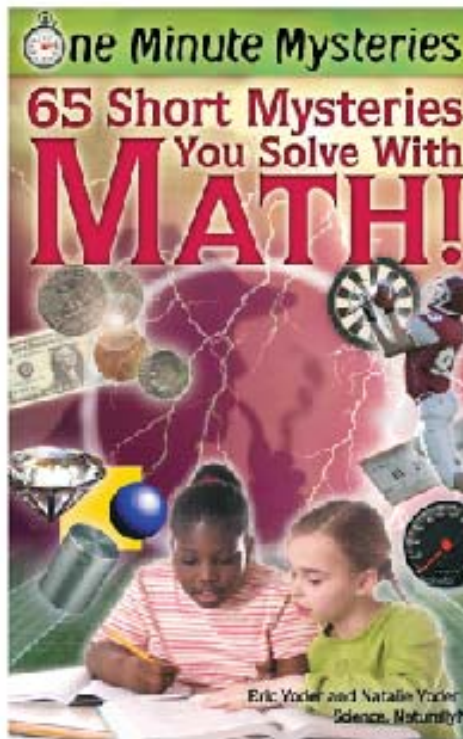


Excerpts from
**One Minute Mysteries:
65 Short Mysteries You
Solve with Math!**

Eric and Natalie Yoder
Science, Naturally!®



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One Minute Mysteries: 65 Short Stories You Solve With Math! goes beyond the ordinary mystery book to make math fun! These short mysteries bring parents and kids together as they are challenged to solve the puzzles using their math knowledge. You'll be surprised and delighted to find that one minute is enough time to introduce topics from the Pythagorean Theorem to finding volume to converting Fahrenheit to Celsius. With these intriguing mysteries, kids learn to apply the problem-solving skills used in math to everyday situations in real life. Also included are five bonus mysteries from the exciting and award-winning first book in our *One Minute Mysteries* series, *65 Short Mysteries You Solve With Science!*

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Teaching the science of everyday life

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About Science, Naturally!

Science, Naturally! is committed to increasing scientific and mathematic understanding by exploring and demystifying key concepts relating to the fields of science and math. Our mission is to produce materials filled with interesting facts, important insights, and key connections that will develop and expand one's knowledge base in science and math. Our products are created to be enjoyed by both children and adults, and are designed to make potentially intimidating topics accessible and intriguing. They are perfect for kids, parents, educators, and anyone interested in gaining a better understanding of how science and math affect everyday life.

Sample Mysteries



Math at Home

#1 Pancake Mix-Up

“Mooommm!” Meg yelled from the kitchen. “Can you please come down here?”

Meg’s family and two other families had rented a house at a ski resort for a long weekend. Each family was going to cook and clean up for one of the three days. It was the morning of Meg’s family’s day.

While Meg’s mother finished getting dressed, she had asked Meg to go into the kitchen and start preparing the pancake mix. They had brought individual packages of mix. They also had several boxes of cereal and bread to make toast, but everyone had said they wanted pancakes.

“I’ll be there in a minute, Meg. What’s the problem?” her mother called.

“I have everything ready to make the pancakes. But each of these packages needs two-thirds of a cup of milk, and there’s no two-thirds measuring cup in this kitchen,” Meg called. “All they have is a three-fourths measuring cup. Can I just estimate?”

“Not if you want the pancakes to be any good,” her mother replied.

“Never mind,” Meg said a moment later. “I have the solution.”

“What did you do?” her mother asked as she walked into the kitchen.



Math Outside

#2 Tall Tale

Challenge Day was one of the highlights of the week at camp. The campers were sent off on all kinds of odd errands, such as finding animal fur, certain kinds of leaves, nuts and other bits of nature.

Dominic and Vincent had ended up with what they were sure was the toughest assignment: figuring out the exact height of the lone tree in the center of the field.

They almost had to laugh when they were given only two tools to do it: a yardstick and a large ball of string.

“This is impossible,” Dominic said, squinting up at the top of the tree. It was a sunny day. “It can’t be impossible,” Vincent said. “The counselor said other guys have done it just with the same things they gave us.”

They thought for a while.

“Well, I have an idea,” Dominic said. “But it’s not going to be easy. One of us could hold the ball of string while the other one ties the end to his belt and climbs the tree. We could probably get close enough to the top to estimate how much was left, and then we could add that to the length of string from there to the ground.”

“I don’t think we’d like the result of that,” Vincent said.

“Why not?” asked Dominic.



Math at Play

#3 Jumping Through Hoops

Ms. O’Cork, the girls P.E. teacher, tried to mix up the activities to give her class different kinds of exercise. Today, she had brought out a bunch of hula hoops for warm-ups, which the girls enjoyed.

They were out in the back field, which had no distance markings because it was used for all kinds of sports. After warm-ups, Ms. O’Cork gathered everyone on the edge of the field, where she dropped a large bag of soccer balls and some short tape measures, the kind used to measure people for clothes.

“The school record for punting a soccer ball is 45 yards,” she announced. “Anyone who can break the record in the next two minutes and can prove it doesn’t have to run laps later.”

“But it will take that long just to measure 45 yards with these little tape measures,” someone said. “Okay, anyone who can figure out how to accurately measure the distance in that time doesn’t have to run laps either,” the teacher said.

Jasmine turned to Audrey, who was the goalie on their soccer team and a good punter. “I know a way we’ll both get out of running laps,” Jasmine said.

“What do you have in mind?” asked Audrey.



Math Everyday

#4 Product Placement

Max had offered to stay after school to help with the fundraiser. The parents’ association was buying new supplies for the three rooms in his grade, and they had divided the cost among all the students. Each student in the three rooms needed to bring in \$15.63. Mr. McGovern’s room had 23 students, Mrs. Chang’s room had 25, and Mrs. Bittle’s room had 24.

The first room to bring in all of its money would get three days off from homework, the second two days off, and the third one day off.

Mr. Howard, the father of Max’s classmate Daniel, was in charge of announcing the winner. Each room had met its goal. Unfortunately, the envelopes were not marked with the names of the teachers, just the amounts in them.

“I know the orange one came in first, the yellow one was second, and the pink one was third,” Mr. Howard said.

Max looked at the envelopes. Mr. Howard’s handwriting was so bad that Max couldn’t make out the exact figures. The white envelope was some dollar amount and 75 cents. This yellow one was something and 49 cents, and the brown one was something and 12 cents.

Daniel glanced at the envelopes too. “So that tells us what we need to know,” he said. Max protested, “How could you figure that out in just a few seconds? I can’t even make out the entire numbers!”



#1 Pancake Mix-Up

“I did some math. It’s a question of least common multiples,” Meg told her mother. “First, I figured out how many times you’d have to fill each kind of measure to reach a whole “number. With the three-fourths measuring cup, to reach a whole number you’d need to use the measure four times. Four times three-fourths is twelve-fourths, which reduces to three. So filling that measure four times gives us three cups of milk. Each package of mix required two-thirds of a cup of milk. If we had a two-thirds measuring cup, you would need to fill it three times to get a whole number. Three times two thirds is six thirds, which reduces to two. So filling a two-third measuring cup three times would give us two cups of milk,” she continued.

“All I had to do then was find the least common multiple of three and two—the smallest number that is a multiple of both. That’s six. Since I would need to fill the three-fourths measuring cup four times to get three cups, I would need to fill it twice that many times, eight times, to get six cups. I did that and put the milk in the bowl. And since three fillings of a two-thirds measuring cup would give us two cups, to get six cups I would need three times that many, or nine, to get the same amount of milk using a measure of that size.

Since we needed one package of mix for each two-thirds of a cup of milk, I added nine packages of the mix. I hope everyone’s hungry!”

#2 Tall Tale

“Even if the climber didn’t fall out of the tree, we still wouldn’t have an exact answer,” Vincent said. “How about if we put one end of the yardstick on the ground, hold the stick straight up, mark the end of the shadow and measure the length of the shadow. Then, we’ll run the string from the base of the tree to the tip of the tree’s shadow, and use the yardstick to measure how much string was used.”

“What good will that do?” Dominic asked. “It’s a matter of ratios,” Vincent said. “The ratio of the yardstick’s height to its shadow will be the same as the ratio of the tree’s height to its shadow. Let’s say the yardstick makes a 2-foot long shadow. That would be a ratio of 2 feet of shadow for every 3 feet in height. So, for every 2 feet of the tree’s shadow, the tree would be 3 feet high.

Say the tree’s shadow is 40 feet. That would mean the tree is 60 feet high.”

“What if we don’t get such nice round numbers?” Dominic asked.

“It’s just a matter of doing the math, we’ll still get the answer,” Vincent said. “And we won’t have to climb the tree.”

#3 Jumping Through Hoops

Jasmine used the tape measure to measure the circumference of a hula hoop, starting at the joint where the two ends joined. It was 108 inches around.

“Dividing 108 inches by 12 inches, the equivalent of one foot, means the hula hoop is nine feet around, or three yards,” Jasmine said. “I’ll roll it along the ground. Every time the joint comes around is three yards farther. Forty-five yards divided by three yards per roll is 15. So after 15 rolls of the hula hoop, I’ll be 45 yards away. Warm up that kicking leg!”

#4 Product Placement

“It’s just a matter of some rules of multiplication,” Daniel said. “The product of a multiplication can only end with a five if an odd number was multiplied by a number ending with a five. So the first envelope, the white one with the number ending with a five, had to be from the only room with a number of students ending in a five—the 25 students in Mrs. Chang’s class.”

Daniel continued, “Of the other two numbers, one was odd and one was even.

The product of a multiplication is odd only when you multiply two odd numbers. An even number times either an even or an odd number gives you an even number. So the odd number on the yellow envelope, the one that came in second, had to be the product of multiplying two odd numbers.

So Mr. McGovern’s room with the 23 students had to be in second place, and Mrs. Bittle’s room with an even number of students, 24, is in third.”

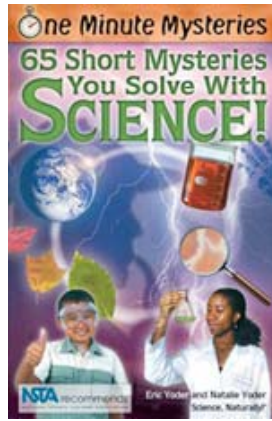
“The actual numbers,” Mr. Howard said, looking at the envelopes, “are \$390.75 for Mrs. Chang’s room, \$359.49 for Mr. McGovern’s room and \$375.12 for Mrs. Bittle’s room. I guess I have to work on my handwriting.”

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