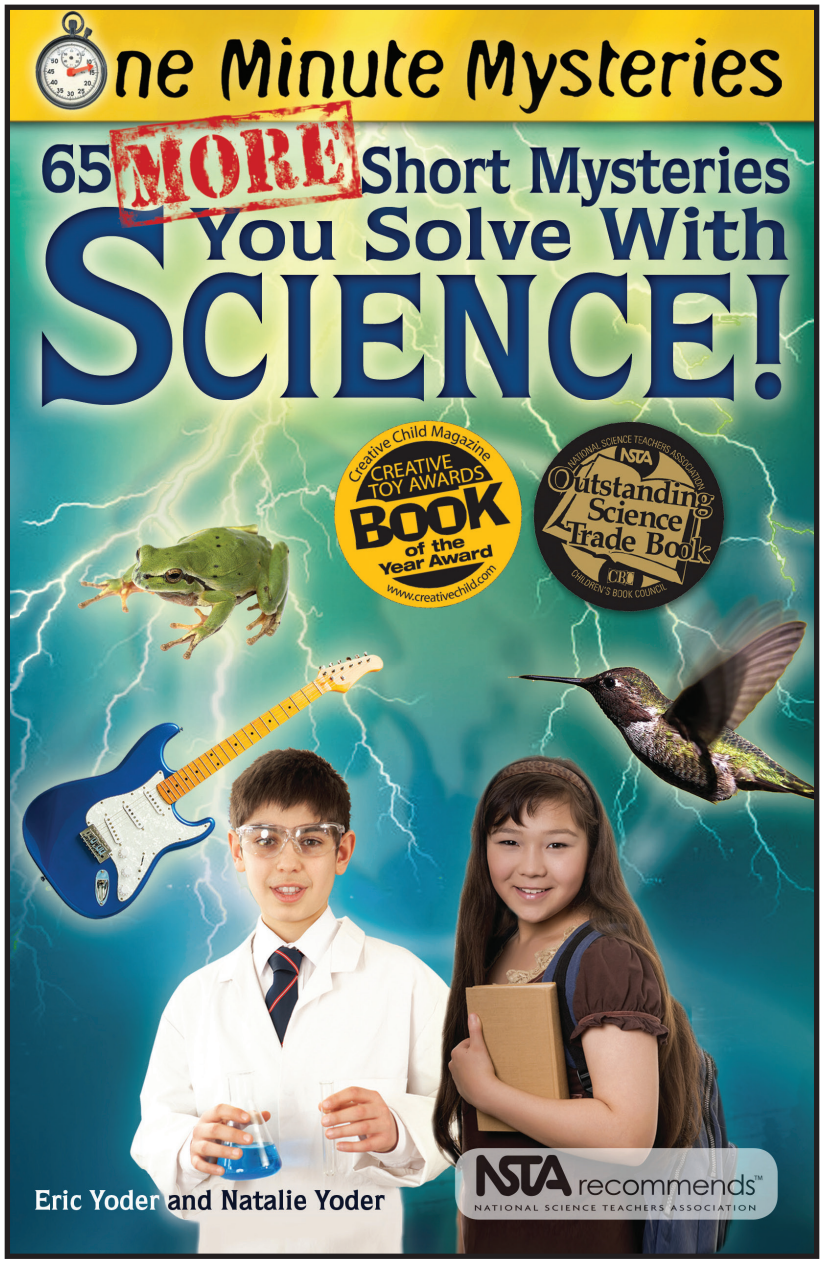
CONDENSATION OF
65 MORE Short Mysteries You Solve With Science!

By Eric Yoder and Natalie Yoder

Includes pages: 1, 8, 9, 10,11, 19, 20, 25, 26, 41, 42. 75, 76, 87, 88, 97, 98, 171, 176

Paperback ($12.95) ISBN 13: 978-1-938492-00-6
Ebook ($8.99) ISBN 13: 978-1-938492-01-3

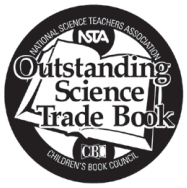
August 2016 • 192 Pages



Science, Naturally!

This title is also available in a Bilingual (English/Spanish) edition.
Find our other *One Minute Mystery* titles at ScienceNaturally.com
Contact Info@ScienceNaturally.com for more information.

DISCOVER WHY EVERYONE LOVES THE *One Minute Mysteries series!*



Selected for the Outstanding Science Trade Books for Students K-12 list.

Gold medal recipient for the Gelett Burgess Children's Book Award for outstanding contributions to children's literature.

"Remarkable! The bite-sized nature of the mysteries, with kids who act as both sleuths and problem-solvers, keeps readers hungry for more."

Awarded Book of the Year by educators and moms from *Creative Child Magazine*.

The reliable source for parents and professionals looking for the best products for children.

"The perfect treat for any science or reading classroom!"

Selected by Library Media Connection as an exceptional title for school libraries.

Science
ISBN 13: 978-0-9678020-1-5
Ages 8-12

More Science
ISBN 13: 978-1-9384920-0-6
Ages 8-12

Math
ISBN 13: 978-0-9678020-0-8
Ages 10-14

All titles in paperback ($12.95) and E-book ($11.99) format.
Bilingual (English/Spanish) editions also available.
Select titles in Korean, Chinese, and Braille.

Supporting and Articulating Curriculum Standards

The content in all *Science, Naturally* books correlates directly with the Next Generation Science Standards and aligns with the Common Core State Standards. The content also aligns with the math and science standards laid out by the Center for Education at the National Academies. Articulations to these, and other standards, are available at

www.ScienceNaturally.com

Table of Contents

Physical and Chemical Science

General Science

BONUS SECTION
Five More Minutes of Science Mysteries!

Discover One Minute Mysteries: 65 Short Mysteries You Solve With Math!

1 Cool as a Cucumber

When Alex and Iona planted a vegetable garden the previous year, their dog, Trevor, discovered how much he liked to jump over the barrier and destroy the plants. Cucumbers were Trevor's favorite. He would get at the cucumbers just as they were starting to ripen. Pulling the young cucumbers off their vines, he would stretch out in the sunshine of the yard and eat them.

Now it was time to plant this year's garden, so Alex and Iona went with their father to the hardware store to pick up seeds and fertilizer.

"I have an idea," Alex said, disappearing down a hardware aisle. He came back with some wooden stakes and a roll of the fine wire mesh used for window screens.

"What do you plan to do with those things?" their father asked.

"I'm going to build a cage to protect the cucumber plants," Alex said. "I'll make it strong and have the plants totally covered, all the way around from the ground and across the top. Then there will be no way Trevor can get at the cucumbers."

"I'm afraid if you do that, we still won't have cucumbers on our salads this year," Iona said.

"The plants will still get water and sunshine. That's all they need to grow, isn't it?" Alex wondered.

"That's all the plants need, sure. But to grow cucumbers, they also need something else."

"What could that be?"

4 The Root of the Situation

"Daisuke, don't forget to water my plant while I'm gone!" Miyu reminded her brother as she left the house.

Daisuke had agreed to take care of Miyu's plant during the weeks that she would be away on a concert tour with her high school chorus. She kept the plant inside their screened-in porch, where it got sunlight, but not rain. She had told her little brother it needed to be watered regularly in the hot summer weather.

Daisuke got a spray bottle and sprayed the leaves every day. After a few days, he wanted to prove to his sister that he had been taking care of her plant, so he asked his mother to send her a picture of the plant with the sprayer he used next to it.

That night when Miyu called, she asked to talk to Daisuke.

"That plant looks droopy," Miyu said. "Are you sure you're taking care of it?"

"I water it every day," Daisuke said defensively.

"Dad, could you help Daisuke with the plant?" Miyu asked when their father took the phone from Daisuke.

"I haven't been watching him," their father said. "What do you think he is doing wrong?"

"I don't think he's giving it enough water," Miyu said.

Their father went out on the porch with Daisuke and checked the soil. It was almost completely dry.

"You're right," their father said before he handed the phone back to Daisuke and went to the kitchen to get more water for the plant.

"What did I do wrong?" Daisuke asked Miyu on the phone.

Cool as A Cucumber

"The plants would start to grow," Iona said. "But for the plants to produce cucumbers, they first put out flowers. Those flowers need to be pollinated, and insects do that. If there is no way for the insects to get to the flowers to pollinate them, the cucumbers won't grow. Let's get a kind of wire mesh that has holes big enough to let insects in, but that will still keep Trevor out."

The Root of the Situation

"Daisuke," Miyu said, "plants need water, nutrients, and sunlight to grow. They get sunlight through their leaves, but most of the water and nutrients they need come through their roots. Some plants can absorb enough water to survive through their leaves, but most plants need to be watered at the roots. So when I saw the spray bottle but no other water container, I knew what was wrong. If you were misting it every day and it still needed water, you must have been only spraying the leaves and not putting water at the roots where it could be more easily absorbed."

12 Life Line

"I wonder if Peanut is still here," Grandma said as she, Elena, and Joseph walked into the zoo. She had joined them and their parents on a vacation to the city where she had gone to college years ago. One day, she offered to take the kids to the zoo so their parents could go out with some friends.

"Who's Peanut?" asked Joseph.

"An animal. I'll show you, if she's still here," Grandma said.

"How would you know an animal here by name?" Elena asked.

"I came to this zoo a lot when I was a college student," Grandma said. "Since I studied biology and zoology in school, my classes did research here. And I worked here during the summers. I got to know some of the animals very well."

"But you went to college a long time ago," Joseph said.

"Forty years ago," Grandma said. "I unfortunately lost touch with this place over the years."

"So there is no way that any animals from then are still here," Joseph protested.

"You don't think so?" Grandma asked.

28 Sundae Skies

"Finally, a good night to lie outside," Kiernan said.

The campers lay in a field waiting for the announcement to go back to their cabins for lights-out.

"It will be time to go inside soon," Mataya said. "It's completely dark now."

"I don't think I could move even if a bear came charging at me," Christine said, holding her stomach.

"I know what you mean. If I eat any more ice cream, I'm going to turn into a sundae," Kiernan said.

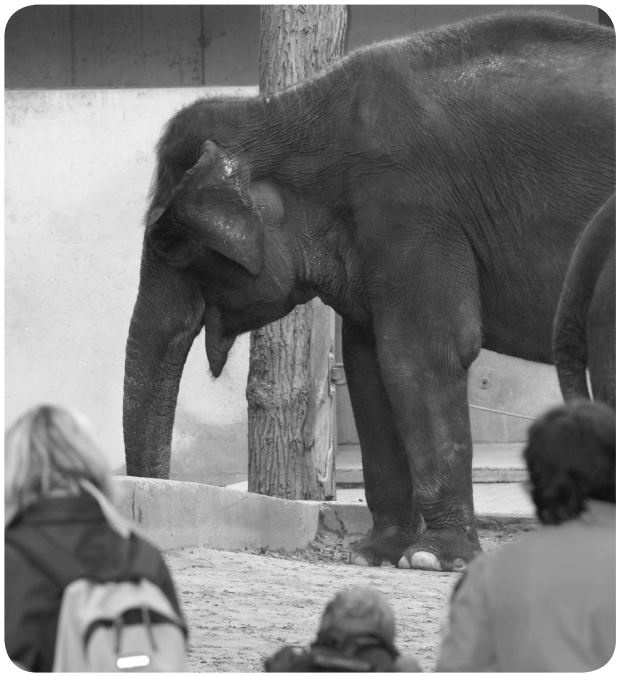
It had been a hot, tiring day, and their stomachs were full. The camp had a rule that if the temperature was above 90 degrees by noon, the campers could have ice cream at each break time and meal to cool them off. Most over-did it by having ice cream several times, even though the temperature reached only a little above 90 all day.

The previous afternoon the sky had clouded over and it remained cloudy through that night and through the day. Around dinnertime, the clouds had drifted away to let the girls gaze at sparkling stars and a full Moon before bed.

"Well, at least we had today to enjoy it," Mataya said. "I doubt we'll have unlimited ice cream tomorrow."

"Why not?" Christine asked. "It's as warm now as it was at this time last night."

12 Life Line



"Some animals have very long life expectancies," Elena said. "Elephants, tortoises, and some birds might have lived all this time."

Grandma nodded and said, "Elephants can live for more than 60 years. Tortoises and turtles can live to be at least 100 and birds, such as macaws and parrots, can also live more than 60 years. Some of those animals from 40 years ago could still be here."

"Okay, let's go," Joseph said. "If we're looking for an animal named Peanut, let's try the elephant house first."

28 Sundae Skies

"The cloudy sky last night helped trap in the heat radiating off the Earth," Mataya said. "That's why it was hot so early today. The sky is clear tonight and the heat will radiate away into space. Tomorrow morning will be cooler. Since the temperature barely got above 90 by noon today, even with the trapped heat this morning, it probably won't get that hot by noon tomorrow."

33 Tennis, Anyone?

"Sorry I'm late. We had to spend ten minutes scraping the ice off the car before we could get going," Ignacio said as he joined the tennis class.

He and his friend Deshi were taking Saturday morning lessons at the tennis club's indoor courts. They both enjoyed tennis and hoped to be a doubles team when they got to high school. This was the first lesson of the new session.

The previous evening, Ignacio and Deshi had played a match there against two other friends, and Ignacio's mother drove them home. On the way out, she had stopped at the front desk and bought several new cans of balls that were required for the lessons. Deshi had closed the car trunk for her when she put them inside.

Deshi's father had bought balls of the same brand for him on the way in to the lesson that morning. Since they each had new balls of the same kind, they didn't bother to keep them separate as they hit to each other to warm up.

Some of the balls bounced normally, but others seemed dead.

"What is wrong with these balls?" Ignacio asked. "Maybe we should ask for our money back."

"Before we do that, let's set the dead balls aside for a while," Deshi said. "They might go back to normal."

"You don't think they are permanently messed up?" Ignacio asked.

38 Finding a Solution

Spring had turned the corner and twins Frances and Fiona were pleased that they could start spending time outside in the back yard. The family's yard was sheltered by trees with long braches, perfect for the girls' hobby of bird watching.

Frances had the job of mixing sugar in water for their hummingbird feeder. In the past, the girls noticed that more hummingbirds came to the feeder when they used a more sugary mix, so this year Frances had decided to make the mix as sweet as possible. In the kitchen, she added sugar to hot water until sugar started collecting in the bottom of the pot even though she was stirring it. Then she filled the feeder with the water.

"I just love it when we get to see so many hummingbirds!" Frances said as she screwed the lid onto the feeder.

The girls hung the feeder on a tree branch where they could watch from their deck. It took a few days for the hummingbirds to start coming. But when they did, the birds left almost instantly each time.

The girls went out to check the feeder.

"I think I see the problem," Fiona said, scraping powder from the feeding holes.

"Where did that come from?" Frances asked.

"The birds can't get the mix out of the feeder," Fiona said. "This powder clogging the holes is sugar."

"I didn't put any sugar on the outside," Frances protested. "And I stopped putting more sugar in the water when it started collecting at the bottom when I was stirring it. I know that when there's as much sugar as the water can hold, it's saturated, and it won't be able to dissolve anymore. Isn't that right?"

33 Tennis, Anyone?

Deshi said, "You left the balls in the trunk of your car overnight, didn't you? They got cold in there and lost some of their bounciness because they stiffened up. In other words, they lost elasticity when they got cold. Also, since air contracts when it gets cold, it would make the air pressure in the tennis balls lower, making them seem flat and less bouncy. When they get back to room temperature, they should be okay."

38 Finding a Solution

"Yes," Fiona said, "but hot water can hold more sugar than cool water—that is, the saturation point is higher when the water is hotter. Once the water cools, some of the sugar can't stay in solution and the sugar precipitates—it reforms into crystals and collects at the bottom. That sugar is blocking the sweetened water from getting out, so the hummingbirds leave. Let's clean it out and try again with less sugar."

Glossary

Allergic Reaction [Noun] A local or generalized reaction of a body to contact with a specific substance to which the body is overly sensitive.

Antarctica [Noun] The continent surrounding the South Pole.

Arachnids [Noun] The class of arthropods with four pairs of legs, such as a spider or a scorpion.

Atmosphere [Noun] The gaseous layer surrounding the earth; the air.

Boiling Point [Noun] The temperature at which a liquid starts to turn to gas. For water, it is 212˚ Fahrenheit or 100˚ Celsius.

Carbohydrates [Noun] Mainly sugars and starches, together constituting one of the three principal types of nutrients used as energy sources (calories) by the body. Carbohydrates can also be defined chemically as neutral compounds of carbon, hydrogen, and oxygen.

Cell Wall [Noun] A rigid layer that is located on the outside of the plasma membrane in plant cells, but not in animal cells.

Chlorophyll [Noun] A green pigment in plants and some algae and bacteria that makes photosynthesis possible.

Chloroplast [Noun] A part of a plant cell containing chlorophyll, which carries out photosynthesis.

Cirrus [Noun] A high-altitude cloud composed of ice particles that form thin, white threads or narrow bands. There are three other types of clouds cumulus, nimbus, and stratus.

Colosseum [Noun] An ancient amphitheater in Rome, begun in 70 A.D. by Emperor Vespasian, and having the form of an oval.

Cytoplasm [Noun] The thick solution inside a cell that holds the organells in their places.

Dairy [Noun] Milk, or products made from or containing milk (dairy products), such as butter and cheese.

Index

Enjoy all the books in this award-winning series!

Featured on NPR's *Science Friday* | Recommended by *Science News*

Got another minute? Then we have a mystery for you!

The mysteries are back! ***One Minute Mysteries: 65 More Short Mysteries You Solve With Science!*** continues the fun. These mysteries have a clever twist—you have to be a super sleuth, tapping into your science wisdom and critical thinking skills to solve them. Each story takes just one minute to read and challenges your knowledge in a variety of science disciplines. These brainteasers keep you engaged and eager to learn more. Written by the same father-daughter team that brought you the award-winning ***65 Short Mysteries You Solve With Math!***, this entertaining and educational book is great for kids, grown-ups, educators, and anyone who loves good mysteries, good science, or both!

"These brainteasers are science magic! They help kids extract the important data needed to solve science and logic problems while strengthening and rewarding their reading skills. My ten year old grandson devoured the book!"

— Robert Fenstermacher, Ph.D., Professor of Science and Society, Drew University

"These books are some of the most engaging nonfiction books I have ever read! They correlate so well with our science curriculum and the Common Core State Standards. They are an excellent asset to our teachers' resource libraries!"

— Sonya Smith, Advancing Teachers of Middle School Science, Mississippi State, MS

"Parents, if you've wondered how to help your child with science at home, these bite-sized mysteries are a surefire way to stimulate interest and ongoing conversations."

— Jan Mokros, Director, Maine Mathematics and Science Alliance

Ages 8-12
ISBN 10: 1-9384920-0-5
ISBN 13: 978-1-9384920-0-6
$12.95

Science, Naturally!®

Sparking Curiosity through Reading

ScienceNaturally.com
1-866-SCI-9876