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| **Galileo Galilei**  **Born February 15, 1564 – Died January 9. 1642**  Galileo Galilei was born in Pisa, Italy, in 1564. He was the first of seven children. Galileo’s father was a musician — a lute player — from a noble background. Galileo’s wish was to become a priest, but his father pushed him to study medicine. He attended the University of Pisa. University courses at this time were based on Aristotle’s teachings. But Galileo made clever observations and began to question some of Aristotle’s ideas. For example, Aristotle taught that objects of different sizes fall at different speeds. Galileo observed hailstones all hitting the ground at the same time. He decided Aristotle was wrong.  Is the Earth or the Sun at the center of it all?  Galileo became a professor of mathematics. He also gave private lessons in architecture, surveying, and mechanics. He also began studying tides, and became interested in **astronomy**. Most scholars at this time still agreed with Ptolemy and Aristotle that all heavenly bodies revolve around Earth. Their view was called a **geocentric** model. But other views were being considered. Nicolaus Copernicus claimed that all bodies revolve around the Sun. His was called a heliocentric model. Astronomer Tycho Brahe believed that Earth stayed still but other planets orbited around the Sun. In 1597, Galileo read a book by German astronomer Johannes Kepler that argued for a **heliocentric** universe. Galileo wrote a letter to Kepler saying he agreed, but was keeping quiet. He didn’t want to be mocked for his ideas.  Galileo looks at the sky  Galileo observed a remarkable event in 1604, when a large star died in an explosion. It’s called a **supernova**.  Aristotle had said that no change could ever take place in the heavens. The supernova proved him wrong. From then on, Galileo began to observe the sky. He performed experiments and made his own conclusions. In 1609, the Dutch made an early telescope. A friend who saw it described it to Galileo. He reported that it had two lenses, one on each end of a 4-foot tube. Within about a month, Galileo had made a telescope three times as powerful as the Dutch device. Galileo continued to work on his telescope, making his own lenses. Using the telescope, Galileo saw four moons orbiting Jupiter. This contra­dicted Ptolemy’s idea that the Earth is the center of all orbiting bodies. Galileo published his findings in March 1610 as The Starry Messenger. The general public was excited by what he wrote. However, most **philosophers** and astronomers disagreed with Galileo. They said the moons weren’t really there. Galileo stopped teaching and became a mathematician for the royal family in Florence. It was there that he began to observe Venus. His observations demonstrated that Venus orbits the Sun. This proved Copernicus right and Ptolemy wrong. Galileo believed that the Earth also orbits the Sun, but he had not proved it yet.  The Catholic Church targets Galileo  The Catholic Church followed the teachings of Ptolemy and did not like the ideas being brought forth by people such as Galileo. In order to spread his ideas, Galileo asks the church if he can write a book about his findings. Galileo got permission from Pope Urban II to write a book, as long as he didn’t take sides in the Earth versus Sun debate. Galileo worked on his book for six years. In the book, one character argues for a heliocentric model, and another character argues for a geocentric model. The third character was a regular person, listening to both sides. The book appeared in Florence in March 1632. In August, an order came from the Roman Inquisition to stop all sales. The Catholic Church felt that Galileo’s book was arguing for a Sun-centered model. In September 1632, Galileo was charged with “**heresy**” — disagreeing with the Church. He was ordered to come to Rome for a trial. Galileo tried to argue that his book showed both sides. Finally, he admitted that maybe the book leaned toward the Sun-centered argument. He was threatened with torture. He had to publicly admit he was wrong. His book was banned. It took the Catholic Church 200 years to lift the ban on Galileo’s book. In 1992, Pope John Paul II apologized for how the Church treated Galileo. |

**Vocabulary Word Bank**

**Astronomy**: Science that studies space, stars, and planets.

**Geocentric**: A view of the universe that has the Earth at the center.

**Heliocentric**: A view of the universe that puts the Sun at the center of our solar system.

**Supernova**: The death of a star in which an explosion results in the creation of all the elements in the periodic table.

**Philosophers**: A person who seeks wisdom and enlightenment.

**Heresy**: Having beliefs or views that go against the teaching of the Catholic Church.

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