

Work Session 2A: Atomic Makeup, Isotopes, Periodic Table

Name _____

Date _____

Grade _____

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1. Complete the chart:

Isotope Symbol	Atomic Number	Mass Number	# of Protons	# of Neutrons
$^{208}_{82}\text{Pb}$				
$^{210}_{82}\text{Pb}$				
	3	7		
			17	20
	9			10
		14	6	
	12	25		
	12			12
		235		143

2. Define the following terms.

atomic mass

atomic mass unit (amu)

atomic symbol

atomic number

mass number

isotope

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3. Silver has two isotopes. ^{107}Ag has an isotopic mass of 106.9051 amu, and an abundance of 51.84%. ^{109}Ag has an isotopic mass of 108.9047, and an abundance of 48.16%. What is the atomic mass of silver? Use significant digits correctly in questions 3 and 4.
4. Naturally occurring iron has four isotopes. The masses and % abundance are given in the table. What is the atomic mass of iron?

mass/amu	% abundance
53.9396	5.82
55.9349	91.66
56.9354	2.19
57.9333	0.33

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5. In the proper position on the following skeletal periodic table, write the symbol and atomic number for any element that does not directly come from the English name for the element. That is, Li comes from lithium, so don't write it, but Sb does not come from antimony, so write it in period 5, group 15. Write the name outside of the table, but near the symbol. Show the period and group at the appropriate place on the table for any entries.

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6. Write the symbols and atomic numbers for the metalloids in the following skeletal periodic table. Label the periods and groups where any symbol appears. Use both the number/letter designation and the (1 - 18) designation for the groups.

7. Use the above skeletal periodic table to write the symbols and atomic numbers of the transition elements and the inner transition elements. Show the period and group numbers for the entries.

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8. Use the following skeletal periodic table to write the symbols and atomic numbers of the main group elements. Show the period and group numbers for the entries. Indicate which are metals and which are nonmetals,

A skeletal periodic table grid consisting of empty boxes. The grid is structured as follows:

- Period 1: 2 boxes (H, He)
- Period 2: 8 boxes (Li, Be, B, C, N, O, F, Ne)
- Period 3: 8 boxes (Na, Mg, Al, Si, P, S, Cl, Ar)
- Period 4: 18 boxes (K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Br, Kr)
- Period 5: 18 boxes (Rb, Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Te, I, Xe)
- Period 6: 32 boxes (Cs, Ba, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Po, At, Rn)
- Period 7: 32 boxes (Fr, Ra, Ac, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr)

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9. Look up the elements that are shown as diatomic molecules. Show where they appear in the following periodic table. Show the period and group numbers for the entries.

The image shows a blank periodic table grid. The grid is composed of empty rectangular cells. The layout is as follows:

- Period 1: 2 cells (H, He)
- Period 2: 8 cells (Li, Be, B, C, N, O, F, Ne)
- Period 3: 8 cells (Na, Mg, Al, Si, P, S, Cl, Ar)
- Period 4: 18 cells (K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Br, Kr)
- Period 5: 18 cells (Rb, Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Te, I, Xe)
- Period 6: 32 cells (Cs, Ba, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Po, At, Rn)
- Period 7: 24 cells (Fr, Ra, Ac, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr)
- Period 8: 10 cells (Rf, Db, Sg, Bh, Hs, Mt, Ds, Rg, Cn, Nh)
- Period 9: 10 cells (Nh, Fl, Mc, Lv, Ts, Og)

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10. The names and symbols for elements 104 to 111 are:
 104: rutherfordium, Rf; 105: dubnium, Db; 106: seaborgium, Sg; 107: bohrium, Bh; 108: hassium, Hs; 109: meitnerium, Mt;
 110: darmstadtium, Ds; 111, roentgenium, Rg. Show these on the following table, using the symbols indicated. Show the period and the group for the entries. Element 112 will soon be made. If it was up to you, what would you name it? If element 118 is ever made, where will it be placed?
