

# Scientific, Philosophical, and Political Developments

## AP European History

### Contextualizing the Scientific Revolution and the Enlightenment

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The **Scientific Revolution** developed new ways to investigate nature. The **Enlightenment** applied concepts and practices associated with these changes to political, social and ethical questions. This encouraged debate about the individual, government and society. It did not produce one method or one agreed political programme.

Observation, experiment, mathematics, reason and classical learning interacted. Religious belief and inherited authority remained important. Alongside intellectual change, developments in agriculture, disease, migration, consumption and family life changed everyday experience. This unit connects these processes without treating every social change as the direct result of a philosopher's ideas.

### The Scientific Revolution

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**Copernicus**, **Galileo** and **Newton** contributed different ideas and evidence to changing understandings of the cosmos. A heliocentric model challenged an Earth-centred account. Mathematical explanation and observation helped challenge inherited authority; these thinkers did not all make the same discovery.

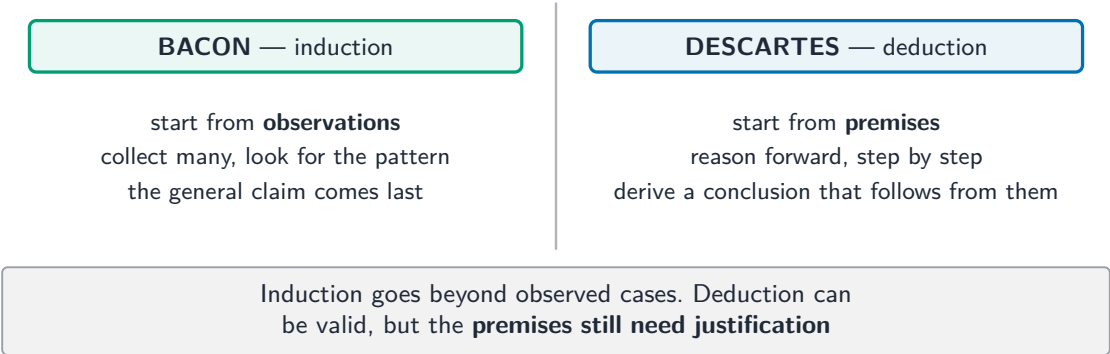
**William Harvey** studied blood circulation and helped present the body as an **integrated system**. This challenged inherited accounts associated with Galen. New anatomical and medical knowledge did not instantly remove every older practice.

**Francis Bacon** and **René Descartes** are associated with contrasting approaches to **inductive and deductive reasoning**. Bacon emphasised observation and systematic investigation; Descartes stressed methodical doubt and reasoning from clear principles. Neither invented all reasoning of that kind. Both contributed to debates about reliable knowledge.

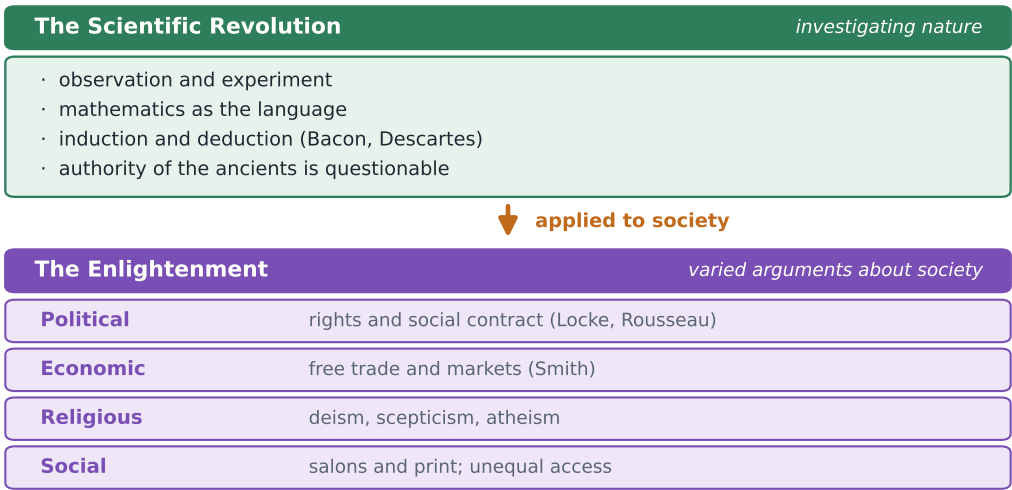
**Original logic example:** several observed heated metal samples become longer. Generalising from these observations is induction; the sample does not prove every material behaves that way. For deduction, assume all objects in box X are metal and object A is in box X. A must be metal if the premises are true and the reasoning is valid. Deduction does not establish the factual truth of the premises by itself.

Alchemy and astrology continued to appeal to some natural philosophers and elites. They shared an interest in a knowable, ordered universe with newer investigations; belief in spiritual forces also continued. This is evidence of continuity, not proof that

all older claims were scientifically valid.



# The Enlightenment



*Claims about equality were contested.  
Arguments about women's education and political roles differed.*

**Empiricism** stresses observation and experience; **rationalism** stresses reasoning; **scepticism** questions claims and grounds for belief. These approaches overlapped and differed. Enlightenment thinkers did not simply follow one laboratory procedure to reach identical answers about society.

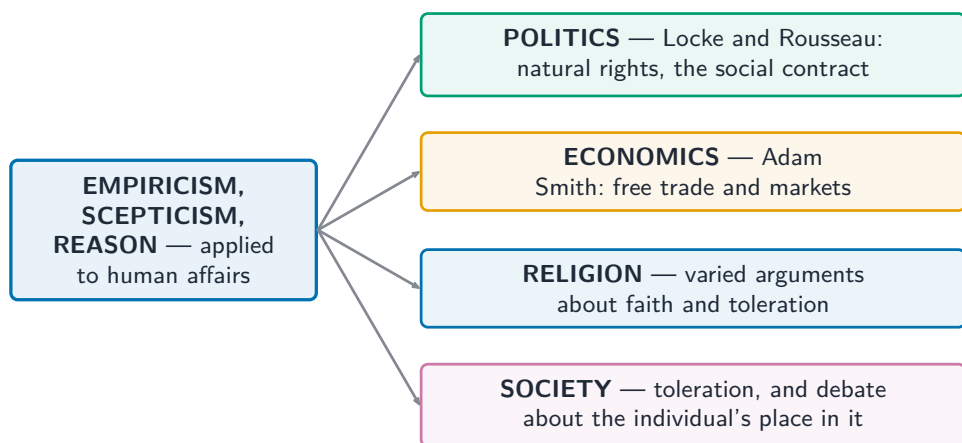
Political arguments included **Locke** and **Rousseau** on **natural rights** and the **social contract**. Locke connected legitimate government with consent and protection of rights, challenging authority based only on divine right or tradition. Rousseau's model was different; sharing the idea of a contract did not make their accounts identical.

**Adam Smith's** arguments supported **free trade** and mar-

kets against mercantilist restrictions. This does not mean that Smith rejected every governmental function. **Voltaire** and **Diderot** illustrate intellectual challenges to religious authority. **Deism, scepticism, and atheism** were distinct positions; not every thinker held all three. Religion was increasingly discussed as a private concern, but public religious institutions remained powerful.

**Salons**, coffeehouses, academies, lending libraries and Masonic lodges spread ideas through conversation and print. Access varied by wealth, literacy, gender and location. A broader public was not the entire population.

Claims about equality were contested. Rousseau argued for women's exclusion from political life; **Mary Wollstonecraft** challenged unequal education and restrictions on women's development as rational people. Her *A Vindication of the Rights of Woman* (1792) offers an example of debate within this intellectual world, not simply opposition between reason and unreason.



These are related questions, not fixed boxes. A source may address **more than one domain**

## ■ Specific examples for explanation

These are useful examples, not a requirement to cite every name or memorise one title per thinker. **Montesquieu**, in *The Spirit of the Laws*, analysed the distribution of political power. **Cesare Beccaria**, in *On Crimes and Punishments*, criticised torture and argued for proportionate punishment. **Anne Robert Jacques Turgot** attempted economic reforms, including freer grain trade, from inside the French monarchy. Their examples help explain institutional criticism or reform when relevant to a prompt.

The **revival of German Pietism** stressed personal devotion and religious experience. It offers evidence that a greater emphasis on reason coexisted with emotional and spiritual religion. It should not be reduced to a purely anti-rational reaction

or treated as the answer every question about the Enlightenment requires.

## 18th-Century Society and Demographics

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In the seventeenth century, small holdings, low agricultural productivity, poor transport and adverse weather could disrupt food supplies and cause subsistence crises. Higher productivity and improved transport later increased food availability and reduced the frequency of such crises. Changes were uneven.

Disease patterns also mattered: plague declined as a major epidemic disease, and smallpox **inoculation** reduced mortality. Lady Mary Wortley Montagu promoted variolation after learning about it in the Ottoman Empire. Variolation deliberately exposed people to smallpox material and carried serious risks. Jenner's later vaccination used a different approach. They should not be treated as the same procedure or as the sole cause of European population growth.

The **European marriage pattern**, involving late marriage and a significant proportion never marrying, limited births. In some areas birth-control methods also mattered. Falling infant and child mortality and increasing commercial wealth encouraged greater resources for children, education and domestic comfort.

Agricultural change could reduce demand for rural labour, while cities offered work. Migration increased urban populations, strained services and created challenges over housing, health, poverty and policing. People did not migrate for one identical reason.

**Original fictional evidence:** a town's population rises from 10,000 to 12,000 over a decade. Records report more rural arrivals and better grain deliveries. This supports migration and food supply as possible explanations. It does not isolate birth and death rates or establish the size of each cause. More records are needed.

## 18th-Century Culture and Arts

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Despite **censorship**, newspapers, books, pamphlets and periodicals reached a growing **literate public** and helped form public opinion. A **public sphere** developed through discussion and print, but unequal access and censorship continued. Representations of peoples outside Europe could challenge accepted norms; they could also reflect European assumptions rather than give neutral descriptions.

Baroque art and music often promoted religious feeling or royal power. Eighteenth-century art and literature increasingly represented private life and commercial society. Neoclassicism expressed ideals of citizenship and political participation. These trends overlapped; religious and royal themes did not suddenly disappear.

The **consumer revolution** increased goods for homes, including porcelain, textiles, mirrors and prints. A growing concern for **privacy** shaped domestic spaces and reading about private emotions. Coffeehouses, taverns, theatres and opera houses provided leisure venues. Access to goods and leisure varied with income and social position.

## Enlightened and Other Approaches to Power

**Enlightened absolutism** describes experiments in Enlightenment-inspired reform under rulers who retained monarchical authority. Frederick II of Prussia and Joseph II of Austria are illustrative cases. Legal, administrative, educational or toleration measures could serve improvement and strengthen the state. Policies varied and met resistance; reform should not automatically be called democratisation, nor assumed to have no effects on existing institutions.

By 1800 most governments in western and central Europe had extended toleration to Christian minorities; some states extended civil equality to Jews. Toleration and civil equality are different, and neither means that all groups immediately received equal rights everywhere.

After Westphalia, limits on imperial authority formed part of the context in which **Prussia rose to power** and the Habsburgs shifted their focus eastward. This was a longer political development, not a direct consequence of Enlightenment philosophy alone.

### REFORM MEASURES

legal and administrative reform  
toleration extended to Christian minorities  
the vocabulary of reason and improvement

### MONARCHICAL AUTHORITY

rulers directed reform programmes  
reform could strengthen  
central administration  
policies and resistance varied by state

Reform under a monarch did not automatically create democracy. Assess **particular changes and institutional effects**

## Causation in the Age of the Enlightenment

**Original practice, not an authentic past-paper item:** explain how Locke's account of consent and rights could challenge a claim that royal authority rests on divine right. **Model reasoning:** if government is justified by consent and its protection of rights, a ruler's divine claim alone cannot establish legitimacy. The challenge concerns the basis of authority. It does not show that all people immediately gained a vote or that the idea automatically caused a revolution.

For causal explanation, identify the idea or process, explain a link to the outcome, and use specific evidence. Distinguish intellectual challenge from immediate institutional change. Multiple causes can interact; a population total alone does not prove a medical intervention caused the change.

## Exam tips

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Answer the actual command with relevant evidence. Distinguish claim, observation and inference. Explain connections instead of listing names. Discuss continuity, disagreements or limits when they answer the prompt, rather than treating them as automatic scoring additions. Analyse a source's purpose and audience before assuming that its claim describes everyone's experience.

## Sources and practice provenance

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Scope: local College Board AP European History Course and Exam Description, topics 4.1–4.7, PDF pages 103–113 and the topic continuation. Practice examples and models are original teaching material. Classroom reasoning examples and town figures are fictional.

Historical checks: Royal College of Physicians: Harvey's experiments in circulation; National Library of Medicine: variolation; Jenner Institute: Edward Jenner; Wollstonecraft's 1792 text, public-domain transcription. Teaching paraphrases are labelled and are not quotations from these works.

Vocabulary card meanings

Scientific Revolution: The sixteenth- and seventeenth-century shift toward observation and mathematical laws of nature. Copernicus: The astronomer who proposed that the planets orbit the sun. Galileo: The scientist who used a telescope and defended a sun-centred cosmos. William Harvey: The physician who described the circulation of the blood. integrated system: A view of nature as parts working together under laws. Francis Bacon: The English thinker who urged systematic observation and experiment. inductive and deductive reasoning: Arguing from observations up to a rule, and from a rule down to a conclusion. Locke: The English thinker who argued for natural rights and government by consent. Rousseau: The Genevan thinker who wrote on the general will and inequality. Adam Smith's: The Scottish writer associated with the case for markets coordinating production. Voltaire: A French writer who attacked intolerance and defended free speech. Diderot: An editor of the *Encyclopedia*, a major Enlightenment reference work. deism, scepticism, and atheism: Belief in a non-intervening creator, doubt, and denial of God. Montesquieu: The French writer who argued for separating powers in government. Cesare Beccaria: The Italian writer who argued that punishment should be proportionate and deter crime. Anne Robert Jacques Turgot: A French reform minister who tried to loosen economic restrictions before the Revolution. revival of German Pietism: A Protestant movement stressing personal devotion over formal orthodoxy. European marriage pattern: A pattern of relatively late marriage and many people never marrying. inoculation: Deliberately giving someone material from a disease such as smallpox, a step that could itself cause serious illness. censorship: State or church suppression of unapproved writing and speech. literate public: A growing audience that could read books, pamphlets, and newspapers. consumer revolution: Wider buying of goods such as cloth, sugar,

and printed items. Prussia rose to power: The Hohenzollern state's climb to great-power status through army and administration. René Descartes: The French thinker who made doubt and reason the starting point of knowledge. empiricism: The claim that knowledge is built mainly from sensory experience. rationalism: The claim that reason is the chief source of knowledge. scepticism: Withholding assent from claims that are not well supported. Mary Wollstonecraft: The English writer who argued for women's education and rights. public sphere: The space of debate in print, salons, and coffeehouses, outside the court.