

Scientific, Philosophical, and Political Developments

AP European History

Contextualizing the Scientific Revolution and the Enlightenment

Unit 4 rests on one claim, and it is worth learning in the CED's own words: the spread of **Scientific Revolution** 科学革命 concepts and practices, and the **Enlightenment's application of those concepts and practices to political, social, and ethical issues**, fostered debate about the role of the individual in relation to the state and society.

That sentence contains the whole unit. A method developed for studying nature was turned on human institutions, and the result was a set of arguments about what a government owes the people it rules.

Running alongside it: everyday experience was shaped by **demographic, environmental, medical, and technological changes** - which is why this unit pairs high intellectual history with population statistics and consumer goods.

The Scientific Revolution

New ideas and methods in astronomy led **Copernicus** 哥白尼, **Galileo** 伽利略, and **Newton** 牛顿 to **question the authority of the ancients** and develop a heliocentric view of the cosmos.

Alongside astronomy:

- Anatomical and medical discoveries by physicians including **William Harvey** 哈维 presented the body as an **integrated system** 整体系统, challenging inherited medical theory.
- **Francis Bacon** 培根 and **René Descartes** 笛卡尔 defined **inductive and deductive reasoning** 归纳与演绎推理 and promoted experimentation and the use of mathematics.

The CED then adds a point students find surprising and examiners like: **alchemy and astrology continued to appeal** to elites and to some natural philosophers, partly because they shared with the new science the assumption that the natural world is governed by discoverable rules. The Scientific Revolution was not a clean break, and saying so demonstrates real understanding of continuity.

BACON — induction

start from **observations**
collect many, look for the pattern
the general claim comes last

DESCARTES — deduction

start from a **certainty** you cannot doubt
reason forward, step by step
the particular claim comes last

Opposite directions of travel. What they share is the target: both refuse to settle a question by citing **the authority of the ancients**

The Enlightenment

The Scientific Revolution

the method, built to study nature

- observation and experiment
- mathematics as the language
- induction and deduction (Bacon, Descartes)
- authority of the ancients is questionable

↓ **applied to society**

The Enlightenment

the same method, turned on society

- | | |
|------------------|---|
| Political | natural rights, the social contract (Locke, Rousseau) |
| Economic | free trade, a limited state (Adam Smith) |
| Religious | deism, scepticism, atheism; faith becomes private |
| Social | salons, print, a literate public debating in the open |

The examinable limit: the same movement that argued for equality also produced contested arguments about women's proper role.

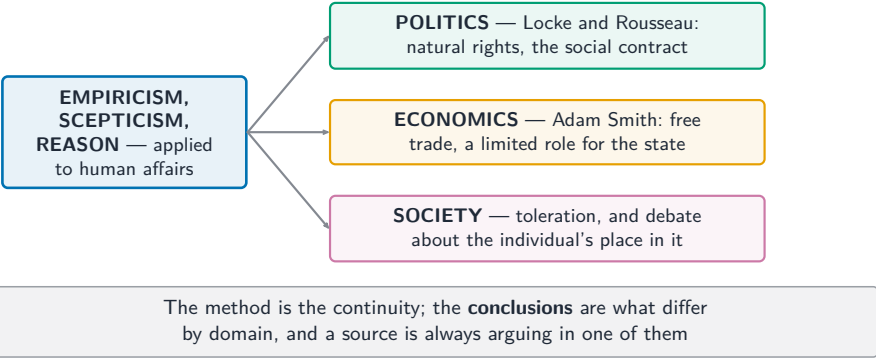
This is what the CED means by the Enlightenment applying the Scientific Revolution to human institutions

Enlightenment 启蒙运动 thought focused on **empiricism**, **scepticism**, **human reason**, **rationalism**, and classical sources of knowledge. Its outputs group into four kinds:

- **Political**: **Locke** 洛克 and **Rousseau** 卢梭 developed new political models based on **natural rights** 天赋权利 and the **social contract** 社会契约. Locke's theory conceived society as composed of individuals driven by self-interest, and argued the state's role was to protect their rights.

- **Economic:** mercantilist theory and practice were challenged by new ideas, including **Adam Smith's** 亚当·斯密, which espoused **free trade** 自由贸易 and a **limited role for the state** in the economy.
- **Religious:** intellectuals including **Voltaire** 伏尔泰 and **Diderot** 狄德罗 developed **deism, scepticism, and atheism** 自然神论、怀疑主义与无神论, and religion came to be seen increasingly as a **private rather than a public concern**.
- **Social:** a variety of institutions, notably **salons** 沙龙, explored and disseminated Enlightenment culture.

One limit is examinable and should never be omitted: **despite the principles of equality** the Enlightenment espoused, intellectuals such as Rousseau offered **controversial arguments about the proper role of women** in society. An answer that presents the Enlightenment as uniformly egalitarian is not the answer the CED wants.



The names the CED expects you to cite

An essay scores for **specific evidence**, so learn one work per thinker rather than a list of surnames:

Thinker	Work	The argument, in one line
Montesquieu 孟德斯鸠	<i>The Spirit of the Laws</i>	power must be divided between branches of government so that each checks the others
Cesare Beccaria 贝卡里亚	<i>On Crimes and Punishments</i>	punishment should deter rather than avenge; torture and the death penalty do neither well
Anne Robert Jacques Turgot 杜尔哥	as Louis XVI's controller-general	free the grain trade and abolish the guilds — reform from inside the state, and it failed against entrenched interests
Adam Smith	<i>The Wealth of Nations</i>	the division of labour and free exchange produce more than mercantilist regulation

Where the ideas were exchanged matters as much as who wrote them, because it explains how a small readership became a public: **coffeehouses, academies, lending libraries** and **salons** put print and conversation in front of people who owned few books. The CED groups these as the institutions of Enlightenment sociability.

△ **Not everyone answered with reason.** The same century saw a **revival of German Pietism** 虔敬主义 and other movements of emotional, personal faith — a reaction *against* rationalism, not a survival of the old order. A question about the Enlightenment's limits usually wants that, together with the controversial views on women that the section above records.

18th-Century Society and Demographics

The demographic story has a clear before and after:

- In the seventeenth century, **small landholdings, low-productivity agriculture, poor transportation, and adverse weather** limited population growth and caused periodic subsistence crises.
- Although the rate of illegitimate births rose in the eighteenth century, growth was still limited by the **European marriage pattern** 欧洲婚姻模式 - late marriage and a significant proportion never marrying.
- As **infant and child mortality decreased** and commercial wealth increased, families dedicated more space and resources to **children** and their education.
- **Cities offered economic opportunities**, which attracted migration from rural areas, transforming urban life and creating new social problems.

Inoculation and disease control belong to this story too: the spread of **inoculation** 接种 against smallpox — and later Jenner's vaccination — together with better sanitation and the retreat of plague, is part of why mortality fell. It is the clearest

case in the unit of a scientific method producing a demographic effect.

18th-Century Culture and Arts

- Despite **censorship** 审查, increasingly numerous and varied printed materials served a growing **literate public** 识字公众 and produced a **public sphere** in which opinion could form outside the state.
- Natural sciences, literature, and popular culture increasingly exposed Europeans to **representations of peoples outside Europe**.
- The arts moved **from the celebration of religious themes and royal power to an emphasis on private life and the public good** - a shift in subject that tracks the shift in authority.
- The **consumer revolution** 消费革命 of the eighteenth century was shaped by a new concern for **privacy** 隐私 and encouraged the purchase of new goods for the home.

Enlightened and Other Approaches to Power

In the eighteenth century a number of states in eastern and central Europe experimented with **enlightened absolutism** 开明专制 - rulers adopting Enlightenment-inspired reforms in law, education, and administration **while retaining absolute authority**. The tension in that phrase is the examinable point.

By 1800 most governments in western and central Europe had **extended toleration to Christian minorities**, and in some states civil rights as well.

And as a result of the Holy Roman Empire's limitation of sovereignty at Westphalia, **Prussia rose to power** 普鲁士 while the Habsburgs turned toward their eastern lands - a structural consequence of Unit 2's settlement arriving a century later.

ADOPTED

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

NOT GIVEN UP

absolute authority over the decision itself
no representative body with a claim on it
the reform is a *grant*, and can be withdrawn

Reform **from** absolute power is not a step away from it. Prussia's rise is the case to test that on

Causation in the Age of the Enlightenment

The unit's reasoning skill is **causation**, applied to how these movements **challenged the existing European worldview**.

Worked example (a real AP exam question). AP European History short-answer questions here ask, for example, to *“Explain one way in which Enlightenment thought challenged existing political authority in the eighteenth century.”* A full-mark answer identifies the challenge and traces it: *“Locke’s theory of natural rights and the social contract held that government exists to protect the rights of individuals and derives its authority from their consent. This directly undermined the claim that a monarch’s authority came from God, because it made obedience conditional on the ruler’s performance rather than unconditional.”* Notice the mechanism: the answer shows *how* one argument displaces another, rather than listing thinkers.

Exam tips

- Learn the CED's own sentence: the Enlightenment **applied Scientific Revolution methods to political, social, and ethical issues**. Many questions are answered by unpacking it.
- The Scientific Revolution was **not a clean break** - alchemy and astrology persisted. Continuity points score.
- Group Enlightenment outputs as **political, economic, religious, social**. Four labelled kinds beat a list of names.
- Always note the **limits on equality**, especially regarding women. The CED names them explicitly.
- **Enlightened absolutism** is a tension, not a contradiction: reform without surrendering authority.
- The **public sphere** - print, literacy, salons - is the mechanism by which ideas became political. Use it to explain, not just to describe.