SCIENTIFIC REVOLUTION AND ENLIGHTENMENT

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I. **The Scientific Revolution**
   A. Medieval view of the world
      1. Primarily religious and theological
      2. Political theory based on divine right of kings
      3. Society largely governed by Church views, traditions, and practices
      4. Superstition played major role in the lives of the people
      5. Scientific thought in the early-16th century was still based on Medieval ideas
         a. Views about the universe were largely influenced by the ancient ideas of Aristotle
         b. The geocentric view held that the earth was the center of a static, motionless universe
         c. Science was essentially a branch of theology

   B. Causes of the Scientific Revolution
      1. Medieval universities provided the framework.
         a. By 1300, philosophy had become an accepted discipline (in addition to law, medicine, and theology).
         b. Medieval philosophers developed a degree of independence from theologians and a sense of free inquiry.
         c. Leading universities established new professorships of mathematics, astronomy, and physics (natural philosophy) within their departments of philosophy.
         d. Major scientific figures either studied or taught at universities.
      2. The Renaissance stimulated science by rediscovering ancient mathematics.
         - Renaissance patronage was often scientific as well as artistic and humanistic.

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3. Navigational problems on sea voyages in the age of overseas expansion created a need for scientific advances
    a. New instruments: telescope, barometer, thermometer, pendulum clock, microscope, and air pump.
    b. Gresham College, England: scientists worked closely with top officials in the Royal Navy and leading merchants and shipbuilders.
        - Became main center of scientific activity during the first half of 17th century.
4. Scientific methodology.
    a. Bacon formalized empirical, experimental research.
    b. Descartes emphasized deductive reasoning.

C. The Scientific Revolution became the major cause of the new world view of the 17th and 18th centuries
    1. Secularism emerged and many educated people became openly hostile to religion
    2. The revolution in learning became a major foundation in Western society

D. The 16th Century
    1. **Nicolaus Copernicus** (1473-1543)
        a. ***On the Revolutions of Heavenly Spheres*** (1543)
            - Copernicus postponed publication of his book fearing a backlash by the scientific community
            - He dedicated the book to Pope Paul III and did not intend for his theories to challenge Church doctrine
        b. **Heliocentric view**: argued that the earth revolved around the Sun and that the sun was the center of the universe
            - Stated that the stars did not move although the apparent movement of the stars was the result of the earth's rotation
            - The universe now seemed enormous, perhaps infinite
            - A major anomaly in his theory, retrograde motion of planets relative to the earth's position, was remedied by the false premise of epicycles
            - Directly challenged Ptolemy's 2nd-century A.D. view of a geocentric universe
            - Seemed to challenge the Bible's Book of Genesis that also put forth a geocentric view

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c. Religious reaction to the Copernican theory
   - Martin Luther and John Calvin condemned Copernicus' theory; pointed to Biblical passages supporting the Medieval view
   - Catholic reaction initially less forceful as the Church didn't always interpret the Bible literally
   - By 1616, the Catholic Church proclaimed the Copernican theory as false and persecuted those who advanced his views (e.g. Galileo)

2. **Tycho Brahe** (1546-1601)
   a. Europe's leading astronomer in the late-16th century
   b. Built the best observatory in Europe and collected massive data on his observations of the universe
      - This data became a cornerstone of astronomy for centuries
   c. His data later proved Copernicus' theory
      - Ironically, Brahe did not accept the Copernican theory; he believed that while the planets all revolved around the sun, the sun revolved around the earth.

3. **Johannes Kepler** (1571-1630)
   a. First great Protestant scientist; assistant to Brahe
   b. Mathematically proved the Copernican theory
   c. Developed **three laws of planetary motion**:
      - Orbits of planets are elliptical
      - Planets do not move at uniform speed while in their orbits
      - The time it takes for a planet to orbit the sun is directly based on its distance from the sun.
        - The closer the planet to the sun (e.g. Mercury and Venus) the faster its orbit

E. The 17th Century
   1. **Galileo Galilei** (1564-1642)
      a. Developed the **laws of motion**
         - Used the experimental method (with controlled experiments)
         - Acceleration experiment: gravity was a universal force that produced uniform acceleration
           - All falling objects descend with equal velocity regardless of their weight
         - Law of inertia: an object that is in motion remains in motion until it is stopped by some external force

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b. Validated Copernicus' heliocentric view with the aid of a **telescope**
   - Galileo was the first to use the telescope as a scientific instrument; he built one himself
   - Demonstrated that the moon and other planets were not perfectly round like a crystal sphere (the prevailing Medieval view)
   - Discovered the 4 moons of Jupiter thus refuting the notion that Jupiter was embedded in an impenetrable crystal sphere

c. Galileo's findings became controversial in Catholic countries
   - His views were largely supported in Protestant northern Europe where reformers had questioned Catholic doctrines
   - The Catholic Church in 1616 declared Copernican theory to be heretical
   - 1632, Galileo published *Dialogue Concerning the Two Chief World Systems* in which he wrote about the Copernican system as a mathematical proposition
   - 1633, The inquisition of Pope Urban VII forced Galileo to retract his support of the Copernican theory
     - He remained under house arrest for the rest of his life

2. **Francis Bacon** (1561-1626)
   a. Formalized the empirical method (or **empiricism**) that had already been used by Brahe and Galileo
   b. **Inductive method** for scientific experimentation:
      - Begin with inductive observation, then form a hypothesis, conduct experiments and then organize the data.
      - "Renounce notions and begin to form an acquaintance with things"
   c. Bacon's inductive method, coupled with Descartes deductive reason formed the backbone of the modern **scientific method**.

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3. **Rene Descartes** (1596-1650)
   a. ***Discourse on Method*** advocated the use of **deductive reasoning**.
      - Employed deductive reasoning to prove his existence: ***"cogito ergo sum"*** **("I think; therefore, I am")**
      - His proof depended on logic alone
      - Believed science must:
        - start with clear and incontrovertible facts
        - subdivide each problem into as many parts as necessary, using a step-by-step logical sequence
   b. Demonstrated the relationship between algebra and geometry and developed analytical geometry
   c. **Cartesian Dualism** divided all existence into the spiritual and the material.
      - The spiritual can only be examined through deductive reasoning (logic)
      - The material is subject to the experimental method.
4. **Modern Scientific Method:** inductive method (of Bacon) + the deductive method (of Descartes)
5. **Isaac Newton** (1642-1727)
   a. Incorporated the astronomy of Copernicus and Kepler with the physics of Galileo into an overarching theory explaining order and design to the universe.
   b. **Principle of universal gravitation**:
      - Detailed in ***Mathematical Principles of Natural Philosophy,*** (1687) (known more popularly as ***Principia***).
        - Perhaps the greatest book on science ever written
      - Natural laws of motion – gravitation – are evident in the movement of heavenly bodies and earthly objects
        - Newton developed a set of mathematical principles to explain motion.
      - Every body in the universe attracts every other body in the universe in a precise mathematical relationship
      - Since these natural laws are unchangeable and predictable, God's active participation in the natural world is not needed to explain the forces of nature
        - This directly challenged Medieval beliefs
        - This view came to be the foundation of the Enlightenment view of God: deism

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c. Invented calculus (although Leibniz also claimed to have done so)

Memory Device for Scientific Revolution:	
C ops	Copernicus
B ring	Brahe
K ids	Kepler
G reat	Galileo
B ig	Bacon
D onuts	Descartes
N ow	Newton

6. Anatomy, physiology, and biology
   a. Scientists began challenging Greco-Roman medical views (especially those of the Roman physician, Galen, in the 2nd century CE)
   b. **Vesalius:** *The Structure of the Human Body* (1543): renewed and modernized the study of human anatomy
   c. **William Harvey** (1578-1657)
      - *On the Movement of the Heart and Blood* (1628): Explained how blood was pumped by the heart and circulated throughout the body.
   d. **Anton van Leeuwenhoek** (1632-1723)
      - "Father of microscopy":developed powerful microscopes
      - First to see and write about bacteria, yeast plants, living organisms in a drop of water and the circulation of blood corpuscles in capillaries.
7. Royal scientific societies
   a. Governments/monarchs encouraged scientific inquiry as a means to further the prestige of the state and remain at the cutting edge of technology
   b. Scientific societies created a means by which scientists could communicate with each other internationally; this helped forge an international scientific community
   c. The **Royal Society** in England was perhaps the most successful and prestigious; founded in 1660
   d. Other royal societies were created in Naples, France, Prussia (by Frederick I) and Russia (by Peter the Great).
8. Impact of the Scientific Revolution on Society
   a. Led directly to the **Enlightenment** of the 18th century (see section below)
   b. Improvements in exploration (e.g. **John**

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Harrison's chronometer gave mariners the ability to easily determine longitude by the late-18th century)

c. Spirit of experimentation perhaps helped accelerate the agricultural revolution—18th century
d. Improvements in medical knowledge helped improve the quality of life later (19th & 20th centuries)
e. Reduced support for witch hunts by discrediting superstition and witchcraft as fallacies.
f. Science and religion were not in acute conflict until the 19th and 20th centuries.
   - No attempt in 17th and 18th centuries to secularize science
     - Scientists believed they were studying and analyzing God's creation.
     - Universal agreement existed among scientists and philosophers regarding the supernatural origin of the universe.
     - Debate centered on the *extent* to which God continued to be involved in His Creation.
   - After Catholic Counter Reformation, the Church became more hostile to science and science declined in Italy (but not France).
   - Protestant countries became the leaders of the scientific revolution, especially England

II. **The Enlightenment**

A. Emergence of a secular world view for the first time in human history
   1. Fundamental notion was that **natural science** and **reason** could explain all aspects of life
   2. Belief in autonomy of man's intellect apart from God.
   3. Most basic assumption: faith in reason rather than faith in revelation
   4. **Deism:** religious arm of the Enlightenment
      a. Existence of God was a rational explanation of the universe and its form.
      b. God was a deistic Creator—a cosmic clockmaker—who created the universe and then stepped back and left it running like a clock
      c. The universe was governed by "natural law", not by a personal God
         - Some called it the "ghost in the machine."
         - The supernatural was not involved in human life.
      d. Deism grew out of Newton's theories regarding natural law.

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5. Baruch Spinoza (1632-1677): Philosopher who created a world view in which he equated God and nature.

B. Belief that the scientific method could explain the laws of society
   1. Progress in society was possible if natural laws and how they applied to society could be understood
   2. Education was seen a key to helping society to progress

C. **John Locke** (1632-1704) – greatest of the Enlightenment thinkers
   1. ***Two Treatises of Civil Government***, 1690
      a. Philosophical defense for the "Glorious Revolution" in England.
      b. **State of nature**: humans are basically good but lack protection
         - This contrasts with Hobbes' view of humans in a state of nature: nasty and brutish
      c. Governments provide rule of law but only through the consent of the governed
      d. The purpose of government is to protect "**natural rights**" of the people: **life, liberty** and **property**
         - **Social contract:** people agree to obey the government in return for protection of natural rights
      e. Right to rebellion: People have a right to abolish a government that doesn't protect natural rights.
   2. ***Essay Concerning Human Understanding***, 1690
      a. One of the great works of the Enlightenment, along with Newton's *Principia*
      b. Stressed the importance of the environment on human development
      c. **tabula rasa:** the human mind was born as a blank slate and registered input from the senses passively.
      d. Saw all human knowledge as the result of sensory experiences without any preconceived notions
         - Rejected Descartes' view that all people are born with certain basic ideas and ways of thinking.
      e. For progress to occur in society, education was critical in determining human development.
      f. Undermined the Christian view that humankind was essentially sinful

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D. The ideal of toleration was popularized by many scholars who made the Enlightenment accessible to the public
   1. Bernard de Fontenelle (1657-1757)
      a. Made highly complicated scientific ideas accessible to a broad audience.
      b. Stressed the idea of progress.
      c. Skeptical of absolute truth and questioned claims of organized religion.
   2. **Pierre Bayle** (1647-1706): *Critical and Historical Dictionary,* 1697
      a. Advocated complete toleration of ideas
         - A person should be free to worship any religion, or none at all.
         - Argued that religion and morality were not necessarily linked
      b. He was a skeptic: believed nothing could be known beyond all doubt
         - Similar to Montaigne's earlier views
      c. His major criticism was of Christianity and its attempt to impose orthodoxy.

E. The ***Philosophes***
   1. Committed to fundamental reform in society
      a. They were extremely successful in popularizing the Enlightenment, though were not professional philosophers (like Descartes and Locke)
         - By 1775, much of western Europe's educated elite had embraced the Enlightenment
      b. Believed in progress through discovering the natural laws governing nature and human existence.
      c. Radically optimistic about how people should live and govern themselves.
   2. **Voltaire** (1694-1778)
      a. Perhaps the most influential of all Enlightenment philosophers
         - He wrote his criticisms with a sharp sarcasm that ridiculed those with whom he disagreed.
      b. Challenged traditional Catholic theology
         - Strong deist views
         - Believed prayer and miracles did not fit with natural law
         - Believed that human reason was the key to progress in society, not religious faith
      c. His social criticism inspired a call for change, setting the stage for the French Revolution
         - He hated bigotry and injustice and called for religious toleration.

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- His most famous quote against religious intolerance was "crush the infamous thing" ***("Ecracsez l'infame")***
- Although Voltaire was raised as a Christian, he came to distrust organized religion as corrupt in its leadership and for having moved away from the central message of Jesus

d. Advocated "enlightened despotism" (a more benevolent form of absolutism) believing that people were incapable of governing themselves
   - These views were similar to Hobbes
   - His views influenced several "Enlightened Despots" including Frederick the Great of Prussia (who invited Voltaire to live in his court in Berlin), Catherine the Great of Russia, Joseph II of Austria and Napoleon of France.
   - Believed in equality before the law but not in the equality of classes.

3. **Baron de Montesquieu** (1689-1755)
   a. Member of the French nobility; hated the absolutism of Louis XIV.
   b. ***Spirit of the Laws*** (1748): called for separation of powers in government into three branches (monarchy, nobility and the rest of the population)
      - Goal: prevent tyranny and promote liberty
      - Principle of **checks and balances** would ensure that no single branch of gov't became too powerful as the other two branches could check excess power.
      - He favored the British system of a monarch, Parliament and independent courts
      - He supported the 13 *parlements* in France (judicial tribunals of nobles) as a check against tyrannical absolute rule by the monarch
   c. Montesquieu's ideas had a significant impact on the creation of the U.S. Constitution and the French Revolution in the 1780s.
4. **Jean-Jacques Rousseau** (1712-1778)
   a. ***Social Contract*** (1762)
      - Believed that too much of an emphasis on property, and not enough consideration of people, was a root cause of social injustice.
      - The ***general will***, a consensus of the majority, should control a nation. This strongly implied democracy.
        - Downside: Minority viewpoints were not recognized.
      - Though these ideas seem to support

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democracy, the ambiguous nature of "general will" was later manipulated by dictators to rationalize extreme nationalism and tyranny (e.g. Robespierre)

b. Though considered part of the Enlightenment, Rousseau is more accurately seen as a founder of the Romantic movement.
   - After the French Revolution, the Enlightenment's emphasis on reason gave way to a glorification of emotion.

c. Rousseau believed that man in a simpler **state of nature** was good—a **"noble savage"**—and was corrupted by the materialism of civilization.

d. ***Emile*** (1762)
   - Believed in progressive education; learning by doing; self-expression encouraged.
   - Ironically, he left his 5 illegitimate children in an orphanage instead of educating them.

5. **Denis Diderot** (1713-1784): ***The Encyclopedia*** (completed in 1765)
   a. Perhaps the greatest and most representative work of the *philosophes*
   b. Compendium of political and social critiques from various Enlightenment philosophers and authors
   c. Helped to popularize the views of the *philosophes*
   d. Emphasized science and reason while criticizing religion, intolerance, injustice and tyranny
      - Sought to teach people to think critically and objectively
   e. The *Encyclopedia* was banned in France; the pope placed it on the *Index of Prohibited Books*
6. **Marquis di Beccaria**: *On Crimes and Punishment* (1764)
   a. Sought to humanize criminal law based on Enlightenment concepts of reason and equality before the law
      - Punishment for a crime should be based rationally on the damage done to society; should not be linked to the religious concept of sin
   b. Opposed death penalty except for serious threats against the state
   c. Opposed torture to extract confessions
   d. His views influenced the Enlightened Despots:
      - Frederick the Great of Prussia banned torture
      - Catherine the Great restricted use of torture
      - Joseph II of Austria banned torture and death penalty (but not other harsh punishments)

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F. Economic Theory in the Enlightenment
   1. **Francois Quesnay** (1694-1774)
      a. Leader of the ***physiocrats*** in France who opposed mercantilist policies
      b. Sought to reform the existing agrarian system by instituting *laissez faire* in agriculture
      c. Believed the French government and nobility had too much control over land which stifled agricultural production
   2. **Adam Smith** (1727-90): ***Wealth of Nations*** (1776)
      a. Considered the "Bible" of capitalism.
      b. Refined and expanded *laissez-faire* philosophy of the *physiocrats*.
      c. Believed the economy is governed by the natural laws of supply and demand.
         - In a free market economy, competition will encourage producers to manufacture most efficiently in order to sell higher quality, lower cost goods than competitors.
         - Gov't regulation only interferes with this natural self-governing style.

G. Women in the Enlightenment
   1. Women played a major role in the **salon movement**
      a. Many of the brightest minds of the Enlightenment assembled in salons to discuss the major issues of the day
      b. Certain women organized salons and took part in the discussions
         - **Madame de Geoffrin**
         - **Madame de Staël**
         - Louise de Warens
      c. Geoffrin played a major role in patronizing Diderot's *Encyclopedia*
      d. Madame de Staël later brought German romantic ideas into France in the early 1800s
   2. The *philosophes* favored increased rights and education for women
      - Condorcet was the only writer to go so far as to support female suffrage
   3. In England, **Mary Wollstonecraft** (1759-1797) promoted political & educational equality for women

H. Later Enlightenment (late 18th century)
   1. Became more skeptical (and in the case of Hume and d'Holbach, even atheistic)
   2. **Baron Paul d'Holbach** (1723-89) *System of Nature*
      a. Argued humans were essentially like machines,

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completely determined by outside forces (determinism)
   b. His staunch atheism, determinism and attacks on Christianity undermined the Enlightenment
3. **David Hume** (1711-1776)
   a. Argued against faith in both natural law and faith
      - Argued desire, rather than reason, governed human behavior
   b. As a skeptic, Hume claimed that human ideas were merely the result of sensory experiences; thus, human reason could not go beyond what was experienced through the senses.
   c. Undermined Enlightenment's emphasis on reason.
4. **Nicolas de Condorcet** (1743-1794) *Progress of the Human Mind*
   a. His utopian ideas also undermined the legitimacy of Enlightenment ideas.
   b. Identified 9 stages of human progress that had already occurred and predicted the 10th stage would bring perfection.
5. **Rousseau**: attacked rationalism and civilization as destroying rather than liberating the individual.
   a. Influenced early Romantic movement
   b. Believed in a more loving and personal god
6. **Immanuel Kant** (1724-1804)
   a. Greatest German philosopher of the Enlightenment
   b. Separated science and morality into separate branches of knowledge.
   c. Argued science could describe nature, it could not provide a guide for morality.
   d. "Categorical imperative" was an intuitive instinct, placed by God in the human conscience.
      - Yet, both ethical sense and aesthetic appreciation in human beings were beyond knowledge of science.
      - Reason is a function of the mind and has no content in and of itself.

I. **Classical Liberalism**
1. The political outgrowth of the Enlightenment
   a. Belief in liberty of the individual and equality before the law (but NOT democracy)
   b. "Natural rights" philosophy played a profound role in the American and French Revolutions of the late-18th century
   c. Impact of Locke and Montesquieu was clearly evident in the American Constitution and in the

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French *Declaration of the Rights of Man*
   d. Rousseau's idea of the "general will" influenced the French Revolution after 1791.
2. Belief in *laissez faire* capitalism (Adam Smith)
   a. Government should not interfere in the economy
   b. Opposite of mercantilism
3. Belief in progress (through reason and education), human dignity and human happiness
4. Religious toleration, freedom of speech & the press, just punishments for crimes, and equal treatment before the law

J. New Christian groups opposed the Enlightenment
1. The secular and deist views of the Enlightenment caused a reaction among some Christian leaders who believed Christian spirituality was on the decline
   - Saw traditional religions as having lost their spiritual and emotional zeal
2. **German pietism**: argued the need for spiritual conversion and religious experience
3. **Methodism**: taught need for spiritual regeneration and a moral life that would demonstrate one's having been "born-again".
   - **John Wesley** (1703-91): Founder of Methodism
4. **Jansenism** (Catholic sect) in France argued against idea of an uninvolved or impersonal God
   - Earlier persecuted by Louis XIV for their belief in certain Calvinist ideas (e.g. predestination)

K. Impact of the Enlightenment on society
1. Emergence of a secular world view of the universe (for the first time in Western history)
2. Enlightened despotism in Prussia, Russia, Austria and France (Napoleon) (see section below)
3. American and French Revolutions (as a result of classical liberalism)
4. Educational reform in various countries
5. Growth of *laissez faire* capitalism in the 19th century during the early industrial revolution in England and in 19th-century America

III. **Enlightened Despotism** (c. 1740-1815)
A. The *philosophes* inspired and supported the reforms of the Enlightened Despots
1. Believed absolute rulers should promote the good of the people
2. Yet believed, like Hobbes earlier, that people were not capable of ruling themselves

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B. Reforms of the Enlightenment Despots were modest
   1. Religious toleration
   2. Streamlined legal codes
   3. Increased access to education
   4. Reduction or elimination of torture and the death penalty

C. **Frederick the Great** (Frederick II) (r. 1740-1786)
   1. Background
      a. One of the greatest rulers in German history
      b. Son of Fredrick William I who gave him a strong military education
      c. Profoundly influenced by the Enlightenment
         - He considered French learning to be superior
         - Patronized Voltaire and invited him to live in his court in Berlin
         - Musician and poet
   2. Wars of Frederick the Great
      a. The first 23 years of Frederick's reign were dominated by warfare
      b. **War of Austrian Succession** (1740-1748)
         - Cause: Frederick invaded and annexed Silesia, part of the Austrian Hapsburg empire
            - Frederick violated Austria's **Pragmatic Sanction** (1713) whereby the Great Powers recognized that Charles VII's daughter, Maria Theresa, would inherit the entire Hapsburg empire
         - Prussia efficiently defeated Austria
         - Treaty of Aix-la-Chapelle:
            - Prussia gained Silesia (and doubled Prussia's population in the process)
            - Prussia was now recognized as the most powerful of all the German states and as one of Europe's "Great Powers"
      c. **Seven Years' War (1756-1763)**
         - Cause: Maria Teresa sought to regain Silesia from Prussia and gained Russia and France as allies.
            - Goal of Austria, Russia and France was to conquer Prussia and divide its territories among the winners
         - **"Diplomatic Revolution of 1756"**
            - France and Austria, traditional enemies, now allied against Prussia
            - Britain, a traditional ally of Russia, supported Prussia with money (but with few troops); saw Prussia as a better check on

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French power than Austria (who had Russia as an ally)
- Bloodiest war in Europe since the Thirty Years' War of the 17th century.
  - World war that also included England and France's struggle for North America
  - Prussia outnumbered by its enemies 15 to 1
  - Prussia suffered 180,000 dead and severe disruptions to its society
  - Berlin was twice captured and partially destroyed by Russian troops
  - Prussia was on the verge of a catastrophic defeat
- Russian Czar Peter III (an admirer of Frederick) pulled Russia out of the war in 1763)
  - This saved Prussia from almost certain defeat
  - Peter was assassinated and replaced by Catherine II as a result
- **Treaty of Paris** (1763)
  - Most important peace treaty of the 18th century and most important since the Treaty of Westphalia (1648)
  - Prussia permanently retained Silesia
  - France lost all its colonies in North America to Great Britain
  - Britain gained more territory in India

3. Enlightened Reforms of Frederick the Great
   a. Frederick claimed that he saw himself as the **"first servant of the state"**
      - The destruction of war encouraged Frederick to help improve society
      - Yet, Frederick was an absolute ruler
      - His reforms were mostly intended to increase the power of the state
      - The peasantry did not really benefit from his reforms
   b. Allowed religious freedom (although less so for Jews)
      - Jews finally gained religious freedom in 1794, eight years after Frederick's death
   c. Promoted education in schools and universities
      - In reality, gains in primary education were very modest
   d. Codified and streamlined laws
      - Numerous existing laws from throughout the

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provinces in the realm were simplified to create a clear unified national code of law
- Judicial system became efficient in deciding cases quickly and impartially
- Abuses by judicial magistrates were curtailed

e. Freed the serfs on crown lands in 1763
- Frederick's motive: peasants needed for the army
- Serfdom remained in full-force on noble estates although Frederick ordered an end to physical punishment of serfs by their lords

f. Improved the state bureaucracy by requiring examinations for civil servants
g. Reduced censorship
h. Abolished capital punishment (but not in the army)
i. Encouraged immigration
j. Encouraged industrial and agricultural growth

4. Social structure in Prussia remained heavily stratified
   a. Serfdom on noble lands maintained
   b. The **"Junkers"** (Prussian nobility) were the backbone of Prussia's military and the state
      - The state did not recognize marriages between nobles and commoners.
      - Nobles were not allowed to sell their lands to non-nobles.
   c. Middle-class found it extremely difficult to move up socially
      - Civilian bureaucrats were not permitted to enter the nobility
      - However, in the judicial system, 2/3 of judges were non-nobles.

D. **Catherine the Great** (r. 1762-1796)
1. Background
   a. One of the greatest rulers in European history
      - As a reformer, perhaps the least "enlightened" of the Enlightened Despots
   b. German princess who became Queen after her husband, Peter III, was assassinated during the Seven Years' War
      - She took part in the assassination plot
      - Peter the Great had abolished the succession of hereditary czars
   c. She was a lover of French culture (she refused to speak German or Russian) and considered herself a child of the Enlightenment

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- Diderot lived in her court for a time

2. **Pugachev Rebellion** (1773)
   a. Eugene Pugachev, a Cossack soldier, led a huge serf uprising.
      - Demanded end to serfdom, taxes and army service.
      - Landlords and officials were murdered all over southwestern Russia.
      - Pugachev eventually captured and executed.
   b. Catherine needed the support of the nobility and gave them absolute control of serfs.
      - Serfdom spread to new areas (e.g. Ukraine)
      - 1785, Catherine freed nobles forever from taxes and state service.
      - She confiscated lands of the Russian Orthodox Church and gave them to favorite officials.
      - Nobles reached their height of position while serfs were worse off than ever before.
3. Imported Western culture into Russia
   a. Architects, artists, musicians and writers were invited to Russia
   b. Culturally, Russia gained the respect of western European countries
4. Educational reforms
   a. Supported the first private printing presses.
      - The number of books published annually in Russia increased to about 400 during her reign compared to a few dozen prior to her reign.
   b. A school for noble girls was founded
5. Restricted the practice of torture
6. Allowed limited religious toleration
   a. Catherine stopped the government policy of persecuting Old Believers (an ultra-conservative and dissident sect of the Orthodox Church)
   b. Jews were granted civil equality
      - Jews had suffered much persecution in Russia:
        - Jews could not be nobles, join guilds or hold political offices
        - Not allowed to participate in agricultural work or certain trades
        - Resented by Russian and Ukrainian peasants for usury
7. Strengthened local government led by elective councils of nobles.
   - Yet, the crown was not obligated to accept recommendations from councils
8. Shortcomings of Catherine's reforms
   a. Only the state and the nobility benefited; the rest

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of the Russian population benefited little, if at all
- Nobles gained more legal and financial security from the state
- Nobles freed from taxes or state service

b. Serfdom became even more severe
- Nobles had complete control over their serfs and could mete out arbitrary punishments (even death)
- Only nobles could own land

9. Territorial growth under Catherine the Great
   a. Annexed Polish territory under the **3 partitions** with Prussia and Austria in 1772, 1793 & 1795
      - Poland's government of nobles was ineffective as the **liberum veto** required unanimous agreement for the government to act.
   b. Gained Ottoman land in the Crimea that was controlled by the Tartars.
   c. Began conquest of the Caucasus region.
   d. Expansion provided Catherine with new lands with which to give the nobility (to earn their loyalty)

E. Austria
1. **Maria Theresa** (r. 1740-1780) (not an Enlightened despot)
   a. Assumed the Habsburg empire from her father, Charles VII.
      - **Pragmatic Sanction of 1713**: Issued by Leopold and agreed to by the Great Powers that the Habsburg Empire would remain intact under his daughter's rule
      - Officially, she was Archduchess of Austria and Queen of Hungary and Bohemia.
      - She sought to improve the condition of her people through absolute rule.
      - Conservative and cautious (unlike her son, Joseph II who was a bold reformer but brought the empire to near rebellion)
   b. The War of Austrian Succession (see above)
      - As a female, Maria Theresa could not assume the title of Holy Roman Emperor
        - This issue cast doubts among the Great Powers regarding her legitimacy as ruler of the Habsburg empire
      - Although Maria Theresa lost Silesia to Prussia, she saved her leadership of the empire.
        - The Hungarian nobility helped the queen to defeat the Bohemian revolt and preserve the empire.

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c. Centralized control of the Habsburg Empire
   - Limited the power of the nobles
     - Reduced power of the lords over their serfs
     - Some serfs were partially freed
     - Feudal dues by peasants were reduced or eliminated
     - Nobles were taxed
   - Maria Theresa did more to help the condition of serfs than any ruler in European history up to that time (only her son, Joseph II, did more)
     - This was in response to the terrible famine and disease of the 1770s.
   - Increased the empire's standing army from 30,000 to over 100,000
   - Improved the tax system
   - Reduced conflicts between various provinces in the empire
   - Reduced the practice of torture in legal proceedings

d. Brought the Catholic Church in Austria under state control
   - Sought to reduce pope's influence in Austria
     - Suppressed the Jesuits
   - Taxed the Catholic Church in Austria
   - She believed that the Church and the nobility were the foundations of the state

e. Promoted economic development
   - Hoped that giving serfs some freedoms would make them more productive
   - Abolished guilds
   - Abolished internal customs duties and
   - Encouraged immigration
   - Improved transportation: roads, ports
   - Supported private enterprise

f. Maria Theresa is NOT considered, however, an Enlightened Despot
   - She was not a fan of the Enlightenment
   - Did not go as far as others in allowing religious toleration (which her son did, along with Frederick the Great and Catherine the Great)
     - She did provide some toleration for Protestants

2. **Joseph II** (r. 1780-1790)
   a. Ruled with his mother, Maria Theresa, as co-regent until her death in 1780
   b. Perhaps the greatest of the "Enlightened Despots" in terms of reforms but in many ways was among the least effective

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- Deeply influenced by the Enlightenment and its emphasis on reforms
- Firm believer in absolutism and he could be ruthless in achieving his goals

c. Major reforms
- Abolished serfdom and feudal dues in 1781
  - Ironically, opposed by many peasants since the law stated that obligations to lords would have to be paid in cash, rather than labor (serfs had little cash available)
  - Nobles resisted their reduced power over the peasantry
  - This edict was rescinded after his death by his brother Leopold II who needed support of the nobles.
- Freedom of religion and civic rights to Protestants and Jews
- Reduced the influence of the Catholic Church
  - Suppressed monasteries
- Allowed freedom of the press to a significant degree
- Reformed the judicial system and sought to make it equal for all citizens
- Abolished torture and ended the death penalty
- Expanded state schools
- Established hospitals, insane asylums, poorhouses and orphanages
  - State provided food and medicine to the poor
- Made parks and gardens available to the public
- Made German the official language of the empire in an effort to assimilate minorities

d. The Empire declined under Joseph's reign
- Austria was defeated several times in wars with the Ottoman Empire
- The Austrian Netherlands were in revolt
- Russia was threatening Austria's interests in eastern Europe and the Balkans
- Leopold II was forced to reverse many of Joseph's radical reforms in order to maintain effective control of the empire.

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Terms to Know

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
Vesalius
William Harvey
Anton van Leeuwenhoek
Royal Society
John Harrison, chronometer
Enlightenment
Deism
John Locke, *Two Treatises of Civil Gov't*
Essay Concerning Human Understanding
tabula rasa
philosophes
Voltaire
"ecracsez l'infame"
Baron de Montesquieu, *Spirit of Laws*
checks and balances
Jean-Jacques Rousseau
Social Contract, 1762
general will
"noble savage"
Denis Diderot, *The Encyclopedia*
Marquis de Beccaria
François Quesnay
physiocrats
Adam Smith, *Wealth of Nations*
salon movement
Madame de Geoffrin
Madame de Staël
Mary Wollstonecraft
Baron Paul d'Holbach
David Hume
Jean de Condorcet
Immanuel Kant
classical liberalism
German pietism
Methodism
John Wesley
Jansenism
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

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Essay Questions

Note: This sub-unit is a very high probability area for the AP exam. In the past 10 years, 7 questions have come wholly or in part from the material in this chapter. Below are some practice questions that will help you study the topics that have appeared on previous exams.

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

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