Interactive Classroom

Glencoe Science

MATTER AND CHANGE

Chapter 6

The Periodic Table and Periodic Law

Mc Graw Glencoe

Click the mouse button or press the Space Bar to continue.

Section 6.2 Classification of the Elements

Objectives

- Explain why elements in the same group have similar properties.
- Identify the four blocks of the periodic table based on their electron configuration.

Review Vocabulary

Resources

valence electron: electron in an atom's outermost orbitals; determines the chemical properties of an atom



MAIN (Idea Elements are organized into different blocks in the periodic table ac to their electron configurations.



Organizing the Elements

- Recall electrons in the highest principal energy level are called valence electrons.
- All group 1 elements have one valence electron.

Table 6.3	Electron Configuration for the Group 1 Elements						
Period 1	hydrogen	1s ¹	1s ¹				
Period 2	lithium	1s ² 2s ¹	[He]2s ¹				
Period 3	sodium	1s ² 2s ² 2p ⁶ 3s ¹	[Ne]3s ¹				
Period 4	potassium	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ¹	[Ar]4s ¹				



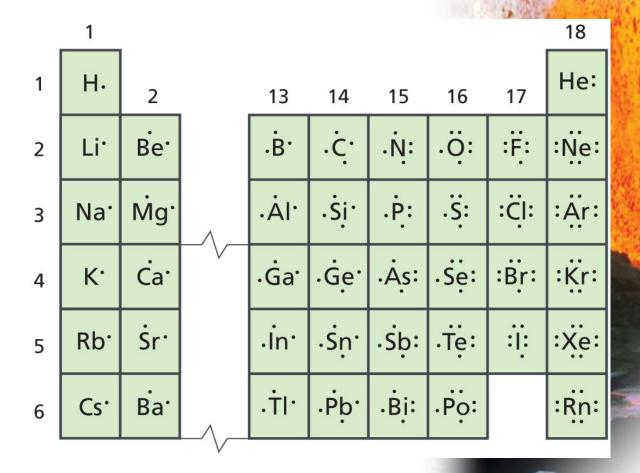
Help

Organizing the Elements by Electron Configuration (cont.)

- The energy level of an element's valence electrons indicates the period on the periodic table in which it is found.
- The number of valence electrons for elements in groups 13-18 is ten less than their group number.



Organizing the Elements by Electron Configuration (cont.)





- Valance Electrons = electrons in the outer energy shell.
- Increasing number that matches the family number of the element (minus the teen value)

Symbol	Li	Be	В	С	N	0	F	Ne
Family	1 (1A)	2 (2A)	13 (3A)	14 (4A)	15 (5A)	16 (6 A)	17 (7A)	18 (8A)
Valence E's	1	2	3	4	5	6	7	8



- Valance Number = Number of electrons lost, shared or gained in chem. rxns
- Number increases to the center of the table, then decreases to the right of the table.

Symbol	Li	Ве	В	С	N	0	F	Ne
Valence E's	1	2	3	4	5	6	7	8
Valence Number	1	2	3	4	3	2	1	0

+ = lose e's

Chapter Menu

- = gains e's

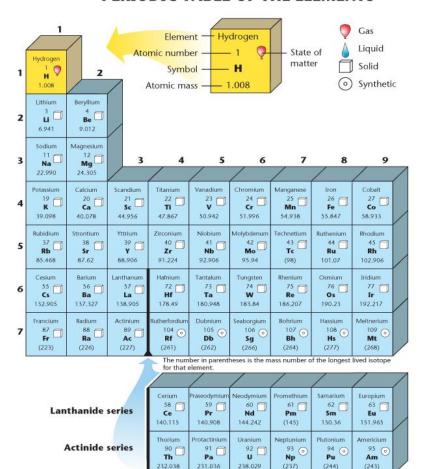
0=no reaction



CHAPTER

The Modern Periodic Table (cont.)

PERIODIC TABLE OF THE ELEMENTS



	/ Met	al							
	Met	alloid						18	-
	Non	metal						\leftarrow	
								Helium 2	
		ently erved	13	14	15	16	17	He *	,
	0.03	ived						4.003	/
			Boron 5	Carbon	Nitrogen	Oxygen	Fluorine 9	Neon	
			В	c 🗇	7 👽 N	8 💎	F	10 🖓 Ne	
			10.811	12.011	14.007	15.999	18.998	20.180	/
		The state of the s	Aluminum	Silicon	Phosphorus	Sulfur	Chlorine	Argon	
10	11	12	13 🗇	14 🗇	15 D	16 D	17 💎	18 🗘	
	/		26.982	28.086	30.974	32.066	35.453	39.948	/
Nickel	Copper	Zinc	Gallium	Germanium	Arsenic	Selenium	Bromine	Krypton	
28 Ni 🗇	29 Cu	30 Zn	31 Ga 🗇	32 Ge 🗇	33 🗆	34 Se	35 A	36 💎 Kr	
58.693	63.546	65.39	69.723	72.61	74.922	78.96	79.904	83.80	/
Palladium	Silver	Cadmium	Indium	Tin	Antimony	Tellurium	Iodine	Xenon	
46 Pd	47 Ag 🗆	48 Cd	49 In	50 Sn	51 D	52 Te	53	54 🕎 Xe	
106.42	107.868	112.411	114.82	118.710	121.757	127.60	126.904	131.290	/
Platinum	Gold	Mercury	Thallium	Lead	Bismuth	Polonium	Astatine	Radon	
78 🗇	79 🗖	80 🍐	81 🗇	82 1	83 🗇	84 D	85 At	86 🔘 Rn	
195.08	196.967	200.59	204.383	207.2	208.980	208.982	209.987	222.018	1
Darmstadtium	Roentgenium	Ununbium		Ununquadium				Ununoctium	
110 💿	111 ① Rg	* 112 ① Uub	* 113 ©	* 114 ①	* 115 Uup	* 116 ①		* 118 © Uuo	
(281)	(272)	(285)	(284)	(289)	(288)	(291)		(294)	1

★ The names and symbols for elements 112, 113, 114, 115, 116, and 118 are temporary. Final names will be selected when the elements' discoveries are verified.

	/				/	/		/
Gadolinium 64 Gd 157.25	Terbium 65 Tb 158.925	Dysprosium 66 Dy 162.50	Holmium 67 — Ho 164.930	68 Er 167.259	Thulium 69	70 7b 173.04	Lutetium 71	
Curium 96 © Cm (247)	Berkelium 97 • Bk (247)	Californium 98 © Cf (251)	Einsteinium 99 © Es (252)	Fermium 100 (o) Fm (257)	Mendelevium 101 (a) Md (258)	Nobelium 102 (o) No (259)	Lawrencium 103 Lr (262)	



version of this graphic.



Section 6.1 Assessment



What is a row of elements on the periodic table called?

- A. octave
- B. period
- C. group
- D. transition

