

SCIENTISTS OF THE SCIENTIFIC REVOLUTION

STUDENT PRESENTATIONS 2014

TYCHO BRAHE (1546-1601 AD)

- Lived in Denmark and was Danish
- Studied at Universities of Copenhagen and Leipzig and then traveled through the German region, studying at the Universities of Wittenberg, Rostock, and Basel.
- Suggested that the moon and sun revolved around the earth, earth didn't move
- Other planets revolved around the sun
- Constructed scientific instruments with which he made more extensive naked-eye observations
- He revolutionized astronomical instrumentation and changed observational practice profoundly

NICHOLAS COPERNICUS:

Nicholas Copernicus 1473-1543 AD

- Rejected Ptolemy ideas
 - Claimed the epicycles were smaller
 - Claimed that earth moved
- He discovered the more often you saw a planet the closer it actually was to you.
- Copernicus achieved "new intelligibility and mathematical elegance to astronomy"
 - To do this he had to reject Aristotle's cosmology and to remove the earth from the center of the universe.
 - Copernicus adopted ideas from Ptolemy but came up with the idea that the solar system was *heliocentric* (Sun-centered).

TYCHO BRAHE

- A solar eclipse awoke his interest in astronomy and then he began reading books on the subjects
- Took the next major step toward conception of a sun centered system

"To know that we know what we know, and to know that we do not know what we do not know, that is true knowledge."

THE COPERNICAN UNIVERSE

Nicholas Copernicus

QUOTE

- And when statesmen or others worry him [the scientist] too much, then he should leave with his possessions. With a firm and steadfast mind one should hold under all conditions, that everywhere the earth is below and the sky above and to the energetic man, every region is his fatherland.
- — Tycho Brahe

JOHANNES KEPLER (1571-1630)

- The assistant to Tycho Brahe
- German astronomer
- He supported heliocentric model (sun-centered)
- Influence by Renaissance Neoplatonism
- Had to abandon Copernicus's model to create his own model
 - Planets are elliptical
 - Used mathematics to figure out the speed of the planets
 - Put this in a book called *The New Astronomy*

ABOUT GALILEO'S LIFE

- He lived from 1564-1642
- He was born in Pisa, Italy
- He became a famous lutenist, and studied medicine then later taught geometry as a mathematician
- Very well known astronomer
- Studied gravity and velocity

JOHANNES KEPLER

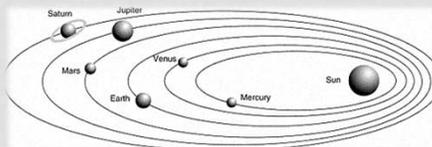
"The diversity of phenomena of nature is so great, and the treasures hidden in the heavens so rich, precisely in order that the human mind shall never be lacking in fresh nourishment."



HIS DISCOVERIES

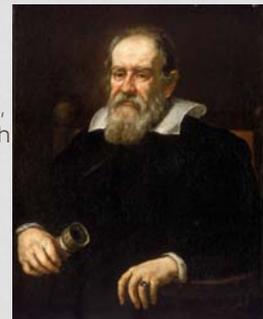
- He built a much improved telescope
- Discovered the details of planets and moons
- Proved the heliocentric model of the Universe through his observations using the telescope.
- The catholic church denied most of his ideas

JOHANNES KEPLER



GALILEO

- "The sun, with all those planets revolving around it and dependent on it, can still ripen a bunch of grapes as if it had nothing else in the universe to do."



ISAAC NEWTON BIOGRAPHICAL DETAIL

- Questions and solved laws of gravity
- Newton believed that religion and science were compatible and mutually supportive



ISAAC NEWTON'S MOTIVATION

- He was perplexed by the question that were unsolved by science and wanted to find the reasons behind it.
- He was also a teacher and wanted to find the knowledge to share with others.

ACCOMPLISHMENTS

- "Newton was a great mathematical genius"
- Found that physical objects moved through mutual attraction.
- Said attraction of gravity explained why the planets moved orderly.
- He proved this mathematically
- Did not attempt to explain the nature of gravity itself

ISAAC NEWTON'S IMPACT

- He work set the foundation for others to build on.
- He found how gravity worked even if he didn't know why.
- He made great changes in mathematical material.
- Explained why planets would move in the way they did according to gravity.

ISAAC NEWTON QUOTES

- "If I have seen further than others, it is by standing upon the shoulders of giants." — [Isaac Newton](#)
- "Trials are medicines which our gracious and wise Physician prescribes because we need them; and he proportions the frequency and weight of them to what the case requires. Let us trust his skill and thank him for his prescription." — [Isaac Newton](#)
- "What I'm trying to do with most of my work is establish this new modernism, ... If people don't walk out of theatres saying, 'Yes, something is possible,' then you've failed." — [Isaac Newton](#)





**"THE MONUMENTS
OF WIT
SURVIVE
THE MONUMENTS
OF POWER."**

SIR FRANCIS BACON (1561-1626)
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WHO WAS MARGARET
CAVENDISH?

- ❖ Lived from 1623-1673
- ❖ English aristocrat
- ❖ Duchess of Newcastle
- ❖ England's most recognized woman
- ❖ Natural philosopher; argued against Descartes and Hobbes
- ❖ Also argued for education of woman and their involvement in science
- ❖ Believed society replaced scholastic and experimental speculation - both ignored problems with utility
 - Composed Description of a New World, Called a Blazing World



INFORMATION

- (1561-1626)
- English man of most universal accomplishment
- Lawyer, high royal official, author of "The Histories", moral essays, philosophical discourses
- Regarded as father of Empiricism and Experiment

QUOTABLE

- ❖ "Art has intoxicated so many men's brains, and wholly employed their thoughts and bodily actions about phaenomena, or the exterior figure of objects"



INFORMATION (CONTINUED)

- Bacon attacked scholastic belief that most truth had already been discovered
- He believed that human knowledge should produce useful results
- He boldly compared himself to Columbus, plotting a new route of intellectual discovery