

Galileo's Leaning Tower Experiment (part 2) by Wendy Macdonald

The next day Massimo looked for Galileo on the bridge and at the market. The professor did not appear. "I must look for him at the university," Massimo decided.

Shabby farm boys were not allowed at the university. But Massimo took a deep breath and walked into one of the huge marble buildings. Crowds of people stood everywhere, talking and laughing. No one noticed him.

Massimo hurried through the courtyard. He stopped only to admire a statue with letters carved into the stone below it.

"I wish I could read this," he said as he ran his hand across the letters.

"What are you doing there?" a voice growled.

"I need to see Professor Galileo;" Massimo croaked.

"We'll see about that," the man said. He took hold of Massimo and marched him through the halls. They stopped in front of an open doorway.

"Professor," the man said gruffly, "this boy says he is here to see you."

Galileo smiled. "Ah, yes! My friend from the bridge," he said. "Please come in!"

The man scowled and pushed Massimo into the room. Massimo stared at the books and papers that filled the office. A thick book on the desk looked as if it had more words than all the ones he knew.

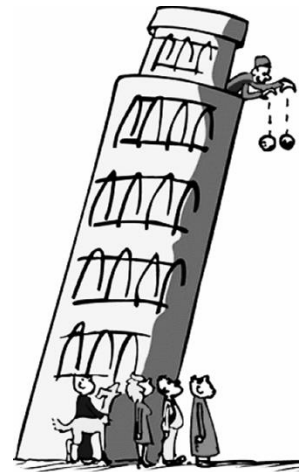
"What brings you here?" Galileo asked kindly.

"I'm sorry to trouble you, Professor," Massimo began, "but it looks as if Aristotle was right after all."

He told Galileo about the buckle and the feather.

Galileo chuckled. "Interesting. I have been dropping things, too!" He handed Massimo a sheet of paper and a rock. "Drop these."

Massimo held them as high as he could and opened his hands. The rock fell to the floor, while the paper floated down slowly, just like the feather.



Name: _____

Cause and Effect: The Scientific Method

Galileo crushed the paper into a ball. "Try it again!"

This time both objects hit the floor together. "What happened?" gasped Massimo.

"It's the air," Galileo replied. "Air is all around us in what looks like empty space. A piece of paper has a large surface, so when you drop it, the air holds it up a little, and it takes longer to fall."

Massimo nodded slowly. "But by crushing the paper, you made the surface smaller, so the air didn't hold it up so much." He picked up the paper ball. "The paper and the rock fell at the same speed. So Aristotle really was wrong."

"Yes, but I must prove it," Galileo said. "It is not easy to change people's minds."

"You could show them by dropping things in front of them," Massimo said.

"Yes, but where?" Galileo wondered.

The bells in the old tower began to ring.

"The bell tower!" Massimo exclaimed. "It's the tallest building around."

Galileo smiled. "I will invite everyone from the university. Will you help me?"

The next day Massimo hurried through his chores and went into town. Many people were already gathered around the tower. As Massimo walked through the crowd, he heard bits of angry conversation.

"Galileo is crazy. How dare he challenge the great Aristotle! I am named after Aristotle. I will not let this professor make a mockery of my name."

Massimo found Galileo surrounded by teachers and students. The boy named Aristotle called out, "Professor, I am very interested in your demonstration. May I assist you?" As the boy bowed low, his friends snickered.

Massimo made his way through the older boys. "I am here to help the professor," he announced.

Galileo smiled at Aristotle. "Thank you, but I have an assistant."

Name: _____

Cause and Effect: The Scientific Method

Galileo and Massimo rolled several cannonballs into the tower. The student named Aristotle stuck his head in the doorway and sneered at Massimo. "One of those balls weighs as much as you do. I will help."

"No, thank you;" Massimo said and pushed the older boy out. Quickly he swung the door shut and bolted it.

One by one, Massimo carried the heavy cannonballs to the top of the tower.

At the top Massimo looked down at the sea of tiny, upturned faces. "Professor, it looks as if all of Pisa has come to see your demonstration!"

He and Galileo set up two long boards. Between the boards they placed a cannonball and a smaller musket ball. Galileo waved to the crowd and told Massimo to stand ready.

"Now!" Galileo shouted. They pulled away the board in front and pushed the back piece forward. The two balls rolled over the edge at the same moment.

Time seemed to slow down as Massimo watched the balls fall. Then they hit the ground with a single thud.

At first there was complete silence. Then people began to argue about what they had seen. They started to chant, "Again, again!"

Galileo and Massimo repeated the demonstration over and over. Finally, even the student named Aristotle agreed: the large ball and the small ball landed together. They must have fallen at the same speed!

When Galileo and Massimo came down from the tower, the crowd cheered.

Galileo and Massimo shook hands. "Well done, my young friend," Galileo said. "You have helped uncover a great secret just by asking questions and paying attention to how things really happen. You have the kind of mind I enjoy teaching. Would you like to be my student?"

"Oh, yes!" Massimo answered. "There's so much I want to find out! How fast do things fall? Do they speed up on the way down? What happens if I throw something instead of just dropping it?"

Galileo smiled. "At the university you can explore all those things and more. Truly, you will help us observe common things in uncommon ways!"

THE END

Name: _____

Cause and Effect: The Scientific Method

1. Why did Galileo want to carry out his demonstration of dropping things from the top of the highest place he could find?
2. Why were people upset with Galileo for challenging Aristotle's thinking?
3. Why was it important for Galileo to repeat his demonstration over and over?
4. In the story, Galileo says that Massimo has the type of mind he enjoys teaching. What kind of mind is he talking about?
5. Massimo says that there is so much more he would like to find out. Do you know the answers to any of the questions he asks? Are you curious to know the answers? So you have any other questions about gravity that you would like to know the answers to?

NOTE: We know about Galileo's Leaning Tower experiment from an account written by Vincenzo Vivianina, one of Galileo's pupils. However, Galileo does not mention the experiment in his own writings, so—as with Ben Franklin— historians are not really sure if he ever conducted it.