

Awesum Alex Math Detective

The Multiplication Mystery



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The air had that cool expectancy of something exciting about to happen. Thomas Keppler just knew it! He was excited about going back for a new year at Emily Noether School—a new year of learning new things with his best friend Alex, and new adventures in his classroom with his teacher Mrs. Googol-Plex and their tiny math guru PI. He couldn't wait to get started.



Thomas had had an interesting summer. His family had taken a vacation to visit his grandparents all the way across the country for a few weeks. He had gone on lots of counting adventures with his grandpa, and his grandma had a garden with all kinds of plants and flowers in it that Thomas didn't have back home. Some of the plants had unusual patterns in the leaves and blooms. Thomas loved counting and patterns, and he never wanted the visit to end.

But when it did and he was back home, he found himself happily enjoying adventures with the other three members of the SCC—the Secret Counters Club. His friends Alex, Gray, and Wu Li were always exploring and discovering new things. They spent a lot of time laughing and amazing their parents with their discoveries about math and science and art. They knew how to have fun together! And now it was the first day of school.

Thomas was pacing back and forth in front of the school building, waiting for his friends. “Where are they?” he muttered. But he wasn't paying attention, and he accidentally bumped into a dark-haired boy standing in front of the school.

“Whoa! Where's who?” asked the startled boy.

“My friends,” said Thomas. “I'm sorry. Usually we ride the bus together, but my dad brought me to school today. I've been waiting for them, but it seems like it's taking the bus forever to get here!” He studied the boy for a moment. “What are you doing?”

“Uh....” The boy swallowed. “Nothing.”

“You're doing something,” Thomas countered. “And I think I know what. I'm Thomas Keppler.” He stuck out his hand. The boy shook it.

“Hi. I’m Emerson Escher. So,” he hesitated, “what do you think I’m doing?”

“I think you might be counting,” replied Thomas. “Am I right?”

“Ha! You are,” said Emerson, surprised. “I was counting the windows on the school building.”

“Do you like counting things?” asked Thomas.

Emerson nodded his head. “I do. I look for patterns and then count them.”

Thomas began to respond, but the bell rang, so he said, “We’d better get inside before we’re late. You’re new here, right? Whose class are you in?”

Emerson nodded again. “Uh...I can’t remember. It’s a funny name. It sounds like ‘noodlehex’ or something.”

“Noodlehex,” Thomas repeated laughing. “You must mean Mrs. Googol-Plex!”

“That’s it!” said Emerson.

“Good,” chuckled Thomas. “I’m in that class, too. Follow me!”



As they walked into the school and started down the main hall, Thomas said to Emerson, “You’ll love this classroom. Our favorite subject is math.”

Emerson paused and frowned. “I really don’t like math,” he explained. “The numbers always get jumbled up, and they’re always jumping around on me. The same thing happens with letters when I’m reading.”

“Maybe Mrs. Googol-Plex can help with that,” suggested Thomas.

“We’ll see,” said Emerson cautiously.

“I’ll introduce you to Mrs. Googol-Plex and some of my friends,” Thomas told him. “They like math, and they like to count, too.”

By that time, they had arrived at their classroom. Standing by the door was Mrs. Googol-Plex. As soon as she saw Thomas, a smile lit her face. Thomas smiled back, and even Emerson managed a grin.

Thomas introduced Emerson to Mrs. Googol-Plex. “Mrs. Googol-Plex, this is Emerson,” he said. “He’s new this year.”

Mrs. Googol-Plex smiled even brighter. “Hi, Emerson. I was expecting you, and I’m so happy to meet you! Come in, and we’ll find you a seat.”

Before they could walk through the door, however, Emerson, Thomas, and Mrs. Googol-Plex were surrounded by Thomas’s friends Alex, Gray, and Wu Li.

“The bus was late,” Alex told Thomas. Then she looked at her teacher. “Hi, Mrs. Googol-Plex! We missed you all summer!” Gray and Wu Li agreed, and they all greeted Mrs. Googol-Plex with smiles and hugs.

Mrs. Googol-Plex beamed with happiness at seeing her students after the summer break. “Have you met our new student?” she asked the group.

Thomas piped up. “I was just about to introduce him,” he said. “This is Emerson Escher. He’s going to be in our class this year. And guess what? He likes to count!”

“Great!” said Alex. “We like to do that, too. I’m Alex Hypatia. Welcome to our class!”

Gray spoke up next. “You have the same last name as an artist I read about,” she told Emerson. “M.C. Escher. Are you related to him? He creates amazing drawings in black and white. They’re so cool! I have a book of his artwork at home. By the way, I’m Gray—Gray Hopper. Nice to meet you!”

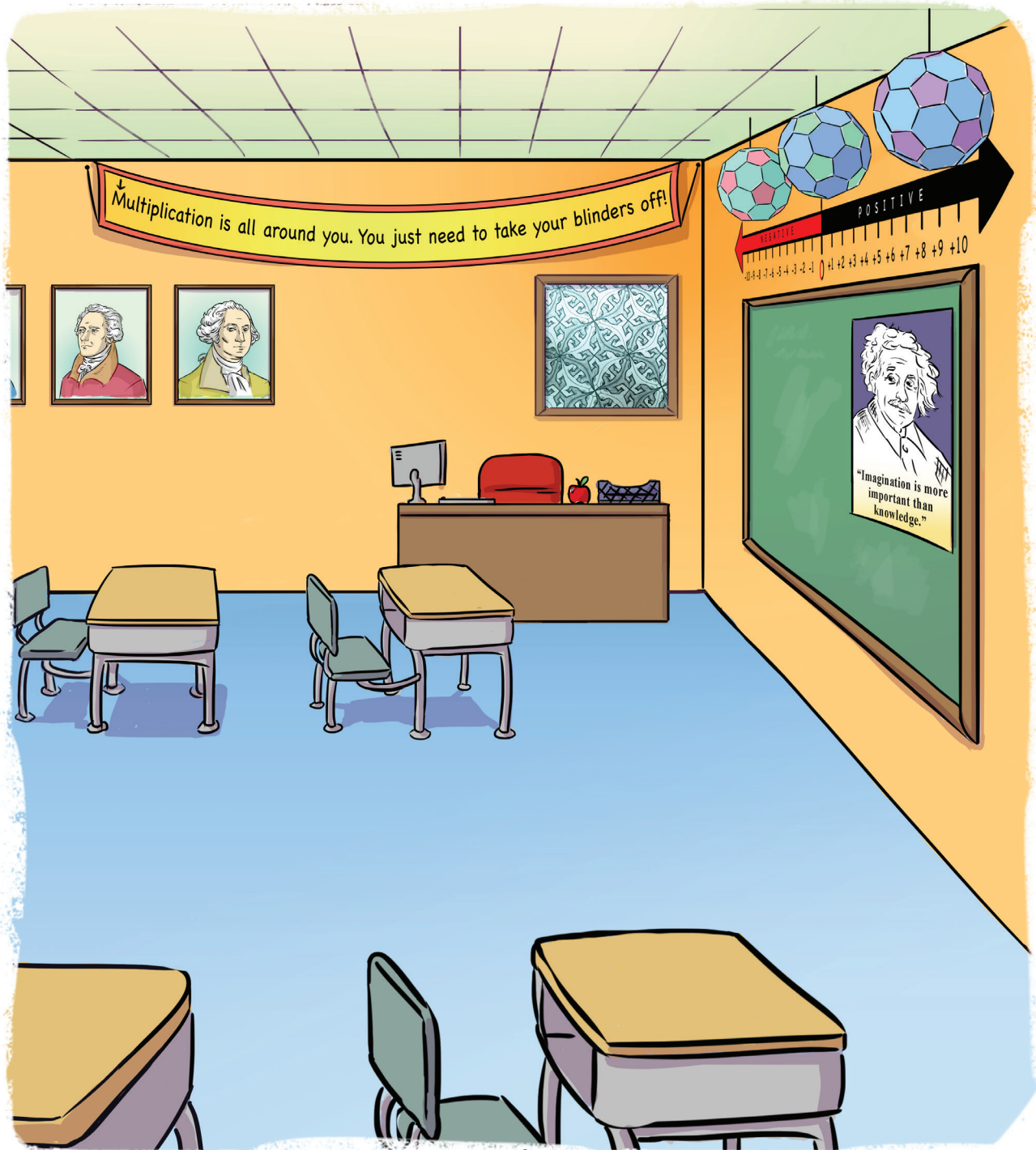
“Hi,” said Emerson. “But I don’t know if I’m related to any artists.”

Mrs. Googol-Plex pointed to the open classroom door. “Why don’t we go in and show Emerson around?”



Wu Li took Emerson's arm. "I'm Wu Li Chien," she said. "Come on. I'll show you our classroom."

The children entered the room, followed by Mrs. Googol-Plex. They were pleased to see the pictures of their old friends George Washington, Alexander Hamilton, and Benjamin Franklin still hanging on the wall. New this year was a large banner draped above Mrs. Googol-Plex's desk. The banner read: "Multiplication is all around you. You just need to take your blinders off!"



Wu Li showed Emerson where the students hung their coats and put other such items, and then Emerson looked at the desks. They were arranged in groups. “Where do you think I should sit?” he asked Wu Li.

“Come with me,” said Wu Li, taking Emerson’s hand. “You can sit by Thomas and me. We sit in groups so we can talk about what we’re learning.”

As Wu Li led Emerson to an empty desk near hers, Emerson noticed some paper soccer balls hanging from the ceiling at the front of the room. He took his seat, turned to Thomas, and whispered, “Why are there soccer balls hanging in the classroom?”

Mrs. Googol-Plex overheard him and answered. “Emerson,” she explained, “when I learned that you were going to become one of my students, I spoke to your parents so that I could find out a little bit about you. During that conversation, I learned that your mother is a professional soccer player. I decided that it would be fun to hang soccer balls in the classroom. To mathematicians, a soccer ball is a good example of a truncated icosahedron.”

“A what?” asked Thomas.

“A truncated icosahedron,” repeated Mrs. Googol-Plex. “But look closely. The soccer ball is made up of two different kind of shapes. In fact, Emerson, why don’t you try to find out what shapes make up a soccer ball. Work on that this evening, and we’ll talk about it as a class tomorrow.”

“Can my parents help me?” asked Emerson.

“Of course,” said Mrs. Googol-Plex. “Parents are always welcome to help!”

Emerson leaned over to Thomas and whispered, “You know, I just might like this class.”

“I told you so,” Thomas whispered back to him. They both smiled.

Mrs. Googol-Plex drew the boys' attention back to the truncated icosahedrons at the front of the room. She pointed to one and said, "This solid has some shapes that repeat themselves and that will be a key to what we're going to study first this year. We're going to solve a new mystery!"

"Yay!" said Alex. "We love mysteries in this class!"

Mrs. Googol-Plex smiled knowingly. "For our first lesson, we're going to study multiplication, which is a way of looking at repeated patterns. First, we'll start with the mystery of multiplication. We'll learn that multiplication is repeated addition—a way to arrange items into groups to make it easier to find the total number of items. Multiplication is an easy way to add more quickly or, as some people would say, a 'lazy smart way' to add. Your mystery is to find out *why* it is repeated addition. You are on a quest to look for signs of multiplication because it's all around you. Notice the banner above my desk."

Gray raised her hand. "I see an arrow over the *M* in *Multiplication*. Does that have anything to do with our mystery?"

"That's a good observation, Gray," said Mrs. Googol-Plex. "But that arrow is there to help Emerson focus his eyes on where to look when he reads."

"That's neat," said Gray.

Mrs. Googol-Plex continued. "There are some concepts that we'll be exploring as we begin studying multiplication this year. But one of the most important things I want you to remember is what that banner says: Multiplication is all around you. So for homework, I want you to look for clues about the mystery of multiplication on your way home from school today. Tomorrow you can bring in your evidence, and we'll use it to begin solving the mystery. Remember to keep your blinders off!"



“Blinders off? What does that mean?” asked Emerson.

Wu Li answered him. “It means that you need to keep your eyes and your mind open for unexpected new discoveries.”

“Hmm,” said Emerson. “I’ll try.”

“Just keep looking around you,” added Gray. “You never know what you might see!”

As the day wore on, Emerson became more and more comfortable in class, and soon it was time for dismissal. Thomas, Wu Li, Alex, and Gray decided to meet on the large checkerboard outside, and they invited Emerson along. As they were getting their backpacks from the back of the room, Thomas turned to Emerson. “So, see you at the checkerboard?” he asked.

Emerson paused. “Mrs. Googol-Plex said she wants to talk to me for a minute. I’ll meet you after that.”

“We’ll wait for you,” Thomas assured him.

As the students exited the classroom, Emerson walked over to Mrs. Googol-Plex, and they began talking.





Outside, Thomas, Wu Li, Alex, and Gray stood in the middle of the checkerboard, chatting.

“I wonder what they’re talking about,” said Thomas.

“Maybe that arrow thing—to see if it helped him?” suggested Wu Li.

“Could be,” said Thomas.

“I wonder when we’ll see PI,” commented Alex.

Gray shrugged. “I’m sure she’ll show up sometime,” she said. “Maybe she doesn’t want to scare Emerson, so she’s figuring out a way to meet him on his own first. I remember how I met her.”

“Me too,” the other three said in unison.

“I can’t wait for the magic to start again,” said Gray.

“Yeah,” agreed Thomas.

Wu Li interrupted their thoughts. “Here comes Emerson,” she said. When he arrived at the checkerboard, she asked, “Is everything okay?”

“Sure,” Emerson replied. “Mrs. Googol-Plex just wanted to know how my first day went. She also asked about other stuff, like how letters and numbers jump around a lot for me when I see them. She said she would try to help me with that.”

“I’m glad you told her about that,” said Thomas. “We’ll help, too, if we can.”

The other three children nodded in agreement.

“This is a cool checkerboard,” said Emerson, changing the subject. “What are we doing on it?”

“Well,” said Alex, “remember our homework assignment. I thought maybe we could start here. There are sixty-four little squares on it. But is there a faster way to count them than just one at a time?”



“We can count the black ones and white ones separately,” suggested Wu Li, “and then add them up.”

“I’ll hop on every other black square and count by twos,” offered Thomas.

“I’ll count the white ones the same way,” said Gray.

After a few minutes of hopping, Thomas panted, “I got thirty-two.”

“I did, too,” said Gray between breaths.

Alex did the math. “Two sets of thirty-two. Thirty plus thirty is sixty, and two plus two is four. So the answer is sixty-four!”

“That’s definitely faster,” said Wu Li.

Just then the children heard the rumbling of bus engines. “Here come the buses,” said Thomas. “Let’s go.”