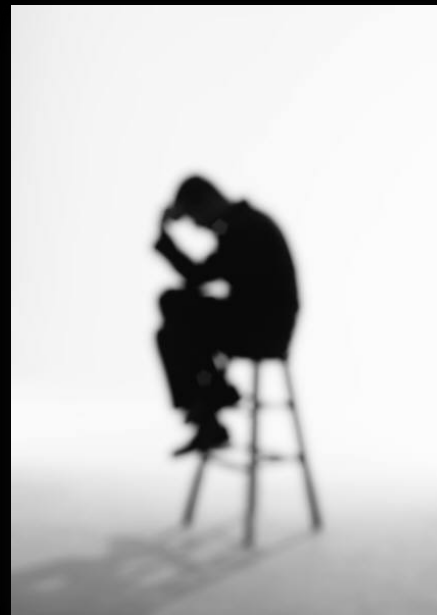




THE SCIENTIFIC REVOLUTION

Questioning Leads to Doubt

- As explorers traveled around the world bringing new ideas and technology, people began to question the ideas of the ancient Greek and Roman scholars.

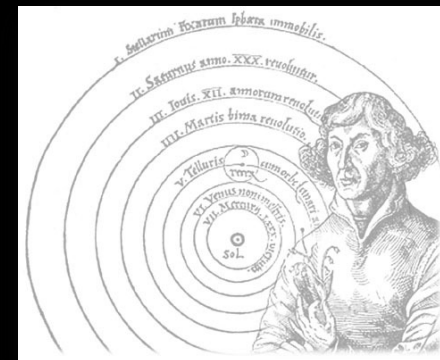




Advances in Astronomy

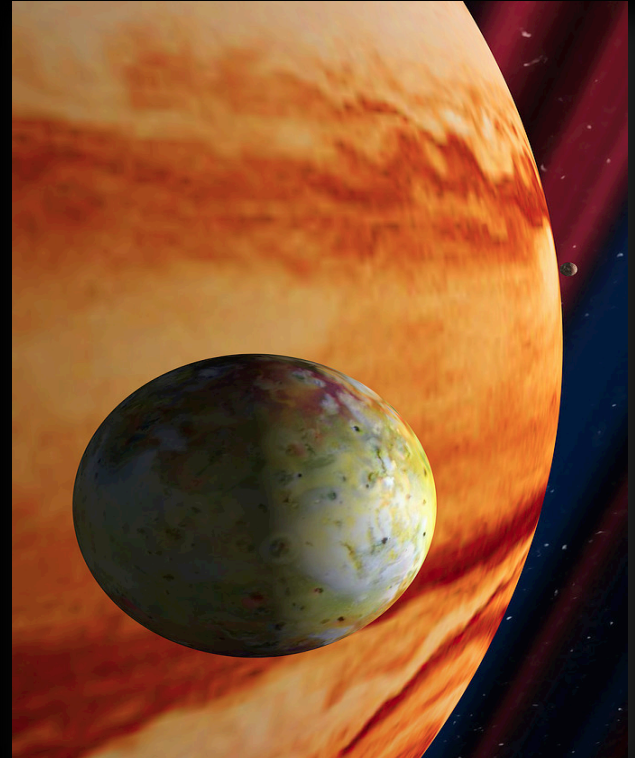
- The Scientific Revolution began with the publishing of the book, *On the Revolution of the Celestial Spheres*, by Nicolas Copernicus.
- Copernicus was the first to theorize the **heliocentric theory** - that the earth revolved around the sun.

What is Copernicus thinking about??



Advances in Astronomy (continued)

- **Tycho Brahe** was one of the first scientists to record the position of the stars. He emphasized the idea of careful observation and data.
- **Johannes Kepler** also made advances in astronomy by mapping the orbits of planets.
- Kepler stated that planets orbit in an elliptical shape, advancing on Copernicus' initial theory.



Advances in Astronomy (continued)

- **Galileo Galilei** was the first person to study the sky using a telescope.
- He discovered the craters and mountains on the moon as well as the moons orbiting Jupiter.
- First scientist to routinely use experiments to test his theories.
- Galileo's teachings along with others conflicted with the Catholic Church.

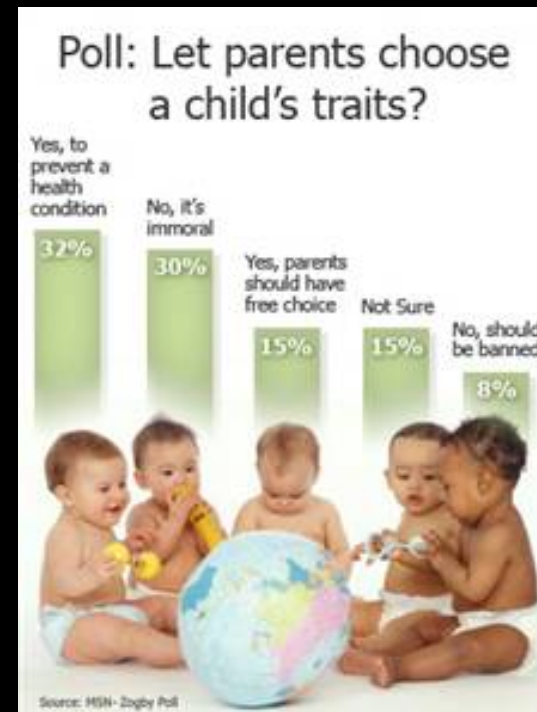




- Galileo was put on trial for heresy and forced to take back his theories in fear of being tortured.
- This clash helped spark more questioning about science and society.
- *What is Galileo thinking about???*



[Genetic manipulation:
https://globalnews.ca/news/3251292/scientists-are-pushing-to-genetically-modify-babies-to-avoid-diseases/](https://globalnews.ca/news/3251292/scientists-are-pushing-to-genetically-modify-babies-to-avoid-diseases/)



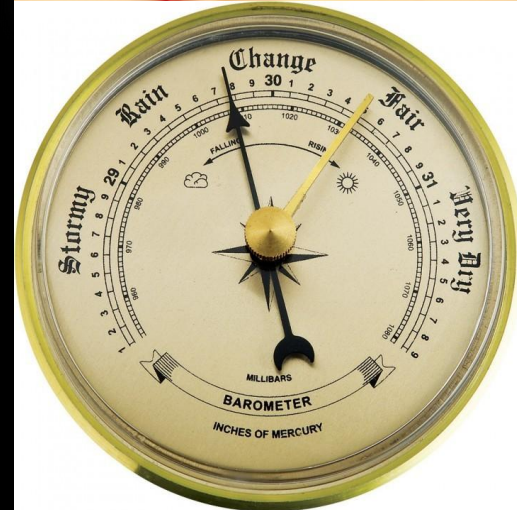
Advances in Astronomy Continued



- **Sir Isaac Newton** was an English scientist who wrote the book, Principia Mathematica.
- Newton invented calculus.
- Newton introduced the **law of gravity** which stated that force attracts objects to one another.
- Newton also created the **laws of motion** which describes how objects move through space.
- He stated, “For every action there is an equal and opposite reaction.”
 - *What is Newton thinking about?*

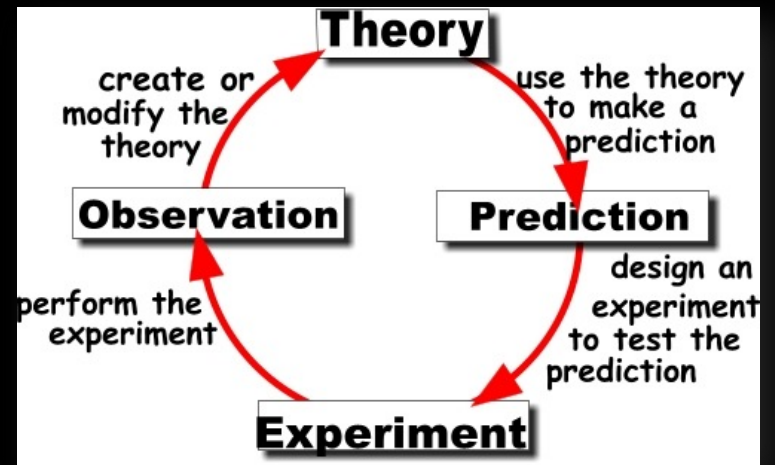
New Inventions

- During the Scientific Revolution new inventions led to new discoveries and theories.
- **Galileo** invented the thermometer, an instrument that measures temperature.
- **Torricelli** invented the barometer, an instrument that measures air pressure (this helps predict the weather).
 - Draw some weather in Torricelli's box



Science and Society

- As the Scientific Revolution progressed, science became the center of knowledge.
- **Francis Bacon** argued that science should be pursued systematically (step-by-step) to gain more knowledge.
- **Rene Descartes** argued that nothing should be accepted as true unless proven.
- **Descartes** claimed that knowledge began with doubt, not faith.
 - *What is Descartes thinking about?*



The Scientific Method

- The scientific method is a step-by-step method for conducting research.
 1. Stating the problem. Asking *why*?
 2. Collecting information.
 3. Forming a hypothesis: an educated guess as to what may happen.
 4. Testing the hypothesis.
 5. Recording and analyzing data.
 6. Creating conclusions on the research and data.

Who said it?

“If you would be a real seeker after truth, it is necessary that at least once in your life you doubt, as far as possible, all things.”

Descartes

Who said it?

“To every action there is always
opposed an equal reaction.”

Newton.

Who said it?

“Therefore, when I considered this carefully, the contempt which I had to fear because of the novelty and apparent absurdity of my view, nearly induced me to abandon utterly the work I had begun.”

Galileo.

Who said it?

“The Bible shows the way to go to heaven, not the way the heavens go.”

Copernicus.

Was Galileo a heretic?

Someone who, in the opinion of others, believes contrary to the fundamental tenets of a religion/group he claims to belong to

History of telling time:

- <https://www.youtube.com/watch?v=mjSwRwAqQA4>