

Teaching Tools

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Modern Periodic Table of the Elements

Periodic Table of the Elements

	1A																0	
1	H	IIA															2	
2	Li	Be										5	6	7	8	9	10	
3	Na	Mg	IIIB	IVB	VB	VIB	VII	VIII	IB	IIB	13	14	15	16	17	18		
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	*La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	Fr	Ra	+Ac	Rf	Ha	Sg	Ns	Hs	Mt	110	111	112	113					

* Lanthanide Series	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
+ Actinide Series	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

Families of Elements

Each element in the periodic table has distinctive properties. When elements have similar properties they are grouped into families:

- Alkali Metals
- Alkali Earth Metals
- Transition Metals
- Rare Earth Metals
- Other Metals
- Nonmetals
- Halogens
- Noble Gases
- Metalloids

Periodic Table of the Elements courtesy of Los Alamos National Laboratories, a Genesis Mission Team Partner (<http://mwanal.lanl.gov/CST/imagemap/periodic/periodic.html>)

Mendeleev's Periodic Table*

TABLE II.
The Atomic Weights of the Elements
Distribution of the Elements in Periods

Groups	Higher Salt-forming Oxides	Typical or f ^t Small Period	Large Periods				
			1st	2nd	3rd	4th	5th
I.	R_2O	Li - 7	K 39	Rb 85	Cs 133	—	—
II.	RO	Be - 9	Ca 40	Sr 87	Ba 137	—	—
III.	R_2O_3	B - 11	Sc 44	Y 89	La 138	Yb 173	—
IV.	RO_2	C - 12	Ti 48	Zr 90	Ce 140	—	Tb 232
V.	R_2O_5	N - 14	V 15	Nb 94	—	Ta 182	—
VI.	RO_3	O - 16	Cr 52	Mn 96	—	W 184	Ur 240
VII.	R_2O_7	F - 19	Mn 55	—	—	—	—
VIII.	}		Fe 56	Ru 103	—	Os 191	—
			Co 58.5	Rh 104	—	Ir 193	—
			Ni 59	Pd 106	—	Pt 196	—
I.	R_2O	H-1, Na-23	Cu 63	Ag 108	—	Au 198	—
II.	RO	Mg - 24	Zn 65	Cd 112	—	Hg 200	—
III.	R_2O_3	Al - 27	Ga 70	In 113	—	Tl 204	—
IV.	RO_2	Si - 28	Ge 72	Sn 118	—	Pb 206	—
V.	R_2O_5	P - 31	As 75	Sb 120	—	Bi 208	—
VI.	RO_3	S - 32	Se 79	Te 125	—	—	—
VII.	R_2O_7	Cl - 35.5	Br 80	I 127	—	—	—
		2nd Small Period	1st	2nd	3rd	4th	5th

Large Periods

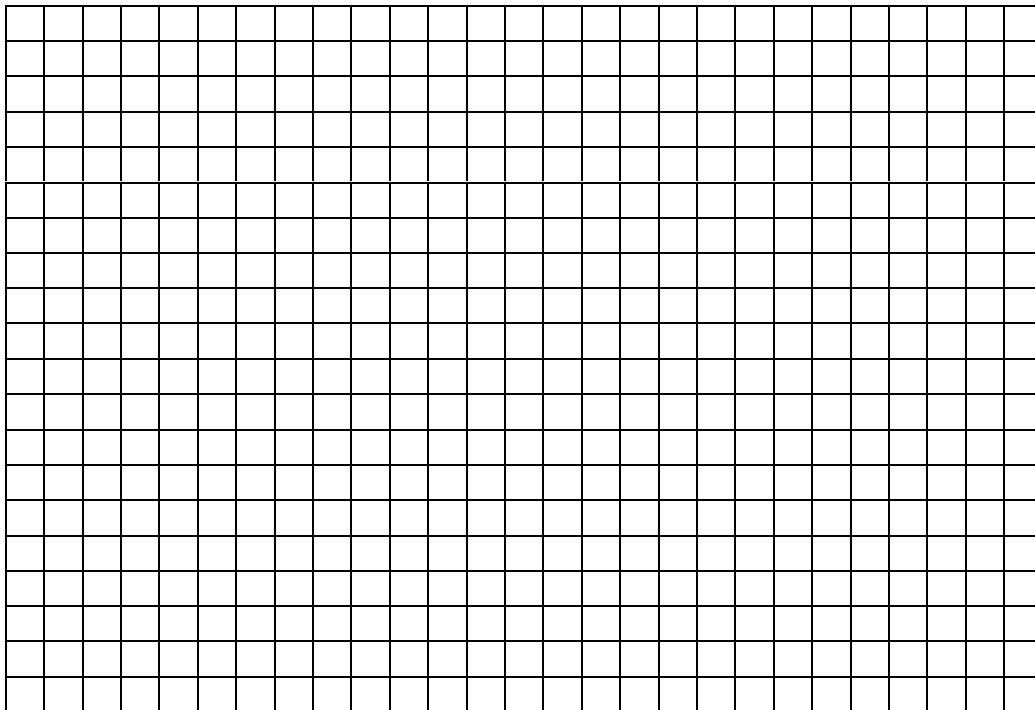
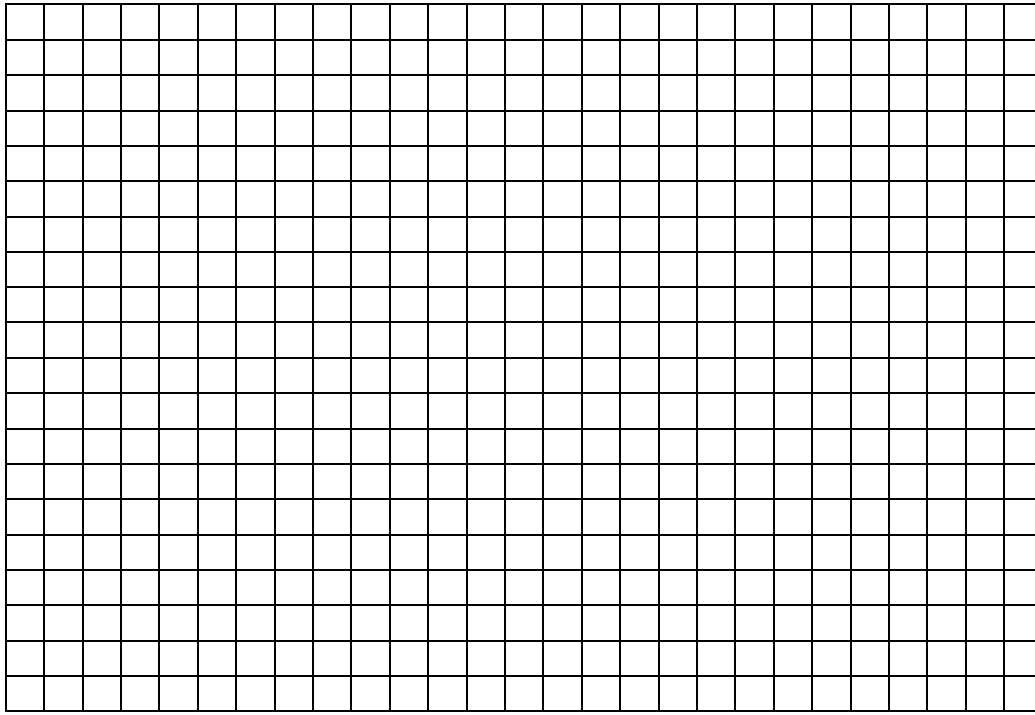
*Mendeleev's Periodic Table is a representation of the periodic table first published by Dmitrii I. Mendeleev in 1871, St. Petersburg, Russia.

Successful Problem-Solving Process Log

Student Group	Variable(s) Used	Why Successful	Difficulties
Lab Group One			
Lab Group Two			
Lab Group Three			
Lab Group Four			
Lab Group Five			
Lab Group Six			



Graphing Tools



Prediction of Properties of an Unknown Element

	<u>Ekasilicon</u>	<u>Germanium</u>
Atomic weight	72	72.32
Specific gravity	5.5	5.47
Color	dark grey	greyish-white
Formula of oxide	EsO ₂	GeO ₂
Specific gravity of oxide	4.7	4.70
Formula of chloride	EsCl ₄	GeCl ₄
Specific gravity of chloride	1.9	1.887
Boiling point of chloride	below 100°C	83°C