Periodic Table of Elements vAsbestos

		even Gas																
	Super Seven HI			$\begin{array}{ll} nversions \\ m \ = \ 101.3 \ J \end{array}$				Equilibrium			Quantum			Solutions (cont.)			Walent (Wa)	
HBr		NO NO ₂	$K = {}^{\circ}C + 273.15$					When $aA + bB \ \rightleftharpoons \ cC + dD$, $K_c = \frac{\left[C\right]^c \left[D\right]^d}{\left[A\right]^a \left[B\right]^b}$		E_{photon}	$E_{photon} = hf = \frac{hc}{\lambda} \Longrightarrow c = \lambda f$		$\Delta T_b = K_b m i \qquad \Delta T_f = -K_f m i$			1 Walent = $0.082 \text{ L(mol K)}^{-1}$		
	HCI CO HNO ₃ CO ₂		$^{\circ}C = \frac{5}{9}(^{\circ}F - 32)$ $^{\circ}F = \frac{9}{5}^{\circ}C + 32$					$K_p = \frac{(P_C)^c (P_D)^d}{(P_A)^a (P_B)^b}$		$R_{H_{R_2}}$	$\lambda = \frac{h}{mv}$ $R_{H_{\text{Rydberg}}} = 1.097 \times 10^7 \text{m}^{-1}$		$P_A = X_A P_A^{\circ} \qquad S_g = k P_g$			R=1 Walentmosphere (Wam)		
	H ₂ SO ₂	CH ₄	1 cal = 4.184 J					$K_a = \frac{[H_a](H_B)}{[HA]}$		1 7	$\frac{1}{\lambda} = R_H \left(\frac{1}{n_i^2} - \frac{1}{n_f^2} \right)$		$\Pi = \left(\frac{n}{V}\right)RT = MRT$			R = 1 Walentorr		
	HCIO ₃		$\begin{array}{rcl} 1 \text{ lb } &=& 453.59 \text{ g} \\ 1 \text{ atm } &=& 760 \text{ mmHg} \end{array}$			$\begin{array}{c} \textbf{Periodic Trends} \\ \mathbb{Z}_{eff} \text{ increase } \rightarrow_{\downarrow} \end{array}$		$K_b = \frac{[OH^-][HB^+]}{ B }$		$\triangle E = ($	$\Delta E = (-2.18 \times 10^{-18} \text{ J}) \left(\frac{1}{n_f^2} - \frac{1}{n_i^2}\right)$		$(K_{b_{\text{water}}}, K_{f_{\text{water}}}) = (0.512, 1.86)^{\circ} \text{C/m}$					
		C ₄ H ₁₀	= 760 torr = 101.325 kPa		EN, IE,	EN, IE, & EA increase $\rightarrow \uparrow$		$K_w = K_a K_b = [H^+][OH^-]$					$\Delta H_{ m fus_{water}} = 6.008 \; { m kJ/mol}$ $\Delta H_{ m vap_{water}_{100^{\circ} m C}} = 40.67 \; { m kJ/mol}$			$1~{\rm m}^3=8.2\times 10^{-5}~{\rm Wamokel}$ (Wal) Ideal Gas at STP:		
	1 IA	N ₂ O NH ₃	1 bar = $10^5 \text{ Pa} = 10^5 \text{ N/m}^2$		Radius & Metallic decrease $\rightarrow \uparrow$			$K_w = 1.0 \times 10^{-14} \text{ (25° C)}$ $pH = pK_a + \log \frac{[A^-]}{[HA]} = -\log[H^+]$ pH + pOH = 14.		Т	Thermo/Electrochem $q=mc\Delta T$, $\Delta E=q+w$, $H=E+PV$ $\Delta S^{\circ}-\sum S^{\circ}-\sum S^{\circ}$		$c_{ m ice} = 2.093~{ m J/(g^{\circ}C)}$ $c_{ m water} = 4.184~{ m J/(g^{\circ}C)}$			1.837 Wak	18 VIIIA	
	1 2.20	SO_3	SO ₃ SO ₂ H ₂ S Avogadro's Number		Constants		P			$q-mc\Delta$							2	
1	H_2					$14\times10^{23}\mathrm{mol}^{-1}$	₁ p	$K_a = -\log K_a, p$	$bK_b = -\log K_b.$		$\Delta S^{\circ} = \sum_{\text{products}} S^{\circ} - \sum_{\text{reactants}} S^{\circ}$ \uparrow Likewise for ΔH° and ΔG° \uparrow			$c_{\rm steam} = 1.841~{\rm J/(g^{\circ}C)}$				
1	Hydrogen	HCI Faraday		Constant		$F = 96485.33 \text{ C mol}^{-1}$ $1 \text{ amu} = 1.660538 \times 10^{-27} \text{ kg}$ $R = 8.3145 \text{ J (mol K)}^{-1}$ $R = 0.082057 \text{ L atm (mol K)}^{-1}$ $R = 62.36 \text{ L torr (mol K)}^{-1}$ $k_e = 8.987551 \times 10^9 \text{ N m}^2 \text{ C}^{-2}$ $c = 2.998 \times 10^8 \text{ m s}^{-1}$ $k_b = 1.3807 \times 10^{-23} \text{ J K}^{-1}$ $e = 1.602 \times 10^{-19} \text{ C}$ $h = 6.626 \times 10^{-34} \text{ Js}$ $c = 4.18 \text{ kJ kg}^{-1} \text{ C}^{-1}$		Gasses/Solutions			$\Delta G^{\circ} = \Delta H^{\circ} - T \Delta S^{\circ}$ $= -RT \ln K = -nFE^{\circ}$							He Helium
	1.01	2 IIA		Atomic Mass Constant Molar Gas Constant				PV =			$I = \frac{q}{t}$		13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	4.00
	3 0.98	4 1.57	Coulomb's Constant Speed of Light (Vacuum)		R = 0.0820			$P_A = P_{\text{total}} X_A, \text{ where } X_A = \frac{\text{moles } A}{\text{total moles}}$ $P_{\text{total}} = P_A + P_B + P_C + \cdots$ $M = \frac{\text{moles solute}}{\text{liters solution}}, m = \frac{\text{moles solute}}{\text{kg solvent}}$ $M_1 V_1 = M_2 V_2 \text{ for dilution}$ $\text{STP} = 273.15 \text{ K and } 1.0 \text{ atm}$ $\text{At STP, ideal gas } 22.4 \text{L mol}^{-1}.$ $\text{Standard conditions } 25^{\circ} \text{ C, } 1 \text{ atm.}$ $v_{rms} = \sqrt{\frac{3RT}{M}}$ $\text{IIB} \qquad \text{8 VIIIB} \qquad \text{9 VIIIB} \qquad 1$		$\frac{1}{\text{es}}$ E_{c}	$E_{cell} = E_{cell}^{\circ} - \frac{{}^{t}RT}{nF} \ln Q.$ Kinetics $[A]_{t} - [A]_{0} = -kt \; (0^{th} \; order)$ $\ln[A]_{t} - \ln[A]_{0} = -kt \; (1^{st} \; order)$ $\frac{1}{[A]_{t}} - \frac{1}{[A]_{0}} = kt \; (2^{nd} \; order)$ $t_{1/2} = \frac{0.693}{k} \; (1^{st} \; order)$ 10 VIIIB 11 IB 12 IIB				8 3.44		10	
2	Li Lithium 6.94	Be																Ne
_		Beryllium 9.01			c = 2.998									Carbon 12.01	Nitrogen 14.01	Oxygen 16.00	Fluorine 19.00	Neon 20.18
	0.51	3.01		Boltzmann Constant Charge on a Proton/Electron										12.01	11.01		13.00	20.10
3	11 0.93 Na Sodium 22.99	12 1.31	Planck's Constant Specific heat cap. of H ₂ O ₍₁₎ 3 IIIB 4 IVB		h = 6.626					$\frac{1}{[A]_t}$				13 1.61 14 1.90 Al Si Aluminium 26.98 Silicon 28.09		16 2.38	17 3.16 18 Ar Cl ₂ Argo	_
		Mg			c = 4.18 k.					t_{1}						S Sulfur		
		Magnesium 24.31			5 VB					10 VIIIB						Phosphorus Sulfur 30.97 32.06		Argon 39.95
	10 000	20 1.00				24 1.66					29 1.90		01 101	22 0.01	22 242	24 0.55	25 0.00	26 0.00
4	19 0.82 K	20 1.00 Ca	21 1.36 Sc	22 1.54 Ti	23 1.63 V	Cr*	25 1.55 Mn	26 1.83 Fe	27 1.88 Co	28 1.91 Ni	Cu*	30 1.65 Zn	31 1.81 Ga	32 2.01 Ge	33 2.18 As	34 2.55 Se	35 2.96 Br ₂	36 3.00 Kr
	Potassium	Calcium	Scandium	II I Titanium	V Vanadium	Chromium	Manganese	Iron	Cobalt	Nickel	Cun	$Z_{\text{inc}}^{(2+)}$	Gallium	Germanium	Arsenic	Selenium	Bromine	Krypton
	39.10	40.08	44.96	47.87	50.94	52.00	54.94	55.85	58.93	58.69	63.55	65.38	69.72	72.63	74.92	78.97	79.90	83.80
5	37 0.82 Rb	38 0.95 Sr	39 1.22	40 1.33	41 1.6	42 2.16	43 1.9	44 2.2	45 2.28	46 2.20	47 1.93	48 1.69	49 1.78	50 1.96	51 2.05	52 2.1	53 2.86	54 2.60
			Υ	Zr	Nb★	Mo★	Tc	Ru★	Rh★	Pd**	Ag★	Cd	In	Sn	Sb	Te	I_2	Xe
J	Rubidium	Strontium	Yttrium	Zirconium	Niobium	Molybdenum	Technetium	Ruthenium	Rhodium	Palladium	Silver ⁽¹⁺⁾	Cadmium	Indium	Tin	Antimony	Tellurium	lodine	Xenon
	85.47	87.62	88.91	91.22	92.91	95.95	(98)	101.07	102.91	106.42	107.87	112.41	114.82	118.71	121.76	127.60	126.90	131.29
	55 0.79	56 0.89	57-71	72 1.3	73 1.5	74 2.36	75 1.9	76 2.2	77 2.20	78 2.28	79 2.54	80 2.00	81 1.62	82 1.87	83 2.02	84 2.0	85 2.2	86 2.2
6	Cs	Ba	La-Lu	Hf	Ta	W	Re	Os	<u>lr</u>	Pt*	Au*	Hg	TI	Pb	Bi	Po Polonium	At Actating	Rn Radon
	Caesium 132.91	Barium 137.33	Lanthanide	Hafnium 178.49	Tantalum 180.95	Tungsten 183.84	Rhenium 186.21	Osmium 190.23	Iridium 192.22	Platinum 195.08	Gold 196.97	Mercury 200.59	Thallium 204.38	Lead 207.2	Bismuth 208.98	(209)	Astatine (210)	(222)
				104						110							117	
	87 0.7 Fr	88 0.9 Ra	89-103	104 Rf	105 Db	106	107 Bh	Hs	108 109 Hs Mt	Ds	111 P or	112 Cn	113 Nh	114 F	115 Mc	116 Lv	117 Ts	118
7	Francium	Radium	Ac-Lr Actinide	Rutherfordium	Dubnium	Seaborgium	Bohrium	Hassium	Meitnerium	Darm-	Rg Roentgenium	Copernicium	Nihonium	Flerovium	Moscovium	L V Livermorium	Tennessine	Og Ogannesson
	(223)	(226)	, tellinge	(267)	(268)	(269)	(270)	(277)	(278)	stadtium (281)	(282)	(285)	(286)	(289)	(290)	(293)	(294)	(294)
		lkali Metal		57 1.1	58 1.10	59 1.13	60 1.14	61 1.13	62 1 17	63 1.2	64 1.2	65 1.1	66 1.22	67 1 22	68 1 24	60 1.25	70 11	71 1.27
	Alkaline-Earth Metal Metalloid Non-metal		Z E.N. Sym	57 1.1 La	58 1.12 Ce	Pr	Nd	Pm	62 1.17 Sm	Eu	Gd	Tb	66 1.22 Dy	67 1.23 Ho	68 1.24 Er	69 1.25 Tm	70 1.1 Yb	Lu
			Name :	Lanthanum	Cerium	Praseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium	Lutetium
			mass .	138.91	140.12	140.91	144.24	(145)	150.36	151.96	157.25	158.93	162.50	164.93	167.26	168.93	173.05	174.97
	Halogen Noble Gas			89 1.1	90 1.3	91 1.5	92 1.38	93 1.36	94 1.28	95 1.13	96 1.28	97 1.3	98 1.3	99 1.3	100 1.3	101 1.3	102 1.3	103 1.3
	Lanthanide/Actinide		Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	
	Synthetic ★ Aufbau Exception		Actinium	Thorium	Protactinium	Uranium	Neptunium	Plutonium	Americium	Curium	Berkelium	Californium	Einsteinium	Fermium	Mendelevium	Nobelium	Lawrencium	
	•			(227)	232.04	231.04	238.03	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(266)