



# It's Elementary! Learning the Periodic Table!

TIQ Learning Activity: 8<sup>th</sup> Grade (Use adaptations for 5<sup>th</sup>)

An introduction to the Periodic Table of Elements through self-directed activities and questions. A Periodic Table is included on this CD-ROM!

*Arizona Academic Science Content Standards are noted.*

**Students will understand** that the Periodic Table organizes the chemical elements in a systematic way. (S08S5C1P06)

## Student Outcomes:

### I. Learners will demonstrate their ability to locate and name elements on the Periodic Table by: (S08S5C1P04 and 6)

- exploring the entire Periodic Table
- observing the location of the elements
- locating specific elements
- identifying the elements by their abbreviations
- selecting specific elements

### II. Learners will demonstrate their knowledge of atomic numbers by: (S08S5C1P06)

- stating the definition of an atomic number
- observing the location of the atomic numbers
- selecting specific atomic numbers
- computing totals of a selected series of atomic numbers

### Materials Required:

- Periodic Table of Elements (Your own or on TIQ CD-ROM)
- Student Directions (included)
- Work Sheets (included)

**Time Required:** Depends on class size and your needs, suggested as independent work in one class period (50 minutes) or as homework.

**Extension:** Water Works and Other Words (additional activities)

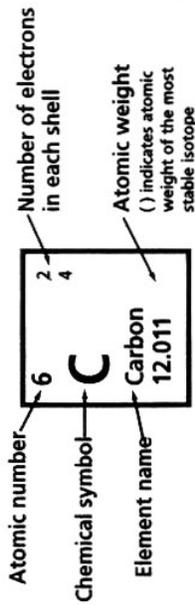
### Assessment:

This is an introductory exploratory activity well suited to peer review at completion. Because mastery of the Periodic Table is the goal, students should have the opportunity to review and redo with peers until they are able to successfully locate and understand these basic essentials of chemistry.

# Periodic Table of the Elements

This table gives information about the chemical elements. Elements are grouped into eight classes according to their properties. Each class is shown in a different color. Hydrogen does not belong to any one class.

- Alkali metals
- Alkaline earth metals
- Transition metals
- Lanthanide series
- Actinide series
- Other metals
- Nonmetals
- Noble gases



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 H Hydrogen 1.00794	2 He Helium 4.002602	3 Li Lithium 6.941	4 Be Beryllium 9.012182	5 B Boron 10.811	6 C Carbon 12.0107	7 N Nitrogen 14.00674	8 O Oxygen 15.9994	9 F Fluorine 18.9984032	10 Ne Neon 20.1797	11 Na Sodium 22.989768	12 Mg Magnesium 24.305	13 Al Aluminum 26.981539	14 Si Silicon 28.0855	15 P Phosphorus 30.973762	16 S Sulfur 32.066	17 Cl Chlorine 35.4527	18 Ar Argon 39.948
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.95591	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.93805	26 Fe Iron 55.845	27 Co Cobalt 58.9332	28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.723	32 Ge Germanium 72.61	33 As Arsenic 74.92159	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.80
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.90585	40 Zr Zirconium 91.224	41 Nb Niobium 92.90638	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.9055	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90447	54 Xe Xenon 131.29
55 Cs Cesium 132.90543	56 Ba Barium 137.327	57 La Lanthanum 138.9055	58 Ce Cerium 140.116	59 Pr Praseodymium 140.90765	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.92534	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93032	68 Er Erbium 167.26	69 Tm Thulium 168.93421	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967	
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	90 Th Thorium 232.0381	91 Pa Protactinium 231.03588	92 U Uranium 238.0289	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)	

For more information visit: <http://pearl1.lanl.gov/periodic/default.htm>  
 Brought to you by the Education Partners at TIQ!



## It's Elementary! Student Directions

Say the Arizona Diamondbacks were playing in their third World Series, Brandon Webb was pitching his second no hitter of the series and Luis Gonzales had just hit his fourth grand slam, all before the 6<sup>th</sup> inning . . . you'd sure want a way to show those kind of statistics! Baseball has its scoreboard and box scores, chemistry has the Periodic Table of Elements.

Although past scientists had know about numerous elements for a long time, a Russian named Dmitri Mendeleev decided to organize them in a special way. Back in 1869, (before baseball and grand slams!) only 60 elements were known! Mendeleev arranged them in order of their weight, with the lightest elements shown first. Each element has its own special symbol of abbreviation and is also assigned an atomic number which tells where it ranks in weight. Find Chlorine, in the third row down. It has an atomic number of 17, meaning only 16 elements are lighter than it is. Its symbol is Cl.

You'll be learning more about the Periodic Table, the rest of the numbers shown, (protons, neutrons, electrons!) about the seven rows across and the special divisions of columns named groups or families because of similar properties. Today, you're going to be taking a look at the names of the elements, their symbolic abbreviations and the atomic numbers only. . . so get ready to get familiar with some names you've heard before (and some you haven't!) as you:

### Spell Your Name Chemically!

You're going to take the letters of your first name, attempt to find matching chemical symbols (as close as you can!), and find the total value of the atomic numbers in your name based on the symbols selected! (Sometimes a symbol can cover two letters in your name—like the example shown! If it does, take double points!) See how many or how few points you can get based on the elements you select and their atomic numbers!

Here's an example: if your name is Oscar, here's what you do!

Letter of Name	Chemical Symbol	Chemical	Atomic Number
O	Os	Osmium	76
S	(use the same!)	Osmium	76
C	Ca	Calcium	20
A	(use the same!)	Calcium	20
R	Ar	Argon	18
Your Name	Chemical Symbols	Chemical Name	Total:
OSCAR	Os Ca Ar	OsCaAr	210

