

NAME:

## HONORS CHEMISTRY

SECTION:

Webquest: Developing Atomic Theory

Use the links provided, as well as information available in your textbook, to answer the following questions. Answer the questions *in complete sentences on separate paper*.

The following websites provide general timelines for many milestones in physics/chemistry. These include the important people, dates and discoveries in the development of the atomic theory.

[http://www-donut.fnal.gov/web\\_pages/standardmodelpg/TheStandardModel.html](http://www-donut.fnal.gov/web_pages/standardmodelpg/TheStandardModel.html)

<http://atomictimeline.net/index.php>

<http://cstl-csm.semo.edu/cwmcgowan/ch181/atomhist.htm>

### Part I: Ancient Greek Philosophers

#### Links:

- <http://www.particleadventure.org/other/history/>
- <http://www.anselm.edu/homepage/dbanach/arist.htm>  
Scroll down to the section on "theory of nature"
- <http://northspringer.tripod.com/HistoryofAtom/>
- <http://www-history.mcs.st-and.ac.uk/history/Biographies/Democritus.html>

#### Questions

1. According to Aristotle, what are the four main types of elements?
2. According to Democritus ("the laughing philosopher"), what is the composition of matter?
3. What is the root of our word "atom" and why is it misleading?
4. Identify some other Greek philosophers (at least 3) who also studied matter. Briefly summarize their main ideas about matter.
5. Whose theory of matter survived the golden age of Greece and became the accepted authority until the 19<sup>th</sup> century? Why was this philosopher's work pre-eminent during this time frame?



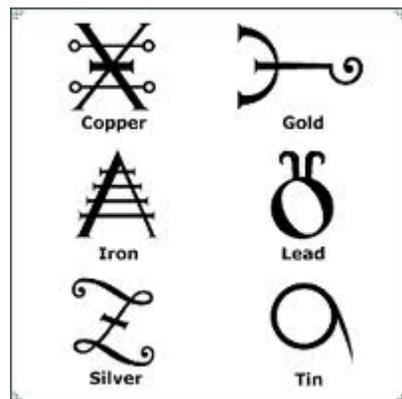
### Part II: Alchemy

#### Links:

- <http://www.chm.bris.ac.uk/webprojects2002/crabb/history.html>
- Virtual alchemy workshop at <http://www.chm.bris.ac.uk/webprojects2002/crabb/flash.html>
- <http://discovermagazine.com/2010/jul-aug/05-isaac-newton-world.s-most-famous-chemist>
- <http://public.wsu.edu/~delahoyd/medieval/alchemy.html>

#### Questions

6. List at least 3 famous alchemists and a major accomplishment for each.
7. List at least three regions of the world where alchemy was pursued.
8. What two main classes of interests did the European alchemists have?



Some alchemical symbols

### Part III: Developing a Rational Theory

Joseph Proust

#### Links

- <http://www.3rd1000.com/history/atoms.htm>
- <http://www.chemteam.info/AtomicStructure/LawofDefiniteProportion.html>
- <http://web.lemoyne.edu/~giunta/proust.html>

#### Questions

9. What famous law is attributed to Proust? Summarize the law in your own words.
10. Was this law initially accepted or challenged? How was it eventually settled?

Antoine Lavoisier

#### Links

- <http://scienceworld.wolfram.com/biography/Lavoisier.html>
- [http://mattson.creighton.edu/History\\_Gas\\_Chemistry/Lavoisier.html](http://mattson.creighton.edu/History_Gas_Chemistry/Lavoisier.html)
- [http://www.historylearningsite.co.uk/antoine\\_lavoisier.htm](http://www.historylearningsite.co.uk/antoine_lavoisier.htm)

#### Questions

11. What famous law is attributed to Lavoisier?
12. Why is Lavoisier called the “father of modern chemistry”?
13. List 3 of Lavoisier’s other accomplishments (beyond your answer to question #11).

John Dalton

#### Links

- [http://www-donut.fnal.gov/web\\_pages/standardmodelpg/TheStandardModel.html](http://www-donut.fnal.gov/web_pages/standardmodelpg/TheStandardModel.html)
- <http://www.3rd1000.com/history/atoms.htm>
- <http://northspringer.tripod.com/HistoryofAtom/id1.html>
- <http://www.chemheritage.org/discover/chemistry-in-history/themes/the-path-to-the-periodic-table/dalton.aspx>

#### Questions

14. What were the 5 key statements (postulates) of Dalton’s atomic theory?
15. Why was Dalton’s theory a modern theory? (Hint: What did Dalton do, that the ancient Greek philosophers never did?)
16. What elements of the Greek theory/model did Dalton retain?
17. List some of Dalton’s other scientific interests.



Dalton’s chemical symbols