

Early Astronomers **Facts**



Astronomy is a natural science that studies celestial objects and phenomena, such as stars, planets, comets, and galaxies. It applies mathematics, physics, and chemistry in an effort to explain the origin of those objects and phenomena and their evolution. More generally, all phenomena that originate outside Earth's atmosphere are within the purview of astronomy.

EARLY HISTORY

- ★ Ancient astronomers were able to differentiate between stars and planets, as stars remain relatively fixed over the centuries while planets will move an appreciable amount during a comparatively short time. Early cultures identified celestial objects with gods and spirits. They related these objects to phenomena such as rain, drought, seasons, and tides.
- ★ It is generally believed that the first astronomers were priests, and that they understood celestial objects and events to be manifestations of the divine, hence early astronomy's connection to what is now called astrology.



Early Astronomer Facts

- ★ We have been told that the Earth revolves around the Sun and probably know that planets other than our own have moons, and the way to test to see whether or not something is true is by experimenting. Thousands of years ago, these things were not widely known. The heavens above were anyone's guess, and the way things were was just the way the gods had made them.
- ★ It was felt that there was no need to truly understand them or put them in any kind of order. See some of the most famous astronomers and physicists throughout history, from humanity's earliest observations of celestial events to today's investigations of deep sky objects that hold the secrets of the universe.

PTOLEMY



Ptolemy wrote the *Almagest*, the work that defined astronomy for over 1,000 years.

- ★ Claudius Ptolemy was an astronomer and mathematician. He believed that the Earth was the center of the Universe. The word for earth in Greek is *geo*, so we call this idea a "geocentric" theory. Even starting with this incorrect theory, he was able to combine what he saw the stars' movements were with mathematics, especially geometry, to predict the movements of the planets.
- ★ His famous work was called the *Almagest*. In order to make his predictions true, he worked out that the planets must move in epicycles, smaller circles, and the Earth itself moved along an equant.
- ★ None of this was true, but it made the math work for his predictions. This flawed view of the Universe was accepted for many centuries.



Early Astronomer Facts

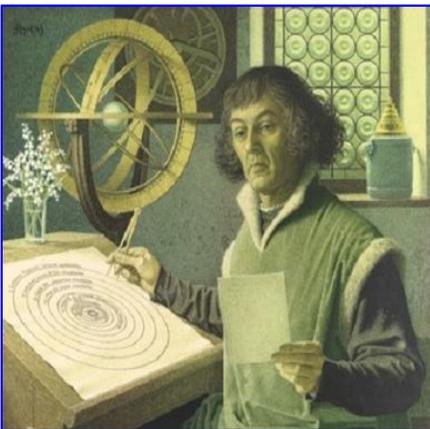
ARISTOTLE

- ★ Aristotle is sometimes called the Grandfather of Science. He studied under the philosopher Plato and later started his own school.
- ★ He, too, believed in a geocentric Universe and that the planets and stars were perfect spheres though Earth itself was not. He further thought that the movements of the planets and stars must be circular since they were perfect and if the motions were circular, then they could go on forever.
- ★ He was one of the first to study plants, animals, and people in a scientific way, and he believed in experimenting whenever possible and developed logical ways of thinking.



Aristotle by
Francesco Hayez
Oil painting

COPERNICUS



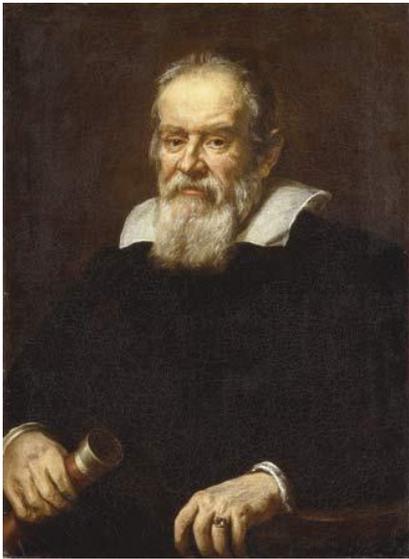
Copernicus' heliocentric
model of the cosmos

- ★ Over a thousand years later, Nicolaus Copernicus came up with a radical way of looking at the Universe. His heliocentric system put the Sun (helio) at the center of our system. He was not the first to have this theory. Earlier starwatchers had believed the same, but it was Copernicus who brought it to the world of the Renaissance and used his own observations of the movements of the planets to back up his idea
- ★ His ideas, including the revelation that the Earth rotates on its axis, were too different for most of the scholars of his time to accept. Those who did study his work intact often did so in secret. They were called Copernicans.



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GALILEO



Portrait of Galileo Galilei (1636), by Justus Sustermans

- ★ Born in Pisa, Italy, approximately 100 years after Copernicus, Galileo became a brilliant student with an amazing genius for invention and observation. He had his own ideas on how motion really worked, as opposed to what Aristotle had taught, and devised a telescope that could enlarge objects up to 20 times.
- ★ He was able to use this telescope to prove the truth of the Copernican system of heliocentrism. He published his observations which went against the established teaching of the Church.
- ★ He was brought to trial and although he made a confession of wrongdoing, he was still kept under house arrest for the rest of his life. But it was too late to lock away the knowledge that Galileo shared. Other scientists, including Sir Isaac Newton and Johannes Kepler, seized its importance and were able to learn even more about the ways of the world and the heavens beyond.

LEGACY

- ★ These early scientists' legacy continues to this day. As time goes on, people use instruments, science, math, reasoning, and creativity to learn more about the secrets of the Universe. In this way, people are directly linked to the astronomers of centuries ago who gave us direction to discover more about the dances of the planets and the nature of the stars.



Name: _____

The Astronomers



An astronomer is a scientist in the field of astronomy that observes astronomical objects. Complete the table below by giving the information of each astronomer.



ARISTOTLE



PTOLEMY



GALILEI

DISCOVERY

CONTRIBUTION

THEORY



Name: _____

See Qualities



Astronomers study the physics of the universe. What do you think are some characteristics that astronomers should have? List them down below.

