

NAME _____

Summer Chemistry I Packet, Grade 11
Periodic Table and the Elements



Below is a link for a complete periodic table as well as a blank periodic table for you to use:

<http://www.sciencegeek.net/tables/ClassesTable.pdf>

<http://www.sciencegeek.net/tables/BlankTable.pdf>

To help you study, try the websites below:

<http://www.ilpi.com/genchem/periodicquiz.html>

<http://www.johnpratt.com/atomic/periodic.html>

2. You will be creating a poster for one element that you choose whose name or symbol begins with the letter of your last name. This poster project will be due the second day you are in class.

The information for the poster project is included as well as a rubric so that you know exactly how you will be graded. The poster will count as one test grade for term 1.

ELEMENT POSTER PROJECT

For this project, each student will research an element and learn about it in depth. Students will then use the information, photos, and graphics that they collect to design and construct a report in the form of a large poster (**at least 22" x 28"** on sturdy poster board, foam board, or a tri-fold).

- You will be creating a poster for one element that you choose whose name or symbol begins with the letter of your last name. For example, if your last name begins with the letter C, you may choose any element whose name begins with a C or any element whose symbol begins with a C. There are no elements on the periodic table whose name or symbol begins with the letters J or Q. If your last name begins with either J or Q you should choose an element whose name or symbol begins with the same letter as your first name.

- Posters that are late will *automatically* lose 5 points per school day (you can bring in a late poster even if you don't have chemistry class that day). [If you are absent the *entire* day when the poster is due, you may bring it in the next *day* that you return to school; after that, it will be late.]
- All your information **must be derived from factual references** and not just be something you already "know." Nevertheless, the actual wording on your poster must *not* be plagiarized! ***Be sure that you paraphrase all your work in your own words***, and that you don't copy any descriptive sentences or phrases directly from Websites or any other sources.
- Your poster must include a **minimum of 3 references** used for research, with **at least one reference that is an actual book**. Try to be creative in your research. A long list of Websites is included in this packet to get you started. You should also use *science* reference books (but not a general encyclopedia or similar general reference book). The references must include a ***title*** (of the book or Web page), ***author*** (if available), and the ***exact url of a Web page*** OR the ***page number and publisher of a book***. You must have all your references together in a section titled "**References.**"
- You must proofread all your text for typos and grammar *before* you put it on the poster! You will lose points if you have obvious typos or obvious misspellings that indicate you did not proofread.
- Information should be *typed on a computer* in a large easy-to-read font, and then printed, cut out, and neatly pasted onto the poster. Titles may be written directly on the poster. All wording should be neat and attractive, with no smudges or cross-outs or messy wrinkles.
- All paper, pictures, decorations, etc. attached to the poster should be **firmly** attached so that they do not come off the poster or even loosely dangle.
- Your poster should be colorful and "eye-catching," and appealing to other students.
- Your poster must include the following information:
 - Your full name
 - The *name of your element* prominently displayed on your poster
 - The one-letter or two-letter *chemical symbol* of your element
 - Atomic number* of your element
 - Atomic mass* (weight) of your element (weighted average of isotopes)

- Classification/family* of your element on the periodic table (metal, transition metal, noble gas, non-metal, halogen, alkali metal, alkaline earth metal, rare earth metal)
- Isotopes* of your element with their *mass numbers*, and *which* isotope is the most abundant in nature, and any other information you find about the isotopes
- The *meaning* and/or *origin of the name* of your element
- Historical Background* of your element (relating to humans): *How* your element was first *discovered* (under what circumstances); the *person or people who discovered* or *identified* or *first used* your element; *when* your element was *discovered*, and *where* your element was *discovered* or *first used* [If your element has been used for eons and does not have a specific history, then provide whatever kind of background you can find. For example, there is a lot of information about iron in the Iron Age.]
- The *natural abundance* of your element *compared to all the other elements found on earth* (this may be a number, a percent, or notes on how common or rare the element is) [Note: This has nothing to do with the relative abundance of isotopes.]
- Where* your element is typically *found in nature* (natural sources)
- How* your element is *obtained* and the *processes used to purify it*
- A *description of the exact form(s)* in which the pure element is available to scientists and other people
- Commercial and/or industrial uses*: How your element is currently being used, as a pure element and/or in compounds
- Cost of your element* in pure form and/or at other grades of purity (look at chemical supply catalogues on the Internet; the CRC Handbook of Chemistry and Physics) OR *explain why* it is *not* available for purchase
- The following *properties* if they apply to your element at room temperature (you may include additional properties as applicable to your element):
 - state (solid, liquid, or gas)
 - color
 - density
 - boiling point
 - melting point
 - luster (shiny or dull)
 - hardness (hard or soft)
 - is it malleable and/or ductile

- o is it brittle and/or powdery
 - o solubility in water
 - o electrical conductivity
 - o radioactivity
- Toxicity and/or hazards* of your element to people; and *safety precautions* necessary when handling the pure element or its compounds (this information is provided on MSDS Sheets that are available on the Internet)
- At least two additional interesting facts* about your element, such as the importance your element may have played in human history; its importance in biology, biochemistry, or human health; its mention in literature or theater; unusual events relating to your element; its beneficial or adverse environmental impact, etc.
- **ILLUSTRATIONS or Pictures:** Your poster should have *at least one illustration showing how your element looks in its natural state* and *at least one illustration showing a use for your element (in a compound, if necessary)*, in color if possible. You may use more than the two required illustrations; however, *illustrations should not be used to fill your poster as a "replacement" for required information.* **All illustrations must include captions** explaining exactly what they illustrate. The pictures and illustrations may be reprinted from a computer or photocopied; however, **you must cite a reference** for each copied illustration! ***Put your reference near the caption.***
- The required information may be listed in chart form OR written in paragraph form. Be sure that you very clearly identify each piece of your information so that it is easy for the reader to find it.
- Student will have an opportunity to display and share their posters with other chemistry students.

ELEMENT POSTER PROJECT RUBRIC

REQUIREMENT	DONE!	Maximum Points*	Actual Points
Poster was turned in on time (lose 5 points for each day it is late)		0	
Poster is at least 22" x 28" and is on sturdy poster board		2	
General appearance of poster is <i>colorful, attractive, eye-catching, creative</i>		2	
Poster is <i>neatly done</i> and in <i>good condition</i> , with all items <i>firmly attached</i> , and no tears or smudges or cross-outs		2	
Poster uses an <i>easy-to-read computer font</i> and is <i>organized</i> so it is easy to follow and understand		2	
Poster has <i>interesting material</i> to look at and read, and is generally useful for learning about the element		2	
Poster contains <i>factual information written in the student's own words</i>		2	
Poster was proofread for typos, and contains complete sentences and good grammar where necessary		2	
Poster contains all the following:			
Your <u>full</u> name		1	
The name of your element		1	
Meaning and/or origin of name		1	
Chemical symbol		1	
Atomic number		1	
Atomic mass		1	
Isotopes		1	
Classification / family		1	
Person who discovered your element		1	
When discovered		1	

Where discovered		1	
How discovered		1	
Natural abundance of element on earth (<i>not</i> of its isotopes)		1	
Where found in nature		1	
How obtained; purification process		1	
Commercial and/or industrial uses		1	
Form of element available		1	
Cost of element		1	
8 or more physical properties (see the list in the packet)		8	
Toxicity and/or hazards; safety precautions		1	
At least 3 “good” references		6	
At least two relevant illustrations--one of the element itself, and one of its use--are provided, and include references and <i>captions</i> explaining what they illustrate		8	
At least two interesting “tidbits” of <i>additional</i> information		4	
TOTAL		60	

Up to 5 bonus points may be awarded in various categories for exceptional work beyond the minimum requirements.

LINKS TO PERIODIC TABLE SITES

WebElements

<http://www.webelements.com/>

Chemical Elements

<http://www.chemicalelements.com>

Chemicool Periodic Table

<http://www.chemicool.com/>

Los Alamos National Laboratory's Chemistry Division Periodic Table of Elements

<http://periodic.lanl.gov/index.shtml>

The Visual Elements Periodic Table

<http://www.chemsoc.org/viselements/pages/pertable fla.htm>

Jefferson Labs: It's Elemental

<http://education.jlab.org/itselemental/index.html>

Environmental Chemistry

<http://environmentalchemistry.com/yogi/periodic/>

The Periodic Table of Comic Books

<http://www.uky.edu/Projects/Chemcomics/>

ChemTopics.com (a table and links to lots of other periodic tables)

<http://www.chemtopics.com/elements.htm>

The Periodic Table of Elements: links to several periodic tables

<http://www.stteresa.net/periodictable.htm>

Rader's CHEM4KIDS! Website (general info)

<http://www.chem4kids.com/>

This document was modified from

lswhs.leesummit.k12.mo.us/Frank.Vovk/periodic%20poster.doc

