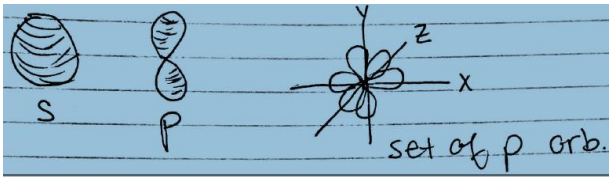
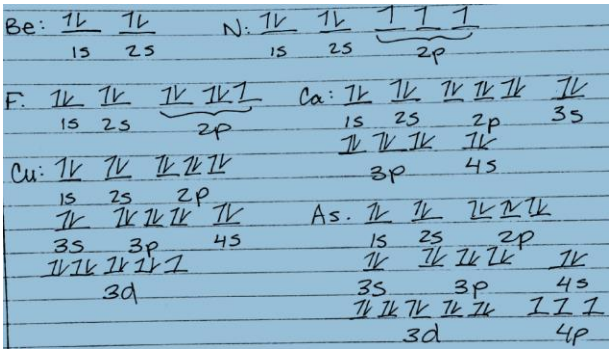
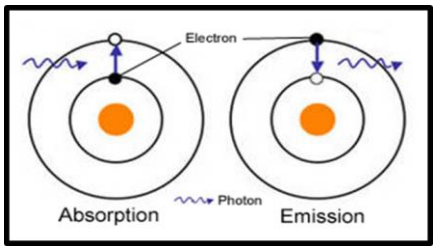
Exam 1 Practice Qs Answer Key *(last updated: 9/24/2018)*

1	**Democritus** - “atomos” -- everything is made up of small particles **Aristotle** - everything is made of small particles of “elementals” -- earth, air, fire, water aether **Dalton** -- billiard ball model **Thompson** -- discovered electrons, plum pudding/chocolate chip cookie model **Rutherford** - nucleus is a positive, dense center, the rest of the atom is mostly empty space **Bohr** - energy “rings” **Schrodinger** - wave equation “orbitals” create an electron “cloud” around the nucleus **Chadwick** - neutron in the center of the nucleus **We did not go over de Broglie and Heisenburg this year. (2018)*
2	See notebook page with model drawings
3	Vanadium-75
4	Lithium-7
5	$p^+ = 47$, $n^0 = 62$, $e^- = 47$
6	$p^+ = 19$, $n^0 = 21$, $e^- = 19$
7	e^- weigh the least, p^+ and n^0 are almost the same
8	Red, orange, yellow, green, blue, purple LOW HIGH
9	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
10	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$
11	3.29×10^5
12	8.96×10^{-6}
13	2700 g
14	8.54×10^8

15	Hecto
16	Kilo
17	20454.5 mi/day (if m→ in → ft → mi) 20458.9 mi/day (if m → km → mi)
18	375.5 yd/min
19	4.13 kg
20	4.8×10^6 mm
21	2.4×10^4 mm
22	22.05 in
23	0.012 in
24	“Probability cloud” → an area in which an electron is likely to be found.
25	s = 1 orbital, p = 3 orbitals, d = 5 orbitals, f = 7 orbitals
26	
27	2, 6, 10, 14
28	
29	K^+, Cl^-, O^{2-}, Mg^{2+}, P^{3-}
30	K: $p^+ = 19$, $n^0 = 20$, $e^- = 19$ K^+: $p^+ = 19$, $n^0 = 20$, $e^- = 18$

	Cl: $p^+ = 17$, $n^0 = 18$, $e^- = 17$ Cl^{-}: $p^+ = 17$, $n^0 = 18$, $e^- = 18$ O: $p^+ = 8$, $n^0 = 8$, $e^- = 8$ O^{2-}: $p^+ = 8$, $n^0 = 8$, $e^- = 10$ Mg: $p^+ = 12$, $n^0 = 12$, $e^- = 12$ Mg^{2+}: $p^+ = 12$, $n^0 = 12$, $e^- = 10$ P: $p^+ = 15$, $n^0 = 16$, $e^- = 15$ P^{3-}: $p^+ = 15$, $n^0 = 16$, $e^- = 18$
31	He: $1s^2$ S: $1s^2 2s^2 2p^6 3s^2 3p^4$ K: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$ Cu: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^9$ Se: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^4$ H: $1s^1$ V: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$ Br: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^1 4p^5$
32	Co, Ga
33	6.02×10^{23} particles
34	$Ca(OH)_2$ = 74.1 g/mol K_2SO_4 = 174.3 g/mol $(NH_4)_2S$ = 68.1 g/mol Ag = 107.8 g/mol
35	0.2 mol
36	0.75 mol
37	851.25 g
38	4.86 g
39	1.51×10^{25} molecules
40	3.79×10^{23} atoms

41	1.56×10^{24} atoms
42	1.8×10^{20} molecules
43	
44	Energy in the form of light (photon)
45	We gave atoms energy with Bunsen burners. Electrons were pushed to excited states and when they fell down to ground state, they emitted colored light. The light was different colors because energy gaps were varied in sizes, so the amount of energy emitted was different. Depending on the color we saw, we could match it with a known element color or spectra.