

Key

Unit 5: Periodic Table Test Review

A. Match the letter of the contribution made to the chemist. Each letter will be used only once.

- | | | |
|---------------------|---|---|
| 1) H.G.J. Moseley | — | a. arranged elements by atomic number |
| 2) J.A.R. Newlands | — | b. grouped elements into sets of 3 |
| 3) J.W. Dobereiner | — | c. predicted the existence and properties of three undiscovered elements |
| 4. Dmitri Mendeleev | — | d. organized elements into repeating groups of 8, which he termed octaves |

B. Calculate the valence for the given element.

- 1) Phosphorus 5
2) Bromine 7
3) Tungsten 2

C. Write out the noble gas configuration for the given element.

1) Scandium $[\text{Ar}] 4s^2 3d^1$

2) Chlorine $[\text{Ne}] 3s^2 3p^5$

3) Helium $1s^2$

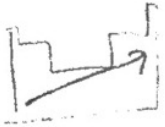
D. Match the group number with the correct family

- | | | |
|--------------------------|---|------------|
| 1) carbon family | — | a. group 2 |
| 2) alkaline earth metals | — | b. group 7 |
| 3) nitrogen family | — | c. group 3 |
| 4) halogens | — | d. group 1 |
| 5) noble gases | — | e. group 6 |
| 6) oxygen family | — | f. group 4 |
| 7) boron family | — | g. group 5 |
| 8) alkali metals | — | h. group 8 |

E. Define the terms.

- 1) Periodic Law - as elements are arranged by increasing atomic number, there is a periodic repetition of properties.
- 2) Families (or groups) - The vertical columns on the Periodic Table
⇒ have the same number of valence electrons
- 3) Periods - The horizontal rows on the Periodic Table
⇒ have the same outer energy level.
- 4) Ionization Energy - The amount of energy needed to remove one electron from an atom in the gas phase.

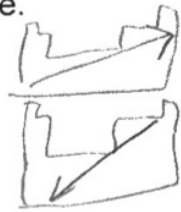




- 5) Electronegativity - The attraction of an atom to the electrons in another atom
- 6) Cations - positively charged ions, lost electrons
- 7) Anions - Negatively charged ions, gained electrons

F. True or False. *never/rarely*

- FALSE 1) Noble Gases always react with other elements.
- TRUE 2) The nucleus has a positive charge, attracting surrounding negative valence electrons.
- FALSE 3) Most elements are liquid *solid*
- TRUE 4) Most elements form compounds with oxygen.
- TRUE 5) Most elements are groups of single atoms in their elemental state.
- FALSE 6) There are only 7 gases. *11*
- FALSE 7) Atomic number increases from right to left of the periodic table. *L R*
- FALSE 8) Atomic Radius increases from left to right of the periodic table. *R L*



G. Parts of the Periodic Table

Identify the metals, nonmetals, and metalloids on this periodic table.

metals →

Periodic Table

1A																	8A				
1																	2				
H																	He				
1.008																	4.003				
3	4															6	7	8	9	10	
Li	Be															B	C	N	O	F	Ne
6.941	9.012															10.811	12.011	14.01	16.00	19.00	20.18
11	12															13	14	15	16	17	18
Na	Mg															Al	Si	P	S	Cl	Ar
23.002	24.31															26.982	28.09	30.97	32.06	35.45	39.95
19	20	21	22	23	24	25	26	27	28	29	30	31	3B		34	35	36				
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga			Se	Br	Kr				
39.10	40.08	44.96	47.90	50.94	52.00	54.94	55.85	58.93	58.70	63.55	65.38	69.72			72.64	79.90	83.80				
37	38	39	40	41	42	43	44	45	46	47	48	49	50	5B		53	54				
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn			I	Xe				
85.47	87.62	88.91	91.22	92.91	95.94	(98)	101.1	102.9	106.4	107.9	112.4	114.8	118.7			126.9	131.3				
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	86					
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	Rn					
132.9	137.3	138.9	178.5	180.9	183.9	186.2	190.2	193.2	197.0	198.9	200.6	204.4	208.9	209	(210)	(222)					
87	88	89	104	105	106	107	109														
Fr	Ra	Ac	Rf	Ha	Unh	Uns	Uup														
(223)	(226)	(227)	(261)	(262)	(263)	(264)	(267)														
Lanthanides		58	59	60	61	62	63	64	65	66	67	68	69	70	71						
		Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu						
		140.1	140.9	144.2	(145)	150.4	152.0	157.3	158.9	162.5	164.9	167.3	168.9	173.0	175.0						
Actinides		90	91	92	93	94	95	96	97	98	99	100	101	102	103						
		Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr						
		232.0	231.0	238.0	237.0	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(260)						

nonmetals

metalloids

What are the characteristics of:

- 1) Metals - shiny, conduct electricity, malleable, ductile, give up electrons, silver or gray
- 2) Nonmetals - do not conduct electricity or heat, not malleable or ductile; brittle if solid, many are gases, many colors
- 3) Metalloids

In the middle:

- somewhat shiny
- somewhat malleable/ductile, may be brittle
- somewhat conductive