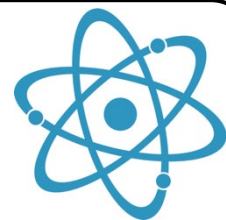




Chemistry 11 Assignment

Part A: "The History of the Atom"



Name: _____

Date: _____ Block: _____

Teacher: Miss Zukowski

Due Date: _____

Task Background

The story of our eventual understanding of the building blocks of matter is an engaging read! It begins almost 2500 years ago in ancient Greece with the philosopher Leucippus and his student Democritus. Using the term "atomos", they described the smallest particles of matter known to man. However, like many scientific theories throughout history, soon ideas of other philosophers and experimenters challenged and replaced this idea that matter was made up of tiny particles. From Aristotle's principle elements, to Thomson's plum pudding, Rutherford's famous gold foil experiment and everything in between, our modern understanding of the atom has transformed from the early models of the ancient Greeks. Where Physics and Chemistry combine, our modern representation of the atom builds on the work of physicist Max Planck and incorporates Quantum Theory to explain particle-wave duality, energy levels and atomic orbitals.

Task Instructions

- Create a timeline** which describes the *development of the model of the atom*. This timeline should fit on a traditional sized poster board **or be electronic (using the Sutori class code)**...leaving room for Part B.
- Include the work of the following scientists **in chronological order**:

Max Planck	James Chadwick	JJ Thomson
Louis de Broglie	Werner Heisenberg	Leucippus
John Dalton	Niels Bohr	Erwin Schrodinger
Democritus	Robert Milliken	
Aristotle	Ernest Rutherford	
- Points on the timeline are to be marked as an influential discovery/contribution to the development of the atomic model. **Each point should include**:
 - The **date** of the accomplishment (*in most cases year alone is sufficient*)
 - **Who** contributed
 - **What** the accomplishment/discovery was
 - **How** it contributed to the *development of our understanding of the atom*
- Pictures and diagrams should be printed (*or drawn very neatly*)
- A **Works Cited & In-text referencing** includes the author surname/s, and the publication date of the source (in brackets), within the body of the essay or report. It is inserted **directly after the information** being sourced from the scientific literature.

In text Referencing Example: "Energy is the ability to make a change happen.(Hebden, 1998)"
OR A study conducted by Hebden (1998) suggested a significant relationship between..."

The Works Cited List will appear at the end of your paper/back of your project. Works Cited entries must be written in a **very specific format**, as outlined here: http://www.sciencebuddies.org/science-fair-projects/project_mla_format_examples.shtml . This is added to the end of your research paper/lab report/assignment as an "appendix" but it is given the subheading WORKS CITED.

Eg . Hebden, James A (1998). *Hebden Chemistry 11: A Workbook for Students*. Kamloops, BC: Hebden Home Publishing.

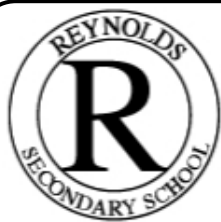
NOTE: Accuracy of scientific information, and quality of content is the most important part of this task. However, you will be also be marked on the presentation of your final assignment.

So please keep in mind that a timeline is in fact a **line**, and not a random assortment of pictures and textboxes ©

Chemistry 11 “History of the Atom” Marking Criteria

Name: _____

		1	2	3	4	5
Criteria	Presentation	Atomic timeline is presented messy and/or mostly incomplete.	Atomic timeline is presented in chronological order . Text boxes, arrows, etc are included carelessly.	Atomic timeline is presented in chronological order . Includes pictures or scientific diagrams. Text boxes, arrows, title etc are included with <u>errors and/or messy</u> .	Atomic timeline is presented neatly & in chronological order . Use of pictures and scientific diagrams to enhance understanding. Text boxes, arrows, etc are clear & draw with a ruler. Includes a title .	Atomic timeline is presented neatly & in correct chronological order . Use of pictures and <u>relevant</u>, scientifically accurate diagrams to enhance understanding. Text boxes, arrows, etc are clear & draw with a ruler. Includes a descriptive title .
	Scientific Understanding	Statement of isolated science knowledge Statements of isolated science facts	Definition and statement of science knowledge Application of science knowledge to generate partial solutions and explanations .	Description, definition and identification of science knowledge Application of science knowledge to generate solutions and explanations in simple situations	Clear description and explanation of science knowledge Analysis and application of science knowledge to generate solutions and informed explanations in a range of situations , including some that are complex	Clear description and comprehensive explanation of science knowledge Critical analysis and application of science knowledge to generate solutions and reasoned explanations in a range of situations , including some that are complex
	Science as a Human Endeavour	Isolated statements about scientific models and theories	Statements about the development over time of scientific models and theories The work of few relevant scientists is presented (<i>or with several mistakes</i>)	Description of the development over time and factors prompting the review of scientific models and theories Includes the work of some relevant scientists (<i>or with some mistakes</i>) as it relates to the development of the atomic model	Analysis and description of the development over time and factors prompting the review of scientific models and theories Accurately includes the work of most relevant scientists as it relates to the development of the atomic model	Critical analysis and description of the development over time and factors prompting the review of scientific models and theories Accurately evaluates the work of all relevant scientists as it relates to the development of the atomic model
	Communication	Use of everyday language to communicate findings and ideas.	Use of aspects of scientific language , conventions, representations and text types to communicate findings and ideas	Use of appropriate scientific language , conventions, representations and text types to communicate findings and ideas	Clear and purposeful use of appropriate scientific language , conventions, representations and text types to communicate findings and ideas	Coherent, concise and purposeful use of appropriate scientific language , conventions, representations and text types to communicate findings and ideas.
	Evaluating	Obvious statements of the history of the atom.	Statements of the history of the atom which reflect little or inaccurate research .	The history of the atom with research which includes sources of data and information <ul style="list-style-type: none"> Reference List 	Evaluation of the history of the atom with clear research which includes various sources of data and information <ul style="list-style-type: none"> Reference List OR In text citations 	Evaluation of the history of the atom which demonstrates clear and accurate research which includes a range of sources of data and information <ul style="list-style-type: none"> Reference List AND In text citations
	Punctuality	Report is missing, 2+ sections and/or is late by 2+ days		Report is missing, 1-2 sections and/or is late by 1-2 days		Report is submitted in full and <u>on time</u>
						Result:



Chemistry 11 Assignment

Part B: "Periodic Table Trends"

Carbon 6 C 12.011

Task Background

In the Middle Ages and Renaissance, a form of chemistry and speculative philosophy practiced was concerned principally with discovering methods for transmuting baser metals into gold and also with finding a universal solvent and an elixir of life. By 1809 at least 47 elements were discovered, and scientists began to see patterns in the characteristics. In 1869 Russian chemist Dimitri Mendeleev started the development of the periodic table, arranging chemical elements by atomic mass. He predicted the discovery of other elements, and left spaces open in his periodic table for them. The modern periodic table is based closely on the ideas he used.

Task Instructions

Using the enlarged periodic table provided, this part of your project must fit on the poster board with Part A.

A) **On the large periodic table show:** (may use the space surrounding for labels & text boxes)

<input type="checkbox"/> 1 enlarged box with <i>atomic number, atomic mass and an element symbol</i> to describe contents of each periodic table box.	/1
<input type="checkbox"/> Clearly label the 5 families: (<i>colour code & label...you may wish to include a legend</i>) <ul style="list-style-type: none">○ Hydrogen, Alkali Metals, Alkali Earth Metals, Halogens, Noble Gasses	/5
<input type="checkbox"/> Indicate the transition metals as well as the Actinides and Lanthanide series.	/3
<input type="checkbox"/> Your poster must indicate and include a <i>description</i> of a groups and periods	/4
<input type="checkbox"/> Show the metal/non-metal division as well as the metalloids	/2

B) **Display the following periodic trends** (*hint: large arrows and labels work well for this*)

<input type="checkbox"/> Atomic radii	/1
<input type="checkbox"/> Atomic mass	/1
<input type="checkbox"/> Ionization energy	/1
<input type="checkbox"/> Ionic charge	/1
<input type="checkbox"/> Electronegativity	/1
<input type="checkbox"/> Electron configuration blocks (s, p, d, f)	/4

C) **Explain the following terms:** (*hint: textboxes*)

<input type="checkbox"/> Include a <i>brief definition</i> of metals, non-metals & metalloids	/3
<input type="checkbox"/> Why does atomic radii change?	/2
<input type="checkbox"/> Why does ionization energy change?	/2
<input type="checkbox"/> Define & provide a sample calculation for ions & isotopes	/4
<input type="checkbox"/> State the <i>Periodic Law</i>	/2

Part B Total /37

Cumulative Assessment Result /67

Helpful Referencing Information:

Books

Format:

Author's last name, first name. *Book title*. Additional information. City of publication: Publishing company, publication date.

Website or Webpage

Format:

Author's last name, first name (if available). "Title of work within a project or database." *Title of site, project, or database*. Editor (if available). Electronic publication information (Date of publication or of the latest update, and name of any sponsoring institution or organization). Date of access and <full URL>.

Bibliography

Hebden, James A. *Hebden Chemistry 11: A workbook for students*. Kamloops, BC: Hebden Home Publishing, 1998

Buescher, Lee. [Atomic Theory Timeline](http://atomictimeline.net). 2004. Watertown High School, Watertown, Wisconsin. [April 20, 2017](http://atomictimeline.net).
<http://atomictimeline.net/index.php>

JJ Thompson discovered some stuff and came up with a plum pudding model. More stuff about JJ T and his model.(Hebden, 1998) (Buescher, 2017) (Atomic Theory timeline, 2017)

In Text Referencing:

(Authors Last name, year of publishing)

(Name of site, year accessed)