did You Know? Science | pp. 18–21

Today, your students learned about some of nature's sticky things. Most of us are familiar with burrs, which are the plant seeds that cling to our socks and shoes after a walk outside. Do your students remember seeing these burrs? Were they sharp or did they have more of a fuzzy feeling? Several different plants produce burrs as seeds and they can feel quite differently.

Limpets cling to rocks found on ocean coastlines. Their foot muscle anchors them in rough seas, and keeps them from drying out in low tides. They eat plants (and some animals) that grow on the rocks they attach themselves to, but wait to move around the rock until it's under water. When they finish feeding, they return to the same "home" spot on the rock that perfectly fits their body. [p. 18]

Activity Sheet Questions | #1–5

Optional: Do Together | Velcro Hunt

Your students learned today about a man-made material called Velcro® that actually works a lot like, and was inspired by, burrs! The enlarged photo of Velcro® on page 19 shows just how this useful material works. Encourage your students to brainstorm ways in which Velcro® might be useful. Go on a hunt around the house for Velcro® on everyday items. Maybe you have some clothing with Velcro®. Other uses may include cord wraps, shoes, bags/totes, for attaching things to walls, umbrella tie straps, etc. If you have a magnifying glass, take a close look at the straps, hooks, and loops. In what ways can this Velcro-type structure be useful for seed dispersion? What sorts of animals might burrs stick to the best? Why?

Day 2

Did You Know? Science | pp. 22–25

Activity Sheet Questions | #6–10

Day 3

Did You Know? Science | pp. 26–29

Activity Sheet Questions | #11–13

Day 4

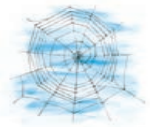
BookShark™ Science D Experiments Book | #2 Why Do Organisms Reproduce? ■

Week 2 Activity Sheet

Did You Know? Science

1. Why are things in nature sticky? (p. 18)

(to help seeds travel; to attach to rocks—or stay in one place; to catch food)



2. List four ways things in nature are able to stick. Use the example pictures to help you. (pp. 18–19)

burrs — *(hooks)*

sundew plant — *(sticky hairs)*

octopus — *(suckers)*

limpets — *(sticky fluid)*

3. Limpets live on rocks along the seashore so they can eat plants and animals that grow on the rocks. They make a sticky fluid and have a strong muscular foot. How do these features help them live where they do? (p. 19)

(The fluid and strong foot helps them stay attached to the rock so they don't wash away in the waves.)

4. Organize the characteristics of insects and spiders into the appropriate column. (pp. 20-21)

3 body segments **2 body segments** **8 legs** **most adults have wings**
called arachnids **6 legs** **related to scorpions**

Insects	Spiders
(3 body segments; 6 legs; most adults have wings)	*(2 body segments; 8 legs; called arachnids; related to scorpions)*

Week 2 Activity Sheet

5. Draw an X to show which ways spiders use silk. (p. 21)

- [x] to make a case for eggs
- [ ] to make clothing
- [x] to make a web to catch and store food
- [ ] to fight off enemies

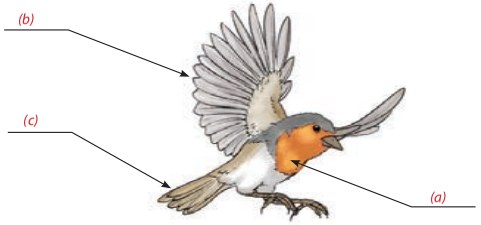
6. Which of the following statements are benefits of feathers? Circle all true statements. (p. 22)

Keeps warm **Allows flight** **Shows off** **Scares enemies**
Rescues friends **Finds food** **Blends and hides** **Helps swim**

7. Draw a line to match each type of feather to its description. (pp. 22–23)

a. body feathers	are slightly different shapes and lengths; make the wing a good shape for flying
b. flight feathers	soft, fluffy; keep the bird warm
a. tail feathers	help the bird steer and balance, and slow down to land

Use the letters for each type of feather above to label the feathers on the bird.



Week 2 Activity Sheet

8. What characteristics do mammals have in common? (p. 25)

- [x] have fur
- [ ] are awake at night
- [x] females make milk to feed babies
- [x] are warm-blooded
- [ ] have sharp teeth
- [ ] have eyes on the front of their heads

9. How does a cheetah's spotted fur and sharp teeth help it to survive? (pp. 24–25)

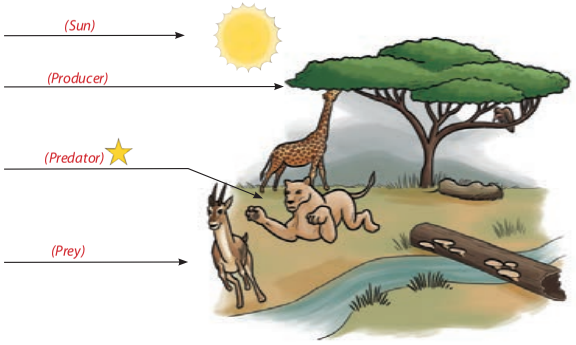
(Their sharp teeth help it to eat the meat of their prey and their spotted fur helps them hide while hunting.)

Why are they well-suited to live on grasslands? *(the sandy color and spotted pattern of their fur blends into the brown grass)*

10. What is "seasonal fur" and how does it help some animals? (p. 25)

(Fur that changes color with the seasons; it allows animals to be camouflaged throughout the year.)

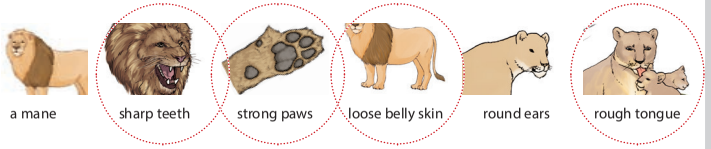
11. Label the parts of the food chain. Place a star next to the top of the food chain. (p. 26)



Producer
Sun
Predator
Prey

Week 2 Activity Sheet

12. What body features make lions good at hunting animals like zebras, antelope and buffalo? (p. 27)



13. Describe each stage in the life cycle of a butterfly to Mom or Dad. (Lines are provided for dictation.) (pp. 28–29)

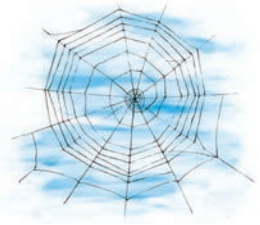
(Possible: Butterflies lay eggs that stick on leaves. Caterpillars hatch from the eggs and eat the leaf the egg was stuck to and more leaves from the same plant. Caterpillars eat to grow bigger. When the caterpillar has finished growing, it attaches itself to a branch and wraps itself in a cocoon [or chrysalis]. When the butterfly breaks free from the cocoon, its wings are soft and damp. They must strech and dry out before the butterfly can fly away. A butterfly eats nectar and lays eggs.)

This process of transformation is called *(metamorphosis)*. Another animal whose body changes completely trough this process is a: *(frog)*.

Week 2 Activity Sheet

Did You Know? Science

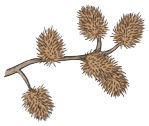
1. Why are things in nature sticky? (p. 18)



_____

_____

2. List four ways things in nature are able to stick. Use the example pictures to help you. (pp. 18–19)



burrs

_____

sundew plant

_____

octopus

_____

limpets

_____

3. Limpets live on rocks along the seashore so they can eat plants and animals that grow on the rocks. They make a sticky fluid and have a strong muscular foot. How do these features help them live where they do? (p. 19)

_____

_____

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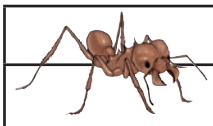
3 body segments	**2 body segments**	**8 legs**	**most adults have wings**
called arachnids	**6 legs**	**related to scorpions**	

Insects	Spiders
	

Week 2 Activity Sheet

5. Draw an X to show which ways spiders use silk. (p. 21)

_____ to make a case for eggs

_____ to make clothing

_____ to make a web to catch and store food

_____ to fight off enemies

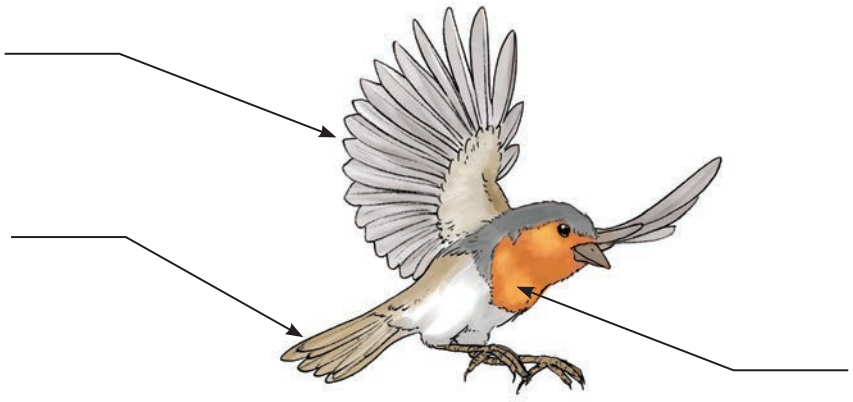
6. Which of the following statements are benefits of feathers? Circle all true statements. (p. 22)

Keeps warm	**Allows flight**	**Shows off**	**Scares enemies**
Rescues friends	**Finds food**	**Blends and hides**	**Helps swim**

7. Draw a line to match each type of feather to its description. (pp. 22–23)

a. body feathers •	• are slightly different shapes and lengths; make the wing a good shape for flying
b. flight feathers •	• soft, fluffy; keep the bird warm
a. tail feathers •	• help the bird steer and balance, and slow down to land

Use the letters for each type of feather above to label the feathers on the bird.



Week 2 Activity Sheet

8. What characteristics do mammals have in common? (p. 25)

- ☐ have fur
- ☐ are awake at night
- ☐ females make milk to feed babies
- ☐ are warm-blooded
- ☐ have sharp teeth
- ☐ have eyes on the front of their heads

9. How does a cheetah's spotted fur and sharp teeth help it to survive? (pp. 24–25)

_____

_____

Why are they well-suited to live on grasslands? _____

_____

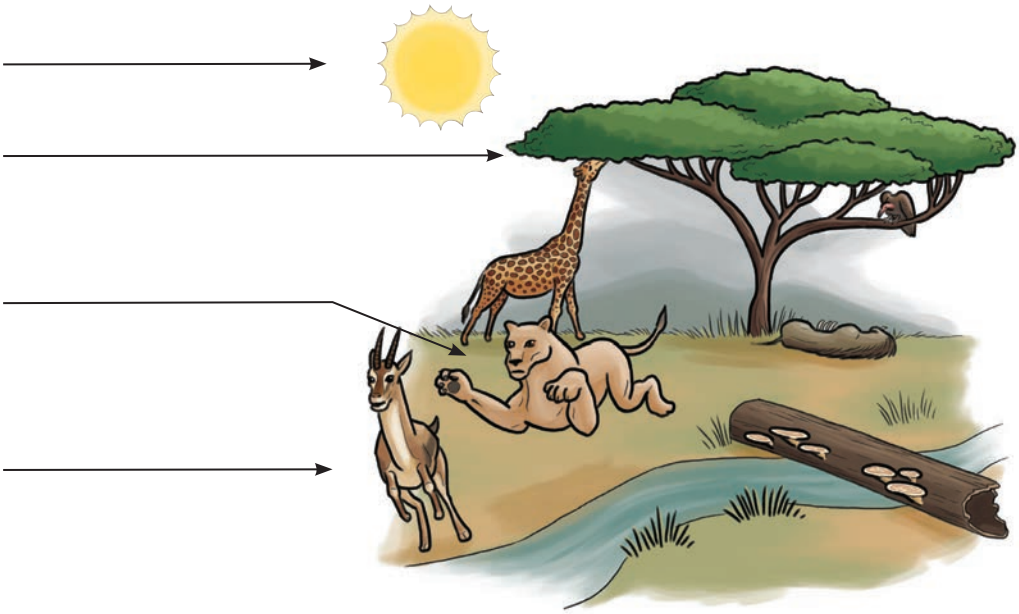
10. What is "seasonal fur" and how does it help some animals? (p. 25)

_____

_____

_____

11. Label the parts of the food chain. Place a star next to the top of the food chain. (p. 26)



Producer

Sun

Predator

Prey

Week 2 Activity Sheet

12. What body features make lions good at hunting animals like zebras, antelope and buffalo? (p. 27)


a mane


sharp teeth

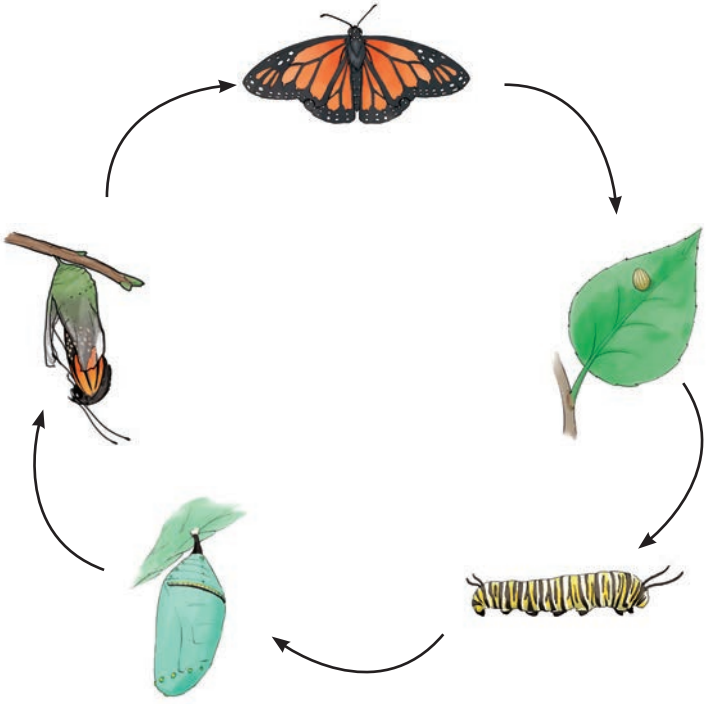

strong paws


loose belly skin


round ears


rough tongue

13. Describe each stage in the life cycle of a butterfly to Mom or Dad. (Lines are provided for dictation.) (pp. 28–29)



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This process of transformation is called _____. Another animal whose body changes completely trough this process is a: _____.

Science D
Week 3 Schedule

Date:	Day 1	Day 2	Day 3	Day 4	Day 5
Did You Know? Science	pp. 30–33				
Fossils Tell of Long Ago		Whole Book			
Bringing Back the Wolves			pp. 4–7		
Activity Sheet Questions	#1–5	#6–9	#10–15		
Optional: Do Together	Flesh It Out				
BookShark™ Science D Experiments Book				#3 How Do Fossils Teach Us About the Past?	
Supplies	**We Provide (3SK):** None provided. **Paper Packet:** How Do Fossils Teach Us About the Past? Experiment Sheet **You Provide:** Nothing required.				
Shopping/Planning List	**For Next Week:** 3 different scented, clear liquids/oils (white vinegar, liquid hand soap, hand sanitizer, a perfume, essential oil, cooking extracts, etc.), 3 zip-top plastic bags, a sheet of paper, permanent marker, green, blue, and red markers, stopwatch, plastic wrap, an empty bag, optional: blindfold, optional: 3 small bowls, cups, or open containers				

Other Notes

Special Note to Instructors

Notes
Week 3

Day 1

Did You Know? Science | pp. 30–33

Activity Sheet Questions | #1–5

Optional: Do Together | Flesh it Out

A fun activity to do after reading these pages about dinosaur fossils is to "flesh out" the fossil! Archaeologists often work with artists to recreate what the animal may have looked like when it was alive. Grab a sheet of printer paper (or tracing paper) and place it over the dinosaur fossil picture in the book (you may have to turn your paper a bit to cover the fossil). Have your students use a pencil to outline where the flesh and muscle that surrounded the skeleton may have been. Then move the paper to a table and ask your students to add some details such as scaly skin, feathers, color, and texture. What kind of dinosaur do they think this may have been?

Day 2

Fossils Tell of Long Ago | Whole Book

Archaeologists are often finding new species of dinosaurs and other organisms. Just when we think the largest dinosaur or strangest sea creature has been identified, scientists unearth a massive sauropod which is a 6-foot-long ancient sea-worm! Do an internet search for "fossils" in the News section of your search engine and see what the latest findings are. Be sure to monitor your students whenever searching the internet.

Activity Sheet Questions | #6–9

Day 3

Bringing Back the Wolves | pp. 4–7

Do you and your students think that the government intervention in the 1800s was a good idea? Should governments remove predators from land so that people can inhabit that land, or have the responsibility to increase the numbers of a certain species?

A modern-day example of government-sponsored bounty on predators comes from South Dakota. The state awards money to individuals who kill coyotes and other "nest predators." The purpose of this bounty is to increase the population of pheasants and ducks in the area so that people have enough fowl to hunt. [p. 6]

Activity Sheet Questions | #10–15

Day 4

BookShark™ Science D Experiments Book | #3 How Do Fossils Teach Us About the Past? ■

Week 3 Activity Sheet

Did You Know? Science

1. Write letter(s) on the line to explain why each adaptation makes a polar bear well-suited for life in the arctic. Some lines will use more than one letter. (pp. 30–31)

- ___(c, h)___ hollow hairs and black skin
- ___(f)___ clear eyelid
- ___(b, e)___ huge paws
- ___(d, g)___ fur
- ___(a)___ fat

Draw a star next to each feature that helps a polar bear stay warm in the cold arctic.

a) up to 4 inches of this lies under the skin to help keep the polar bear warm in cold weather
b) act like snowshoes to keep the polar bear on top of the snow
c) sunlight can travel through the hair
d) a thick, short layer traps air to keep the polar bear warm
e) slightly webbed toes help the polar bear swim
f) helps the polar bear see underwater or during a snowstorm
g) longer pieces stick together to be waterproof when wet
h) this absorbs sunlight to help keep the polar bear warm

2. **Critical Thinking:** Far inland, scientists discover fossilized sand-ripple marks like those found on a seashore. What could they determine about what the local environment was like in that area thousands of years ago? (p. 32)

(Sand-ripple marks are caused by water—the area probably had a large body of water in it in the past)

3. How do paleontologists learn more about dinosaurs when they study coprolite? (p. 33)

(By studying dinosaur poop, they can learn what dinosaurs ate—and what other plants or animals lived nearby.)

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Week 3 Activity Sheet

4. Match the pictures to the descriptions of how fossils form. (p. 33)

1. The rock lifts and is worn away over time and paleontologists discover the fossils.
2. An animal dies and is quickly buried by sand, ash or mud.
3. Layers of earth, sand and mud pile up to squish the animal's body. Minerals replace the hard parts, like bones.

5. Circle the items that can be found as fossils. (pp. 32–33)

Mammal Bones	**Animal Poop**	**Rusted Cars**	**Footprints**
Plants	**Shells**	**Chairs**	**Insects**
Skateboards	**Ripples in Sand**	**Dinosaur Bones**	**Horns**

Fossils Tell of Long Ago

6. What could scientists learn about how ancient mammoth lived when they found a frozen mammoth in the arctic? (pp. 18–19)

(They learned that mammoths once lived in the area, that they ate grass—that grass once grew in the area, that it looked somewhat like an elephant, etc.)

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Week 3 Activity Sheet

7. Circle the types of materials in which fossils are found. (pp. 8–27)

cakes	peat, which hardens into coal	amber	play-doh
sandstone	marble (polished limestone)	stone	frozen in the ground

8. Explain what we learn when we find fossils in each of the following places. (pp. 22–25)

If we find fossils of jungle plants and animals in an area that is now desert?	*(The area must have had more rainfall in the past and was once a jungle)*
If we find fossils of sea creatures where we now have mountains?	*(The land must have once been underwater)*
If we find fossils of tropical plants in cold lands?	*(Temperatures here must have once been warmer)*

9. What can we learn from fossils of strange creatures? (p. 25)

(We know what kinds of animals used to roam the earth that have all died out.)

Bringing Back the Wolves

10. A place where different living things interact with one another and their environment is called an: (p. 5)

habitat | forest | back yard | ecosystem

Week 3 Activity Sheet

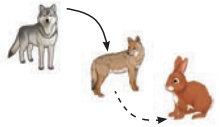
11. How might an ecosystem change if all the rabbits went missing? (p. 5)

(Possible: grasses might grow taller; animals that eat rabbits would have less food and may start eating other animals, like squirrels, so there may be fewer squirrels, or the predators may be less healthy, etc.

12. What are **apex predators**? Why did the U.S. government offer a bounty for hunters to hunt apex predators in the late 1800s? (p. 6)

(Apex or top predators aren't eaten by any other predator. The U.S. government wanted to encourage farming in the West so they paid hunters to hunt animals that would kill cattle and livestock.)

13. How do keystone species impact other species in an ecosystem? (p. 6)



(Keystone species can affect another species directly, such as eating it, or indirectly, like a chain reaction that happens through other species.)

14. Circle the correct answer. When a keystone species goes missing in an ecosystem, the chain reaction of change that takes place is called a _____. (p. 6)

Tragedy | Catastrophe | Trophic Cascade | Missing Link

15. Look at the chart on page 7 in your book. Trace a sequence of arrows that starts with "wolves" to show how many other species wolves affect. Record the animal names in the sequence you chose below. (You may not need all of the boxes.) (p. 7) *(Answers will vary, use the forward-pointing arrows on page 7 to check your student's work.)*

Wolves	*Possible: (bison)*	*(woody plants)*
	(bears)	*(berries)*

Week 3 Activity Sheet

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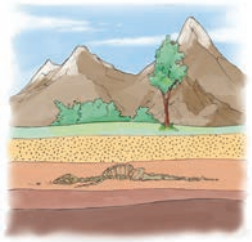
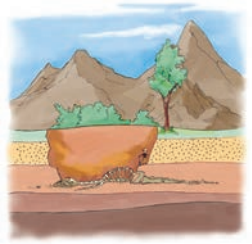
2. 

3. 

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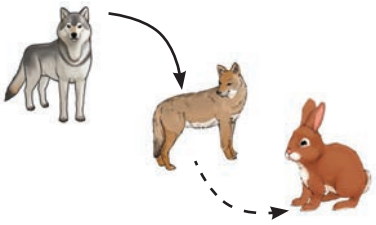

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