

GRUPPO

1	1,0079	H
-258,1	-252,9	
8,879 Lg.		

3	6,941	4	9,01218	2
180,5	1278	2979,799x		
1347				
8,534	Li	1,85	Be	

(della²)
Lito

Berillio

(della²)
Sodio

Magnesio

(della²)
Potassio

(della²)
Calcio

(della²)
Scandio

(della²)
Titano

(della²)
Vandio

(della²)
Cromo

(della²)
Manganese

(della²)
Ferro

(della²)
Cobalto

(della²)
Nickel

(della²)
Rutenio

(della²)
Molibdeno

(della²)
Tecnasio

(della²)
Ruthenio

(della²)
Rodium

(della²)
Palladio

(della²)
Argento

(della²)
Cadmio

(della²)
Indio

(della²)
Stagno

(della²)
Antimonio

(della²)
Tellurio

(della²)
Iodio

(della²)
Atomo

(della²)
Rado

(della²)
Francio

(della²)
Radio

(della²)
Atomo

(della²)
Protactinio

(della²)
Tono

TAVOLA PERIODICA DEGLI ELEMENTI

20	40,08	21	44,9559	22	47,88	23	50,9415	24	51,996	25	54,9380	26	55,847	27	58,9332	28	58,89	29	63,546	30	65,38	31	69,72	32	72,59	33	74,9216	34	78,96	35	79,904																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
63,6	1	1541	1560	4,3	1890	5,4,3,2	1857	1244	6,3,2	1532	3,2	1495	1453	1532	1495	1453	1083,4	1103,6	29,78	31,0	51,217,5	52,126,0	53,126,05	54,126,05	55,126,05	56,126,05	57,126,05	58,126,05	59,126,05	60,126,05	61,126,05	62,126,05	63,126,05	64,126,05	65,126,05	66,126,05	67,126,05	68,126,05	69,126,05	70,126,05	71,126,05	72,126,05	73,126,05	74,126,05	75,126,05	76,126,05	77,126,05	78,126,05	79,126,05	80,126,05	81,126,05	82,126,05	83,126,05	84,126,05	85,126,05	86,126,05	87,126,05	88,126,05	89,126,05	90,126,05	91,126,05	92,126,05	93,126,05	94,126,05	95,126,05	96,126,05	97,126,05	98,126,05	99,126,05	100,126,05	101,126,05	102,126,05	103,126,05	104,126,05	105,126,05	106,126,05	107,126,05	108,126,05	109,126,05	110,126,05	111,126,05	112,126,05	113,126,05	114,126,05	115,126,05	116,126,05	117,126,05	118,126,05	119,126,05	120,126,05	121,126,05	122,126,05	123,126,05	124,126,05	125,126,05	126,126,05	127,126,05	128,126,05	129,126,05	130,126,05	131,126,05	132,126,05	133,126,05	134,126,05	135,126,05	136,126,05	137,126,05	138,126,05	139,126,05	140,126,05	141,126,05	142,126,05	143,126,05	144,126,05	145,126,05	146,126,05	147,126,05	148,126,05	149,126,05	150,126,05	151,126,05	152,126,05	153,126,05	154,126,05	155,126,05	156,126,05	157,126,05	158,126,05	159,126,05	160,126,05	161,126,05	162,126,05	163,126,05	164,126,05	165,126,05	166,126,05	167,126,05	168,126,05	169,126,05	170,126,05	171,126,05	172,126,05	173,126,05	174,126,05	175,126,05	176,126,05	177,126,05	178,126,05	179,126,05	180,126,05	181,126,05	182,126,05	183,126,05	184,126,05	185,126,05	186,126,05	187,126,05	188,126,05	189,126,05	190,126,05	191,126,05	192,126,05	193,126,05	194,126,05	195,126,05	196,126,05	197,126,05	198,126,05	199,126,05	200,126,05	201,126,05	202,126,05	203,126,05	204,126,05	205,126,05	206,126,05	207,126,05	208,126,05	209,126,05	210,126,05	211,126,05	212,126,05	213,126,05	214,126,05	215,126,05	216,126,05	217,126,05	218,126,05	219,126,05	220,126,05	221,126,05	222,126,05	223,126,05	224,126,05	225,126,05	226,126,05	227,126,05	228,126,05	229,126,05	230,126,05	231,126,05	232,126,05	233,126,05	234,126,05	235,126,05	236,126,05	237,126,05	238,126,05	239,126,05	240,126,05	241,126,05	242,126,05	243,126,05	244,126,05	245,126,05	246,126,05	247,126,05	248,126,05	249,126,05	250,126,05	251,126,05	252,126,05	253,126,05	254,126,05	255,126,05	256,126,05	257,126,05	258,126,05	259,126,05	260,126,05	261,126,05	262,126,05	263,126,05	264,126,05	265,126,05	266,126,05	267,126,05	268,126,05	269,126,05	270,126,05	271,126,05	272,126,05	273,126,05	274,126,05	275,126,05	276,126,05	277,126,05	278,126,05	279,126,05	280,126,05	281,126,05	282,126,05	283,126,05	284,126,05	285,126,05	286,126,05	287,126,05	288,126,05	289,126,05	290,126,05	291,126,05	292,126,05	293,126,05	294,126,05	295,126,05	296,126,05	297,126,05	298,126,05	299,126,05	300,126,05	301,126,05	302,126,05	303,126,05	304,126,05	305,126,05	306,126,05	307,126,05	308,126,05	309,126,05	310,126,05	311,126,05	312,126,05	313,126,05	314,126,05	315,126,05	316,126,05	317,126,05	318,126,05	319,126,05	320,126,05	321,126,05	322,126,05	323,126,05	324,126,05	325,126,05	326,126,05	327,126,05	328,126,05	329,126,05	330,126,05	331,126,05	332,126,05	333,126,05	334,126,05	335,126,05	336,126,05	337,126,05	338,126,05	339,126,05	340,126,05	341,126,05	342,126,05	343,126,05	344,126,05	345,126,05	346,126,05	347,126,05	348,126,05	349,126,05	350,126,05	351,126,05	352,126,05	353,126,05	354,126,05	355,126,05	356,126,05	357,126,05	358,126,05	359,126,05	360,126,05	361,126,05	362,126,05	363,126,05	364,126,05	365,126,05	366,126,05	367,126,05	368,126,05	369,126,05	370,126,05	371,126,05	372,126,05	373,126,05	374,126,05	375,126,05	376,126,05	377,126,05	378,126,05	379,126,05	380,126,05	381,126,05	382,126,05	383,126,05	384,126,05	385,126,05	386,126,05	387,126,05	388,126,05	389,126,05	390,126,05	391,126,05	392,126,05	393,126,05	394,126,05	395,126,05	396,126,05	397,126,05	398,126,05	399,126,05	400,126,05	401,126,05	402,126,05	403,126,05	404,126,05	405,126,05	406,126,05	407,126,05	408,126,05	409,126,05	410,126,05	411,126,05	412,126,05	413,126,05	414,126,05	415,126,05	416,126,05	417,126,05	418,126,05	419,126,05	420,126,05	421,126,05	422,126,05	423,126,05	424,126,05	425,126,05	426,126,05	427,126,05	428,126,05	429,126,05	430,126,05	431,126,05	432,126,05	433,126,05	434,126,05	435,126,05	436,126,05	437,126,05	438,126,05	439,126,05	440,126,05	441,126,05	442,126,05	443,126,05	444,126,05	445,126,05	446,126,05	447,126,05	448,126,05	449,126,05	450,126,05	451,126,05	452,126,05	453,126,05	454,126,05	455,126,05	456,126,05	457,126,05	458,126,05	459,126,05	460,126,05	461,126,05	462,126,05	463,126,05	464,126,05	465,126,05	466,126,05	467,126,05	468,126,05	469,126,05	470,126,05	471,126,05	472,126,05	473,126,05	474,126,05	475,126,05	476,126,05	477,126,05	478,126,05	479,126,05	480,126,05	481,126,05	482,126,05	483,126,05	484,126,05	485,126,05	486,126,05	487,126,05	488,126,05	489,126,05	490,126,05	491,126,05	492,126,05	493,126,05	494,126,05	495,126,05	496,126,05	497,126,05	498,126,05	499,126,05	500,126,05	501,126,05	502,126,05	503,126,05	504,126,05	505,126,05	506,126,05	507,126,05	508,126,05	509,126,05	510,126,05	511,126,05	512,126,05	513,126,05	514,126,05	515,126,05	516,126,05	517,126,05	518,126,05	519,126,05	520,126,05	521,126,05	522,126,05	523,126,05	524,126,05	525,126,05	526,126,05	527,126,05	528,126,05	529,126,05	530,126,05	531,126,05	532,126,05	533,126,05	534,126,05	535,126,05	536,126,05	537,126,05	538,126,05	539,126,05	540,126,05	541,126,05	542,126,05	543,126,05	544,126,05	545,126,05	546,126,05	547,126,05	548,126,05	549,126,05	550,126,05	551,126,05	552,126,05	553,126,05	554,126,05	555,126,05	556,126,05	557,126

PROPRIETA' PERIODICHE DEGLI ELEMENTI CHIMICI

Raggio atomico
Energia di ionizzazione
Affinità elettronica

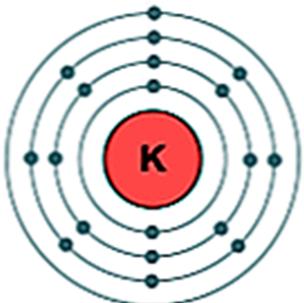
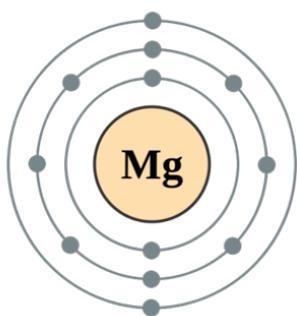
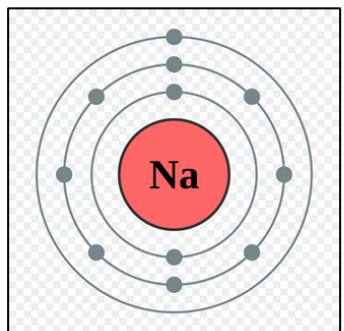
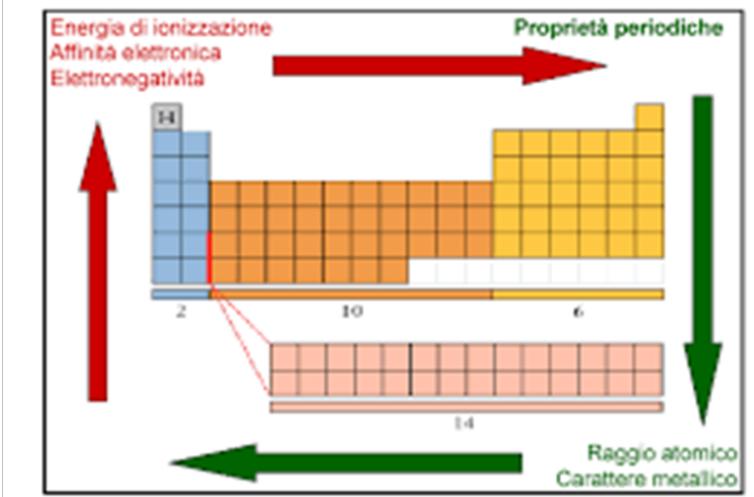
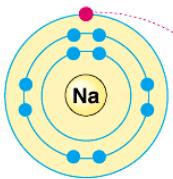


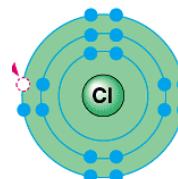
TAVOLA PERIODICA DEGLI ELEMENTI																	
GAS NUBILI																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H	He	Li	Be	Na	Mg	K	Ca	Fr	Rb	Sc	Ti	Cr	Mn	Fe	Co	Ni	Zn
Hydrogeno	Helio	Litio	Borico	Sodio	Magnesio	Calio	Sodio	Fr	Rame	Scandio	Titanio	Cromo	Manganese	Irono	Cobalto	Nickel	Zinco
1.008	4.003	6.941	9.012	11.999	12.990	19.99	24.31	39.09	35.45	21.00	24.31	54.94	55.85	58.71	63.55	65.41	69.72
1.008	4.003	6.941	9.012	11.999	12.990	19.99	24.31	39.09	35.45	21.00	24.31	54.94	55.85	58.71	63.55	69.72	69.94
1.008	4.003	6.941	9.012	11.999	12.990	19.99	24.31	39.09	35.45	21.00	24.31	54.94	55.85	58.71	63.55	69.72	69.94
1.008	4.003	6.941	9.012	11.999	12.990	19.99	24.31	39.09	35.45	21.00	24.31	54.94	55.85	58.71	63.55	69.72	69.94



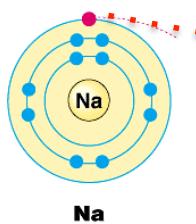
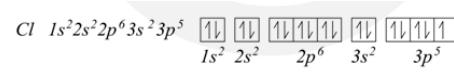
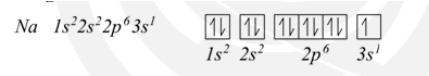
LEGAME IONICO



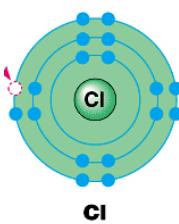
Na



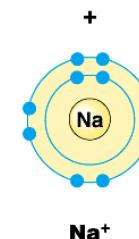
Cl



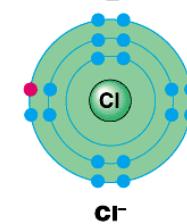
Na



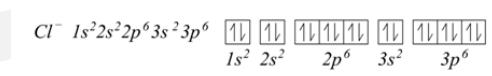
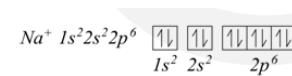
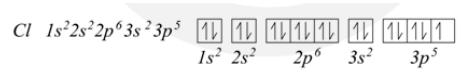
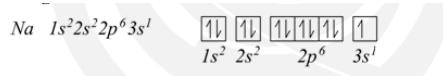
Cl



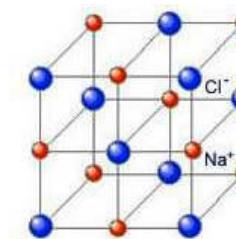
Na⁺



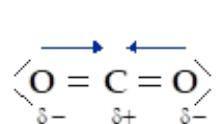
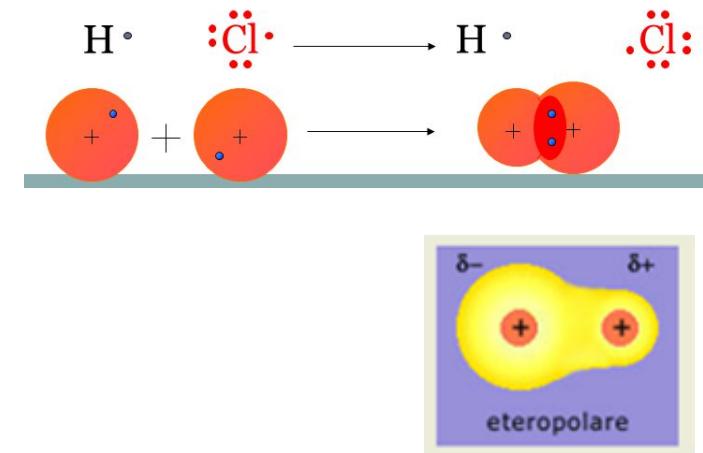
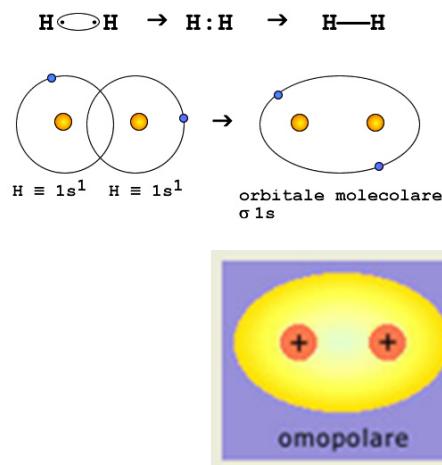
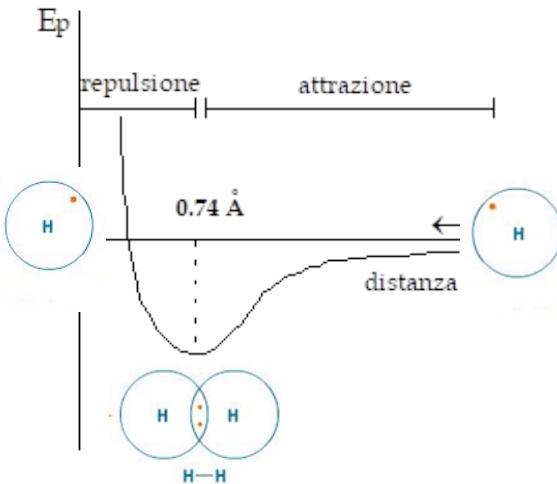
Cl⁻



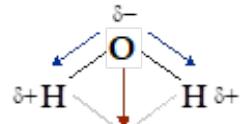
$$F = \frac{q_1 \cdot q_2}{4 \pi \epsilon r^2}$$



LEGAME COVALENTE



molecola apolare
(nessun dipolo)



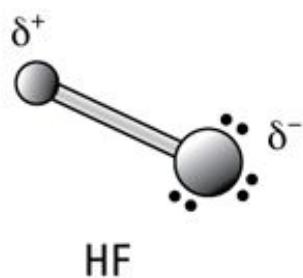
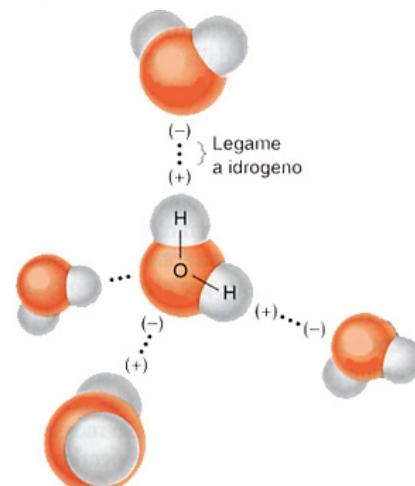
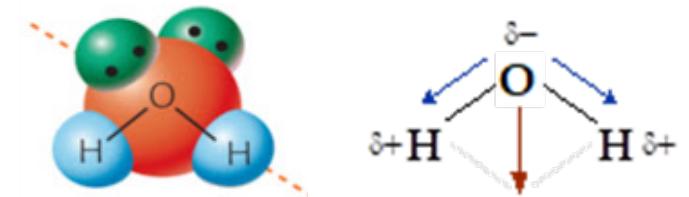
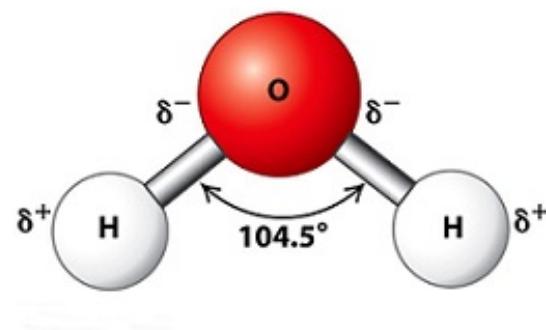
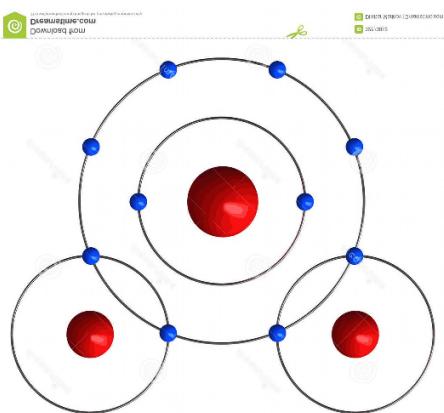
molecola polare
(dipolo elettrico)

Alcuni valori di elettronegatività

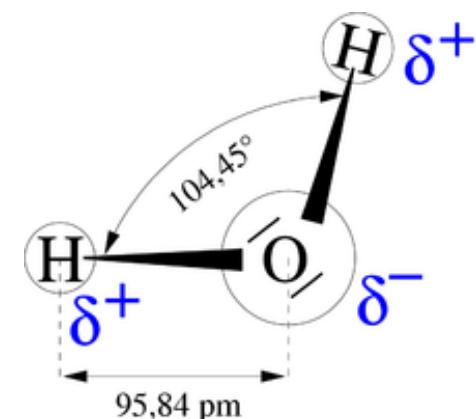
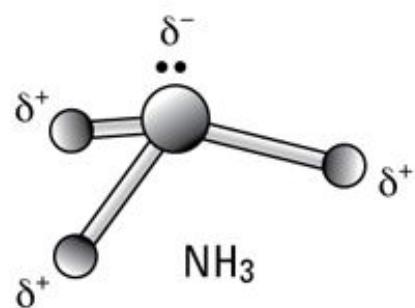
Elettronegatività di alcuni elementi secondo Pauling							
H 2.1							
Li 1.0	Be 1.5		B 2.0	C 2.5	N 3.0	O 3.5	F 4.0
Na 0.9	Mg 1.2		Al 1.5	Si 1.8	P 2.1	S 2.5	Cl 3.0
K 0.8	Ca 1.0				As 2.0	Se 2.4	Br 2.8
						Te 2.1	I 2.5

ΔEN	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8
% ionicità	1	4	9	15	22	30	39	47	56	63	70	76	82	86

LEGAME IDROGENO

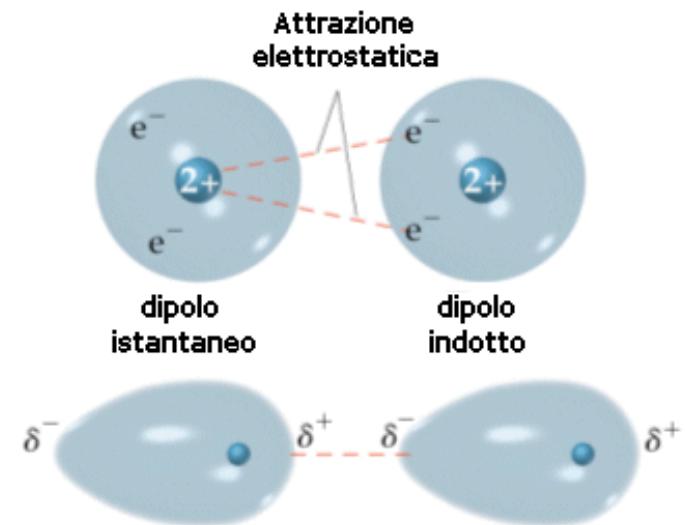
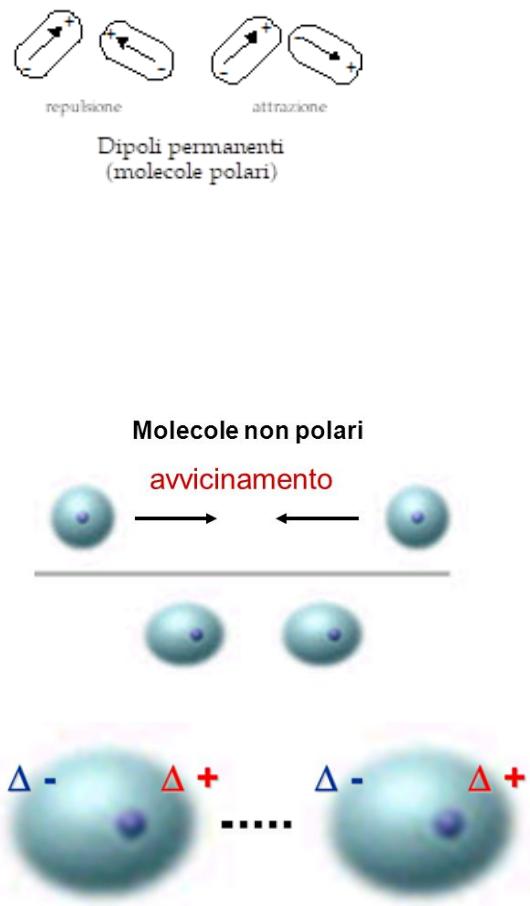


LEGAMI IDROGENO



NO LEGAMI IDROGENO

FORZE DEBOLI DI VAN DER WAALS



SOLUZIONI E CALCOLO DELLA CONCENTRAZIONE

METODO PERCENTUALE: (attenzione alle unità di misura)

% p/v il peso (p) si riferisce al soluto
 il volume (v) al totale della soluzione

$$molarità = \frac{\text{moli di soluto}}{\text{litri di soluzione}}$$

% p/p il peso(p) a numeratore si riferisce al soluto
 il peso(p) a denominatore si riferisce al totale della soluzione

$$n^o \text{ moli} = \frac{\text{massa sostanza (g)}}{M_m (\text{g/mole})}$$

% v/v il volume (v) a numeratore si riferisce al soluto
 il volume (v) a denominatore si riferisce al totale della soluzione

$$molarità = \frac{\text{moli di soluto}}{\text{kg di solvente}}$$

Soluzione fisiologica: 0,9% p/v di NaCl

in 100mL di soluzione ci sono 0,9 g di NaCl
in 100L di soluzione ci sono 0,9 Kg di NaCl
in 100hL di soluzione ci sono 0,9q di NaCl

Calcolare la concentrazione in % p/v di una soluzione preparata con 90g di NaCl (volume soluzione 10L):

$$\% \text{ p/v} = (\text{grammi soluto (90g NaCl}) / \text{volume soluzione (10L)}) \times 100 = (90g / 10000mL) \times 100 = 0,9\% \text{ p/v}$$

Preparare 10 litri di una soluzione 0,9% p/v di NaCl

$$\% \text{ p/v} = (\text{grammi soluto (NaCl}) / \text{volume soluzione (10L)}) \times 100 = 0,9 \longrightarrow \text{NaCl(g)} = 0,9 \times 10000 / 100 = 90g$$

Si pesano 90g di NaCl, si mettono in un contenitore graduato e si aggiunge acqua fino al volume di 10L