16/17 – The Scientific Revolution and Enlightenment

Key Concept 1.1: The worldview of European intellectuals shifted from one based on ecclesiastical and classical authority to one based primarily on inquiry and observation of the natural world

IV. New ideas in science based on observation, experimentation, and mathematics challenged classical views of the cosmos, nature, and the human body, although folk traditions of knowledge and the universe persisted.
- A. New ideas and methods in astronomy led individuals such as Copernicus, Galileo, and Newton to question the authority of the ancients and religion and to develop a heliocentric view of the cosmos.
- B. Anatomical and medical discoveries by physicians, including William Harvey, presented the body as an integrated system, challenging the traditional humoral theory of the body and of disease espoused by Galen.
  - **Paracelsus, Andreas Vesalius**
- C. Francis Bacon and René Descartes defined inductive and deductive reasoning and promoted experimentation and the use of mathematics, which would ultimately shape the scientific method.
- D. Alchemy and astrology continued to appeal to elites and some natural philosophers, in part because they shared with the new science the notion of a predictable and knowable universe. In the oral culture of peasants, a belief that the cosmos was governed by divine and demonic forces persisted.
  - **Paracelsus, Gerolamo Cardano, Johannes Kepler, Sir Isaac Newton**

Key Concept 2.3: The popularization and dissemination of the Scientific Revolution and the application of its methods to political, social, and ethical issues led to an increased, although not unchallenged, emphasis on reason in European culture. II

I. Rational and empirical thought challenged traditional values & ideas.
- B. Intellectuals such as Voltaire and Diderot began to apply the principles of the Scientific Revolution to society and human institutions.
  - **Montesquieu's *The Spirit of the Laws*, Cesare Beccaria's *On Crimes and Punishments***
- C. Locke and Rousseau developed new political models based on the concept of natural rights.
- D. Despite the principles of equality espoused by the Enlightenment and the French Revolution, intellectuals such as Rousseau offered new arguments for the exclusion of women from political life, which did not go unchallenged.
  - **Mary Wollstonecraft, Olympe de Gouges, Marquis de Condorcet**

IV. New public venues and print media popularized Enlightenment ideas.
- B. A variety of institutions, such as salons, explored and disseminated Enlightenment culture.
  - **Coffeehouses, Academies, Lending libraries, Masonic lodges**
- C. Despite censorship, increasingly numerous and varied printed materials served a growing literate public and led to the development of public opinion.
  - **Newspapers, Periodicals, Books, Pamphlets, *The Encyclopédie***
- B. Natural sciences, literature, and popular culture increasingly exposed Europeans to representations of peoples outside Europe. II

I. New political and economic theories challenged absolutism and mercantilism.
- A. Political theories, such as John Locke's, conceived of society as composed of individuals driven by self-interest and argued that the state originated in the consent of the governed (i.e., a social contract) rather than in divine right or tradition.
- B. Mercantilist theory and practice were challenged by new economic ideas, such as Adam Smith's, espousing free trade and a free market.
  - **Physiocrats, Francois Quesnay, Anne Robert Jacques Turgot**

IV. During the Enlightenment, the rational analysis of religious practices led to natural religion and the demand for religious toleration.
- A. Intellectuals, including Voltaire and Diderot, developed new philosophies of deism, skepticism, and atheism.
  - **David Hume, Baron d'Holbach**
- B. Religion was viewed increasingly as a matter of private rather than public concern.
- C. By 1800, most governments had extended toleration to Christian minorities and, in some states, civil equality to Jews.

V. The arts moved from the celebration of religious themes and royal power to an emphasis on private life and the public good.

A. Until about 1750, Baroque art and music promoted religious feeling and was employed by monarchs to glorify state power.
   - **Diego Velázquez, Gian Bernini, George Frideric Handel, J. S. Bach**

B. Artistic movements and literature also reflected the outlook and values of commercial and bourgeois society as well as new Enlightenment ideals of political power and citizenship.
   - **Dutch painting, Frans Hals, Rembrandt, Jan Vermeer, Neoclassicism, Jacques Louis David, Pantheon in Paris**
   - **Daniel Defoe, Samuel Richardson, Henry Fielding, Johann Wolfgang von Goethe, Jane Austen**

IV. While Enlightenment values dominated the world of European ideas, they were challenged by the revival of public sentiment and feeling.
   A. Rousseau questioned the exclusive reliance on reason and emphasized the role of emotions in the moral improvement of self and society.
   B. Revolution, war, and rebellion demonstrated the emotional power of mass politics and nationalism.
   C. Romanticism emerged as a challenge to Enlightenment rationality.

Major Themes and BIG Questions

Themes:

- ☐ How did the Scientific Revolution impact European society intellectually, politically, religiously, and economically?
- ☐ Analyze the extent to which the Enlightenment affected European society with regard to religion, education, and economics.
- ☐ Analyze the impact of the Enlightenment on politics in the 18th century.
- ☐ To what extent is the term "Enlightened Despot" appropriate when describing the reigns of Frederick the Great, Catherine the Great, and Joseph II?
- ☐ Analyze how the balance of power was maintained in Europe between 1740 and 1786.

Essential Questions:

The Scientific Revolution:

- Explain the "Aristotelian" view of the universe by incorporating his ideas on physics and motion.
- Why was the church so willing to accept Aristotle's teachings?
- How did the Renaissance, Reformation and Age of Exploration shape the new views of the universe in the fourteenth and fifteenth centuries?
- Why did Copernicus dispute Ptolemy's theory and what was his hypothesis?
- How did the Copernican Hypothesis challenge traditionally accepted beliefs, both religious and secular, about the universe?
- What contributions did Tycho Brahe and Johannes Kepler make to the evolution of scientific thought?
- Why was Galileo viewed as a heretic and what was the result of his trial?
- What was the significance of Newton's Mathematical Principles of Natural Philosophy (1687) and Law of Gravity?
- How did Francis Bacon and Rene Descartes contribute to the Scientific Revolution?
- What were the social, political, and economic impacts of the Scientific Revolution?
- How were women affected by new patterns of thought?
- How did the religious faiths react to the Scientific Revolution?
- What medical advancements were made by Paracelsus, Vesalius, Harvey and Boyle?

The Enlightenment:

- Discuss the three central concepts of the Enlightenment
- How did new world view affect the way people thought?
- Discuss Locke's views from his "Essay Concerning Human Understanding" (1690)
- What is a *philosophe* and how did they get their message to the public?
- Why did the enlightenment reach its highest development in France?
- Describe the major contributions of the following French *philosophes*: Montesquieu, Voltaire, Madame du Châtelet, and Diderot.
- What were the views of Hume and Kant on race?
- What was the Reading Revolution and how did it impact Europe?
- What was a salon? How did it help spread enlightenment ideals?
- What role did women play in the Enlightenment?
- What were Jean Jacques Rousseau's beliefs on The Social Contract and the General Will?
- What was enlightened absolutism?
- Why did *philosophes* focus on enlightening monarchs rather than the people?
- Describe the ideas of Frederick the Great and discuss why he was considered enlightened.
- Discuss the three goals of Catherine the Great.
- Compare and contrast the enlightened rules of Maria Theresa and Joseph II.

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VOCABULARY

[How many of these can you remember?}

- □ Scientific Revolution
- □ Copernicus
- □ heliocentric view
- □ Tycho Brahe
- □ Johannes Kepler
- □ 3 laws of planetary motion
- □ Galileo
- □ laws of motion
- □ telescope
- □ Francis Bacon
- □ empiricism
- □ inductive method
- □ Rene Descartes
- □ deductive reasoning
- □ *cogito ergo sum* ("I think; therefore, I am")
- □ Cartesian dualism
- □ scientific method
- □ Isaac Newton
- □ principle of universal gravitation
- □ *Principia*, 1687
- □ Paracelsus
- □ Vesalius
- □ William Harvey
- □ Anton van Leeuwenhoek
- □ Royal Society
- □ John Harrison, chronometer
- □ alchemy
- □ astrology
- □ Enlightenment
- □ natural science
- □ reason
- □ Deism
- □ John Locke
- □ humans in a state of nature
- □ *Two Treatises of Civil Government*
- □ consent of the governed
- □ natural rights: life, liberty, property
- □ social contract
- □ right to rebellion
- □ *Essay Concerning Human Understanding*
- □ *tabula rasa*
- □ religious toleration
- □ Pierre Bayle
- □ *philosophes*
- □ Voltaire
- □ "ecracsez l'infame"
- □ Baron de Montesquieu, *Spirit of Laws*
- □ checks and balances
- □ Jean-Jacques Rousseau
- □ *Social Contract*, 1762
- □ general will
- □ "noble savage"
- □ *Émile*
- □ Denis Diderot, The *Encyclopedia*
- □ Marquis de Beccaria
- □ François Quesnay
- □ physiocrats
- □ Adam Smith, *Wealth of Nations*
- □ *laissez faire*
- □ "invisible hand"
- □ salon movement
- □ Madame de Geoffrin
- □ Madame de Staël
- □ Marquis de Condorcet
- □ Mary Wollstonecraft
- □ Baron Paul d'Holbach
- □ David Hume
- □ Jean de Condorcet
- □ Immanuel Kant
- □ classical liberalism
- □ Enlightened Despotism
- □ Frederick the Great
- □ War of Austrian Succession
- □ Silesia
- □ Seven Years' War
- □ "Diplomatic Revolution of 1756"
- □ Treaty of Paris
- □ "first servant of the state"
- □ Catherine the Great
- □ Pugachev Rebellion
- □ Polish partitions
- □ liberum veto
- □ Maria Theresa
- □ Pragmatic Sanction of 1713
- □ Joseph II