

THE MATHEMATICIAN

Hal Ames



Matthew was a normal eleven-year-old boy. He liked to play with his friends, play computer games on his laptop computer, and watch TV.

However, there was one thing that made him special. Matthew was excellent in mathematics. From the age of three he could easily say all his addition, subtraction, multiplication and division tables. He started in algebra when he was five, and now he was studying trigonometry and physics at the university in his town, even though he was only in the fifth grade. He loved to work on very difficult equations during his free time. He taught himself computer programming languages and wrote many computer games his friends loved to play. He just loved math.

He became famous after he joined the math club, and they won every competition.

One day, while he was at his elementary school, a man in a dark blue business suit stopped him in the hallway and told him he needed to go with him to the principal's office. Matthew didn't understand why this stranger was making him go see the principal, but since he was a respectful child, he went with him.

Matthew and the stranger went inside the office. The principal was sitting behind his desk. He waved for Matthew to sit down in the chair in front of him. Just then Matthew noticed that his parents were also there. He began to get scared. What had he done to be in so much trouble? He looked around the room at all the people who were there.

The principal spoke first, "Matthew, a man is here to ask you to do something very

special. He's from the government, and they need your help. There's been a problem, and they are having difficulty resolving it. They've asked me to bring you here so they can explain the situation to see if you can help."

"Me, help the government? How can I do that, I'm just a kid," Matthew spoke up.

The man in the dark business suit came forward. "Matthew, we need someone with your special talents to help us get out of a problem. We have seven people who working on this, and we aren't sure how to fix it.

"We've seen your work on the internet, and based on your talents in mathematics, we think you can help. If we are off by just a fraction, it will mean disaster. Will you help us?" the man asked in a quiet, yet reassuring way.

Matthew looked over at his parents, then the principal, and then at the man who had talked to him. They were all smiling and shaking their heads in agreement.

"I guess I can try to help. What do you need me to do?" Matthew questioned.

"You'll come with us now to the Ames Space Center in Mountain View, California. You will be taken to the engineers, and they will explain the problem and what they have done so far to try to fix this thing," the man in the suit answered.

"Is it OK, mom and dad?" Matthew asked his parents.

"Yes son, we want you to do all you can do to help your country. We give you our full support," his father said while pulling his son toward him to give him a hug.

The man in the suit then motioned for Matthew to follow him.

"Wow, I'm off on an adventure!" he thought to himself.

The trip to the airport was fast. There was a motorcycle with flashing lights leading the way. The limousine was long. There were many buttons to play with inside, but his mother said not to touch anything. Sitting across from them were three men in dark suits. They were all using their cell phones talking to different people getting and giving directions on what should be done next. The limousine driver was friendly. He told Matthew that there was a can of soda in the mini-fridge, so he took a soda and sat back to enjoy the ride.

Matthew's mother had already packed a bag for him. He would have everything he needed for at least a week.

After they arrived at the airport, Matthew and his mother entered through a special entrance, and then up a flight of stairs to a spacious room. There were many sofas and oversized chairs there.

About ten minutes later a flight attendant came in and talked to one of the men. He waved his hand for everyone to follow him. Matthew got up to follow. As he walked out the door, he saw the airplane that would be taking them to Mountain View, California. It was a smaller private plane, which was red with a blue stripe down the side. It was beautiful.

The flight attendant took the guests to their seats. The plane was empty except for Matthew, his mother and the men in dark suits. Matthew looked out the window at his hometown as they took off. Soon he would be flying to Mountain View. He had always wanted to visit the space center, but his parents said it was too expensive. Now he was going there in a private jet!

The plane took off smoothly and climbed to its cruising height. For Mathew, the flight was boring. He fell asleep in his chair. A few hours later, as they were preparing for the landing, the flight attendant came by to make sure that Matthew had his seat belt fastened. She also offered him some peanuts.

The plane landed and rolled up to a building that seemed to be in the middle of nowhere. Matthew looked around. This didn't look like the Ames Space Center. Where were all of the people? Where were all the military soldiers? Where were the space crafts?

After getting off the airplane, Matthew was led a small building that looked nothing like what he had seen in the pictures he had looked at on the internet. They walked into the building to an elevator. When they got into the elevator, the door closed, and then it began to drop very fast. Matthew's ears started to pop. When the elevator stopped, Matthew looked up and saw that they were thirteen stories down!

They followed the men in the suits down a long corridor to a room that had a sign on the door that said, ‘Authorized Personnel ONLY!’

Their escort swiped a card on the side of the door and then it opened. Matthew and his mother were taken inside. There was a long table with many chairs around it. A man in a uniform pointed for Matthew to take a seat near the end of the table.

The military man smiled, and said, “Son, we’re glad that you are here. My name is General Martin. We’ve brought you here on a very special mission. We need your math skills to calculate the range and direction for a very special project. I’m sorry that we had to mislead you, but this is a top-secret operation, and we didn’t want anyone to know what you’re doing.”

“So, what is it you need me to do?” asked Matthew, confused about why he was there.

“We need you to try to figure out our mistakes. We thought we had the calculations correct, but every time we test the project it fails.

We saw your work on the internet, and when we reviewed the mathematics tests you took at the beginning of the school year, it showed us that you might be the one to help us out of this mess. We need to have this operational as soon as possible. Do you think you can do it?” he asked.

“I don’t know. Let me see what you are working on,” Matthew requested.

The general took Matthew into a second room close by. He introduced Matthew to several very busy people who were on their computers working very hard. Matthew wanted to see what they were working on, but they walked past too fast for him to be able to see the screens very well.

He was taken to a small room and sat him in a chair at a desk. On the desk were a calculator, pen, paper and a laptop computer. Shortly after sitting down, a woman in a navy blue uniform came and sat next to Matthew.

She introduced herself, “My name is Susan. I’m going to show you what we need you to help us do.”

She began to tell him the details of the project and the problems they were having. Matthew listened intently. He wrote down notes as she talked. He was very curious about what the project was for.

“What is this all about, anyway?” Matthew asked.

“You’ll be told that later. Until then you are on a need-to-know basis only,” Susan said sternly. “Don’t ask questions, just listen and follow directions.”

Matthew did as he was told. He took notes trying to piece together the plan. It was very confusing. There were missing elements in the information she was giving him. It seemed like they were purposely trying to keep all the pieces of the puzzle from him.

Matthew did as he was told but, it was not easy. At the end of the day, he was taken to see his mother. He had only solved one part of the question.

“Mom, can we go home now,” Matthew said as he ran up to his mother with a big smile on his face.

Susan answered quickly, “Not so quick young man, we have more for you to do. That was just the first problem.”

“But I want to go home,” Matthew said as he turned to Susan.

“You’ll have stay here until the project is completed. We have a place for you to sleep. You’ll have everything you need,” Susan explained as she pointed for them to follow her down a hallway.

Matthew and his mother went with Susan. When they got to end of the corridor there was an elevator. When the doors opened, they went inside. The elevator went up eleven stories. When the doors opened, they walked down another hallway to a larger room.

“This is the common area. The TV, video games, food and other entertainment are here. If you need something, push this button, someone will come to help you,” Susan gave directions.

She then gave them a tour of the suite. The bedrooms were very nice. In fact, everything was very nice.

Matthew and his mother sat down. The place was fine, and there were many things to do, but it was not home.

Matthew jumped up and pushed a button on the intercom on the wall before his mother could say no.

A voice came over the speaker, "How may I help you?"

"I would like some ice cream and cake." Matthew spoke to the box on the wall.

"We'll bring them to you in just a few minutes. Is there anything else we can do for you?" the voice responded.

"No, that'll do for now," Matthew said, smiling in anticipation of his treat.

The concierge arrived with the ice cream and cake on a cart with two plates.

Matthew turned to his mother, and said, "Maybe this place isn't so bad after all."

They spent the evening relaxing and watching movies.

At 8:00 in the morning the alarm went off. Breakfast was waiting for them. After he ate, Susan came to the room and took Matthew back to the room to work on the problem.

After two days of working, Matthew turned to Susan in frustration, and said to her, "I can't help you. I don't have enough information to make any sense of this. It's all too confusing. Just when I think I understand what you want, something is missing or changes. I can't do this."

Susan got angry, then said to him, "You'll listen, and you'll do as you are told. Then everything will be fine!"

Matthew was surprised at how mad she was. He closed his mouth and listened. He was getting scared. This was not fun or exciting. It was frightening.

Just then, another woman came to the door. She had some papers to give to Matthew.

After he looked over the papers he said, "Now this makes more sense. There are some errors here, but I think I can figure them out."

He looked closely at the problem and then began to write down numbers on a piece

of paper. He put numbers into his calculator and transferred them to the paper. Then he stopped.

He looked over at Susan and said confidently, “The dimensions of the outer sphere seem to be out of balance with the thrust of the engine. With this imbalance, the trajectory will be off by more than two percent. That’s not acceptable.”

Susan was surprised. “How do you know that?” she asked.

“It’s obvious that the ratio of torque to thrust is all wrong,” Matthew explained.

This made no sense to Susan, but she passed on the information to the general.

A little while later, the general entered the room and sat down next to Matthew.

“OK son, tell me where did we go wrong,” the general asked.

“Well sir, someone made an assumption in their calculations that was not correct. The torque to thrust ratio is all wrong. If I insert this factor right here,” he said pointing to the paper he was given, “then the properties of the exponent will agree with the factor of twelve. Then the trajectory will be correct,” Matthew explained to the general.

“Son, that doesn’t mean anything to me, but I’ll take it to our people and have them check this out,” the general said to Matthew as he picked up the paper, and then left the room.

Matthew waited in the office for a long time. He played a game on the computer and checked his e-mail.

The general returned with a big smile on his face.

“You got it! Amazing! We had some pretty good people working on this and you were able to find the solution, congratulations.” the general complimented Matthew.

“Once I was given the entire problem, it became clear where the miscalculation was. Sometimes the answer is right in front of your face. Having a new pair of eyes looking at the problem can make a difference,” Matthew responded, then asked, “Can I see my mother now?”

Susan took Matthew to his mother who had been resting in the waiting area. He and his mother returned to their room to wait.

It was a few hours later when there was a knock on the door to the suite. When Matthew answered the door, he met the general.

“May I come in?” the general asked.

“Sure, come on in. What can we do for you?” Matthew’s asked.

“Your calculations were perfect. We made three computer model tests and each one was successful. You’re a genius boy. I’m proud to know you,” the general said as he patted Matthew on his head.

Looking over at his mother, he said, “We’re very proud of this young man, you should be proud of him as well.”

Matthew’s mother replied with a big smile on her face, “We are very proud of him too, thank you.”

“Are we free to go now?” she continued.

“Not quite yet, we’ve got a few loose ends to pull together, but soon,” the general said as he turned to leave.

“What do you mean by loose ends?” Matthew’s mother asked in a stern voice. “You said that everything was fine. Why can’t we go home?”

“In due time ma’am, in due time,” the general replied.

Then he got up and left the room.

Matthew and his mother looked at each in surprise. They did not understand why they had to wait longer to go home.

They had dinner in the suite and watched a movie before going to bed. It felt like a very luxurious prison. They had to stay in the room. They had no way to contact anyone on the outside. Why was this happening to them?

The next morning the alarm clock went off at 6:30. Their breakfast arrived soon after. A note on the tray said that there would be a meeting at 8:00 a.m. in the main conference room. Someone would come to the room and take them to the meeting.

After getting ready, precisely at 7:50, there was a knock on the door. A man in a uniform entered, and said, “Ma’am, it’s time to go. I’m here to escort the two of you to

the main conference room. Please follow me.”

Matthew and his mother followed as instructed. They entered the elevator and went up to the first floor. The doors opened, and they walked slowly into a conference room. The first person Matthew saw was his father.

“Dad, what are you doing here?” Matthew said as he ran to his father and gave him a big hug.

“They sent a plane for me last night. I just got here. I think there’s a big surprise for you,” his dad said, as he hugged his son.

“What is that?” Matthew questioned.

“Look behind you,” his dad said, as he turned Matthew around.

To Matthew’s amazement, in front of him stood the President of the United States. He had his hand extended to shake Matthew’s. Matthew shook the President’s hand, and then he turned to his dad and asked, “Is this for real?”

The president smiled as he spoke, “Matthew, you’ve done your country a big service. Without your help, this project might have failed. You have truly amazed all of us. I want to personally thank you for your help.

“I want to present you with this special medal of recognition,” the president continued, as he took out a blue box and opened it to show him a beautiful gold medal with a red, white, and blue ribbon. “You have no idea how your assistance will help the country.”

“What exactly did I do?” Matthew asked.

“Didn’t anyone tell him?” the president questioned those in the room. When he didn’t get a response, he explained to Matthew what he had done.

“Young man, we are developing a new space shuttle program to assist in the construction of the International Space Station. Because we have had so many problems with the rockets we have had to keep this a secret. When a new project is started in the space program, and it fails, we are looked at very poorly by the rest of the world. We had to keep this a secret until we got it right. With your help, we are now able to announce to

the world that the new shuttles will be operational in less than a year. Without your help, it might have been several years before we could make this announcement. We owe you a lot. We are truly amazed at your skills,” the president explained to Matthew the history of the project.

Matthew was smiling from ear to ear. His parents were so proud of him. Matthew was relieved that the ending to the story was like this. He thought that he was in big trouble and that he would be held in the place he was working for a long time.

The next day he was taken to the Ames Space Center as promised. He spent the entire day talking to the staff and learned about the project he had been a part of.

When he returned to his school, he was a hero. They had a parade down the main street of the town and then a big rally in the gymnasium. He was a celebrity.

A few weeks later Matthew was on his way to school. A black limousine drove past him and then stopped. The window at the back of the car went down. A man waved for Matthew to come to the car. The man said something and then Matthew got into the car. The President needed him again.

VOCABULARY (*Match the word to its definition*)

- | | |
|-----------------------|-----------------------------------|
| 1. respectful ____ | a. rock for space |
| 2. meteorite ____ | b. long car usually for VIP's |
| 3. gyroscope ____ | c. long hallway |
| 4. fraction ____ | d. expectation, longing |
| 5. limousine ____ | e. polite, courteous |
| 6. expensive ____ | f. next to, connected |
| 7. corridor ____ | g. a portion or part of something |
| 8. adjoining ____ | h. mystery, problem |
| 9. puzzle ____ | i. spinning balance device |
| 10. anticipation ____ | j. costly, pricey |

TRUE / FALSE

- | | |
|--|-------|
| 1. Matthew was in university. | T / F |
| 2. The men in the blue suits were policeman. | T / F |
| 3. Matthew's father went with him on his trip. | T / F |
| 4. Matthew went into a very tall building. | T / F |
| 5. The president gave Matthew a medal. | T / F |
| 6. Matthew was taken in a taxi to the airport. | T / F |
| 7. Matthew was very good in math. | T / F |
| 8. Matthew was a hero. | T / F |
| 9. Matthew and his mother stayed in a very nice suite. | T / F |
| 10. Matthew likes ice cream and cake. | T / F |

MULTIPLE CHOICE

1. What was Matthew good at? _____
 - a) biology
 - b) chemistry
 - c) English
 - d) mathematics

2. Where did Matthew go in the airplane? _____
 - a) Ames Space Center
 - b) NASA
 - c) The space station
 - d) Mountain View, California

3. Who gave him the medal? _____
 - a) the general
 - b) the flight attendant
 - c) his father
 - d) the president

4. What did Matthew order for a snack? _____
 - a) milk shake
 - b) hotdog
 - c) ice cream and cake
 - d) French fries

COMPREHENSION: (*Write a complete sentence to answer the question.*)

1. Where was Matthew when the principal called him to his office?

2. Who went with Matthew on the airplane?

3. What club did Matthew join at the university?

4. What city were they going to on the airplane?

5. What kind of car took them to the airport?

6. How many stories underground did Matthew go down?

7. What was the name of the woman who worked with Matthew?

8. What did Mathew and his mother do in the evening?

9. What time was the knock on the door for Matthew to leave in the morning?

10. What did the president give to Matthew?
