

CONDENSATION OF Mole and Tell

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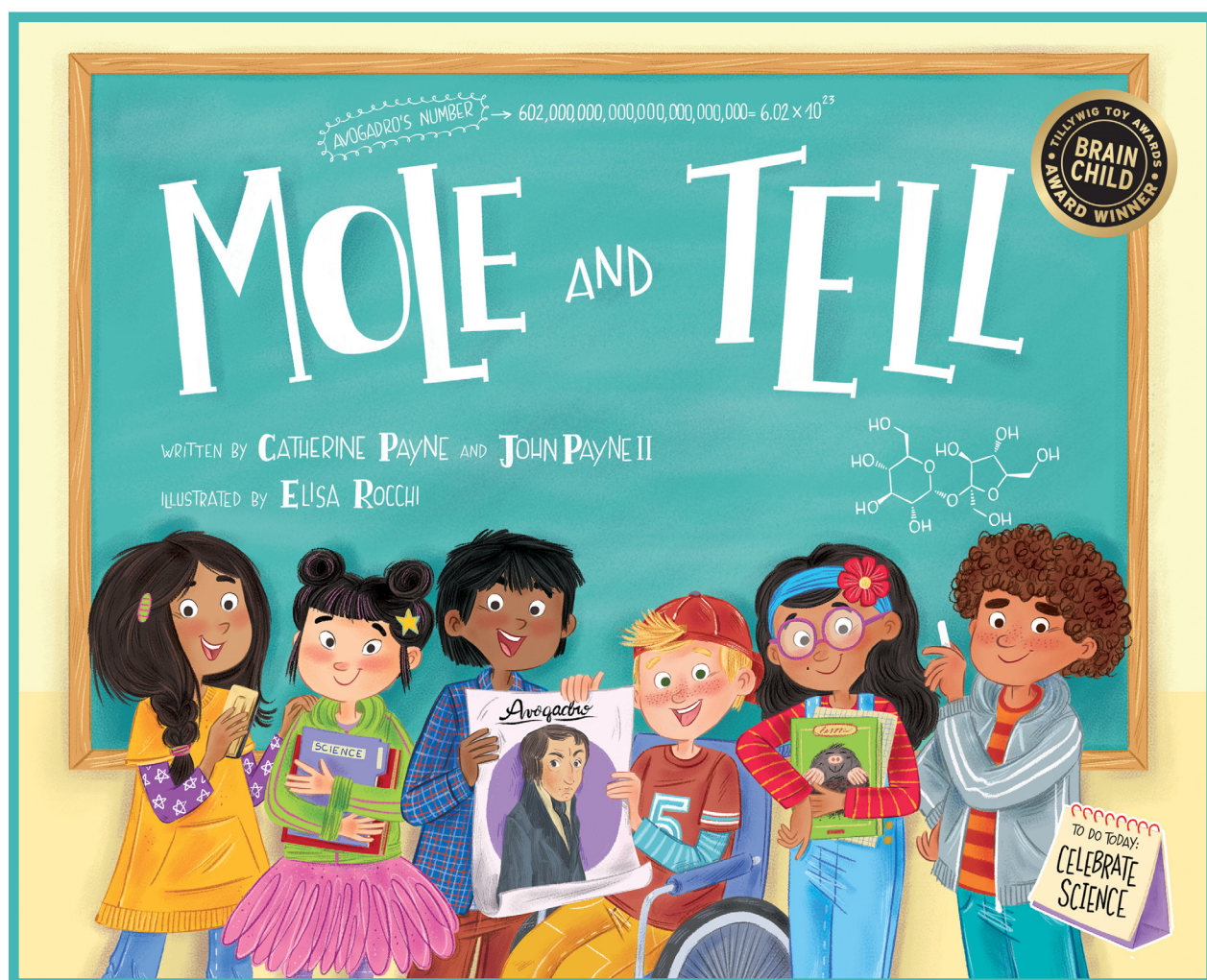
Includes pages 4, 5, 8, 9, 14, 15, 24, 25, 28, 29, 32, 33, 36, 37

Hardcover (\$16.95) ISBN: 978-1-958629-11-6

Paperback (\$14.95) ISBN: 978-1-958629-10-9

eBook (\$13.99) ISBN: 978-1-958629-12-3

May 2023 • 40 Pages



Science, Naturally!

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The students filed into Mr. Cantello's science classroom, still out of breath from recess.

"What is that date written on the board?" Leilani asked.

Akiko looked at the board. "Do we have a field trip coming up?"



“Good try, Sanjay, but Pi Day is in March,” Mr. Cantello smiled. “October 23rd is Mole Day, which celebrates a unit of measurement called a mole. What do you think moles measure?”

Before anyone could guess, Kevin called out, “Wait! A mole isn’t used to measure something. A mole is an animal!”

“It’s also a spy who works undercover. I saw it in a movie,” Alejandro added.



“No, a mole is a colored spot on your skin!” Leilani said. “I have one right here.”

“That’s true, Leilani, a mole is a spot on your skin. It can also be a spy and an animal,” Mr. Cantello said. “The word ‘mole’ is a homonym, which means that it has more than one meaning. Today, we will be learning about the kind of mole that is used by scientists.”



"Yes, it is, but there's a way to shorten it," Mr. Cantello began to explain. "Who here has a nickname?"

Alejandro raised his hand. "Sometimes my family calls me Al."

"Why do you think they do that instead of always saying Alejandro?"

"I guess because it's shorter and easier to say," Alejandro shrugged.

"Exactly! Just as you can simplify a long name by using a nickname, you can simplify really long numbers by using scientific notation. It makes numbers easier to read and easier to say out loud," Mr. Cantello said. "The way to say this big number in scientific notation is six-point-zero-two times ten to the twenty-third, and you write it like this: 6.02×10^{23} ."



FRIDAY IN MR. CANTELLO'S CLASSROOM...

"Good morning, everyone. Welcome to our first ever Mole and Tell," Mr. Cantello grinned. "Who wants to go first?"

Fatima raised her hand and walked to the front of the class. "I brought one mole of water. My mom helped me figure out that it's only 18 grams."

"Good work, Fatima," Mr. Cantello said. "It's hard to believe that there are 602 billion trillion water molecules in that bottle!"

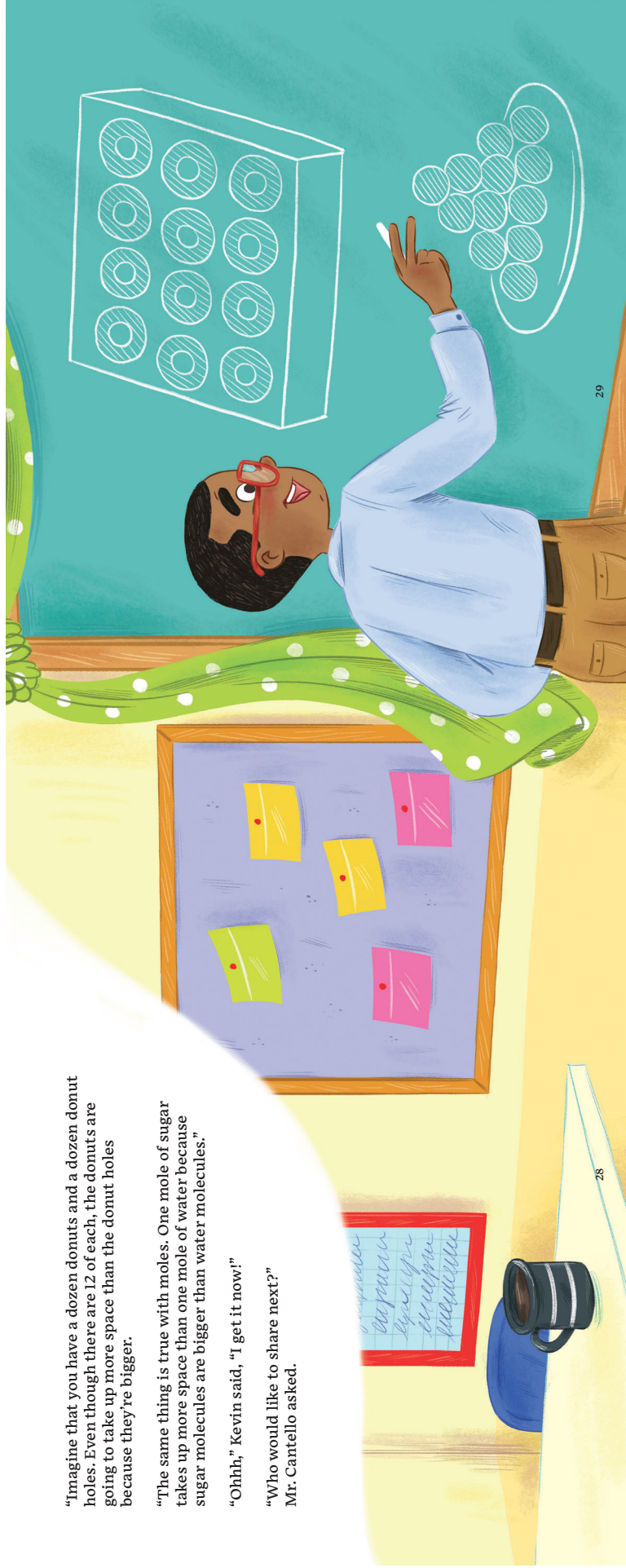


"Imagine that you have a dozen donuts and a dozen donut holes. Even though there are 12 of each, the donuts are going to take up more space than the donut holes because they're bigger."

"The same thing is true with moles. One mole of sugar takes up more space than one mole of water because sugar molecules are bigger than water molecules."

"Ohhh," Kevin said, "I get it now!"

"Who would like to share next?" Mr. Cantello asked.



Leilani went last. "My mom is a pharmacist. She uses moles at work to measure chemicals for different medicines."

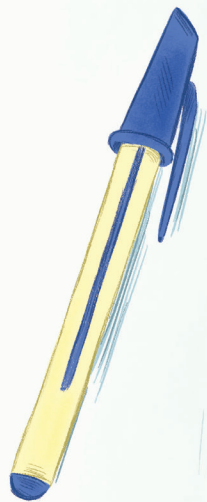
"A lot of people use moles for their jobs," Mr. Cantello said. "Scientists who make plastic and batteries have to measure specific amounts of different elements when they create their products. In many cases, they use moles to take these measurements."

"Wow," Alejandro said. "Moles are everywhere!"

"They are," Mr. Cantello said. "That's why it's so important for us to learn about them."



6.02×10^{23}



10/23

When Mr. Cantello's fourth graders see a strange date written on the board, they learn that Mole Day is coming soon... but what is a mole? And what does it have to do with their science class?

In this fun and accessible explanation of Avogadro's number, six inquisitive kids use the power of their curiosity to put together a Show and Tell like you've never seen before.

In the first book of the Celebrate Science series, join the class for a delightful introduction to scientific measurements—and a Mole Day celebration to remember!



"This book introduces children to how chemists count things like atoms and molecules. What a fun way to learn about one of the core concepts of chemistry! *Mole and Tell* is sure to spark curiosity and encourage kids into more scientific explorations."

— Adam E. Cohen, Ph.D., Professor, Chemistry and Physics, Harvard University



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through reading

ISBN 978-1-958629-11-6 \$14.95
9 781958 629116 5 1495 >
Ages: 7-10 • Grades: 2-5
Teacher's Guide Available