

Directions: First 40 minutes with your partner, non-programmable calculator and no notes; next 10 minutes with notes; remaining 25 minutes on the board.

1) Complete (Fill in) the following periodic table:

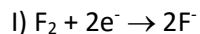
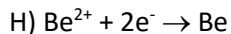
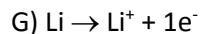
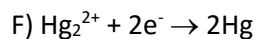
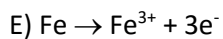
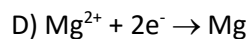
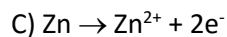
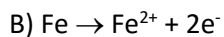
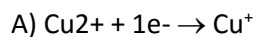
I		II												III	IV	V	VI	VII	VIII												
		The Periodic Table of the Elements																2 He Helium 4.00													
3 Li Lithium 6.94	4 Be Beryllium 9.01																	5 B Boron 10.81		7 N Nitrogen 14.01	8 O Oxygen 16.00		10 Ne Neon 20.18								
11 Na Sodium 22.99	12 Mg Magnesium 24.31																	13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95								
	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94		27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80														
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42		48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71		52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29														
55 Cs Cesium 132.91	56 Ba Barium 137.33	57 La Lanthanum 138.91	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08		80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)														
	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium 178.49	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (272)	112 Cn Copernicium (285)																				
																		58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.97
																		90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium 168.93	102 No Nobelium (259)	

2. Ba has how many protons? Electrons?

3. B has how many electrons in its valence shell?

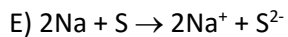
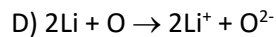
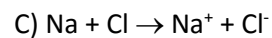
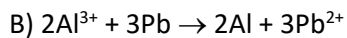
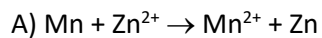
4) Sr has how many electrons in its valence shell?

5) Identify which of the following reactions are reduction or oxidation reactions:



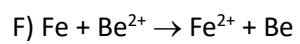
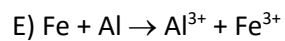
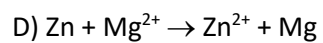
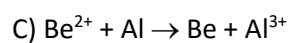
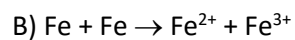
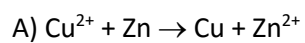
6) Why are the oxidation reactions oxidation? Why are the reduction reactions reduction? If you had to come up with a mnemonic for these two kinds of reactions, what would it be and why? How does your mnemonic work?

7) Given the following reactions, determine which reactant is oxidized and which reactant is reduced:



8) Based on your responses to #7, above, which reactant is the oxidizing agent and which reactant is the reducing agent?

9) Based upon your new understanding of "simple" redox reactions, balance the following reactions:



10) There are two isotopes of Lithium: ${}^6\text{Li}$ and ${}^7\text{Li}$. There's 12 times as much ${}^7\text{Li}$ as ${}^6\text{Li}$. What is the average mass of Li?

11) There are three isotopes of Magnesium: ${}^{24}\text{Mg}$, ${}^{25}\text{Mg}$ and ${}^{26}\text{Mg}$. There's 8 times as much ${}^{24}\text{Mg}$ as there is ${}^{25}\text{Mg}$ and ${}^{26}\text{Mg}$. What is the average mass of Mg?

12) There are two isotopes of Copper: ${}^{63}\text{Cu}$ and ${}^{65}\text{Cu}$. There's 2 times as much ${}^{63}\text{Cu}$ as ${}^{65}\text{Cu}$. What is the average mass of Cu?

13) There are three isotopes of Silicon: ${}^{28}\text{Si}$, ${}^{29}\text{Si}$ and ${}^{30}\text{Si}$. There's 20 times as much ${}^{28}\text{Si}$ as there is ${}^{29}\text{Si}$ and ${}^{30}\text{Si}$. What is the average mass of Si?

14) There are two isotopes of Silver: ^{107}Ag and ^{108}Ag . These isotopes are present in nature in equal amounts. What is the average mass of Ag?

15) There are 4 isotopes of Cadmium: ^{112}Cd , ^{113}Cd , ^{114}Cd and ^{115}Cd . Respectively, they are present, abundancy-wise in nature as, 3 parts ^{112}Cd , 2 parts ^{113}Cd , 4 parts ^{114}Cd and 1 part ^{115}Cd . What is the average mass of Cd?

Isotope Abundance Data source: http://www.ncsu.edu/ncsu/pams/chem/msf/pdf/IsotopicMass_NaturalAbundance.pdf, accessed 20 September 2015, 1555 hours PDT

16) Color the metals in the periodic table in #1 in light blue; the non-metals in yellow; the metalloids in light green (yes, you'll need colored pencils in class).

17) What is a cation?

18) What is an anion?

19) What are the two "magic numbers" for elements when they ionize? With which ionic form (cation or anion) do they align?

20) Draw your version of the atomic vs ionic radii for Be and Cs, below.

21) Do the same as in #20 for N and S, below.

22) The most electronegative element on the periodic table is:

23) The most electropositive element on the periodic table is:

24) Explain how your responses to #'s 22 and 23 are dependent upon the first ionization energy for both elements.

25) From your readings, select one topic that you didn't think was very clearly explained. Explain it to your comprehension satisfaction clearly and concisely in the space below (**ONLY in the space below!**).