WATER WORKS and OTHER WORDS

5th and 8th Grade (Extension Activity-1)

Go over to your sink, turn on the tap and get a big glass of cool water . . . add some ice if you like, and sit back and think on an elemental level what you are drinking. (Your tap water will contain elements and minerals essential for good health, but think back to just the basics . . . those two molecular building blocks!

You already know which elements are in water, probably learned it back in the fourth grade! (Which elements are in water? _____ and _____.)
(Hydrogen (H) and Oxygen (0) are the answers!)

You'll be hearing more in class about why there's a "subscript $_2$" after the H, and how elements combine to form compounds. But in this activity, you're going to be using the Periodic Table to locate elements by their symbolic abbreviations (symbol) or by their atomic number. What is an atomic number? Define it. _____*
*(It tells where an element ranks in weight. The smaller the number the lighter the element.)

WHAT: you'll be locating elements to spell words and total up the atomic number values.
HOW: look at your Periodic Table, everything you need is there!
WHEN: in a class period or whenever your instructor tells you.

First, fill in the chart to get all the information you will need to use.

Element	Symbol	Atomic Number
Oxygen		
	He	
		13
Silicon		
	H	
		6
Boron		
	N	
		73
Bismuth		
	Ba	
		16
Iodine		
	U	
		24
Radium		
	Li	
		52
Tin		
	W	
		42
Carbon		
	K	

NOW, you'll be using these to spell words and add your atomic number values!

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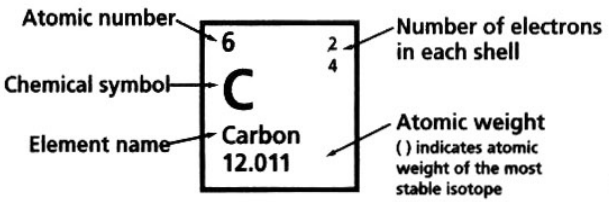
Periodic Table of the Elements

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		72 Hf Hafnium 178.49	73 Ta Tantalum 180.9479	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.217	78 Pt Platinum 195.078	79 Au Gold 196.96654	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.98037	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium (226)		104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (262)	108 Hs Hassium (263)	109 Mt Meitnerium (268)									

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
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

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Water Works and Other Words

Say you use Oxygen's (0) and Hydrogen's (H) symbols, to spell two words and add their atomic numbers for a total POINT value of each word. You get:

OH Total points: 9 (0=8 + H=1)
HOO Total points: 17 (H=1 + 0=8 + 0=8)

Let's add Boron (B) to the mix and continue on to get:

HOB Total points:14 (H=1 + 0=8 + B=5)
BOO HOO Total points:38 (B=5+ 0=8 + 0=8 and H=1 + 0=8 + 0=8)

*Use your chart to spell as many words as you can using the symbols you have noted. You can use the symbols more than once in a word! Compound words, contractions, anything goes! (But it has to be <u>real</u>!)

*Remember to write the atomic numbers under or next to the words to get your total point value for each word. Write that total for each word.

(Use a work sheet if that helps before you write them here!)

WORD	POINT VALUE	WORD	POINT VALUE
O H 1 8	9	H O O 1 8 8	17
Total Points:		**Total Points:**	

Could you find 40 words?_____ <u>GRAND Total Points</u> (all):_____

* **Want to try some more? Use <u>all the elements</u>.**
- What can you come up with?
- Longest word?
- Most points?

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