# UNIT 4 STUDY GUIDE:

***Scientific Revolution & Enlightenment***

THE HELIOCENTRISM DEBATE:

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| **Ptolemy**(Ancient Roman) | **Copernicus**(Polish) | **Kepler**(German) | **Galileo**(Italian) |
| **Geocentric Theory** | **Heliocentric Theory** |
| **TRADITION** | **HYPOTHESIS** | **MATHEMATICAL PROOFS** | **EMPIRICISM**  |
| **Astrology**(Superstition) | **Astronomy**(Science) |

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**Experience**

**Experimentation**

**Evidence**

The “natural philosophers” of the early modern period believed that true knowledge comes from experience. The *scientific method* was designed as a system for collecting empirical evidence.

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| **“Natural Philosophers” of the Scientific Revolution** |
| **Philosopher** | **Country of Origin** | **Contribution(s)** |
| **Descartes** |  | [REVIEW ON YOUTUBE](https://www.youtube.com/watch?v=l04HlEP-N60) |
| **Bacon** |  |  |
| **Newton** |  |  |
| **Vesalius** |  |  |
| **Pascal** |  |  |

**The Scientific Method and Inductive Reasoning**

Image Credit: [http://scifiles.larc.nasa.gov](http://scifiles.larc.nasa.gov/text/kids/Research_Rack/images/scientific_method01.gif)



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| **Deductive Reasoning***(Aristotle & Descartes)* | **Inductive Reasoning***(Bacon)* |
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**Sir Francis \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Rene \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** were instrumental in formulating the *scientific method*, which created a fixed system of scientific inquiry that was accepted by natural philosophers throughout Europe.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Academies**

![C:\Documents and Settings\trichey.SDOC\Local Settings\Temp\Temporary Internet Files\Content.IE5\MLRAYU8Y\MC900368542[1].wmf]()**Absolute monarchs established Royal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in order to promote scientific inquiry.** These monarchs were not interested in scientific advancement for its own sake, but in the possibilities scientific inquiry had to produce wealth (alchemy) and new military technologies.

**Wealth**

**Warmaking**

**Weaponry**

***The [British] Agricultural Revolution*** [**REVIEW ON YOUTUBE**](https://www.youtube.com/watch?v=-t7yJko34pc)

*The application of* ***\_\_\_\_\_\_\_\_\_\_\_ principles*** *and* ***\_\_\_\_\_\_\_\_\_\_\_ capitalism*** *to agriculture*

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| **E\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **I\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **S\_\_\_\_\_\_\_\_\_\_\_\_\_ Breeding** |
| Replaced the \_\_\_\_\_\_\_\_\_\_\_\_\_\_, where the whole community would plant crops and graze their livestock. | **Jethro \_\_\_\_\_\_\_\_\_\_\_\_\_\_**The \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_, which mechanized sowing, was Tull’s most famous invention. | The process of breeding animals with desirable characteristics together to produce genetically superior livestock |

***The Enlightenment*** [**ENLIGHTENMENT RAP ON YOUTUBE**](https://www.youtube.com/watch?v=eWkjihcnZ8g)

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| **VALUES OF THE ENLIGHTENMENT** |
| **REASON** | **SCIENCE** | **PROGRESS** | **LIBERTY** | **TOLERATION** |
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| **What is Enlightenment?** | Immanuel Kant, a German *philosophe*, defined “enlightenment” as an individual’s escape from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - a sort of self-imposed intellectual childhood. Enlightened individuals are capable of thinking for themselves. |

According to Kant, the only thing necessary to escape from *nonage* is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Two institutions dominant in France at the time limited freedom of inquiry:

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| **Freedom-limiting Institutions***in the eyes of the philosophes:* |  |  |  |
| Most *philosophes* were **anticlerical** (against the influence of a hierarchical, institutional Church organization – not necessarily against the general concept of religion) in their thinking.***“And his hand would plait the priest’s entrails, For want of a rope, to strangle kings.”* -- Diderot** | C:\Documents and Settings\trichey.SDOC\Local Settings\Temp\Temporary Internet Files\Content.IE5\MLRAYU8Y\MP900289865[1].jpg | king_01_clip.gif |

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| **Natural Religion**(e.g., \_\_\_\_\_\_\_\_\_\_\_\_) | **Revealed Religion**(e.g., \_\_\_\_\_\_\_\_\_\_\_\_) |
| **Knowledge of God comes from:**[REVIEW ON YOUTUBE](https://www.youtube.com/watch?v=a7ZOGHOcxX8) | **Knowledge of God comes from:** |

The religion of *Deism*, which boasted such illustrious adherents as Voltaire, Thomas Paine, and Thomas Jefferson, was a natural religion. The metaphysics of Deism are fairly easily explained:

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| **C:\Documents and Settings\trichey.SDOC\Local Settings\Temp\Temporary Internet Files\Content.IE5\MLRAYU8Y\MC900441322[1].pngGod exists.** He created an orderly universe and made it possible for human beings to understand him through the use of **observation** and **reason**. | * ~~Sacred texts~~ claiming to contain the revealed word of God
* ~~Religious dogmas~~ derived from said texts
* ~~C:\Documents and Settings\trichey.SDOC\Local Settings\Temp\Temporary Internet Files\Content.IE5\8ZRYA7YH\MC900441321[1].pngMiracles~~, ~~prophecies~~ and religious "~~mysteries~~"
 |

**Although enlightened ideals spread throughout Europe, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was the epicenter of the Enlightenment.**

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| **The French “*Philosophes*”**  |
| ***Philosophe*** | **Notable Published Work(s)** | **Contribution(s) to Enlightened Thinking** |
| **Voltaire** |  |  |
| **Diderot** |  |  |
| **Montesquieu** |  |  |
| **Rousseau** |  |  |

![C:\Users\Tom\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DQRHCO83\MC900432659[1].png]()***Enlightened Absolutism***

Absolute monarchs in Central and Eastern Europe took an interest in the ideals of the Enlightenment, seeing in them an opportunity to modernize and consolidate their states.

**The Enlightened Despots** [**REVIEW ON YOUTUBE**](https://www.youtube.com/watch?v=oBvZAPQVIro)

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| **(Prussia)** | **(Austria)** | **(Russia)** |
| A ruler is the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ of the state. | The \_\_\_\_\_\_\_\_\_\_\_\_\_ ambitious, but the \_\_\_\_\_\_\_\_\_\_\_\_\_ successful of the enlightened despots.Lifted restrictions on \_\_\_\_\_\_\_\_s. (Religious Group) | Raised to the throne after participating in a conspiracy to assassinate her husbandPurchased \_\_\_\_\_\_\_\_\_\_\_\_\_’s library and paid him to be the librarian\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_’s Rebellion |

**The Program of the Enlightened Absolutists:**

* **Religious Toleration**
* **Free Speech and Press**
* **Private Property Rights**
* **Patronage of the Arts and Sciences**
* **~~Rebellion~~**

**“Only one ruler in the world says: ‘Argue as much as you please, but obey!’” – Kant**

*Although the enlightened absolutists promoted religious toleration, education, and other benevolent reforms, they tended to promote these ideals only to the point to which the ideals furthered their goals. Ultimately, the enlightenment ideal of freedom would prove incompatible with absolute rule.*