

CHAPTER OVERVIEW

7: Proving the Heliocentric Model Correct

This unit takes us back to the early 1600's and one of the greatest intellectual battles in the history of science. On one side was Galileo, an Italian astronomer, mathematician, and inventor. Galileo supported the heliocentric (Sun-centered) theory of Copernicus. Galileo believed that his new invention, the astronomical telescope, could help him prove that the Sun was the center of our solar system and that Earth was just one of many planets orbiting our star.

On the other side of the debate was Aristotle, an ancient Greek astronomer who had taught that the Earth was the center of our solar system – and the entire universe! Although Aristotle has been dead for almost 2000 years, his ideas were still at the center of all the ideas and theories of astronomy in the early 1600's. Galileo realized that Aristotle's ideas had never been tested by experiment, these ideas had simply been repeated for so long that everyone accepted them without question.

Galileo did not believe that the science of astronomy was settled. Galileo insisted that all ideas in science should be tested and open to experiment and investigation. Aristotle's ideas had been accepted not only by scientists, but also by the Roman Catholic Church – and powerful men in government and positions of power. Galileo was not only challenging the science of Aristotle, but the people in power who believed in it.

Although the struggle between Galileo and his opponents was monumental, this is not the true focus of our teaching and activities. These activities and experiments can show your students both how and why scientists sometimes alter, even throw out an old theory in favor of a new one. Discarding an old theory is never done lightly. Predictions are made by both old and new theories, innovative and delicate experiments are devised by the challengers, and the outcome hangs on the data alone. No thought or prayer will change it, no belief will alter the results in the slightest. Our experiments ask the questions and nature gives the answers. Let the best model win!

[7.1: Modeling the Moons of Jupiter](#)

[7.2: The Phases of Venus](#)

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