

Galileo Galilei

Our understanding of the universe began with Aristotle in ancient Greece and was built upon by Ptolemy years later. It was later Copernicus's **heliocentric** or sun-centered theory that gave us our modern understanding of the universe. Today we know Copernicus was correct in his assumptions, but at the time he had only observation and math to prove his hypothesis. Copernicus knew it would take unequivocal evidence to truly convince those in his time period that he was right. Copernicus waited until he was on his deathbed to finally publish his lifelong findings.



Use the video clip to answer the questions:

How did Galileo change the telescope?

What did Galileo see through the telescope?

Why were Galileo's scientific conclusions more shocking and more powerful than any of the earlier theories of the universe?

Galileo and the Catholic Church

In 1633 he published the most controversial of his books, Dialogue Concerning the Two Chief World Systems, in which he confirmed Copernicus's heliocentric theory. The following are quotes from his books:

"I think that in discussion of physical problems we ought to begin not from the authority of the scriptural passages, but from sense-experiments and necessary demonstrations..."

"I should think that anyone who considered it more reasonable for the whole universe to move in order to let the earth remain fixed would be more irrational than one who would climb to the top of a cupola (hill) just to get a view of the environment, and then demand that the whole countryside should revolve around him so that he would not take the trouble to turn his head".

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

"I do not feel obliged to believe that the same God who has endowed us with sense, reason, and intellect has intended for us to forgo their use".

Is Galileo a threat to the Church? Directly refer to at least two quotes in your answer.

Trial by Inquisition

In April of 1633, at the time Galileo's second book was published, he was summoned to appear before the Pope for an inquisition (investigation) into his theories. In his book, *Dialogue Concerning the Two Chief World Systems*, he argues that the sun, not the earth is at the center of the universe. Galileo was charged with questioning the authority of the Roman Catholic Church.

The charges against Galileo were as follows:

- *He had not treated the ideas of Copernicus as theory, but rather as facts*
- *He had treated the idea of the earth revolving around the sun as if it were possible*
- *He had held that there is equity between the human mind and the divine mind in understanding scientific and mathematical ideas*
- *He wished to convert those who agreed with the Church to his own beliefs*

The court, which consisted of ten cardinals of the Catholic Church, found Galileo guilty of heresy (witchcraft), with the punishment to be determined.

Work with a partner, imagine you are Galileo- what would you do?

1. Publicly take back everything you said. Admit that the church is the supreme law of the land. Discontinue your research of the universe.
2. Stick to your beliefs and research no matter what the church says even if it means you will be tortured and killed and your family disgraced.
3. Publicly take back everything you said. Admit that the Church is the supreme law of the land. Secretly continue to do your research of the universe.



Your answer (include a specific REASON):

What really DID happen to Galileo? (use the slides to answer)

The New York Times

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After 350 Years, Vatican Says Galileo Was Right

By ALAN COWELL,

ROME, Oct. 30— More than 350 years after the Roman Catholic Church condemned Galileo, Pope John Paul II is poised to rectify one of the Church's most infamous wrongs -- the persecution of the Italian astronomer and physicist for proving the Earth moves around the Sun.

With a formal statement at the Pontifical Academy of Sciences on Saturday, Vatican officials said the Pope will formally close a 13-year investigation into the Church's condemnation of Galileo in 1633. The condemnation, which forced the astronomer and physicist to recant his discoveries, led to Galileo's house arrest for eight years before his death in 1642 at the age of 77.

"We today know that Galileo was right in adopting the Copernican astronomical theory," Paul Cardinal Poupard, the head of the current investigation, said in an interview published this week.