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Question #1: Analyze the changes and continuities in scientific thought from the Renaissance through the Scientific Revolution

The Renaissance lasted from around the 1300's to the 1500's and kickstarted the birth of humanism along with the renewed interest in arts and literature in Europe. The Scientific Revolution occurred later than the Renaissance (around the 16th and 17th centuries), and was characterized as natural philosophers rethinking theories and data from the late Middle Ages, along with new discoveries and inventions that led to advancements in science and mathematics. From the Renaissance to the Scientific Revolution, there were many continuities in scientific thought, however there were also numerous changes. During the time period between the 1300's and 1700's in Europe, antiquity and going against traditional Church teachings remained constant in scientific thought, while there were significant changes in scientific thought such as the invention of new forms of mathematics and advanced ways of proving hypotheses.

I. During the time period 1300-1700, antiquity caused many things to stay constant in scientific thought because previous knowledge from the Middle Ages was still valued in both the Renaissance and the Scientific Revolution.

A. One continuity that occurred in scientific thought was antiquity.

a. The reason for this continuity is because scientists of both the Renaissance and the Scientific Revolution looked to ancient Greek and Roman works for information. People

(continued) analysis → of the Renaissance were influenced by humanism, and one of the characteristics of humanism is antiquity. Both time periods used antiquity as a way to rethink the teachings in schools/churches at the time.

b. An example of this would be what Nicolaus Copernicus stated in his work *On the Revolution of Heavenly Spheres*, which was that he reread the works of all the past philosophers he could obtain (such as Hicetas, Plutarch, and Philolaus the Pythagorean) in order to disprove the teachings of astronomy in schools at the time.

evidence → (example)

B. Another continuity that occurred in scientific thought was going against what the Catholic Church taught.

example →

a. The reason for this continuity is because secularism and doubt began to rise during the Renaissance due to humanism, and the Scientific Revolution happened after the Reformation, so there was already doubt among the people about the teachings of the Church, and the new/renewed discoveries increased doubt.

analysis →

b. An example of this would be Galileo Galilei's statement in his work, *Starry Messenger*, where he stunned all of Europe by claiming that celestial bodies, such as the moon, were not as perfect as everyone thought they were, and then providing proof using a telescope that celestial bodies truly were not perfectly smooth and even.

evidence → (example)

topic sentence → II. During the time period 1300-1700, scientists using mathematics to prove hypotheses caused many things to change in scientific thought because scientists invented new forms of math and new ways of proving their theories.

example → A. One change that occurred in scientific thought was the use of new types of mathematics.

a. The reason for this change is because as scientists were beginning to realize that the universe revolved around mathematical law, they needed to invent new forms of mathematics in order to support any discoveries they made.

b. An example of this would be when Sir Isaac Newton invented calculus, a different type of math that had never been seen before.

B. An additional change that occurred in scientific thought was unprecedented strategies of proving hypotheses.

a. The reason for this change is because before the Scientific Revolution, like during the Renaissance, intellectuals tended to prove any discoveries they had by the Bible, or Holy Scripture. However, during the time of the Scientific Revolution, scientists started to provide proof for any hypotheses they had, mainly because their hypotheses would contradict Church teachings and they needed a lot of proof to convince people that their hypothesis was correct.

b. An example of this would be William Harvey, a doctor who claimed that the heart was a pump that forced blood around the body through arteries, and that valves contained veins. He had to thoroughly prove his hypothesis because all of the people at the time still believed that Galen's idea that the human body made new blood once supplies were used up was accurate.

From the 1300's to the 1700's, antiquity and going against the Church's teachings remained constant within scientific thought, however there were notable changes in scientific thought such as inventions of different kinds of mathematics and divergent ways of proving

don't discuss today

hypotheses. Today, people do not really use ancient works to rethink any discoveries, however, all people use proof in order to support any hypothesis or new discovery they think they have. Scientific thought is fluctuating, as modern day people are always finding new ways to prove a statement, but going against the Church is no longer observed, and there mostly is not any new and recent types of mathematics, but instead everyone learns the mathematics that have already been invented.

global connection (significance)

discuss significance for time afterward (immediately or soon after time period in essay)