



## AP European History 2000 Student Samples

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The Scientific Revolution of the seventeenth century had as its center two profound ideas: skepticism and a belief in natural laws. The discoveries of the Scientific Revolution, which were made possible by the development of the scientific method, inspired thinkers of the Enlightenment to question traditional sources of authority the same way scientists questioned traditional views on the nature of the world and of the universe.

René Descartes and Francis Bacon both were prominent in the development of the scientific method in the early seventeenth century. Descartes and Bacon both emphasized observation, empirical data, and conclusions drawn from data. Descartes thought that observation should be used to deduce information, while Bacon thought that observation should be used to induce the laws of nature. Eventually, Bacon's method won out among scientists. These two men's ideas on rationalism, empirical data, and the use of reason were to have a profound impact.

Descartes and Bacon made ~~no~~<sup>no</sup> scientific discoveries themselves, they merely developed methods for the later discoveries of scientists. Copernicus, discontent with the mathematical inconsistencies of the Ptolemaic geocentric world view, presented a heliocentric world view. The geocentric world view put Earth in the center of the Solar System, while the heliocentric system had the sun in the center. Kepler refined the heliocentric view by proposing that the planets followed an elliptical orbit rather than a circular one. This system was even more mathematically sound. Galileo put his telescope to the sky and found a universe far more complex than

ever imagined. His observations validated Copernicus' and Kepler's theories. Through observation he drew rational conclusions. The culmination of the Scientific Revolution came with Isaac Newton. Newton formulated the laws of gravity and thus explained how and why the planets acted as they did. His ideas were all validated by mathematical equations. Newton showed the power of the human mind and gave credence to the idea of natural laws. Skepticism came to be valued.

These ideas had a profound influence on the writers of a literary and philosophical movement called the Enlightenment. These writers came to believe that human society also functioned by natural laws. They thought that if these laws were discovered society could be bettered. Also coming from the idea of natural laws was the idea of natural rights. The writers believed that current governments were violating natural rights. They ~~was~~ believed that governments ruled by "consent of the governed." It was natural law that all men are equal. Thus, these writers criticized European society for its class distinction and its absolutist government. Also, since natural laws governed the universe, God lost influence. The writers of the Enlightenment believed in Deism, whereby God created the universe and its natural laws and then let it be. They criticized traditional religion as irrational and superstitious. Miracles were ~~is~~ seen as violations of natural law.

The emphasis on skepticism and natural laws by scientific thinkers led many people to question traditional ~~the~~ sources of authority. They questioned the right of

the government to rule as it did. They questioned long-held religious beliefs. Their criticism and lack of response by authority created the conditions that led to the French Revolution -

The Scientific Revolution was a time of drastic change in ideologies that previously dominated the minds of the people. It progressed from a time of dependence on religion to explain natural phenomena to the use of science, experimentation and observation. It called for an increase in secularist views and in some ways opposing the sacred institution of the time, the Roman Catholic Church. Gaining its foundations in the Reformation and the Enlightenment, the Scientific Revolution in the seventeenth century encouraged new ideas and concepts.

One of the most dominant and popular aspect of the scientific revolution was the use of methodology to explain certain aspects of nature. Bacon was known for using the inductive method, whereas Descartes was renowned for using the deductive method. Yet, the predominant method used to explain aspects of nature was the scientific method. The scientific method involved the creation of a hypothesis, careful experimentation and observation, and the application of the results. This method was used by many scientific thinkers to establish modern concepts of nature.

In the process of establishing modern concepts, scientists often overlooked or disagreed with the previous concepts established by traditional sources of authority, such as the Catholic Church. Galileo is an excellent example of one of these scientists. In establishing the hard reality of the heliocentric theory, he undermined

the concept of the universe set by the church. So, in 1633, he was confined to house arrest through the Roman Inquisition and his book was placed in the index of forbidden books. The Catholic church feared that the growth in scientific thinking would weaken its influence on the people and therefore weaken its power. So, in order to maintain the authority of this institution, the Roman Catholic Church took several drastic steps against the growth of scientific thinking.

Science also fostered the growth of medicine which was favored by the traditional sources of authority. New developments in ~~anatomy~~ anatomy through the use of the scientific method led to the creation of new medicines such as the polio vaccine. Monks usually learned these developments and practiced the use of this medicine.

The growth of secularism led to the development of the scientific method and other methods such as the deductive and inductive methods. In using his methods and developing new concepts, scientists challenged the authority of traditional institutions such as the Catholic Church. Yet, scientists were able to overcome these obstacles and discover new and more important information that led to the development of modern science and also led to a division between science and religion. Even though, scientists such as Blaise Pascal attempted to unite science and medicine

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in his book, *Pemoein*, science became the predominant way to explain natural phenomena.