

Some Chemical Formulas and Physical Values that All Their Ordainments belong to Allah

Density = $d = m / V$

Surface Pressure with solids, liquids and gases = $P = F / A$

Kelvin Temperature Scaling: $K = °C + 273,15$

Fahrenheit Temperature Scaling: $F = (9/5 \cdot °C) + 32$

[Therefore, $1 °C = 32 °F \approx 273 °K$]

Ideal Gas Equation $\rightarrow P \cdot V = n \cdot R \cdot T$ (T, Kelvin and look for R ifor the values)

The Pressure of the liquid with height : $P = P_0 + dgh$

[d:density, g:gravity accleration, h:height P₀:pressure (i.e.air pressure)]

Heat: $Q = m \cdot c \cdot \Delta t$

If there is a state-changing : $Q = m \cdot L$

Molarite=M= $\frac{n(\text{molar number of the soluted matter})}{V(\text{Volume of the solution})}$

Normally, for a Neutral Atom ;

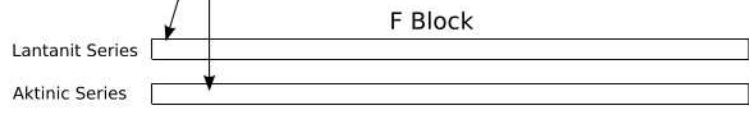
Atom Number (as a terim) = proton number = nucleus

charge = elektron number

Periyodik Table

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		Groups' Numbers																			
		1A	2A											3A	4A	5A	6A	7A	8A		
Periyot' Numbers	1	H	He																		
	2	Li	Be											B	C	N	O	F	Ne		
	3	Na	Mg	1B	2B	3B	4B	5B	6B	7B	8B	9B	10B	Al	Si	P	S	Cl	Ar		
	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	Te	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	Unh	Uns													



Generally The Groups are

- 1A Alkali Metals
- 2A Toprak Alkali Metaller
- 7A Halogens
- 8A Inert Gases
- B Geçiş Elementleri / Metalleri

Generally the Blocks are

- *s(excludig H), d ve f blocks' elements are metals.
- *In p block: Ge, As, Sb, Te ve Po are half-metal
- *Al, Ga, In, Tl, Sn, Pb and Bi are metals.
- *The others are ametals.

<u>(generally) In the I direction :</u>	<u>(generally) In the II direction :</u>
Metality increases	Generally atomic rad..decreases.
Ametality decreases	Ametality increases
İyonlaşma enerjisi düşer.	Metality increases
Elektronegativty increases.	Elektronegativty decreases
	İonisation energy increases.

About Reactions:

If; $aA_{(g)} + bB_{(g)} \leftrightarrow cC_{(g)} + dD_{(g)}$ is in balance,

$$K = \frac{[C]^c [D]^d}{[A]^a [B]^b}$$

But if there is a solid solution like:

$AB_{(s)} \leftrightarrow aA^+ + bB^-$ Then $K_s = [A^a][B^b]$

$K_{water} = [H^+][OH^-]$ ve $K_{water} = 1.10^{-14}$ (25 C, standart e.)

$pH = -\log[H^+]$ For instance, for the water:

$$pH = -\log 1.10^{-7} = -(-7) = 7$$

$$pOH'ta = -\log [OH^-] = -\log (1.10^{-7}) = 7$$

Therefore in acidic environment $pH < 7$

in basic environment $pH > 7$

Generally (-although several exceptions available-), for the speed of sound:

$$V_{\text{sound solid}} > V_{\text{sound liquid}} > V_{\text{sound gas}}$$

Photosentesis :



[Chlorofile, Sun light]

The Diffision speed of the gases of the same environment: $\frac{V_1}{V_2} = \sqrt{\frac{M_2}{M_1}}$

$$\Delta H = H_{\text{product}} - H_{\text{ingredient}}$$

In Exhothemic reaction: Giving heat ($\Delta H < 0$)

Endoothermic reaction : Taking heat ($\Delta H > 0$)

Some Physical Values:

Gravity Formula Value = $G = 6,67 \cdot 10^{-11} \text{ Nm}^2 / \text{kg}^2$

Avagadro Number = $N_A = 6,022 \cdot 10^{23} \text{ tane (1 mol)}$

Amu (atomic mass unit) = $1,606 \cdot 10^{-27} \text{ kg}$

Approximate elektron mass = $m = 9,109 \cdot 10^{-31} \text{ kg}$

Elekt.Charge Force Formula Value= $K = 9,00 \cdot 10^9 \text{ Nm}^2 / \text{C}^2$

By Boltzman, $k = R / N_A = 1,380 \cdot 10^{-23} \text{ J/moleculeK}$

By Plank, the h value = $6,626 \cdot 10^{-34} \text{ Js} \approx 4,14 \cdot 10^{-15} \text{ eVs}$

Charge of an elektron = $e = 1,602 \cdot 10^{-19} \text{ C}$

Gas Formula Value = $R = 8,314 \cdot 10^3 \text{ J/K.mol}$

Normal Condition 0 C and 1 atm pressure

In Normal cond, the pressure of 1 mol gas is about 22,4 lt

Sea level Approximate (accepted)Pressure $1,013 \cdot 10^5 \text{ N/m}^2$

Average Approx. gravity of Earth = $g \approx 9,80 \text{ m / sn}^2$

Approx. Mass of Earth = $M = 5,98 \cdot 10^6 \text{ kg}$

Approx. Mass of Sun = $M = 1,987 \cdot 10^{30} \text{ kg}$

Approx. Mass of Moon = $M_{\text{moon}} = 7,343 \cdot 10^{22} \text{ kg}$

Average Approx. Earth-Sun Distance $\approx 1,49 \cdot 10^8 \text{ km}$

Approx. Speed of Sound in air = 331 m / sn^2

Approx. Speed of Sound in water = 1460 m / sn^2

Value	Prefix	Abbrev.	Value	Prefix	Abbrev.
10	Deca	da	10 ⁻¹	Deci	d
100	Hecto	h	10 ⁻²	Centi	c
1000	Kilo	k	10 ⁻³	Mili	m
10 ⁶	Mega	M	10 ⁻⁶	Micro	μ
10 ⁹	Giga	G	10 ⁻⁹	Nano	n
10 ¹²	Tera	T	10 ⁻¹²	Pico	p