**Periodicity**   
<http://www.unit5.org/chemistry/Periodicity.htm>

**Learning Objectives/Targets** Worksheet / Lab

PERIODICITY and THE PERIODIC TABLE  
  
6.1 CLASSIFICATION OF ELEMENTS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To state the original periodic law proposed by Mendeleev.*

6.2 THE PERIODIC LAW CONCEPT \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 • *To explain the modern periodic law concept proposed by Moseley.*

6.3 GROUPS AND PERIODS OF ELEMENTS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 • *To apply the following terms to the periodic table of elements:  
 (a) groups (families) and periods (series)  
 (b) representative elements and transition elements  
 (c) metals, semimetals, and nonmetals  
 (d) alkali metals, alkaline earth metals, halogens, and noble gases  
 (e) lanthanide series and actinide series  
 (f) rare earth elements and transuranium elements  
 • To designate a group of elements in the periodic table using both the American convention (IA–VIIIA) and the IUPAC convention (1–18).*

6.4 PERIODIC TRENDS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To predict the trend in atomic size within a group or period of elements.  
 • To predict the trend in metallic character within a group or period.*

6.5 PROPERTIES OF ELEMENTS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To predict a physical property for an element given the values of other elements in the same group.  
 • To predict a chemical formula for a compound given the formulas of other compounds containing an element in the same group.*

6.6 BLOCKS OF ELEMENTS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To predict the highest energy sublevel for an element given its position in the periodic table.  
 • To predict the electron configuration for an element given its position in the periodic table.*

6.7 VALENCE ELECTRONS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To predict the number of valence electrons for any representative element.*

6.8 ELECTRON DOT FORMULAS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To draw the electron dot formula for any representative element.*

6.9 IONIZATION ENERGY \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To state the general trends of ionization energy in the periodic table.  
 • To state the group with the highest and the lowest ionization energy.*

6.10 IONIC CHARGES \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 *• To predict the ionic charge for any representative element.  
 • To write the predicted electron configuration for selected ions.*

**Vocabulary**

|  |  |  |  |
| --- | --- | --- | --- |
| actinides | coinage metals | ionization energy | nonmetal |
| alkali metals | electronegativity | lanthanides | period |
| alkaline-earth metals | group | main block elements | periodic law |
| anion | halogens | metal | shielding effect |
| atomic radius | ion | metalloid (semimetal) | transition elements |
| cation | ionic radius | noble gases |  |

**Labs/Activities**

|  |  |
| --- | --- |
| (1) [Aliens Lab](http://www.unit5.org/chemistry/PDF/Periodicity/PowerPoint/Aliens%20Activity.pptx) ([II](http://www.unit5.org/chemistry/PDF/Periodicity/PowerPoint/Aliens%20Activity%20%282%29.pptx)) [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/11alienlab.pdf) Cards [A](http://www.unit5.org/chemistry/PDF/Periodicity/Word/Aliens%20A.docx) [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/Aliens%20A.pdf" \t "_blank)   [B](http://www.unit5.org/chemistry/PDF/Periodicity/Word/Aliens%20B.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/Aliens%20B.pdf) | (5) [Physical Constants of Elements](http://www.unit5.org/chemistry/PDF/Periodicity/Word/PhysicalData.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/PhysicalData.pdf) |
| (2) [Element Project Example Brochure (Publisher)](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/IRIDIUM_BROCHURE.pdf) | (6) [Chemical BINGO](http://www.unit5.org/chemistry/Labs_and_Activities/BINGO/BINGO.pptx)   [pdf](http://www.unit5.org/chemistry/Labs_and_Activities/BINGO/Element%20Bingo.pdf)      [Study Sheet](http://www.unit5.org/chemistry/Labs_and_Activities/BINGO/Element%20Bingo%202.docx)  [pdf](http://www.unit5.org/chemistry/Labs_and_Activities/BINGO/Element%20Bingo%202.pdf) |
| (3) [Timeline of Elements Discovery](http://www.unit5.org/chemistry/PDF/Periodicity/Word/TIMELINEThe%20Discovery%20of%20Element1.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/TIMELINEThe%20Discovery%20of%20Element1.pdf) | (7) [3-D Periodic Trends (microwell plates)](http://www.unit5.org/chemistry/PDF/Periodicity/Word/Trend.docx) [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/Trend.pdf) |
| (4) [Polyatomic Ions](http://www.unit5.org/chemistry/Labs_and_Activities/BINGO/Polyatomic%20Ion.docx)  [pdf](http://www.unit5.org/chemistry/Labs_and_Activities/BINGO/Polyatomic%20Ion.pdf) | [*Plotting Trends*](http://www.flinnsci.com/homepage/chem/pdfs/Plotting_Trends.pdf) |
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**Worksheets**

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| --- | --- |
| (8) [Vocabulary:  Periodic Table and Periodicity](http://www.unit5.org/chemistry/PDF/Periodicity/Word/11vocabpertab.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/11vocabpertab.pdf) | (13) [Molar Masses of the Elements](http://www.unit5.org/chemistry/PDF/Periodicity/Word/2MolarMass_element.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/2MolarMass_element.pdf) |
| (9) [Periodic Table - Word List Paragraph](http://www.unit5.org/chemistry/PDF/Periodicity/Word/11perwordlist.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/11perwordlist.pdf) | (14) Grading Rubric for Element Project  pdf |
| (10) [Periodicity Packet HW](http://www.unit5.org/chemistry/PDF/Periodicity/Word/periodtablequest.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/periodtablequest.pdf) | (15) [Ionization Energies](http://www.unit5.org/chemistry/PDF/Periodicity/Word/11ionenergy.docx) [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/11ionenergy.pdf)*(*[*beta*](http://www.unit5.org/chemistry/PDF/Periodicity/Word/11ionenergyh.doc)*)* [*Graph*](http://www.unit5.org/chemistry/Ionization%20Energies%20Graph.htm)[*II*](http://www.unit5.org/chemistry/PDF/Periodicity/Word/Ionization%20Energy.xlsx) |
| (11) [Coloring Activity](http://www.unit5.org/chemistry/PDF/Periodicity/Word/11minipertab.xlsx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/11minipertab.pdf) | (16) [Test Review](http://www.unit5.org/chemistry/PDF/Periodicity/Word/11testrev98995.docx)  [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/11testrev98995.pdf) |
| (12 ) [Periodic Table (to be colored)](http://www.unit5.org/chemistry/PDF/Periodicity/Word/2pertable.xlsx) [pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/2pertable.pdf) [*Categories*](http://www.unit5.org/chemistry/PDF/Periodicity/Word/11pertabgrps.xlsx)[pdf](http://www.unit5.org/chemistry/PDF/Periodicity/PDF/11pertabgrps.pdf) | (17) [Textbook Questions](http://www.unit5.org/chemistry/NEW%20Text%20Questions/u4tqs_0910.docx)  [pdf](http://www.unit5.org/chemistry/NEW%20Text%20Questions/u4tqs_0910.pdf) |
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| LECTURE OUTLINE: [Unit 4 Notes - Periodicity](http://www.unit5.org/chemistry/General%20Chemistry%20PP/u4ohnotes18f2005.doc)  [pdf](http://www.unit5.org/chemistry/General%20Chemistry%20PP/u4ohnotes18f2005.pdf)  (6 pages) ([students](http://www.unit5.org/chemistry/Outlines/Student%20Notes/u4lectout.docx))  [pdf](http://www.unit5.org/chemistry/Outlines/Student%20Notes/u4lectout.pdf) | |

**Calendar**  
  
Day 1 – Aliens Activity (1)  
Day 2 – Periodicity Packet (10)  
Day 3 – Periodicity Packet, (10), (11), (12) [WEBSITE for Chemistry Textbook](http://wps.prenhall.com/esm_corwin_chemistry_4/16/4163/1065904.cw/index.html)  
Day 4 – Lecture on Periodicity (15)  
Day 5 – Organization of the Periodic Table (9)  
Day 6 – Summarize Periodic Trends (16)  
Day 7 – Review Day  
Day 8 – QUIZ: Periodic Table  
  
**TOPICS REVIEW / EXTERNAL LINKS**

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| [Periodic Table & Periodicity](http://www.unit5.org/chemistry/Periodic%20Table%20and%20Periodicity.htm) | [Dynamic Periodic Table](http://www.ptable.com/) (available in many languages) |
| [Periodic Table(s)](http://www.unit5.org/chemistry/christjs/Periodic%20Table%20American%20Heritage.htm) | [Web Elements](http://www.webelements.com/) |
| [Interactive Periodic Table](http://www.unit5.org/chemistry/PDF/Periodicity/PowerPoint/periodic%20table.pptx) | [Interactive Periodic Table](http://lrs.ed.uiuc.edu/students/petersn2/ci335/3b.html)  [II](http://www.sciencegeek.net/tables/periodic.shtml) |
| [Chinese Periodic Table](http://www.unit5.org/chemistry/Chinese%20Periodic%20Table.htm) | [Pictorial Periodic Table](http://chemlab.pc.maricopa.edu/periodic/) |
| [Development of the Periodic Table](http://www.unit5.org/chemistry/Development%20of%20Periodic%20Table.htm) | [Visual Periodic Table](http://www.chemsoc.org/viselements/pages/pertable_j.htm) |
| [Various Elements and their Uses](http://www.unit5.org/chemistry/LABS%20&%20Activities/BINGO/Element%20Bingo%202.doc) | [The Comic Book Periodic Table](http://www.uky.edu/Projects/Chemcomics/) |
| [PRINTABLE PERIODIC TABLES](http://www.sciencegeek.net/tables/tables.shtml) | [Elements - Discovery and Origins of their Names](http://homepage.mac.com/dtrapp/Elements/elements.html) |
| [Elemental Spectra](http://jersey.uoregon.edu/vlab/elements/Elements.html) | [Chemicool Periodic Table](http://www-tech.mit.edu/Chemicool/index.html) |
| [Animated "Element Song"](http://www.privatehand.com/flashanimation/elements.html) | [Other Tables](http://www.doane.edu/crete/academic/science/chem/DoaneElements.html) |

    UNIT 4 – Periodicity  
Honors Chemistry