Quick Start Guide

Science Instructor's Guide: Levels K-6

Get to Know Your Instructor's Guide

Your Instructor's Guide (IG) gives you the structure and flexibility to teach your children with confidence.

In your Science IG, you'll find detailed Notes that explain how to conduct experiments and discuss the concepts they address. The supply lists on the Schedule pages help you plan ahead for experiments. We also include a handy chart that shows which subjects you'll study and when, so you can plan field trips or other extracurricular opportunities.

Before you dive into your new Sonlight materials, familiarize yourself with your IG. Remember that you are in control of your homeschool; the wealth of information in your IG is here to help you. Only you can decide the right pace for your family. Your IG is a tool to make your life easier as you shape your children's education.

🔊 Plan Your Schedule

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Activity	hest Questions				814		
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The weekly schedules help you plan. You can follow them closely, reorganize them, or merely use them as a springboard for your own plans. Please know you DO NOT have to do everything scheduled in your IG. Find a rhythm that

works for you.

Find activity ideas and thoughtprovoking Notes for scheduled assignments directly behind your Schedule pages. Use these Notes to spark discussions with your children.

moves quickly. Because of this unique ability, these lizards	about? What do they not have an interest in? Do they have
have actually gottan the nickname Jesus Roards, referring	any ideas for fun activities they could do that relate to
to Jesus and his miracle of walking on water (Matthew 14.	what they're learning about?
25-31, John 6:16-215. By the way, after about 15 feet of	Make a list of their thoughts and ideas. Then let them
running on water, a basilisk sinks and starts to swim, mak-	pick one to do today. In this way, you will let them know
ing it more of a Pater licerd than a Jusius licerd.	that their opinion is important. Oxideen who feel they
an Mult	have an important, active role in detarmining what they
Mr. Marth	learn about will be more engaged in their studies. Have
What does the book mean when it says, 'Only animals	fun and treasure these times together.
with well-developed wings can By?? Do some animals have poorly developed wings? If so, which animals do the	Day 3: The World Around You
authors of the book have in mind? Oo they think that if	Today, spend some time outside with your children. It's
an ostrich or penguin had "well-developed wings" these	always fun to 'do school' outside. Your children will enjoy
Rightless birds could fly? Maybe they should have just	the change of pace and so will you!
written, 'Not all animals with wings can fly."	As they begin their study of the wonderful world of an
The origins of fight is a pensistent problem for non-	multi, so on a tour around your yard and/or neighborhos
thetatic macromodulization, who not only have to mailain	What another do they sent? Do you have any "hery" and
Right as being the result of an undirected process despite	mais rearby, such as dogs, cats, does, saccoors, squirrels,
its annuant contribute but also must exclain it for the	hadness, etc.? What about leathered blands? Know many
iso sottles high memory's batul and insorts Goen	different types of high car your children west? One's far
all of the further personals for Bole to succeed it seems	out shout the casese counter! I as your children fied an
a shade it the classe that it came advect in from different	secondary of mostly have metting and/or amphibiant?
block of assessib without any cost of bitellinest descriptor	What do not a children entrop should the assess they
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	minute many fird they are say primely first different?
Activity Sheets	Rant Swam? Revit
Your Activity Sheets might work more easily in a small	As you begin this year's science studies together, be o
binder for your children to keep and use as assigned. If	the tackout for ways to reinforce what your children reac
you have more than one child using this program, extra	about. Nearly every day, you will likely run across oppor-
sets of the Activity Sheets may be pumbased for each child	tunities to docuts something your children see in the
Den (171)	'real' world and connect it to something that they've real
	about in their books. When you homeschool your chil-
Ontional: Do Tonother	dren, learning can-and often does-occur any time an
optimizer of regeneric	anywhere. So be prepared and make the most of these
Day 1:Kidt' Choice	moments when they present themselves. You never kno
Each week throughout Science 1, we will provide ideas	on beautions because and halo assessed him on a children'
for fun activities to do with your children. In general, we	strate and the second sec
will try to make the activities actually "active" performing	HERDS.
additional research on a particular topic, playing a game, getting outside, or some other type of "hands on" activity	Discover & Do Level 1 DVD
that seeks to apply what your children have been learning	We produced this fun and educational OVD so you and
in a meaningful way.	your children could eatch "Professor Justin" perform auc
Take our ideas for what they are-more suggestions-	of the assigned experiments from Science Activities, Vol.
and don't feel endeved to them. If your children don't	7. We recommend you gather your supplies, watch the
want to do a particular activity or have a different, better	OVD to see what to do, and then try each of these simple
idea he all means dischours and on with theirs!	exercisem young
Put this attitude into oractice today by actively listening	Or, if you prefer, you can do the experimental on your
biogram a biology the theory and add on their standard and of	case and then work the PEP is one how it haved out o
homenets there most? What do they want to have more	access New state whet he say and state in her and and
and a beautiful and the set of a set of the set	

Organize Your Activity Sheets

In addition to the hands-on experiments scheduled throughout your program, your children can use the included Activity Sheets to interact with the science concepts they're learning. Find a complete answer key for these Activity Sheets after each week's schedule. Some parents

choose to place the Activity Sheets in a separate binder so children may work on them independently when assigned. If you think you might reuse your Science IG in a few years with a younger child, we recommend you purchase an extra set of Activity Sheets when you buy the IG. That way, you'll still have matching Activity Sheets even



after we update the IG you're using.

Start Your Science Journey

Ready? Set? Go! Your Science IG lets you to teach well from the very first day. As you progress, adapt the curriculum to meet your needs. Need to go faster or slower? Need to use more/less than what we offer? Sonlight puts you in control of your homeschool journey and enables you to customize your children's educational experience. Our goal is to make your job easier, help you overcome obstacles, and protect your family's interests. Please contact us if we can help. Visit us at www.sonlight.com/help or call (303) 730-6292.

Subjects in Science Levels K-6

Sonlight's unique and innovative science program will capture your children's imagination and encourage them to discover the wonders of God's world. Intriguing, full-color books and stories will bring science to life. Over the years, Sonlight children will focus on several primary fields of study:

- Biology/Nature: Children explore God's living world through biology, botany, animals and anatomy.
- Technology: Children develop an understanding of machines, inventions and modern technology.
- Physical Sciences: Children conduct experiments and discover truths as they study chemistry and physics.
- Earth and Space: Children chart new territory in oceanography, meteorology, archaeology and astronomy.
- Health and Medicine: Children delve into the world of anatomy, physiology, nutrition and medicine.

Science 3—Weekly Subject List

5-Day

Week Subject

- 1 biology/taxonomy/counting/numbers
- 2 taxonomy/cells/measuring/times
- 3 prokaryotic and animal cells/organelles/mammals/giraffe/platypus/energy
- 4 camouflage/defense/symbiosis/mammal nourishment, rest, and temperature /beaver/heat and temperature
- 5 mammal senses/hunting and prey/birds/bird territories/nests/woodpecker/heat rays/energy and life/food chain/ photosynthesis/animals and food
- 6 birds/eggs/chicken egg/incubator/bird/nests
- 7 frog life cycle/reptiles and amphibians/water
- 8 reptiles and food/animal and reptile defense/gecko/reptile and amphibian communication/saltwater/freshwater
- 9 reptile and amphibian survival and senses/ocean feeding/underwater locomotion/ocean creature defense and survival /chuckwalla lizard/water and plants/plankton/water life
- 10 ocean creature symbiosis/shoals/dolphins/whales/ocean creature breeding/habitats/deep sea life/ponds/lakes/ wetlands/rivers
- 11 seas and oceans/underwater life/food webs/camouflage/coral reefs/symbiosis/poisonous animals/oceans/tides /currents
- 12 sharks/rays/whales/dolphins/deep sea life/migration/Arctic and Southern oceans/walruses/penguins/waves /alternative energy (water/solar/wind/geothermal)
- 13 currents/tides/coasts/seashore life/hurricanes/tsunamis/boats and ships/submarines/shipwrecks/ocean resources floating and sinking
- 14 ocean pollution/overfishing/undersea facts/insects/spiders/bombardier beetle
- 15 insect camouflage and mimicry/insect colonies/bees/metamorphosis/insect homes/unique insect features/ water and erosion/weather
- 16 butterfly life cycle/caterpillars/cocoons/clouds/water cycle
- 17 Rachel Carson/water cycle
- 18 Rachel Carson/human physiology/botany (radishes)
- 19 plant life/animal-eating plants/plant movement/spores/plant defense/botany (radishes)
- 20 plants/parasites/plant communities/plant cells/botany (radishes)
- 21 plant parts/flowers/botany (radishes)/experiment evaluation
- 22 photosynthesis/leaves/botany (corn/beans)
- 23 plants/botany (corn/beans)
- 24 plant growth/seeds/botany (corn/beans)
- 25 plant growth and nutrition/life cycle of flowering plants/botany (corn/beans)
- 26 protists (protozoa)/microscope/botany (corn/beans)/body water/water power
- 27 protists (protozoa)/euglena/paramecia/amoeba/botany (corn/beans)/underground water/caves/water purification
- 28 earth/ecosystems/food cycle/air cycle/water cycle/rural water/water and industry
- 29 physics/movement/forces/friction/gravity/water pollution/flood and drought
- 30 physics/movement/forces/pressure/light and dark/bouncing light/climate change/water conservation
- 31 mirrors and pictures/bending light/eyesight/colored light/water facts and figures/water timeline

- 32 mixing colors (physics)/sound/hearing/simple machines/engines
- 33 musical sounds/sonar/ultrasound/solids, liquids, gases/atoms and molecules/flying machines/spacecraft
- 34 solids, liquids, gases/heating and cooling/boiling and freezing/elements and compounds /weather
- 35 fire/materials/electricity/sound recording/microphones/speakers/radio and television
- 36 types of electricity/magnets and electricity/producing electricity/electromagnetic spectrum/computer technology

1. The **N** symbol means there is a note immediately following the schedule.

2. While *The Usborne Science Encyclopedia* is used in both the 5-and 4-Day schedules, we will label it as 5-Day when it is used on Day 5. Consider it optional if you are following the 4-Day schedule.

Biology, Level 1

p. 3

The book credits Carolus Linneaus as being the founder of taxonomy, but a case can be made for Aristotle (ca. 384–322 B.C.) being the founder of taxonomy. The beginnings of taxonomy, then, resulted from the interests of an ancient philosopher trying to make organizational sense out of life. It may be better to say that Linneaus refined taxonomy, resulting in its modern scientific form, or that he is the founder of "modern" taxonomy.

Activity Sheet Questions

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 year (and years to come!) to enable students to learn "naturally" through repetition and practice over time. Please don't expect your children to write the answers until they gain considerable proficiency at handwriting. We have provided a variety of activities to interest and challenge your children. Feel free to let your children do those activities that he enjoys 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.

Remember: this program is designed for you to use to meet your children's needs. It is not meant to use you!

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 #3TS1).

Occasionally we assign a "cut-out" activity. Please find these separate sheets immediately after week 36. If you like, color the sheets first, then cut them out and attach them to the worksheet.

5-Day: The Usborne Science Encyclopedia

p. 3

The guide to the book notes "simple experiments" on some pages of the text. Feel free to consider these experiments as optional, as you and your children will have plenty of scheduled experimenting to do with other books in this level.

p.4

The book is somewhat speculative about how early people may or may not have viewed counting and numbers. Some of the greatest mathematical thinkers lived in ancient times, so the idea that people of the past didn't have much of a clue regarding math, counting, and numbers is something of a stretch. An astute understanding of certain areas of mathematics was necessary in building ancient structures such as the pyramids of Egypt, for example.

Optional: Do Together

Day 2: Kingdom Poster Board

For a fun time, help your children create a poster board about one of the five Kingdoms. You'll need a piece of poster board, as well as pencils, pens, crayons, colored pencils, scissors, and glue.

Help your children choose one of the five Kingdoms that they would like to learn more about, and then show them how to find more information on the Internet. As they learn new and interesting facts, show them how to make notes about this information. If they find interesting pictures, be sure to print some of them for your children to use on their poster board.

When they have learned a lot about their chosen Kingdom, help them to gather their pictures and facts. Which pictures and facts do they want to highlight on their poster board? Which things would other people most want to know about this Kingdom? Do they have pictures of sample species from within the Kingdom? When your children are finished with their poster board, find a place to hang it so that others can see their work.

Day 4: What's in a Name?

And the LORD God said, "It is not good that man should be alone; I will make him a helper comparable to him." Out of the ground the LORD God formed every beast of the field and every bird of the air, and brought them to Adam to see what he would call them. And whatever Adam called each living creature, that was its name. So Adam gave names to all cattle, to the birds of the air, and to every beast of the field. But for Adam there was not found a helper comparable to him. Genesis 2:18–20 (NKJV)

The process that scientists use today to name new species seems much more complicated than the plan God used with Adam. Ask your children: if they had been Adam, would they have enjoyed naming all the animals? Why or why not?

Today, give them a chance to do just that. That's right! Let them name some animals. Use an encyclopedia or the Internet to find some pictures of animals that your children may not recognize. Pick 5 or 10 animals and then show the pictures to your children. What would they name the animal? Why? When they're done, share with them the real names of the animals. Did they come close on any of them?

If they enjoy this activity, feel free to repeat it with additional animals. Have fun!

evel 1 evel 1 e meanings of the two Greek words that make up the word <i>biology</i> below. (1.1) (<i>life)</i> logos. (<i>description</i>)	94.	Week 1 Activity SI	heets	
e meanings of the two Greek words that make up the word <i>biology</i> below. (1.1) (<i>life)</i> logos: (description)	Write the names of the five	kingdoms scientists use below. (1.3)		
			Crew Crew	
b but rown definition of biology here:(Answers will vary.)	(P)lantae P (P)	rotista A (A)nimalia	M (M)onera F	(F)ungi
	Which characteristic determ	vines the kingdom in which an organis	sm will be placed? Circle y	/our answer. (1.3, p. 4)
e characteristics of living things. (1.1)	where it lives	bone structure	its coloring	cell structure
	Fill in the chart below with th	ne missing information about the diffe	erent kingdoms. (1.3, pp. 5	(-6)
	Kingdom	Sample Creature	Interesti	ing Fact
can smile they reproduce have skin require food	Animalia	(Answers will vary.)	All animals hav	ve animal cells.
	(plantae)	Sycamore tree	All plants have(<i>pla</i>	int) cells.
	Fungi	(Answers will vary.)	Members of this kingdo with plants in the	me were once grouped e Plant Kingdom.
move freely in have legs breathe air eventually die environment	(protista)	Euglenas, Amoebas	Some members in this features, and <i>(animal-like)</i>	group have plant-like others have features.
taxonomy helpful to scientists? (1.2) Because it better shows scientists each animal's particular color.	Monera	Common creature shapes include rods, spheres and spirals.	Most members are	(unicellular) ey only have one cell.
By organizing types of living things, scientists can better study their similarities and differences. By organizing types of living things, scientists better know what to feed them at the zoo.				
Because organizing living things into groups helps scientists share the work of studying them.	Why aren't frogs and cats pa	rt of the same family? (1.4)		
the name of the scientist who founded taxonomy here: (Carolus Linneaus)	Because frogs live o Because frogs live in	n both land and water and cats nurse. I the water and cats live on land.	their young.	

邊 Week 1 Activity Sheets	The Utspone Science Encyclopedia 3-Doy 3-Doy 1- Write your age, your father's age and your grandfather's age in homan and Arabic numerals. (pp. 4-5) Roman numerals: 1 Roman: N Ron	4 Student Activity Sheets + Week 1 + Science 3
Week 1 Activity Sheets	 In the transmitted exert of the test of test of the test of test	Science 3 + Week 1 + Student Activity Sheets 3

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Week 1 Activity Sheets



Biology, Level 1

1. Write the meanings of the two Greek words that make up the word *biology* below. (1.1)

bios:	logos:

Write your own definition of *biology* here: ______

2. Circle the characteristics of living things. (1.1)



3. Why is taxonomy helpful to scientists? (1.2)



Because it better shows scientists each animal's particular color.

By organizing types of living things, scientists can better study their similarities and differences.



By organizing types of living things, scientists better know what to feed them at the zoo.

Because organizing living things into groups helps scientists share the work of studying them.

Write the name of the scientist who founded taxonomy here:

1



- 5. Which characteristic determines the kingdom in which an organism will be placed? Circle your answer. (1.3, p. 4)
 where it lives bone structure its coloring cell structure
- 6. Fill in the chart below with the missing information about the different kingdoms. (1.3, pp. 5–6)

Kingdom	Sample Creature	Interesting Fact
Animalia		All animals have animal cells.
	Sycamore tree	All plants have cells.
Fungi		Members of this kingdome were once grouped with plants in the Plant Kingdom.
	Euglenas, Amoebas	Some members in this group have plant-like features, and others have features.
Monera	Common creature shapes include rods, spheres and spirals.	Most members are, which means they only have one cell.

7. Why aren't frogs and cats part of the same family? (1.4)



Because frogs live on both land and water and cats nurse their young.

Because frogs live in the water and cats live on land.

Week 1 Activity Sheets

8. Match the characteristic descriptions to the animal pair that best define each. Write the letter on the line. (1.4)



- a. has a horny beak / is cold blooded
- b. has a soft body / has a backbone
- c. sharply hooked beak / flightless; live near oceans

9. Use the words in the box to order the classification categories into the funnel below. (1.4–1.5)



4	ß				Wee	ek 1 A	ctivit	y She	ets				
The	e Us	borne Scie	ence End	cyclope	dia								
5-D	ay												
11.	Wri	te your age, y	our fathe	er's age ar	nd your g	randfath	er's age i	n Roman	and Ara	bic numer	als. (pp. 4	-5)	
	Ron	nan numeral	5: I	П	Ш	IV	V	VI	VII	VIII	IX	Х	L
	Ara	bic numerals	: 1	2	3	4	5	6	7	8	9	10	50
	Му	age: Arabi	c:	I	My fathe	er's age:	Arabic: _		_ My g	grandfath	er's age:	Arabic:	
		Roma	in:				Roman:					Roman	:
		Arabic i Arabic s	s shorter in the state of the s	and simpl things so	ler to wri [:] you don'	te. 't have to	add/sub	otract syr	nbols tog	gether to f	igure out	a numb	er.
		Arabic Arabic of	alue for z	ero. ones and	tens and	l hundred	ds.			0 1 2	3 1 5 6	78	1 10 11 12
13.	a.	Challenge!	What doe	s the pref	fix "bi" m	ean?					(p	p. 4–5)	
		How many s	ymbols a	re used ir	n a binary	v system?							
	b.	Computers	use the sy	mbols			and	d b		(pp. 4-	-5)		
	c.	What base s	ystem do	clocks us	ie?					(pp. 4–	5)		

SCIENCE 3		WEEK	2		SCHEDULE
Date:	Day 1 6	Day 2 7	Day 3 8	Day 4 9	Day 5 10
Real Science 4 Kids: Biology Level I	1.6	2.1 🛯	2.2	2.3	
Activity Sheet Questions		#1–2	#3–6	#7–8	
5-Day:The Usborne Science Encyclopedia					pp. 6–9 N
Activity Sheet Questions					#9–16
Optional: Lyrical Life Science 1	chap. 2		l	chap. 11	
Optional: Do Together		3-D Cell Model 🗎		DNA N	
		Other No	otes		

Biology, Level I

p. 11

The "highly ordered arrangement of atoms and molecules" that make up life suggests a designer not a random process. Even secular scientists, by the way, can't help using language to describe life that refers to complex human inventions such as machines and factories requiring ordered information and parts in order to function properly.

5-Day: The Usborne Science Encyclopedia

pp. 6–7

Note that the book uses British spellings such as "metre" (meter) and "litre" (liter). "Cubits" are mentioned throughout the Bible.

The book notes, correctly, that most countries today use the metric system. The United States, however, still uses inches, feet, and yards for much measuring. The exception is in the field of science, where the metric system is dominant.

pp. 8–9

Did you know that clocks were originally used by monks to better schedule their times of worship? It wasn't until later that clocks began to be used for things other than Christian worship. Now clocks are found almost everywhere. We have schedules, time zones, wrist watches, and precise times when things are supposed to start and finish. What's good about having so many clocks and schedules? Are there any negative aspects to the detailed keeping of time?

Look at the map on page 9 and ask your children if they can find their time zone.

Optional: Do Together

Day 2: 3-D Cell Model

Help your children make a three-dimensional cell model today. Here's what you'll need: a couple of sealable storage

bags, some light-colored syrup (such as Karo[™] syrup), and some various items to represent the parts of a cell (these items could include, but are not limited to, the following: gummi candies, cereal, balloons, fruit slices, peanuts, jelly beans, etc.).

Fill one of the sealable bags most of the way full with the syrup, and then put it inside of the second sealable bag for strength. Then add in the other items to represent the nucleus and other organelles. See the diagrams in your book for the types of organelles present in cells.

Let your children play with the cell they created. Do they see how it's flexible and can move around? Now have them imagine billions of such cells comprising their bodies!

Day 4: DNA

Your book mentions that one of the primary ingredients of cells is DNA. Help your children do some research about DNA. What does DNA stand for? Why do we have DNA in our bodies? Why is your children's particular DNA so special?

Find a website that discusses and shows the doublehelix structure of DNA. Visit our IG Links web page for a link to a fitting website. ☐ Make sure your children understand just the very basics of DNA. It is a complicated topic, but it's very interesting and it's never too early to introduce them to the building blocks of life! ■

<i>₿</i>				(organs)		e and survive.)		nucleic acids		S	De D
ity Sheets	question. (2.1)	atoms	make up (cells)	organs /, which make up	blocks of life"? (cells	ther? (2.1) ing creature can eat, reproduce, move	ell? (2.2)	proteins	o of a cell. (2.2) It of the cell; make proteins and ul ones.)	quit working? (2.2)	are used again to make new
Week 2 Activ	rm in each blank. Then answer the	molecules	and <u>(molecules)</u>	cells make up(tissues	o scientists consider "the building l	rgans in an organism to work toge need to work together so that the liv	does most of the work inside of a c	large molecules	these "worker molecules" do inside oteins and small molecules in and ou oteins ende large molecules out of sma	s and other molecules inside a cell is ow in their place	hen they die? (2.2) ak down into smaller molecules and t cell)
	Biology, Level I 1. Write the appropriate ter	a) cells	(atoms)	b) tissues (cells)	Which of these terms d	 Why is it important for or lorgans in an organism. 	3. Which type of molecule o	sugars	 Name some of the tasks (proteins move other pro- nucleic acids like DMA, a 	 What happens if proteins the cell explode new proteins gr 	 What happens to cells will the parts of the cell bree inthe parts of the cell bree molecules for a different

Science 3 \bullet Week 2 \bullet Student Activity Sheets $\binom{7}{7}$ 쪻 days in a year Based on the time zones, explain why people on the other side of the world are already in tomorrow (or are still in J ANULARY (pp. 8–9) 1 Ser and a ser a se 24 (366) (365) in one location, and morning of the next in another. For example, if it's 5:00 p.m. on the 15th (because there are so many time zones, it is possible for the time to be afternoon of one day Jared's mom never has any quarters. How many years would it take him to make an extra How many days are in a leap year? How much money would he really make in a year? (Think about quarters!) (5365.25) _ days to orbit the sun. Jared is paid \$1.00 a day for allowance. By the calendar, Jared knows that there are $_{-}$ How many time zones are there in the world? (Circle the correct answer) (p. 9) Week 2 Activity Sheets 20 14. Talk it out question: Demonstrate/explain out loud to Mom or Dad. (365 1/4) (it takes 4 years to build up enough time to make an extra day.) in Colorado, USA, it's 5:00 a.m. on the 16th in Bombay, India.) 16. Why does a leap year only come every so often? (pp. 8-9) In Science he learns that it actually takes the earth yesterday). (Lines provided for dictation) (pp. 8-9) __ a year. 13. How many days are in a normal year? (365) 13 By the calendar, he is paid (\$365.00) (pp. 8–9) (4) dollar? 12. 15. 01000 by Sonlight Curriculum, Ltd. All rights rese ©2010 by Sonlight Curriculum, Ltd. All rights reserved (because the metric system is based off of the meter, which is found by dividing the distance from the North Pole to the Equator by 10 million. Since this base unit is not based off of anything that could **B** c) Which of these cells make up all other living things, like plants and animals? Write "plants and animals" in the have / don't have a nucleus. 7. Describe the differences between prokaryote and eukaryote cells. Use the questions a-c below to help you. (23) (pp. 6–7) a) Which of these cells is bigger and more complicated? Write the word "bigger" in the appropriate column. change—like the size of someone's hand—its easier for all to get the same measurements.) ruler (since humans are not bacteria, we are made up of eukaryote cells like all other nonbacterial living things) b) Which of these cells make up all bacteria? Write the word "bacteria" in the appropriate column. plants and animals) Eukaryote Cells (bigger; (because people's bodies are different sizes which means the units of measure vary from person 10. Why are units of measure that are based on the human body difficult to use? (p. 7) 9. When you compare something to a fixed quantity, that quantity is called a unit of Challenge: Is your body made up of prokaryote or eukaryote cells? Explain. (2.3) inches Week 2 Activity Sheets 11. Why is the metric system better as a standard measurement system? (p. 7) Circle one: have / don't have a nucleus. movement Prokaryote Cells The Usborne Science Encyclopedia (bacteria) appropriate column. measure Circle one: to person.) 5-Day 嚠 œ.

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Week 2 Activity Sheets

B	

a) cells	molecules	atoms	
	and	make up	
b) tissues	cells	organs	
	make up	, which make up	
Which of these term	s do scientists consider "the buil	ding blocks of life"?	
Vhy is it important fo	or organs in an organism to work	together? (2.1)	
Which type of molect	ule does most of the work inside	of a cell? (2.2)	nucleic acide
Sugars	large molecules	proteins	nucleic acid.
Name some of the ta	sks these "worker molecules" do	inside of a cell. (2.2)	
Vhat happens if prot	eins and other molecules inside	a cell quit working? (2.2)	
What happens if prot	eins and other molecules inside odes	a cell quit working? (2.2)	new cells
What happens if prot the cell explo new protein:	eins and other molecules inside odes s grow in their place	a cell quit working? (2.2) the cell divides into r the cell dies	new cells
Vhat happens if prot the cell explo new proteins What happens to cell	eins and other molecules inside odes s grow in their place s when they die? (2.2)	a cell quit working? (2.2) the cell divides into r the cell dies	new cells



Week 2 Activity Sheets

Describe the differences between prokaryote and eukaryote cells. Use the questions a-c below to help you. (2.3) 7.

Pro	aryote Cells			Eukary	ote Cells	
Circle one: have	/ don't have	a nucleus.	Circle one:	have /	don't have	a nucleus.

- a) Which of these cells is bigger and more complicated? Write the word "bigger" in the appropriate column.
- b) Which of these cells make up all bacteria? Write the word "bacteria" in the appropriate column.
- c) Which of these cells make up all other living things, like plants and animals? Write "plants and animals" in the appropriate column.
- Challenge: Is your body made up of prokaryote or eukaryote cells? Explain. (2.3) 8.

The Usborne Science Encyclopedia

5-Day

When you compare something to a fixed quantity, that quantity is called a unit of ______. (pp. 6–7) 9.

measure movement inches ruler	neasure	movement	inches	ruler
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10. Why are units of measure that are based on the human body difficult to use? (p. 7)



11. Why is the metric system better as a standard measurement system? (p. 7)

Student Activity Sheets

Week 2

Science 3 6

		Week 2 A	Activity	Sheets	6	身 少
12.	How many time zones are there i	n the world? (Circle	e the correc	t answer.) (p. 9)		
	6	12		20	24	
13.	How many days are in a normal y	rear?	How man	y days are in a leap year?	9 (pp. 8–9)	
14.	Talk it out question: Demonstrate	e/explain out loud t	to Mom or	Dad.		
	Based on the time zones, explain	why people on the	e other side	of the world are already	/ in tomorrow (or are still i	n
	yesterday). (Lines provided for di	ctation) (pp. 8–9)				
15.	Jared is paid \$1.00 a day for allow	vance. By the calen	dar, Jared k	nows that there are	days in a ye	ear.
	By the calendar, he is paid	a year.			\$	
	In Science he learns that it actual	ly takes the earth _		_ days to orbit the sun.	15-0-5	į
	How much money would he real	ly make in a year? (Think abou	it quarters!)		
	Jared's mom never has any quart	ers. How many yea	rs would it	take him to make an ext	ra P	ð
	dollar? (pp. 8–9)					

16. Why does a leap year only come every so often? (pp. 8–9)



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SCIENCE 3 WEEK 3 SCHEDULE									
Date:	Dav 1 11	Dav 2	12	Dav 3 13	Dav 4 14	Dav 5 15			
Real Science 4 Kids: Biology Level I	2.4	2.6–2.7 🕅		2.8					
Activity Sheet Questions	#1-4	#5–8							
Mysteries and Marvels of Nature				pp. 14–15	pp. 26–27 ℕ; pp. 38–39				
Activity Sheet Questions				#9–11	#12–18				
5-Day: The Usborne Science Encyclopedia						pp. 10–13 🕅			
Activity Sheet Questions						#19–23			
Optional: Lyrical Life Science 2	Introduction	chap. 2		chap. 13	chap. 3	chap. 1			
Incredible Creatures That Defy Evolution I (DVD)				Giraffe (track III)	Platypus (track VIII)				
Optional: Do Together			1	Summary Picture <u>N</u>	Let's Fight! N				
Other Notes									
Other Notes									

Biology, Level I

Note to Mom or Dad: We'll read section "2.5 Plant Cells" when we study plants later in the year.

p. 17

As we've mentioned before, in Darwin's day animal cells were thought to be relatively simple blobs, but as science has advanced we've come to realize that even supposedly simple cells are truly complex marvels of functionality.

Mysteries and Marvels of Nature

рр. 26—27

While not overtly supporting macroevolution (see our note in the Introduction), the phrase, "Mammals

have developed" is at least suggestive of evolution. The book covers many "mysteries and marvels" of nature, but appears to presuppose that these mysteries and marvels are simply the result of chance and time. Interestingly, page 27 notes, "Every part of a cheetah's streamlined body is designed for speed." So are the amazing creatures featured throughout the book the product of randomness or design? You really can't have both because design entails intelligence, while chance does not.

5-Day: The Usborne Science Encyclopedia

рр. 10–11

Read the text at the top of both pages before looking at the illustration below. The text defines key terms you will see in the picture such as kinetic and potential energy.

pp. 12–13

The book correctly states that our "energy comes from the food" we eat. But where did all this energy come from to begin with? What keeps the energy in the universe going? Biblically, we are told that Christ sustains "all things" (see Hebrews 1:3, for instance).

Incredible Creatures That Defy Evolution I

Incredible Creatures That Defy Evolution I offers some amazing insights that coincide well with other things you and your children will learn about animals. As a result, we've scheduled different tracks on the DVD to fit with studies in Mysteries & Marvels of Nature and The Magic School Bus: Inside the Human Body. However, if you prefer you are welcome to watch the entire 50-minute DVD in one sitting.

Optional: Do Together

Day 3: Summary Picture

Challenge your children to create a picture that summarizes all the main points of Chapter 2: Cells — The Building Blocks of Life. Have them review the Summary (2.8), and then try to create a visual summary that incorporates all of the most important parts of the chapter. They could create a separate picture for each of the points, or they could make one large picture that involves all the points and shows how they interact and relate to each other. Since children learn in a variety of ways, it's important to review information in various ways to ensure that your children are learning in the most effective way possible. Have fun and be sure to showcase their final artwork on the refrigerator!

Day 4: Let's Fight!

Most children find it fascinating to study the peculiar defense mechanisms that many animals possess. Who wouldn't be intrigued by the poisonous spurs of the duckbilled platypus? Or the vicious tusks of the Arctic walrus?

But what about us humans? Do we have any special defense mechanisms? We don't mean guns and knives either! Ask your children to brainstorm about what they might use to defend themselves in the wild.

After they've thought about it for a while, challenge them to either (1) write a short story, (2) draw a picture, or (3) give a brief oral report that highlights at least two human defense mechanisms. Some candidates: teeth, hands (fists), fingers (nails, claws!), feet (kicking), etc.

L

	7. Challenge: Since animal cells do not have a cell wall, they are less rigid than plant cells. How do you think flexibl
celi.	cells benefit animals, and rigid cells benefit plants? (2.6) $\left(\bigcup_{M_{n}} \bigcap_{M_{n}} \right) \text{(Possible: Since animal cells don't have a cell wall, they don't provide the same structure}$
ane.)	that plant cells do, but that's okoy! Animals have other systems that provide structure to their bodies. Tike skeletons and exoskeletons. And without a cell wall, animals can be more
embrane. (2.4) es that control what enters and exits the cell. The cell	feature flexible, which means they can move around much more easily than plants. Since plant cells do have a selecton to do
	otherwise)
ected to a "motor" in the cell that twids rapidly to	8. Write each term in the box next to the correct function each performs. (2.7)
	cell wall nucleolus chloroplast mitochondria golgi apparatus
cel wall ribosomes	ribosomes nucleus peroxisomes lysosomes rough endoplasmic reticulum a. (ribosomes) make proteins.
المالة مع قلمة (b. Proteins and new membranes are made in the
elis to the function each performs. (2.6) a. rough endoplasmic reticulum	the cell needs to live and reproduce. d
b. microtubules c. nucleus	for the cell. e. Proteins are modified and shipned or stored in the (golgi apparatus)
d. mitochondria	f. Energy molecules for the cell are made in the (mitochondria)
	g. Found in plants, the <u>(cell wall)</u> serves as the plant's skeleton and helps it
in plants.	hold its shape. // // //sosomes/ digest big molecules for other uses in the ce
	i. Pieces of ribosomes are made in the (nucleolus)
ed only by the plasma membrane.). Cells get rid of dangerous substances in the (perovisiones)
(

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אעבע ז ארוו		
he Usborne Science Encyclopedia - ^{Day}		 Write one example of a change in energy. (Example: a boom box changes electrical energy into sound energy.) (pp. 12–13. (Answers will vary. Possible: toaster—electrical energy into heat energy.)
9. Name at least five types (or forms) of energy. (p. 10–11)		
(potential)	(kinetic)	23. Use the words in the box to complete the crossword puzzle. We have removed any spaces between words. (pp. 6–11) $\frac{3}{2}$
(chem	ncial)	1M E 2T R I C S Y S T E M 1 1 M M M M M M 1 N U M E R A L
ungruy). See how many examples of energy illustrated on pages 1	ound) 10 and 11 in <i>The Usborne Science Encyclopedia</i>	
you can identify. Example:	Type of Energy:	
(Possible: electric lights)	(light energy)	^B B A S E
(stretched elastic)	(potential energy)	
(petrol, coal, wood)	(chemical energy)	numeral imperial units volume base time zones metric system joure axis
(bood)	(chemical energy)	Across Down
(moving water)	(kinetic energy)	1) first system of measurement not based on the body 2) the world is divided into 24 of these
 Does energy get used up? (Circle one.) (pp. 12–13) 	Yes	 a written symbol to stand for an amount unit or measurement for energy measurement system based on English an imaginary line that the Earth spins on king's body the amount of space an object fills
lf not, what happens to it? <u>(If is charged to anomer for</u>	(m	 a counting system is formed around this quantity
	Criance 3 & Waak 3 & Chrident Articity Chante (13	11 Stindart Artivity Shaars & Waak 3 & Sriance 3

Week 3 Activity Sheets

Biology, Level I

- 1. Where do prokaryotic cells keep their DNA? (2.4)
- 2. Describe the difference between the cell wall and the plasma membrane. (2.4)
- 3. How do many prokaryotic cells move? (2.4)
- 4. Which part of a prokaryotic cell helps it stay in place? (2.4)

	pili	flagella	cell wall		ribosomes
Match	the following parts that are	found in both plant and an	imal cells to the t	function each perf	orms. (2.6)
	Proteins are made here.		a.	rough endoplasr	nic reticulum
	This part holds the cell's [DNA.	b.	microtubules	
	A small factory that make	es energy molecules.	c.	nucleus	
	Move things from place to	o place in the cell.	d.	mitochondria	
What is	s the main difference betwe	een plant and animal cells?(2.6)		
	Animal cells are found in	animals, and plant cells are f	ound in plants.	/	
	Only plant cells have a nu	icleus.		(,	
	Only animal cells have an	rough endoplasmic reticulu	m.		60 60
	Only plant cells have a ce	II wall; animal cells are surro	unded only by th	ne plasma membra	ane.

5.

6.

b

Week 3 Activity Sheets

7. Challenge: Since animal cells do not have a cell wall, they are less rigid than plant cells. How do you think flexible

cells benefit animals, and rigid cells benefit plants? (2.6)

A CON	

8. Write each term in the box next to the correct function each performs. (2.7)

	cell wall	nucleo	olus chlo	oroplast	mitochondria	golgi apparatus				
	ribosomes	nucleus	peroxisomes	lysosome	s rough en	doplasmic reticulum				
a.		make proteins.								
b.	Proteins and new m	embranes are m	ade in the							
c.	The		is t	he central pa	rt of the cell that l	nolds all of the information				
	the cell needs to live and reproduce.									
d.	in plants uses light energy from the sun to make energy molecules									
	for the cell.									
e.	Proteins are modified and shipped or stored in the									
f.	Energy molecules for the cell are made in the									
g.	Found in plants, the serves as the plant's skeleton and helps it									
	hold its shape.									
	// h digest big molecules for other uses in the cell.									
		i. Pieces	of ribosomes ar	e made in the	<u> </u>					
	j. Cells get rid of dangerous substances in the									
10) Stu	dent Activity Sheets	◆ Week 3 ◆ Scie	ence 3							
			-							

	We	ek 3 Activity Sh	neets 🏼 🖉
Mysteries and M	arvels of Nature		
9. Mammals have _ feed their babies		on their bodies and (p. 14)	
10. How does a Tam	anduas make sure it will h	ave a meal another day?	(p. 14)
11. Match the anima vampire bat	Is below to the special to	ols each is equipped with • c	to help it find food. (pp. 14–15) urved claw to dig out bugs
giraffe aye-aye tiger	•	• e • la • la	xcellent hearing, vision and sense of smell ong, sharp front teeth ong tongue
12. True or False? Th	e faster a kangaroo travel: True	s, the less energy it uses. Fa	(pp. 26–27) lse
13. Kangaroos' legs a a spring gasolin an iron electric	are like (Check the box g — the energy from one e — can only run a little v — pushes everything into i ty — with increased volta	that is true.) (pp. 26–27) jump helps to power the vhile before it runs out o the ground age can go faster	
14. A sugar glider <u></u> A) flies	B) hops	from tree to tree. (Ci C) climbs	rcle the correct answer.) (p. 27) D) parachutes



Week 3 Activity Sheets

The Usborne Science Encyclopedia

5-Day

19. Name at least five types (or forms) of energy. (p. 10-11)



20. See how many examples of energy illustrated on pages 10 and 11 in The Usborne Science Encyclopedia

Example:	Type of Energy:	

21.	Does energy get used up? (Cir	cle one.) (pp. 12–13)	Yes	Νο
	If not, what happens to it?			

Science 3 Week 3 Student Activity Sheets (13)



Week 3 Activity Sheets

22. Write one example of a change in energy. (Example: a boom box changes electrical energy into sound energy.) (pp. 12–13)

23. Use the words in the box to complete the crossword puzzle. We have removed any spaces between words. (pp. 6–11)



numeral imperial units volume base time zones metric system joule axis

Across

- 1) first system of measurement not based on the body
- 4) a written symbol to stand for an amount
- 6) measurement system based on English king's body
- 8) a counting system is formed around this quantity

Down

- 2) the world is divided into 24 of these
- 3) unit of measurement for energy
- 5) an imaginary line that the Earth spins on
- 7) the amount of space an object fills