Atomic Weights / Molar Mass

- Weights are listed in the periodic table without units.
- The weight listed is the average mass of one atom of each element, in amu.
- Avogadro's number is how many AMU sized things fit into a gram:

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1 gram ÷ 1.6606 x 10<sup>-24</sup> grams = 6.022 x 10<sup>23</sup>
1 gram ÷ 1 amu = 1 mol
1 gram = 1 mol x 1 amu
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That means:



1 mol of *anything* will weigh in grams, what a single of that *anything* weighs in amu.

- If a cat weighs X amu, a mol of cats weighs X grams.
- That means each weight in the periodic table is:
 - the weight of 1 atom of that element, in amu
 - the weight of 1 mol of that element, in grams
- Reading from the periodic table...
 - a hydrogen atom (H) weighs 1.008 amu
 - a mol of hydrogen atoms (H) weigh 1.008 g
 - a copper atom (Cu) weighs 63.55 amu
 - a mol of copper atoms (Cu) weighs 63.55 g

	1A 1																	8A 18
1	1 H	2A 2											3A 13	4A 14	5A 15	6A 16	7A 17	2 He
2	3 Li	4 Be											5 B	6 C	7 N	8 0	9 F	10 Ne
3	11 Na	12 Mg	3B 3	$^{4\mathrm{B}}_{4}$	5B 5	6B 6	7B 7	8	<u>8B</u> 9	10	1B 11	2B 12	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112	113	114	115	116		118
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		Metals Metalloids		57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	
				89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	
		Nonn	netals															,
		,																



1 H = 1.008 amu 1 mol H = 1.008 g 1 Cu = 63.55 amu 1 mol Cu = 63.55 g