The Renaissance, Reformation, and Scientific Revolution
What is the Renaissance?

• A revival of Greek and Roman knowledge and culture after the Middle Ages in Europe – began in Italy
  • Ancient Greece/Rome – very advanced and emphasized education, philosophy, art, trade
  • Middle Ages – very little education, art, trade
• Renaissance is French for “rebirth”
• Beginning of “modern” civilization
Causes of the Renaissance

- End of Middle Ages = revival of education
- Crusades brought back Greek/Roman learning
- Turks/Arabs in Middle East had preserved much ancient learning
Why Italy?

- History – had been the center of Roman Empire
- Geography – peninsular country, perfect for trade
- Cities – had many cities with wealthy people who patronized art and education
Middle Ages had grown very distant from ideas of Greece and Rome

- R/G were polytheistic, MA was Roman Catholic
- R/G both empires, MA was small city-states led by Kings
- R/G very advanced, MA had declined in learning

Catholic Church of the Middle Ages denounced all non-Christians

- Fought Muslims in Crusades, blamed Jews for plague

Problem – how could Greek and Roman knowledge be accepted if they were not Christians?
Humanism

- Philosophy that originated at beginning of Renaissance
  - Early origins with Francesco Petrarch
- Break in traditional Medieval thinking that the Church, God, and salvation were the only worthwhile endeavors
- Instead, focused on life ON Earth rather than life AFTER Earth
- It was ok to be a Christian AND pursue things for purposes other than salvation
Education of the Renaissance

- More universities built
- Attendance expanded to females
- Subjects emphasized were the humanities – history, literature, poetry, rhetoric, grammar
- Increased literacy
Renaissance’s Influence on Art

- Art of Middle Ages had been solely for the sake of Christianity and salvation
  - Murals, statues, tapestries only hung in churches
- In the Renaissance, quality and purpose of art changed
  - Purpose – not just about religion, but also about humanity
  - Quality – improved greatly
- Wealthy families in Italy began artistic revival
  - Educated enough to appreciate art
  - Wealthy enough to pay for art
  - Most famous family – the Medici
<table>
<thead>
<tr>
<th>Medieval Art</th>
<th>Renaissance Art</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Only religious subjects</td>
<td>• Religious, natural, and worldly subjects</td>
</tr>
<tr>
<td>• Commissioned by church</td>
<td>• Commissioned by church and private citizens</td>
</tr>
<tr>
<td>• Anatomically inaccurate</td>
<td>• Very anatomically accurate</td>
</tr>
<tr>
<td>• Techniques less advanced</td>
<td>• Advanced techniques like perspective, shading</td>
</tr>
</tbody>
</table>
The Renaissance Spreads

- Revival began in Italy, spread to southern France and Spain all in 1300’s
- By 1400-1500 – Renaissance ideas began to spread north
- As Renaissance progressed, trade and wealth increased in all of Europe
Knowledge spread slowly at first due to lack of translated texts

- Only available in Greek and Latin
- Most spoke in common vernacular (local language)
- Printing technologies were outdated
  - Printed with blocks/stamps or written by hand which led books to be expensive
The Printing Press

- New printing press “invented” in 1456 by Johan Gutenberg – Germany – moveable type printing press
  - Used technology from China
  - Letters/symbols could be rearranged and reused for more efficient printing
  - Books more easily made, printing in many languages, cheaper to produce and buy
Results of the Printing Press

- Knowledge spread as books were published
- More people became literate
- More authors
- Books were cheaper
- Renaissance spread even further
Notable Works of Renaissance Literature

- **The Prince** – written by Niccolo Machiavelli
  - Describes qualities of a successful ruler
  - A ruler should be strict, feared, and shrewd, not liked
  - Results are better than keeping promises

- **Don Quixote** – by Miguel de Cervantes
  - Satire of medieval society
  - First true European novel

- **Canterbury Tales** – by Geoffrey Chaucer
  - Satire of medieval religion

- **Plays of William Shakespeare**
  - Famous for tragedies and comedies (Romeo & Juliet, Macbeth, Taming of the Shrew)
  - Also known for writing sonnets
The Printing Press and the Church

• Bible quickly became most printed and translated book
• As literacy increased, more people were able to read the Bible for themselves
  • Only the clergy had been able to (Bibles were printed in Latin)
• As more people read and interpreted the Bible, many realized how corrupt the Church had become
  • Clergy lived in wealth (supposed to be charitable)
  • Popes competed with Kings for power (excommunication)
  • Churches were massive and ornate (Gothic)
  • Persecuted non-Christians (Crusades)
  • Sold indulgences – pardons for sins
Martin Luther

- German monk and professor
- Struggled to live a perfect life according to Catholic Church
- Believed Catholic Church had grown too far from words of the Bible and Christ’s teachings
The 95 Theses

- A list of 95 arguments against the Church, especially sale of indulgences
- Written by Luther
- Posted on church doors in Wittenberg, Germany, on Oct. 31, 1517
- Copies were distributed across Europe in many languages – soon all of Europe had read Luther’s attack on the Catholic Church
Catholic Practices
• Masses held in Latin
• Pope is ultimate source of religious information
• Specific deeds required for salvation (Sacraments)
• Follow 7 Sacraments
• Rituals and rites must be observed for salvation (Communion)
• Clergy cannot marry
• Pope, priests can grant salvation
• Church can make $$$ off marriages, baptisms etc.
• Believed in sale and power of relics

Luther’s Ideas
• Services held in vernacular
• Bible is ultimate source of religious information
• Faith alone required for salvation
• Only follow 2 Sacraments
• Rituals and rites are useless for salvation, which is reached through faith alone
• Clergy can and should marry
• Only God can grant salvation
• The Church should not work for profit
• Relics are not religious in nature
Churches Reaction

• Pope demanded that Luther recant the 95 Theses, refused
• Luther excommunicated in 1521 by Pope
• Diet of Worms - 1521
  • Holy Roman Emperor demanded Luther recant
  • Luther refused, made an outlaw
• German princes provided protection for Luther, began to hold “Lutheran” services in church rather than Catholic masses
• Followers of Luther spread “Lutheran” beliefs, became known as “Protestants” due to their protest of Catholic corruption
Luther’s Ideas Spread — Protestant Reformation

• Many, especially Northern Europe, liked Luther’s ideas
  • Challenged Pope’s power
  • Helped reduce Church’s corruption

• “Protestantism” became an actual religion and opponent to Catholicism
  • Not Luther’s original goal — only wanted to reform Catholic faith
  • Had no choice but to accept his new religion

• Peace of Augsburg — 1555
  • Each king could decide the faith of his own kingdom
  • Northern Europe tended to be Protestant, Southern Europe remained Catholic
**Timeline of Christianity’s Branches**

- **c. 33 – 1054**
  Catholicism is only form of Christianity

- **1054**
  Great Schism Occurs
  Eastern Orthodox Christianity forms

- **1517**
  Protestant Reformation Starts
  Eventually forms Protestant Christianity
New Protestant Denominations

• Today there are thousands of forms of Christianity
• Any non-Catholic or non-Orthodox form is a type of Protestantism
  • Lutheranism – followed Luther’s ideals
  • Calvinism – John Calvin’s teachings
    • Mainly Luther’s ideas
    • Believed in predestination – God decides at birth if salvation is granted
• Baptism
  • Only adults can truly understand God’s teachings and be baptized
• Anglicanism
  • Formed by King Henry VIII of England – wanted to divorce wife
  • AKA Church of England
  • Same basic principles of Catholicism
Influences of the Renaissance and Reformation

• Scientific Revolution – age of new scientific advancements and discoveries
  • Rebirth of ancient knowledge → interest in scientific world instead of a religious one

• Age of Exploration – age of increased travel and search for new lands and trade routes
  • New technology and need for new trade routes → age of travel and discovery

• Enlightenment – age of increased social freedom and demand for equality and fair government
  • Protestant Reformation → protesting spirit
  • Renewed interest in Greek and Roman history → democracy and republic
Scientific Revolution

1450’s – 1700’s
Scientific Revolution

• Time of increased interest in the physical sciences
  • Astronomy, biology, chemistry, physics, medicine, mathematics
• Inspired by Roman/Greek scientists reborn with Renaissance
• Emphasis placed on physical world and natural causes rather than spiritual world and religious causes
Nicolaus Copernicus

• 1543 – Published On the Revolutions of the Celestial Spheres
  • Suggested the Sun (heliocentrism) was at the center of the solar system, not the Earth (geocentrism)
  • Geocentrism was the belief of the Church and ancient Greeks (Ptolemy), so many refused to believe his theory
  • Mathematic calculations also supported elliptical, not circular, orbit (Johannes Kepler)
Galileo Galilei

- First to use a telescope to observe the night sky
  - Observed moons orbiting Jupiter, confirmed not all objects orbit Earth
- Confirmed Copernicus/Kepler theory of heliocentrism and published findings in 1610
  - Met with opposition from Catholic Church
  - Catholic Inquisition put Galileo on trial, found guilty
  - Forced to recant, publish works supporting geocentrism, and put on house arrest until his death
Isaac Newton

• Published *Principia* in 1687
  • Stated the 3 laws of motion
    • Every object at rest stays at rest
    • Force = ma
    • Every action has an opposite and equal reaction
  • Provided explanation to gravity, planetary orbits, tides

• Believed all natural phenomenon could be explained mathematically

• Helped define laws of calculus
**Biological Discoveries**

Galen – Roman philosopher who believed in humorism – body is composed of 4 humors through dissection of monkeys
- Yellow bile, Black bile, Blood, Phlegm
- Believed the liver pumped blood

Vesalius – dissected human corpses and disproved Galen in 1453

William Harvey – published works in 1628
- Proved that blood circulated body by means of the heart
- Differentiated veins (carry blood to heart) and arteries (out of heart)
**Scientific Method**

- Used and advocated for first time during Scientific Revolution
  - Develop hypothesis → experiment to prove or disprove → collect data → revise hypothesis → repeat
- Helped contribute to a rational and logical explanation of the world and its events
- Use physical evidence, not religious faith to explain nature
Age of Exploration

1450’s – 1700’s
Age of Exploration

Era of European exploration of the world

- Looking for new water trade routes to Asia — Ottoman Empire controlled Silk Road land routes
- Land routes were also dangerous
- Looking for new resources and colonies, spreading religion

Advancements in astronomy and reason helped Europe realize the world was round that the oceans were a connected system
Asia (India and China) had spices, silk, luxury goods desired by Renaissance Europe.

Ottoman Empire blocked trade.

Only known continents at the time were Europe, Asia, Africa.
THE WORLD
according to
HECATŒUS
B.C. 500
<table>
<thead>
<tr>
<th>Explorer</th>
<th>Looking to spread Christianity and find new route to Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartolomeu Dias – Portugal</td>
<td>First to sail to southern tip of Africa</td>
</tr>
<tr>
<td>Vasco de Gama – Portugal</td>
<td>Looking to spread Christianity and find new route to Asia</td>
</tr>
<tr>
<td></td>
<td>First to sail around Africa to reach Asia</td>
</tr>
<tr>
<td></td>
<td>Claimed land in South America for Portugal</td>
</tr>
<tr>
<td>Christopher Columbus – Spain</td>
<td>Looking for new route to Asia by sailing across Atlantic Ocean</td>
</tr>
<tr>
<td>(from Italy)</td>
<td>First European to set foot in Americas (did not know at time)</td>
</tr>
<tr>
<td>Ferdinand Magellan – Portugal</td>
<td>Looking for route to Asia by sailing across Atlantic Ocean</td>
</tr>
<tr>
<td></td>
<td>Rounded tip of South America, crew first to circumnavigate the globe</td>
</tr>
<tr>
<td>John Cabot – England</td>
<td>Looking for northern route to Asia (Northwest Passage) – did not find</td>
</tr>
<tr>
<td></td>
<td>Explored Canada, claimed for England</td>
</tr>
<tr>
<td>Explorer</td>
<td>Nationality</td>
</tr>
<tr>
<td>---------------------------</td>
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<tr>
<td>Henry Hudson</td>
<td>Netherlands</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Francisco Pizarro</td>
<td>Spain</td>
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<tr>
<td>Amerigo Vespucci</td>
<td>Spain</td>
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<td></td>
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<tr>
<td>Walter Raleigh</td>
<td>England</td>
</tr>
<tr>
<td>Hernando Cortes</td>
<td>Spain</td>
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New World Powers Emerge

- England becomes most powerful country and colonizes all over the world (North America, India, Africa)
- Portugal, Spain, France, and the Netherlands compete with one another for secondary dominance
  - North America – France, Spain, Netherlands
  - South America – Spain and Portugal
  - Africa – Portugal, France, Netherlands
- Colonization allows Europe to become most powerful at expense of American and African exploitation
  - Slave trade
  - Millions of natives killed, pushed off land
Columbian Exchange

- Products between old world (Europe/Africa/Asia) and new world (Americas) exchanged for the first time
  - Animals
  - Plants
  - Diseases
Colonialism

- Europe set up colonies for resources all around the world
- Native populations forced off land or killed
  - Aztecs/Incas – killed by Spanish
- Europeans would travel to new world for religious freedom
- Colonies often controlled through fear and oppression which will lead to revolutions
  - England’s 13 colonies rebel and become USA
Loss of Faith

• Catholic Church had denied:
  • Heliocentric universe
  • Round Earth

• New continents discovered
  • Not mentioned in the Bible
  • Natives had advanced civilizations and were not Christians

• Adds fuel to the Protestant Reformation
• Leads to questioning of religion all together
The Enlightenment
1650’s – 1750’s
Background

• AKA the Age of Reason
• Time of philosophy, logic, and reason as applied to human life
  • Scientific Revolution used logic and reason to explain physical world
  • Enlightenment uses logic and reason to explain human nature

• Why did it occur?
  • More people in Europe were highly educated than ever before
  • Kings were absolute rulers, yet not effective
  • Catholic Church was extremely powerful, yet proven wrong many times
The Philosophers

- English and French philosophers developed theories on how best to govern people and the nature of humanity
- Many believe in the good nature of people and that the government should protect rights of people
<table>
<thead>
<tr>
<th>Name</th>
<th>Nationality</th>
<th>Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas Hobbes</td>
<td>England</td>
<td>Believed people were a wild beast that needed strict governments to keep them in place; People make a “Social Contract” with society to exchange animalistic ways for an ordered and safe life, but their true nature will be revealed if there is no order</td>
</tr>
<tr>
<td>John Locke</td>
<td>England</td>
<td>Believed people were naturally moral, and that they all had natural rights (life, liberty, property, pursuit of happiness); believed the government should protect these rights and that the people should overthrow a government if it takes away these rights</td>
</tr>
<tr>
<td>Baron de Montesquieu</td>
<td>France</td>
<td>Believed government should be divided into three parts: Executive (leader), Legislative (law-makers), and Judicial (courts) so one part doesn’t become too powerful</td>
</tr>
<tr>
<td>Voltaire</td>
<td>France</td>
<td>Believed in freedom of speech and religion, protested slavery; believed in God but also that God did not interfere with humans after he created Earth</td>
</tr>
<tr>
<td>Jean Jacques Rousseau</td>
<td>France</td>
<td>Believed that humans were bad due to unequal wealth distribution and corruption; believed humans should be equal and that government officials should be chosen by all men</td>
</tr>
</tbody>
</table>
Effects of the Enlightenment

- Continued skepticism of the Church and its power
  - Increased religious toleration
- Protests against absolute rulers
  - Increased desire for freedom of speech
  - Increased desire for basic human rights
- Eventually, revolutions that overthrow absolute kings
  - American colonies rebelling against King of England
  - French citizens rebelling against King of France
  - By 1900 – most kings and queens in Europe would become mainly figureheads with little ruling power