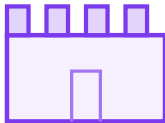


Scientific, Philosophical, and Political Developments

AP European History ■ Unit 4

AP European History



A new argument does not guarantee a new society

The organising question

How could observation and reason challenge established authority while older beliefs, unequal rights and powerful monarchies continued?

Distinguish an intellectual challenge, the spread of an idea and an actual institutional change. Each requires evidence.

1

Contextualizing the Scientific Revolution and the Enlightenment

Connect inquiry and institutions

Scientific Revolution 科学革命

Observation, experiment and mathematics changed investigation of nature. Classical learning and religious belief remained important.

Enlightenment 启蒙运动

Thinkers applied concepts and practices to politics, society and ethics. They disagreed about authority, rights, faith and reform.

The connection is not a single method that generated one agreed programme.

Keep intellectual and everyday changes in view

Worked contextual explanation

Scientific and intellectual debate developed alongside changes in agriculture, disease, family life, migration and consumption. These processes could interact, but a rise in population is not automatically evidence that a philosopher's idea caused it.

Explain a specific connection. Events occurring in the same century do not by themselves establish causation.

2

The Scientific Revolution

Changing accounts of cosmos and body

Astronomy

Copernicus, Galileo and Newton contributed different models, observations and explanations. Heliocentric accounts challenged an Earth-centred cosmos.

Anatomy and medicine

William Harvey's work on blood circulation helped explain the body as an integrated system and challenged inherited medical accounts.

The common development was renewed scrutiny of inherited knowledge. These thinkers did not all make the same discovery.

Two forms of reasoning

BACON — induction

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

DESCARTES — deduction

start from **premises**
reason forward, step by step
derive a conclusion that follows from them

Bacon is associated with systematic observation; Descartes with methodical doubt and reasoning from principles. Neither invented every form of induction or deduction.

An induction example with a limited sample

Fictional classroom observations

Sample A lengthens when heated. Sample B lengthens when heated. Sample C lengthens when heated. A student proposes: "Other metal samples may also lengthen when heated."

The proposed generalisation goes beyond the observed cases. It is not proof about every material under every condition.

A deduction example with explicit premises

Supplied premises

All objects in box X are metal. Object A is in box X. Therefore object A is metal.

The conclusion follows if the premises are true. Valid reasoning alone does not show that the box was labelled accurately.

Your turn: separate inference and certainty

Original practice — attempt before the check

Classify the sample generalisation and the box argument as induction or deduction. Explain one reason neither example gives certainty about every unobserved fact in the world.

Check: the source of the conclusion

Induction

The heated-sample generalisation extends observations to further cases. More observations could challenge or refine it.

Deduction

The box conclusion follows from its premises. Whether those premises accurately describe the actual box needs evidence.

Do not confuse a logically valid argument with proof that all of its starting claims are factually true.

Continuity alongside change

New investigation

Observation and mathematical explanation could question inherited views of the cosmos and the body.

Continuing beliefs

Alchemy, astrology and spiritual accounts continued to appeal to some elites and natural philosophers.

Explain what persisted. Continuity is relevant evidence when it answers the prompt, not an automatic extra mark.

3

The Enlightenment

Scientific practices informed social arguments

The Scientific Revolution

investigating nature

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

↓ **applied to society**

The Enlightenment

varied arguments about society

Political	rights and social contract (Locke, Rousseau)
Economic	free trade and markets (Smith)
Religious	deism, scepticism, atheism
Social	salons and print; unequal access

Claims about equality were contested.

Arguments about women's education and political roles differed.

Methods and conclusions varied; equality and access remained contested.

Different approaches to knowledge

Empiricism 经验主义 and **rationalism** 理性主义

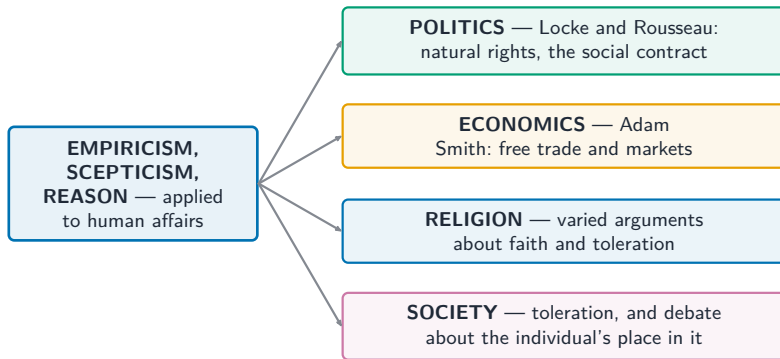
Empiricism stresses observation and experience. Rationalism stresses reasoning and principles.

Scepticism 怀疑主义

Question a claim and ask what supports it. This does not mean rejecting every claim regardless of evidence.

Thinkers combined or contested approaches. They did not all follow an identical laboratory procedure.

Related questions could overlap



A claim about toleration may concern both religion and political authority. Identify its argument before assigning a label.

Consent changes the basis of authority

Locke 洛克: rights and consent

Government should protect natural rights and rest on consent. Divine right or tradition alone cannot establish its legitimacy.

Rousseau 卢梭: social contract

Rousseau also used a contract model, but his account of collective political authority differed from Locke's.

Sharing a concept does not mean two thinkers made identical arguments.

Explain the challenge rather than naming a thinker

Worked reasoning

If legitimate government rests on consent and protection of rights, a ruler cannot justify every action merely by claiming divine authority. The idea changes the grounds on which rule is defended or criticised.

This explains an intellectual challenge. It does not show that all people immediately gained voting rights.

Markets and religious arguments

Adam Smith and trade

Free trade and markets challenged mercantilist restrictions. Criticising those restrictions did not mean rejecting every governmental function.

Voltaire, Diderot and faith

Deism, scepticism and atheism represent different positions. Do not assign all three to every thinker or assume religious institutions vanished.

Religion was increasingly considered a private concern, while public religious authority remained significant.

Institutions helped ideas reach audiences

Venue or medium

Salons and coffeehouses

Academies and libraries

Pamphlets and periodicals

Possible connection

Discussion links readers and listeners.

Learned exchange and access to texts.

Repeated circulation of arguments beyond a single conversation.

Wealth, literacy, gender, censorship and location affected access. A broader audience was not the whole population.

A disagreement about women and reason

Teaching paraphrase of Wollstonecraft, 1792

Unequal education encourages women to seek approval instead of developing understanding. Women should be treated as rational people whose abilities deserve education and respect.

Based on A Vindication of the Rights of Woman; this is not a quotation. Rousseau's arguments excluding women from political life provide a contrasting position.

Your turn: explain a disagreement within the Enlightenment

Original practice — attempt before the check

Explain how Wollstonecraft's educational argument challenges restricted roles for women. Then explain why this disagreement makes "all Enlightenment thinkers supported equal participation" an inaccurate summary.

Check: reason could challenge exclusion

Challenge

If women are rational people, denying the education needed to develop their understanding conflicts with equal respect for their capacities.

Disagreement

Rousseau defended restrictions while Wollstonecraft challenged unequal education and roles. The movement did not have one uniform position.

Analyse the specific claim and context. Neither text by itself describes every woman's experience.

Use a named example for a purpose

Institutional criticism

Montesquieu analysed political power; Beccaria criticised torture and supported proportionate punishment. Use the example that fits the question.

Economic and religious debate

Turgot attempted reform within monarchy. German Pietism stressed personal devotion and spiritual experience alongside intellectual debate.

Pietism cannot be reduced to a purely anti-rational reaction. There is no mandatory list of names for every answer.

4

18th-Century Society and Demographics

Connect food supply and population

- 1 Small holdings, low productivity, poor transport and adverse weather could disrupt seventeenth-century food supplies.
- 2 Higher agricultural productivity and improved transport later increased food availability and reduced demographic crises.
- 3 Disease patterns, marriage, births and migration also affected population; regional changes were uneven.

A causal explanation can identify several interacting mechanisms without claiming that one factor explains every case.

Smallpox: distinguish two historical approaches

Variolation

Lady Mary Wortley Montagu promoted inoculation learned in the Ottoman Empire. Smallpox material was deliberately introduced; the procedure carried serious risks.

Later vaccination

Jenner's later vaccination used a different approach. It should not be described as the same procedure as variolation.

Historical context: NLM and Jenner Institute. Inoculation contributed to reduced smallpox mortality; it was not the sole cause of population growth.

Births, childhood and household change

European marriage pattern

Late marriage and a significant proportion never marrying limited births. Some areas also used birth-control methods.

Mortality and wealth

Falling infant and child mortality, together with commercial wealth, encouraged resources for children, education and comfort.

Marriage, mortality and household resources are different variables. Explain how the relevant one affects the outcome.

Evidence pack: a growing town

Fictional record

Start of decade

End of decade

Local descriptions

Not supplied

Information supplied

Population 10,000

Population 12,000

More rural arrivals; better grain deliveries

Annual births, deaths and migration counts

These are original classroom data, not historical statistics. The descriptions do not quantify each cause.

Your turn: interpret population evidence

Original practice — attempt before the check

Use the town records to explain two possible contributors to growth. Identify one further type of record needed to distinguish their effects. Can the total prove a medical intervention caused the rise?

Check: plausible mechanisms and missing evidence

What the records support

Migration can add residents; better food deliveries can reduce shortages and support growth. The descriptions identify possible contributions.

What remains unknown

Birth, death and migration counts are needed to separate effects. No intervention or comparison is supplied, so a medical cause is not established.

The increase is 2,000 people over the decade. Its size alone does not identify its causes.

Urban opportunity also created pressures

Worked connection

Agricultural change could reduce demand for rural labour while cities attracted people seeking work. Population concentration increased demands for housing, public health and protection. Poverty and crime prompted stronger policing of marginal groups.

Do not assume every migrant moved for the same reason or that all urban residents experienced prosperity.

5

18th-Century Culture and Arts

Print and public opinion

New circulation

Books, newspapers, pamphlets and periodicals served a growing literate public. Discussion helped form public opinion beyond government institutions.

Continuing limits

Censorship and unequal access persisted. Accounts of non-European peoples could challenge norms or reproduce European assumptions.

Explain how an argument circulated and who could encounter it, rather than assuming print instantly reached everyone.

Changing emphases in the arts

Baroque examples

Religious feeling and royal power remained important themes and purposes of artistic patronage.

Commercial and civic subjects

Private life and bourgeois values gained prominence. Neoclassicism expressed ideals of citizenship and participation.

These trends overlapped. The rise of new subjects did not eliminate all religious or royal art.

Consumption, privacy and leisure

Connect an object to a social development

Porcelain, textiles, mirrors and prints offered new goods for homes. Private domestic spaces and novels about personal emotion reflected concern for privacy. Coffeehouses, taverns and theatres expanded leisure venues.

Identify the household or audience involved. Increased consumption did not give every social group equal purchasing power.

Your turn: explain circulation with a limit

Original practice — attempt before the check

A pamphlet is discussed in a coffeehouse and borrowed through a lending library. Explain how those settings could broaden its audience, then identify one reason the audience would still be limited.

Check: transmission and unequal access

Mechanism

Readers and listeners can exchange the argument; borrowing lets a text reach people who did not buy their own copy.

Limit

Literacy, cost, censorship, gender or location can restrict access. A wider public is not automatically a universal public.

A source's claim should be analysed separately from the number of people who heard or accepted it.

6

Enlightened and Other Approaches to Power

Reform measures and authority are separate questions

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

Frederick II and Joseph II are illustrative cases. Policies, resistance and institutional effects must be assessed individually.

Toleration does not mean identical rights

Religious toleration

By 1800 most western and central European governments had extended toleration to Christian minorities.

Civil equality

Some states extended civil equality to Jews. This is a different claim from permission to practise a religion.

Do not turn limited, uneven change into immediate equal rights for all groups everywhere.

Political context: Prussia and the Habsburgs

A longer development

Limits on imperial authority after Westphalia formed part of the context for Prussia's rise and the Habsburg shift eastward. State competition and institutional development mattered alongside later reform ideas.

Prussia's rise should not be presented as a direct consequence of Enlightenment philosophy alone.

Your turn: assess a reform claim

Original practice — attempt before the check

In a fictional case, a monarch issues a toleration decree and appoints officials to enforce it. A student concludes: “The country is now a democracy.” Explain what the supplied evidence shows and what further institutional evidence would be needed.

Check: reform and who exercises power

Supported conclusion

The decree changes religious policy, and the ruler directs implementation through appointed officials.

Missing evidence

The example gives no account of representative institutions, voting or control of the monarch. Those would be needed to assess democracy.

This is an original hypothetical case, not a claim about a specific historical decree. Reform could strengthen royal administration.

7

Causation in the Age of the Enlightenment

Evidence pack: authority and knowledge

Development

Evidence supplied

Scientific inquiry

Observation and mathematical reasoning challenged inherited accounts of nature.

Political argument

Locke connected legitimate government with consent and rights.

Transmission

Print and discussion venues circulated arguments, with unequal access.

Teaching summaries based on CED topics 4.2–4.5. They are not historical quotations.

Your turn: build a causal explanation

Original practice — attempt before the check

Use one item from the pack to explain how an existing basis of authority could be challenged. Add a second item to explain transmission or context. State one limit on what your explanation establishes.

Check: argument, connection and limit

- 1 Locke's account challenges divine right as a sufficient basis of legitimacy by making consent and rights central.
- 2 Print and discussion venues can help circulate that argument beyond the author and immediate readers.
- 3 Neither intellectual challenge nor circulation proves that every listener accepted it or that government immediately changed.

This is illustrative reasoning, not a guaranteed mark award. Other evidence-based explanations can also answer the prompt.

8

Exam tips

Improve the explanation, not the list of names

Weak claim

“Reason changed everything.”

“Population grew because of science.”

“Reform created democracy.”

Question to answer

Which argument challenged which authority?

Which food, disease, birth or migration mechanism is supported?

Who gained rights or institutional control?

Use relevant qualifications. Do not append the same continuity or gender sentence regardless of the prompt.

Sources and practice provenance

Scope: local College Board AP European History CED, topics 4.1–4.7.

Historical checks: Royal College of Physicians on Harvey; NLM on variolation; Jenner Institute on vaccination; Wollstonecraft's 1792 text. Full links are in the handout.

Prompts, logic examples, town data and hypothetical decree are original teaching material. Paraphrases are labelled. No task is claimed to be an authentic past-paper item.

Check yourself

- 1 Distinguish a generalisation from observations and a deduction from premises.
- 2 Explain how consent challenges divine right as a basis of authority.
- 3 Give an example of disagreement about equality within the Enlightenment.
- 4 Explain two possible contributors to population growth and the evidence needed.
- 5 Distinguish toleration, civil equality and democratic participation.