

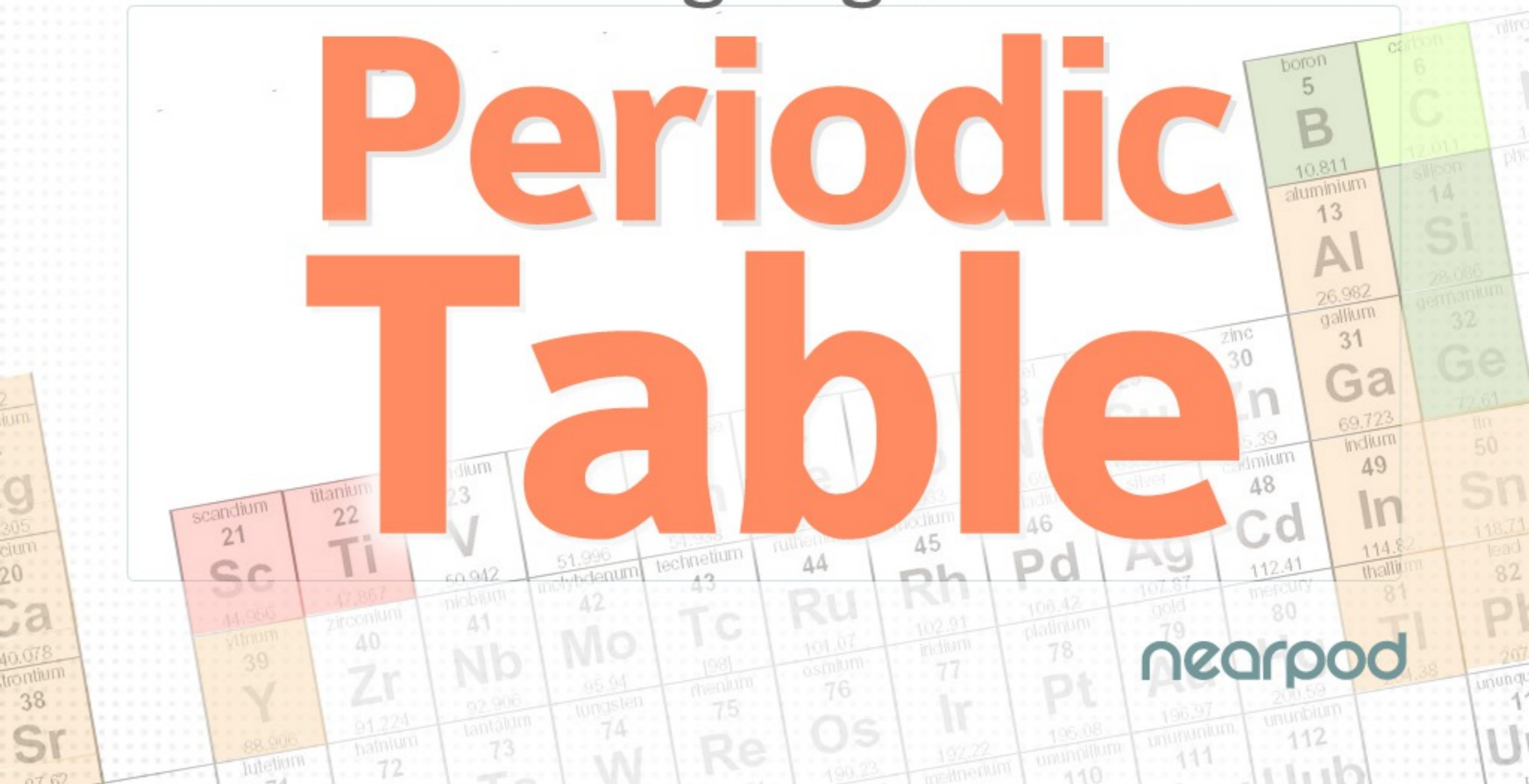


Charles Harvey



Navigating the

Periodic Table



nearpod

Objectives:

In this lesson, students will...

- ❑ Identify Dimitri Mendeleev as the “Father of the Modern Periodic Table”
- ❑ Distinguish between a Period and Group (family) on the Periodic Table of Elements.
- ❑ Given a group and family, identify the element at that location on the periodic table.

HS-PS1 (Next Generation Science Standards)
“Matter and its interactions”

Learning Targets

- I can identify the charge, relative mass, and significance of protons, neutrons, and electrons in an atom.
- I can analyze the location of an element on the period table to determine the number of protons, neutrons, and electrons, and valence electrons in an atom.
- I can classify elements as metals, nonmetals, or metalloids.
- I can evaluate the chemical and physical properties of families of the periodic table.

What do all of these have in common? (Hint: Think 'time')



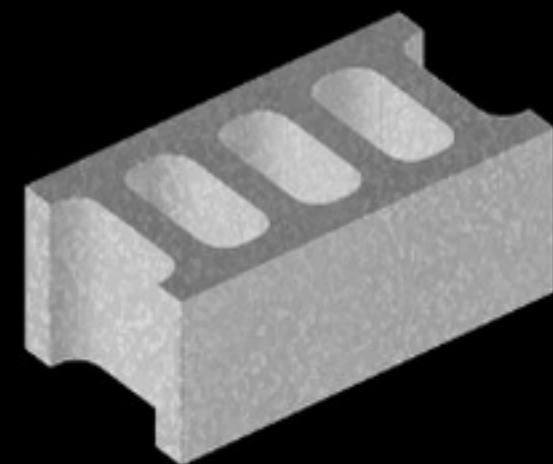
Share what you think - discuss with your neighbor

Open Ended Question



What do the items have in common?

What do all of these have in common?



Share what you think - discuss with your neighbor

Open Ended Question



What do these items have in common?

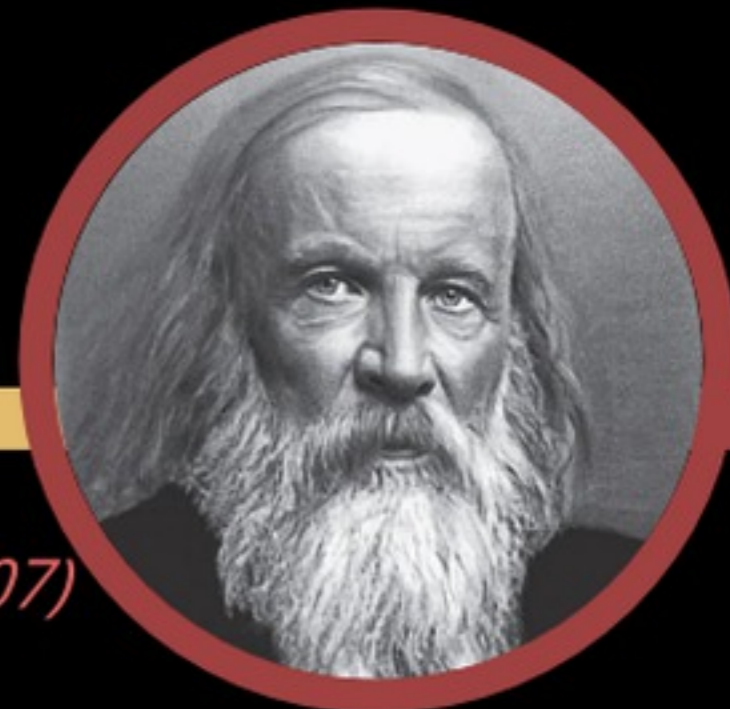
The Connection

These happen or occur on a regular, repeating pattern ("Periodicals")



All of these are made of matter, which ELEMENTS are the building blocks

Picking up on Patterns



Dimitri Mendeleev (1834 -1907)

- Russian chemist & inventor
- Considered to be the *“Father of the Modern Periodic Table”*
- “Pattern Pro” - identified **PERIODIC** patterns of properties in the known **ELEMENTS**

“Setting the Table”

- Mendeleev arranged the *known* chemical elements into a Periodic Table.
 - (Not all of the elements had been discovered)
- He predicted the location & properties of some yet undiscovered chemical elements!
 - When those elements were later discovered, it turned out that Mendeleev was correct in his prediction of their place and properties!

ОПЫТЪ СИСТЕМЫ ЭЛЕМЕНТОВЪ.
ОСНОВАННОЙ НА 43Ъ АТОМНЫХЪ ВѢСОВЪ И ЛИНИЧЕСКОМЪ СХОДСТВѢ.

	Тi = 50	Zr = 90	? = 180.
	Y = 81	Nb = 94	Te = 182.
	Cr = 52	Mo = 96	W = 186.
	Mn = 55	Rh = 104,4	Pt = 197,4
	Fe = 56	Ru = 104,4	Ir = 198.
	Ni = Co = 59	Pd = 106,8	Os = 199.
H = 1	Cu = 63,5	Ag = 108	Hg = 200.
Li = 7	Zn = 65,2	Cd = 112	
Be = 9,4	Mg = 24	U = 116	As = 1877
B = 11	Al = 27,1	? = 70	Sn = 118
C = 12	Si = 28	As = 75	Sb = 122
N = 14	P = 31	Se = 79,4	Te = 128
O = 16	S = 32	Br = 80	I = 127
F = 19	K = 39	Rb = 85,4	Cs = 133
Cl = 35,5	Ca = 40	Sr = 87,6	Ba = 137
Na = 23	? = 45	Ce = 92	Pb = 207.
	Th = 58	La = 94	
	U = 60	Di = 95	
	Mn = 15,4	Th = 137	

И. Менделѣевъ



Video - SciShow

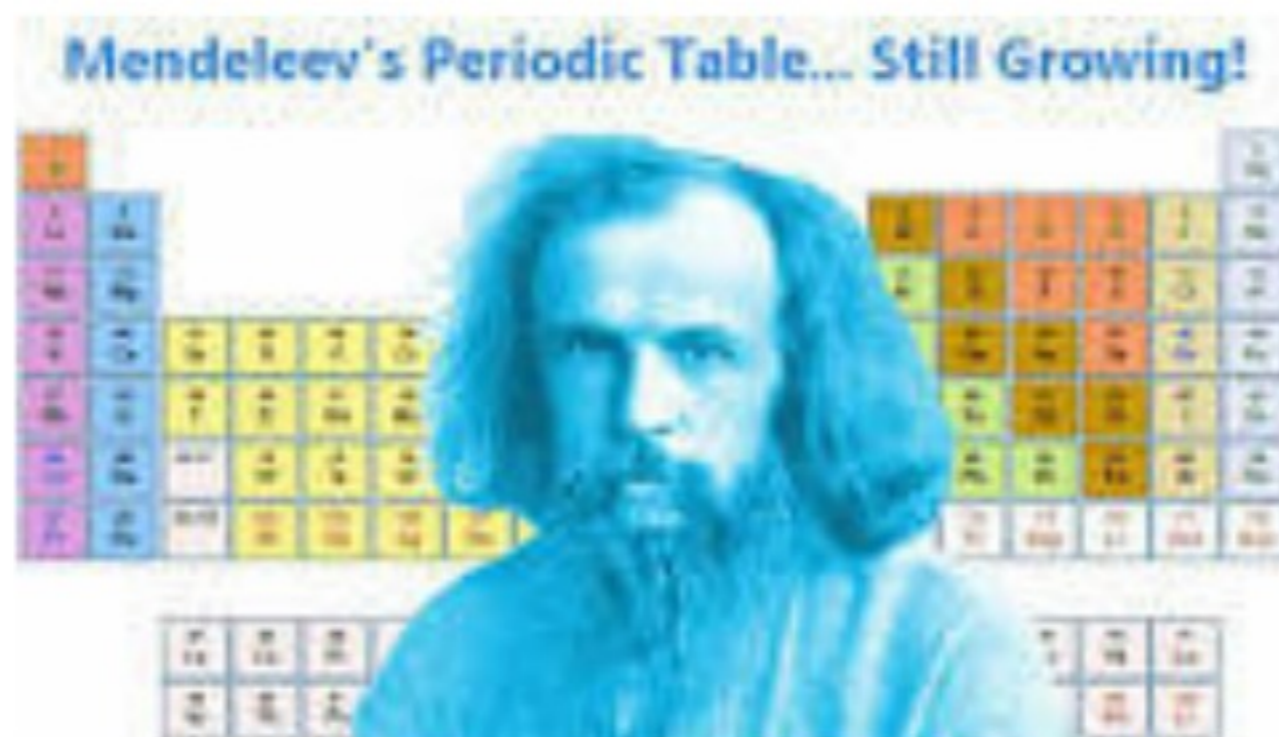
As you view the following video, listen and watch as Hank, from SciShow, tells us about the **awesomeness** and **arrangement** of the **periodic table of elements** and the **genius of the man** who invented it, **Dimitri Mendeleev**.





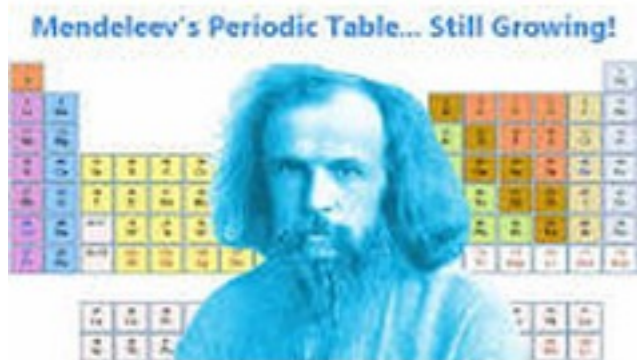
<http://www.youtube.com/embed/IgA37CNa7Ow>

A little more about Dmitri Ivanovich Mendeleev



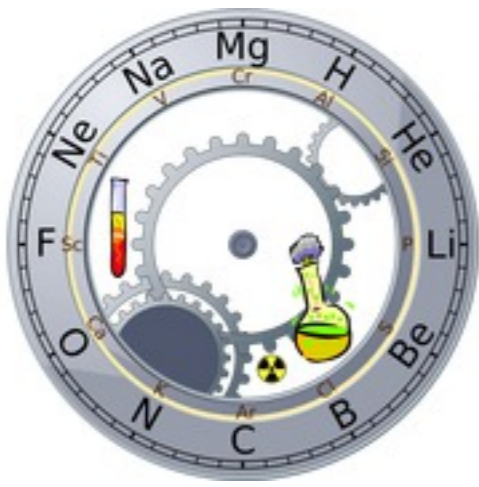
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Open Ended Question



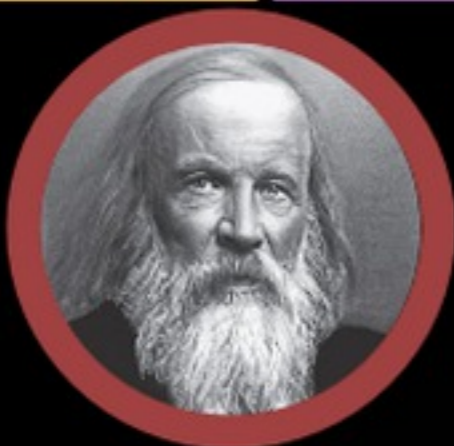
Mendeleev organized the periodic table according to atomic mass. Is this the way that the periodic table is organized today? If not, how is it organized?

Open Ended Question



What does it mean if something is "Periodic"?

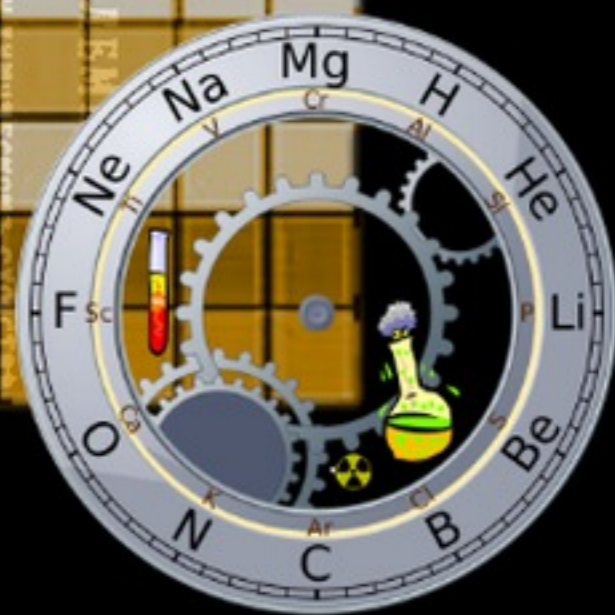
Fast Forward - Today's Table



ОПЫТЪ СИСТЕМА ГИЕМ

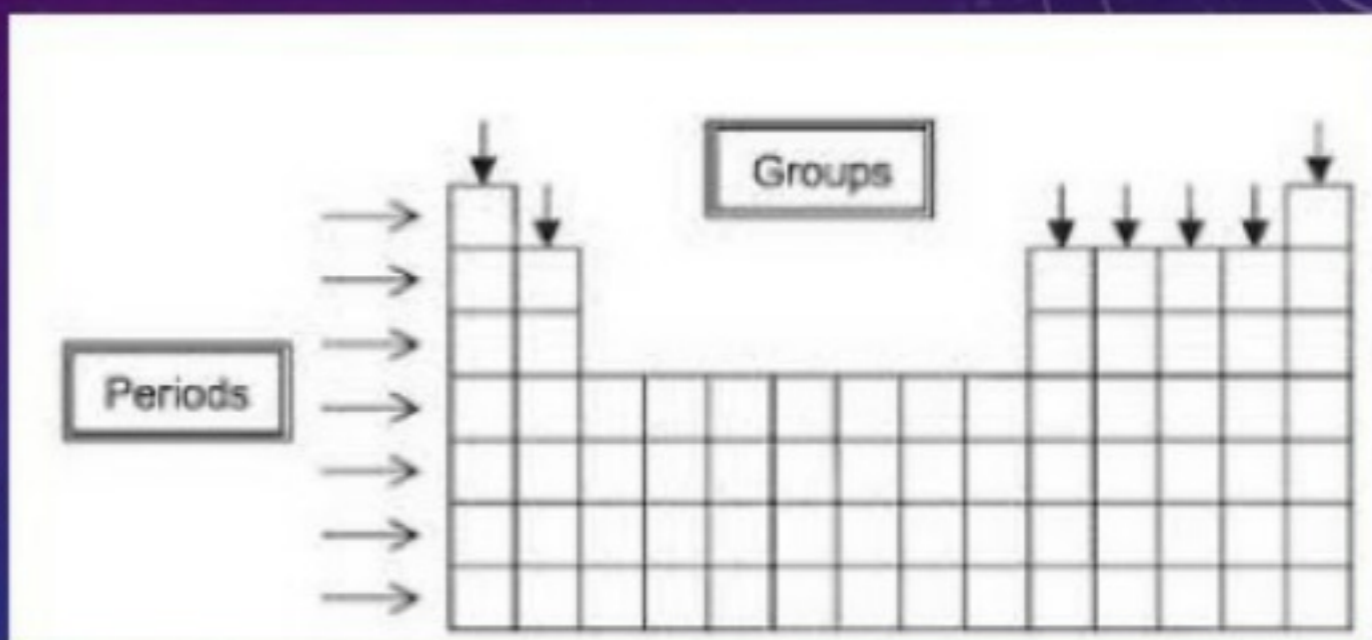
ОСНОВАНОЙ НА ИТЬ АТОМНОМЪ

H = 1	Be = 9, Mg = 24, Zn = 65,2	Cu = 63,4	Ag = 108	Hg = 200.
B = 11	Al = 27,1 ? = 68	Cd = 112	Uf = 116	Aur = 197?
C = 12	Si = 28 ? = 70	Sn = 118	Sb = 122	Bi = 210?
N = 14	P = 31 As = 75	Te = 128?	I = 127	Pt = 201.
O = 16	S = 32 Se = 79,4	Br = 80	Ce = 138	Pb = 207.
F = 19	Cl = 35,5 Br = 80	K = 39 Rb = 85,4	Ca = 40 Sr = 87,6	
Li = 7 Na = 23		Ca = 40 Sr = 87,6	? = 45 Ce = 92	
		?Er = 56 La = 94	?Yt = 60 Di = 95	
		?In = 75,6 Th = 118?		



COMPLETING THE PERIOD TABLE

Notice that the periodic table falls into seven numbered rows (going from left to right) and 18 numbered columns (going from top to bottom)

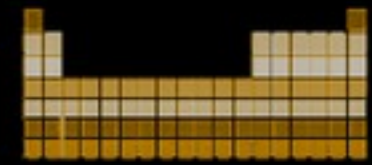


The ROWS are called PERIODS, and the columns are called FAMILIES (or GROUPS). Like human families, the various families of elements “look alike” in appearance and chemical behavior.



00:00

Today's Table: Lay of the land



PERIODS

HORIZONTAL Rows = PERIODS
(There are 7* Periods)

Group	1	2											13	14	15	16	17	18
1	Hydrogen 1 H 1.00794(7)																	Helium 2 He 4.002602(2)
2	Lithium 3 Li 6.941(2)	Beryllium 4 Be 9.01218(3)											Boron 5 B 10.811(7)	Carbon 6 C 12.0107(8)	Nitrogen 7 N 14.0067(2)	Oxygen 8 O 15.9994(3)	Fluorine 9 F 18.9984032(5)	Neon 10 Ne 20.1797(6)
3	Sodium 11 Na 22.98977(2)	Magnesium 12 Mg 24.304(6)											Aluminum 13 Al 26.9815386(8)	Silicon 14 Si 28.0855(3)	Phosphorus 15 P 30.973762(5)	Sulfur 16 S 32.06(5)	Chlorine 17 Cl 35.45(3)	Argon 18 Ar 39.948(1)
4	Potassium 19 K 39.0983(1)	Calcium 20 Ca 40.078(4)											Gallium 31 Ga 69.723(1)	Germanium 32 Ge 72.630(8)	Arsenic 33 As 74.9216(3)	Selenium 34 Se 78.9718(8)	Bromine 35 Br 79.904(1)	Krypton 36 Kr 83.80(1)
5	Rubidium 37 Rb 85.4678(3)	Strontium 38 Sr 87.62(3)											Indium 49 In 114.818(8)	Tin 50 Sn 118.710(7)	Antimony 51 Sb 121.757(3)	Tellurium 52 Te 127.6(3)	Iodine 53 I 126.905(5)	Xenon 54 Xe 131.29(6)
6	Cesium 55 Cs 132.905(2)	Barium 56 Ba 137.327(7)	Lanthanum 57 La 138.905(7)	Hafnium 72 Hf 178.49(2)	Tantalum 73 Ta 180.94788(2)	Tungsten 74 W 183.84(1)	Rhenium 75 Re 186.207(1)	Osmium 76 Os 193.224(3)	Iridium 77 Ir 192.222(1)	Ptassium 78 Pt 195.084(9)	Gold 79 Au 196.966569(4)	Mercury 80 Hg 200.59(2)	Thallium 81 Tl 204.3833(2)	Lead 82 Pb 207.2(1)	Bismuth 83 Bi 208.98040(1)	Polonium 84 Po [209]	Astatine 85 At [210]	Radon 86 Rn [222]
7	Francium 87 Fr [223]	Radium 88 Ra [226]	Actinides 89-103	Rutherfordium 104 Rf [261]	Dubnium 105 Db [268]	Seaborgium 106 Sg [269]	Bohrium 107 Bh [270]	Hassium 108 Hs [269]	Mtnerium 109 Mt [268]	Darmstadtium 110 Ds [281]	Roentgenium 111 Rg [281]	Copernicium 112 Cn [285]	Ununbium 113 Uub [286]	Flerovium 114 Fl [289]	Ununpentium 115 Uup [288]	Livermorium 116 Lv [293]	Ununseptium 117 Uus [294]	Ununoctium 118 Uuo [294]
			Lanthanum 57 La 138.905(7)	Cerium 58 Ce 140.116(1)	Praseodymium 59 Pr 140.90765(2)	Neodymium 60 Nd 144.242(3)	Promethium 61 Pm [145]	Samarium 62 Sm 150.36(2)	Europium 63 Eu 151.964(1)	Gadolinium 64 Gd 157.25(3)	Terbium 65 Tb 158.92535(2)	Dysprosium 66 Dy 162.500(1)	Hoium 67 Ho 164.93032(2)	Erbium 68 Er 167.259(3)	Thulium 69 Tm 168.93421(2)	Ytterbium 70 Yb 173.054(5)	Lutetium 71 Lu 174.9668(1)	
			Actinides 89	Thorium 90 Th 232.03806(2)	Protactinium 91 Pa 231.03689(2)	Uranium 92 U 238.02891(3)	Neptunium 93 Np [237]	Plutonium 94 Pu [244]	Americium 95 Am [243]	Curium 96 Cm [247]	Berkelium 97 Bk [247]	Californium 98 Cf [251]	Einsteinium 99 Es [252]	Fermium 100 Fm [257]	Mendelevium 101 Md [258]	Nobelium 102 No [259]	Lawrencium 103 Lr [262]	

* These two rows belong to Periods 6 & 7, but are pulled out and placed at the bottom to make the table easier to view and read

Today's Table: Lay of the land



GROUPS (or Families)

1	GROUPS (or Families)																18						
1 Hydrogen 1 H 1.00794(7)																	2 Helium 2 He 4.002602(2)						
2											13	14	15	16	17	18							
3 Lithium 3 Li 6.941(2)	4 Beryllium 4 Be 9.01218(3)											5 Boron 5 B 10.811(7)	6 Carbon 6 C 12.0107(8)	7 Nitrogen 7 N 14.0067(2)	8 Oxygen 8 O 15.9994(3)	9 Fluorine 9 F 18.9984032(5)	10 Neon 10 Ne 20.1797(4)						
11 Sodium 11 Na 22.98977(2)	12 Magnesium 12 Mg 24.305(6)	3	4	5	6	7	8	9	10	11	12	13 Aluminum 13 Al 26.9815386(8)	14 Silicon 14 Si 28.0855(3)	15 Phosphorus 15 P 30.973762(2)	16 Sulfur 16 S 32.065(5)	17 Chlorine 17 Cl 35.453(2)	18 Argon 18 Ar 39.948(1)						
19 Potassium 19 K 39.0983(1)	20 Calcium 20 Ca 40.078(4)	21 Scandium 21 Sc 44.955912(6)	22 Titanium 22 Ti 47.867(1)	23 Vanadium 23 V 50.9415(1)	24 Chromium 24 Cr 51.9961(6)	25 Manganese 25 Mn 54.938(4)	26 Iron 26 Fe 55.845(2)	27 Cobalt 27 Co 58.933(2)	28 Nickel 28 Ni 58.69(4)	29 Copper 29 Cu 63.546(3)	30 Zinc 30 Zn 65.38(4)	31 Gallium 31 Ga 69.723(1)	32 Germanium 32 Ge 72.63(1)	33 Arsenic 33 As 74.92160(2)	34 Selenium 34 Se 78.96(3)	35 Bromine 35 Br 79.904(1)	36 Krypton 36 Kr 83.798(2)						
37 Rubidium 37 Rb 85.4678(3)	38 Strontium 38 Sr 87.62(1)	39 Yttrium 39 Y 88.90585(2)	40 Zirconium 40 Zr 91.224(2)	41 Niobium 41 Nb 92.90638(2)	<div style="border: 2px solid black; padding: 10px; background-color: #800000; color: white; text-align: center;"> VERTICAL Columns = GROUPS (or FAMILIES) (There are 18 GROUPS on the periodic table) </div>						42 Molybdenum 42 Mo 95.94(1)	43 Technetium 43 Tc [98]	44 Ruthenium 44 Ru 101.07(2)	45 Rhodium 45 Rh 102.9055(2)	46 Palladium 46 Pd 106.363(2)	47 Silver 47 Ag 107.8682(8)	48 Cadmium 48 Cd 112.414(3)	49 Indium 49 In 114.818(8)	50 Tin 50 Sn 118.710(7)	51 Antimony 51 Sb 121.760(1)	52 Tellurium 52 Te 127.60(3)	53 Iodine 53 I 126.90447(3)	54 Xenon 54 Xe 131.29(6)
55 Cesium 55 Cs 132.905(2)	56 Barium 56 Ba 137.327(7)	57-71 Lanthanides	72 Hafnium 72 Hf 178.49(2)	73 Tantalum 73 Ta 180.94788(2)							74 Tungsten 74 W 183.84(1)	75 Rhenium 75 Re 186.207(1)	76 Osmium 76 Os 190.23(4)	77 Iridium 77 Ir 192.22(2)	78 Platinum 78 Pt 195.084(8)	79 Gold 79 Au 196.96657(4)	80 Mercury 80 Hg 200.59(2)	81 Thallium 81 Tl 204.38(3)	82 Lead 82 Pb 207.2(1)	83 Bismuth 83 Bi 208.98040(1)	84 Polonium 84 Po [209]	85 Astatine 85 At [210]	86 Radon 86 Rn [222]
87 Francium 87 Fr [223]	88 Radium 88 Ra [226]	89-103 Actinides	104 Rutherfordium 104 Rf [261]	105 Dubnium 105 Db [268]	106 Seaborgium 106 Sg [269]	107 Bohrium 107 Bh [270]	108 Hassium 108 Hs [277]	109 Meitnerium 109 Mt [276]	110 Darmstadtium 110 Ds [285]	111 Roentgenium 111 Rg [286]	112 Copernicium 112 Cn [285]	113 Nh [288]	114 Flerovium 114 Fl [289]	115 Moscovium 115 Mc [288]	116 Livermorium 116 Lv [293]	117 Tennessine 117 Ts [294]	118 Oganesson 118 Og [294]						
Lanthanides		57 Lanthanum 57 La 138.90547(7)	58 Cerium 58 Ce 140.116(1)	59 Praseodymium 59 Pr 140.90765(2)	60 Neodymium 60 Nd 144.242(3)	61 Promethium 61 Pm [145]	62 Samarium 62 Sm 150.36(2)	63 Europium 63 Eu 151.964(1)	64 Gadolinium 64 Gd 157.25(3)	65 Terbium 65 Tb 158.92535(2)	66 Dysprosium 66 Dy 162.500(1)	67 Holmium 67 Ho 164.93032(2)	68 Erbium 68 Er 167.259(3)	69 Thulium 69 Tm 168.93421(2)	70 Ytterbium 70 Yb 173.054(5)	71 Lutetium 71 Lu 174.9668(1)							
Actinides		89 Actinium 89 Ac [227]	90 Thorium 90 Th 232.03806(2)	91 Protactinium 91 Pa 231.03689(2)	92 Uranium 92 U 238.02891(3)	93 Neptunium 93 Np [237]	94 Plutonium 94 Pu [244]	95 Americium 95 Am [243]	96 Curium 96 Cm [247]	97 Berkelium 97 Bk [247]	98 Californium 98 Cf [251]	99 Einsteinium 99 Es [252]	100 Fermium 100 Fm [257]	101 Mendelevium 101 Md [258]	102 Nobelium 102 No [259]	103 Lawrencium 103 Lr [262]							

HENRY MOSELEY (1887-1915)

- Mendeleev's version of the Periodic Table was not perfect. In a few cases, an element's atomic mass seemed to place it in the wrong family. The insight that would explain this problem and give the period table its final form was provided by a brilliant scientist named Henry Moseley.



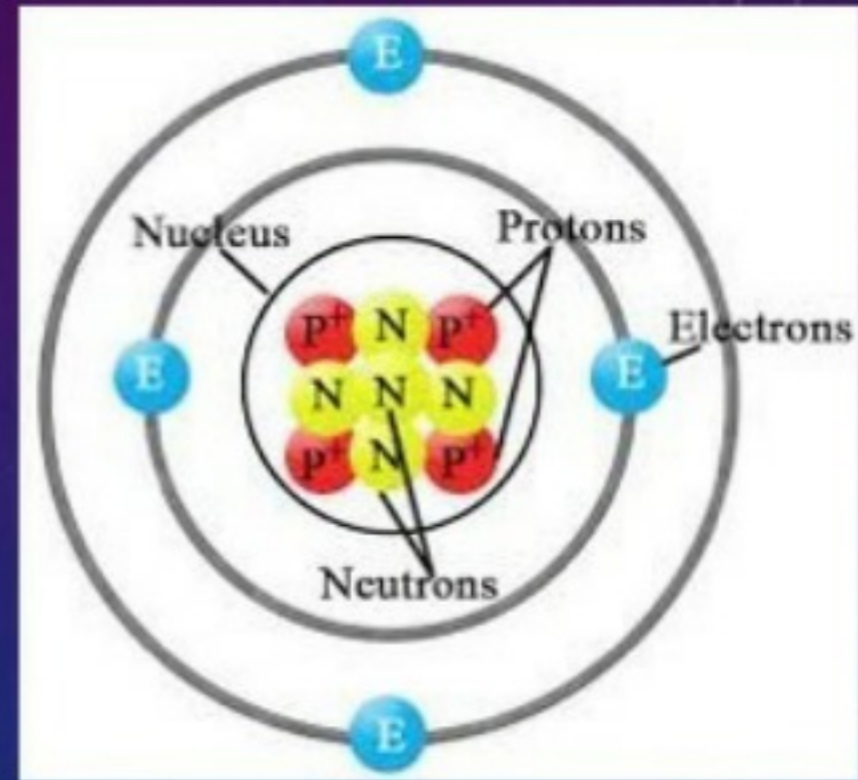
Working with X-rays, he was able to show that an element's properties were more dependent on the number of positively charged particles in an atom than that of its mass like Mendeleev believed.



00:00

PROTONS

- Those positively charged particles were later named PROTONS. The number of protons in the atom of a given element defines its atomic number, which is listed just above the element's chemical symbol in the table. When elements are listed by their atomic number, they all fall within the proper families.



00:00

Helpful HINTS:

PERIOD -


- rows
- horizontal
- going left to right
- like a sentence with a "period" at the end

GROUPS (families) -

- columns
- vertical
- going top to bottom
- elements "look alike"
- "similar in appearance" like in a family

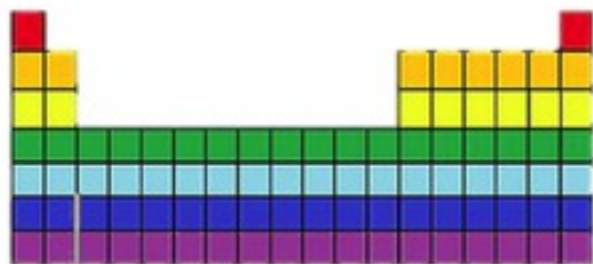


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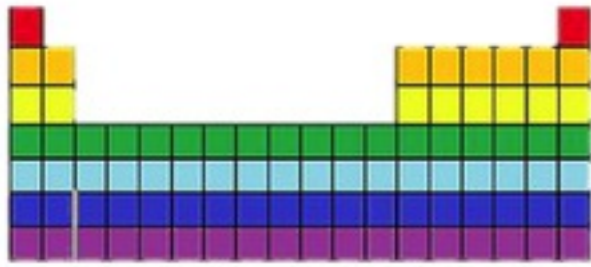
Quiz

Check Up



The horizontal rows on the periodic table of elements are known as

- rows
- building blocks
- families
- periods



The vertical columns on the periodic table are known as

- building blocks
- groups (or families)
- chemicals
- periodic

Draw It

Draw a line through the elements in GROUP 2

		Group 1																18			
		Hydrogen 1 H 1.00794(7)																Helium 2 He 4.002602(2)			
		1	2											13	14	15	16	17	18		
		Lithium 3 Li 6.941(2)	Beryllium 4 Be 9.01218(3)											Boron 5 B 10.811(7)	Carbon 6 C 12.0107(8)	Nitrogen 7 N 14.0067(2)	Oxygen 8 O 15.9994(3)	Fluorine 9 F 18.9984032(5)	Neon 10 Ne 20.1797(6)		
		Sodium 11 Na 22.98977(2)	Magnesium 12 Mg 24.305(6)											Aluminum 13 Al 26.9815386(8)	Silicon 14 Si 28.0855(3)	Phosphorus 15 P 30.973762(2)	Sulfur 16 S 32.065(5)	Chlorine 17 Cl 35.453(2)	Argon 18 Ar 39.948(1)		
Period	4	Potassium 19 K 39.0983(1)	Calcium 20 Ca 40.078(4)	Scandium 21 Sc 44.955912(6)	Titanium 22 Ti 47.867(1)	Vanadium 23 V 50.9415(1)	Chromium 24 Cr 51.9961(6)	Manganese 25 Mn 54.938045(5)	Iron 26 Fe 55.845(2)	Cobalt 27 Co 58.933195(5)	Nickel 28 Ni 58.6934(4)	Copper 29 Cu 63.546(3)	Zinc 30 Zn 65.3(2)	Gallium 31 Ga 69.723(1)	Germanium 32 Ge 72.63(1)	Arsenic 33 As 74.92160(2)	Selenium 34 Se 78.96(3)	Bromine 35 Br 79.904(1)	Krypton 36 Kr 83.798(2)		
	5	Rubidium 37 Rb 85.4678(3)	Strontium 38 Sr 87.62(1)	Yttrium 39 Y 88.90585(2)	Zirconium 40 Zr 91.224(2)	Niobium 41 Nb 92.90638(2)	Molybdenum 42 Mo 95.96(2)	Technetium 43 Tc [98]	Ruthenium 44 Ru 101.07(2)	Rhodium 45 Rh 102.90550(2)	Palladium 46 Pd 106.42(1)	Silver 47 Ag 107.8682(2)	Cadmium 48 Cd 112.411(8)	Indium 49 In 114.818(3)	Tin 50 Sn 118.710(7)	Antimony 51 Sb 121.760(1)	Tellurium 52 Te 127.60(3)	Iodine 53 I 126.90447(3)	Xenon 54 Xe 131.293(6)		
	6	Cesium 55 Cs 132.905(2)	Barium 56 Ba 137.327(7)	57-71 Lanthanides	Hafnium 72 Hf 178.49(2)	Tantalum 73 Ta 180.94788(2)	Tungsten 74 W 183.84(1)	Rhenium 75 Re 186.207(1)	Osmium 76 Os 190.23(3)	Iridium 77 Ir 192.217(3)	Platinum 78 Pt 195.084(9)	Gold 79 Au 196.966569(4)	Mercury 80 Hg 200.59(2)	Thallium 81 Tl 204.3833(2)	Lead 82 Pb 207.2(1)	Bismuth 83 Bi 208.98040(1)	Polonium 84 Po [209]	Astatine 85 At [210]	Radon 86 Rn [222]		
	7	Francium 87 Fr [223]	Radium 88 Ra [226]	89-103 Actinides	Rutherfordium 104 Rf [267]	Dubnium 105 Db [268]	Seaborgium 106 Sg [269]	Bohrium 107 Bh [270]	Hassium 108 Hs [269]	Meitnerium 109 Mt [268]	Darmstadtium 110 Ds [281]	Roentgenium 111 Rg [281]	Copernicium 112 Cn [285]	Ununtrium 113 Uut [286]	Flerovium 114 Fl [289]	Ununpentium 115 Uup [288]	Livermorium 116 Lv [293]	Ununseptium 117 Uus [294]	Ununoctium 118 Uuo [294]		
	Lanthanides	Lanthanum 57 La 138.90547(7)	Cerium 58 Ce 140.116(1)	Praseodymium 59 Pr 140.90765(2)	Neodymium 60 Nd 144.242(3)	Promethium 61 Pm [145]	Samarium 62 Sm 150.36(2)	Europium 63 Eu 151.964(1)	Gadolinium 64 Gd 157.25(3)	Terbium 65 Tb 158.92535(2)	Dysprosium 66 Dy 162.500(1)	Holmium 67 Ho 164.93032(2)	Erbium 68 Er 167.259(3)	Thulium 69 Tm 168.93421(2)	Ytterbium 70 Yb 173.054(5)	Lutetium 71 Lu 174.9668(1)					
	Actinides	Actinium 89 Ac [227]	Thorium 90 Th 232.03806(2)	Protactinium 91 Pa 231.03688(2)	Uranium 92 U 238.02891(3)	Neptunium 93 Np [237]	Plutonium 94 Pu [244]	Americium 95 Am [243]	Curium 96 Cm [247]	Berkelium 97 Bk [247]	Californium 98 Cf [251]	Einsteinium 99 Es [252]	Fermium 100 Fm [257]	Mendelevium 101 Md [258]	Nobelium 102 No [259]	Lawrencium 103 Lr [262]					

Draw It

Draw a line through the elements in PERIOD 4

Group 1																		18					
Hydrogen 1 H 1.00794(7)																		Helium 2 He 4.002602(2)					
		1	2											13	14	15	16	17	18				
		Lithium 3 Li 6.941(2)	Beryllium 4 Be 9.01218(3)											Boron 5 B 10.811(7)	Carbon 6 C 12.0107(8)	Nitrogen 7 N 14.0067(2)	Oxygen 8 O 15.9994(3)	Fluorine 9 F 18.9984032(5)	Neon 10 Ne 20.1797(6)				
		Sodium 11 Na 22.98977(2)	Magnesium 12 Mg 24.305(6)											Aluminum 13 Al 26.9815386(8)	Silicon 14 Si 28.0855(3)	Phosphorus 15 P 30.973762(2)	Sulfur 16 S 32.065(5)	Chlorine 17 Cl 35.453(2)	Argon 18 Ar 39.948(1)				
Period	4	Potassium 19 K 39.0983(1)	Calcium 20 Ca 40.078(4)	Scandium 21 Sc 44.955912(6)	Titanium 22 Ti 47.867(1)	Vanadium 23 V 50.9415(1)	Chromium 24 Cr 51.9961(6)	Manganese 25 Mn 54.938045(5)	Iron 26 Fe 55.845(2)	Cobalt 27 Co 58.933195(5)	Nickel 28 Ni 58.6934(4)	Copper 29 Cu 63.546(3)	Zinc 30 Zn 65.3(2)	Gallium 31 Ga 69.723(1)	Germanium 32 Ge 72.63(1)	Arsenic 33 As 74.92160(2)	Selenium 34 Se 78.96(3)	Bromine 35 Br 79.904(1)	Krypton 36 Kr 83.798(2)				
	5	Rubidium 37 Rb 85.4678(3)	Strontium 38 Sr 87.62(1)	Yttrium 39 Y 88.90585(2)	Zirconium 40 Zr 91.224(2)	Niobium 41 Nb 92.90638(2)	Molybdenum 42 Mo 95.96(2)	Technetium 43 Tc [98]	Ruthenium 44 Ru 101.07(2)	Rhodium 45 Rh 102.90550(2)	Palladium 46 Pd 106.42(1)	Silver 47 Ag 107.8682(2)	Cadmium 48 Cd 112.411(8)	Indium 49 In 114.818(3)	Tin 50 Sn 118.710(7)	Antimony 51 Sb 121.760(1)	Tellurium 52 Te 127.60(3)	Iodine 53 I 126.90447(3)	Xenon 54 Xe 131.293(6)				
	6	Cesium 55 Cs 132.905(2)	Barium 56 Ba 137.327(7)	57-71 Lanthanides	Hafnium 72 Hf 178.49(2)	Tantalum 73 Ta 180.94788(2)	Tungsten 74 W 183.84(1)	Rhenium 75 Re 186.207(1)	Osmium 76 Os 190.23(3)	Iridium 77 Ir 192.217(3)	Platinum 78 Pt 195.084(9)	Gold 79 Au 196.966569(4)	Mercury 80 Hg 200.59(2)	Thallium 81 Tl 204.3833(2)	Lead 82 Pb 207.2(1)	Bismuth 83 Bi 208.98040(1)	Polonium 84 Po [209]	Astatine 85 At [210]	Radon 86 Rn [222]				
	7	Francium 87 Fr [223]	Radium 88 Ra [226]	89-103 Actinides	Rutherfordium 104 Rf [267]	Dubnium 105 Db [268]	Seaborgium 106 Sg [269]	Bohrium 107 Bh [270]	Hassium 108 Hs [269]	Meitnerium 109 Mt [268]	Darmstadtium 110 Ds [281]	Roentgenium 111 Rg [281]	Copernicium 112 Cn [285]	Ununtrium 113 Uut [286]	Flerovium 114 Fl [289]	Ununpentium 115 Uup [288]	Livermorium 116 Lv [293]	Ununseptium 117 Uus [294]	Ununoctium 118 Uuo [294]				
	Lanthanides	Lanthanum 57 La 138.90547(7)	Cerium 58 Ce 140.116(1)	Praseodymium 59 Pr 140.90765(2)	Neodymium 60 Nd 144.242(3)	Promethium 61 Pm [145]	Samarium 62 Sm 150.36(2)	Europium 63 Eu 151.964(1)	Gadolinium 64 Gd 157.25(3)	Terbium 65 Tb 158.92535(2)	Dysprosium 66 Dy 162.500(1)	Holmium 67 Ho 164.93032(2)	Erbium 68 Er 167.259(3)	Thulium 69 Tm 168.93421(2)	Ytterbium 70 Yb 173.054(5)	Lutetium 71 Lu 174.9668(1)							
	Actinides	Actinium 89 Ac [227]	Thorium 90 Th 232.03806(2)	Protactinium 91 Pa 231.03688(2)	Uranium 92 U 238.02891(3)	Neptunium 93 Np [237]	Plutonium 94 Pu [244]	Americium 95 Am [243]	Curium 96 Cm [247]	Berkelium 97 Bk [247]	Californium 98 Cf [251]	Einsteinium 99 Es [252]	Fermium 100 Fm [257]	Mendelevium 101 Md [258]	Nobelium 102 No [259]	Lawrencium 103 Lr [262]							



Quiz

Track it down...

What element is located in Group 2, Period 4?

Lithium (Li)

Calcium (Ca)

Gold (Au)

Carbon (C)

What element is located in Group 4, Period 5?

- Vanadium (V)
- Chromium (Cr)
- Zirconium (Zr)
- Niobium (Nb)

What element is located in Group 5, Period 4?

- Carbon (C)
- Chromium (Cr)
- Niobium (Nb)
- Vanadium (V)



LESSON REFLECTION

How do you feel about this topic?

Turn and talk with a partner. Share three interesting facts that you learned during this lesson.



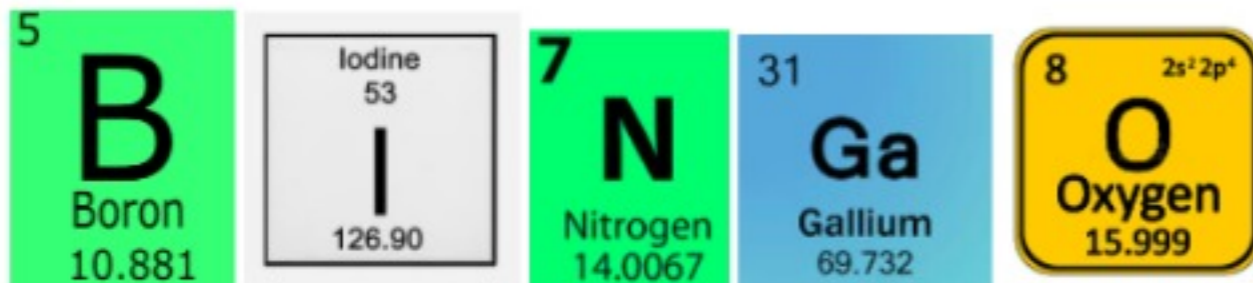
Collaborate!

The Period Table

Let's Play Periodic BINGO

RULES:

- Click on the link.
- select your card by click on the "new card" symbol at the top.
- select the correct box if your element is called, by selecting, an X will appear in the box.
- Do not delete your card if you call BINGO until I check that the winner has the correct elements. They may be wrong and the game will continue.





Home



Edit



Create



Print



New Card

Periodic Bingo

Iron	Copper	Neon	Nitrogen
Boron			Lithium
Radon			Helium
Argon	Sodium	Lead	Tin

<http://mfbc.us/m/hu6wv9>

myfreebingocard.com

Digging Deeper

Website - Periodic Table Study Guide - Introduction & History



By Anne Marie Helmenstine, Ph.D.
Chemistry Expert



<http://chemistry.about.com/od/k12gradelessons/a/periodictable.htm>



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Periodic Table Study Guide - Introduction & History

Organization of the Elements



By Anne Marie Helmenstine, Ph.D. Chemistry Expert



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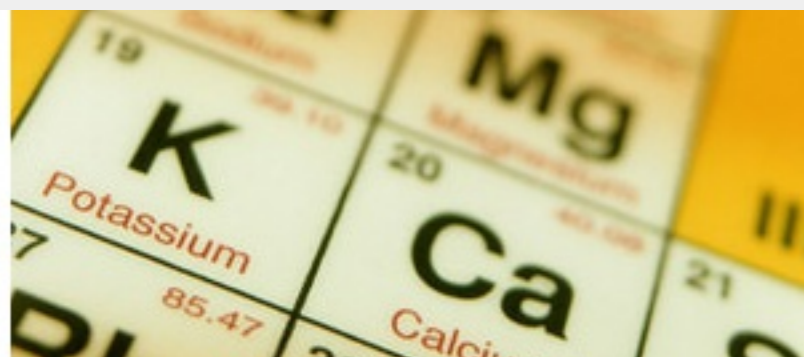
Ads Analytical Chemistry Lab Study Guide Tip Table Iron Element Iron Removal

Updated June 10, 2014.

[Introduction](#)

it's a win-win

<http://chemistry.about.com/od/k12gradelessons/a/periodictable.htm>



Introduction to the Periodic Table

People have known about elements like carbon and gold since ancient time. The elements couldn't be



T H A

1
H
Hydrogen
1.00794

nitrogen
7
N
14.007

Potassium
19
K
39.098

39
Y
Yttrium
88.9059

8
O
OXYGEN
15.999



Oxygen Meet the Atom
8 protons 8 neutrons 8 electrons

92
U
Uranium
238.02891

Navigating the Periodic Table - NearPod Presentation
Teacher's Notes & Resources

This presentation is a good start to introducing the basics of getting around on the periodic table. It can be followed up with information about reading a periodic table entry and explanations of atomic number, mass, symbols, and element names. Periodic trends and patterns should complete the information.

Additional Resources:

Webelements

www.webelements.com

Interactive Periodic Table

www.ptable.com

Hunting the Elements

[NOVA's Hunting the Elements](#)
[Hunting the Elements](#)

SciShow on YouTube

<https://www.youtube.com/watch?v=...>

Periodic Table of Videos

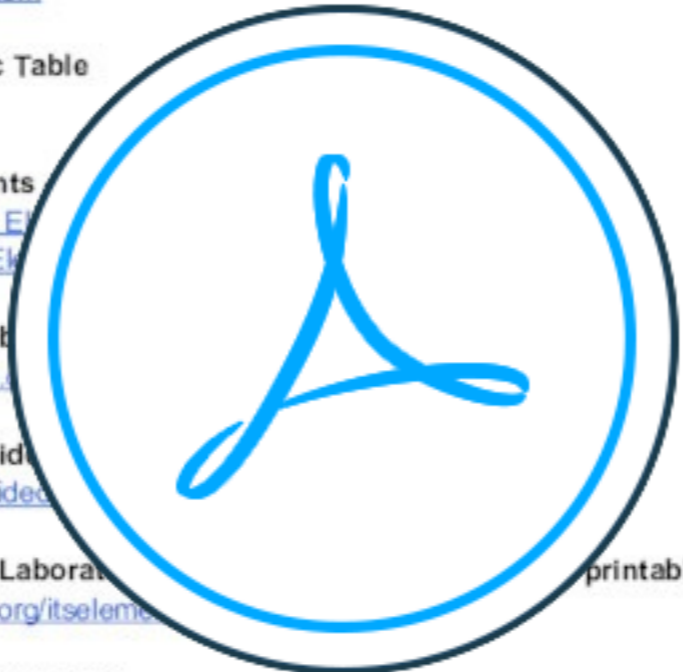
<http://www.periodicvideos.com>

Jefferson National Laboratories

<http://education.jlab.org/itselements/> (printables)

Proton Don - From FunBrain

<http://www.funbrain.com/periodic/>



<http://nearpod.s3.amazonaws.com/neareducation/new/Webpage/7881827/iconoriginal.pdf>

C. Harvey - Technology Integration Specialist

Resources:



- www.youtube.com/scishow
- http://upload.wikimedia.org/wikipedia/commons/a/af/Dmitri_Mendeleev.jpg
- http://upload.wikimedia.org/wikipedia/commons/e/e7/Periodic_Table_Radioactivity.svg
- http://upload.wikimedia.org/wikipedia/commons/thumb/8/89/Periods_of_the_periodic_table_2.jpg/320px-Periods_of_the_periodic_table_2.jpg
- <http://www.helpteaching.com/imgs/Chemistry/900x700/periodic-table.png>
- <http://www.nextgenscience.org/>
- <http://chemistry.about.com/od/k12gradelessons/a/periodictable.htm>
- <http://chemwiki.ucdavis.edu/@api/deki/files/1260/IRON.jpg?size=bestfit&width=300&height=182&revision=1>