

## Models of the Universe

the "ANCIENTS"	everywhere	from the beginning	<p>Earth was the centers of the universe and the stars, sun, moon were their clocks and calendars.</p> <p>The heavens provided a great source of mythology, mystery and religion.</p> <p>Five "stars" were special and seemed to "wander" about the other stars which were fixed to the celestial sphere...these stars were called <b>planets</b> (means <i>wanderer</i> in Greek)</p>
Aristotle	Greece	384-322 B.C.	<p><b>Geocentric</b> model of the Universe. The sun, stars and planets revolve around Earth.</p> <p>Celestial sphere is perfect; terrestrial, imperfect</p>
Ptolemy	Greece	85-165 A.D.	His geocentric model included epicycles to account for the wandering motion of the planets
Eratosthenes	Greece	276 to 194 B.C.	was able to calculate the <a href="#">circumference of the Earth</a>
Nicolas Copernicus	Poland	1473-1543 A.D.	<b>Heliocentric</b> model of the universe (Sun-centered)
Galileo Galilei	Italy	1564-1642 A.D.	<p>First to use a telescope to view the heavens</p> <p>Discovered the Galilean moons of Jupiter, craters on our moon, and sunspots</p> <p>Supported the heliocentric model</p>
Tycho Brahe	Denmark	1546-1601	he made very accurate observations of the night sky, all without the aid of a telescope. Tycho's records were used by Kepler to describe the orbits of planets
Johan Kepler	Germany	1571-1630 A.D.	<p>3 laws of planetary motion</p> <p>orbits are elliptical, not perfect circles</p>
Isaac Newton	England	1642-1727 A.D.	<p>Laws of motions and gravity</p> <p>Invented the reflecting telescope</p> <p>"clockwork" universe</p>
Albert Einstein	Germany	1879-1955 A.D.	Theory of relativity; $E = mc^2$
Edwin Hubble	U.S.A.	1889-1953 A.D.	<p>Changed the model for a static universe with just one galaxy to an expanding universe with billions of galaxies.</p> <p><i>Andromeda</i> was another galaxy, 2 million light-years away</p> <p>Billions of galaxies, all of which were moving away from each other (red shift)...the <b>expanding universe (Big Bang!)</b></p>