Chem I Name _____

Date _____ Per ____

Matter and Atomic Structure Test Review

1. Given the following: wood, sucrose, oxygen gas (O_2), sugar in water, air, distilled water, 14-K gold, copper, granite, tin, brass (like our gold pennies), and ozone (O_3); which are

   a. homogeneous mixtures _____

   b. heterogeneous mixtures _____

   c. pure compounds_____

   d. elements _____

2. How can you tell the difference between a physical change and a chemical change?

_____

_____

3. What are the characteristics of a

   a. metal? _____

   b. non-metal? _____

   c. metalloid? _____

4. What are the 6 metalloids? (Give the symbols)

   _____ _____ _____

   _____ _____ _____

5. Don't forget these! Give the symbols for:

   antimony _____ copper _____ gold _____ iron _____

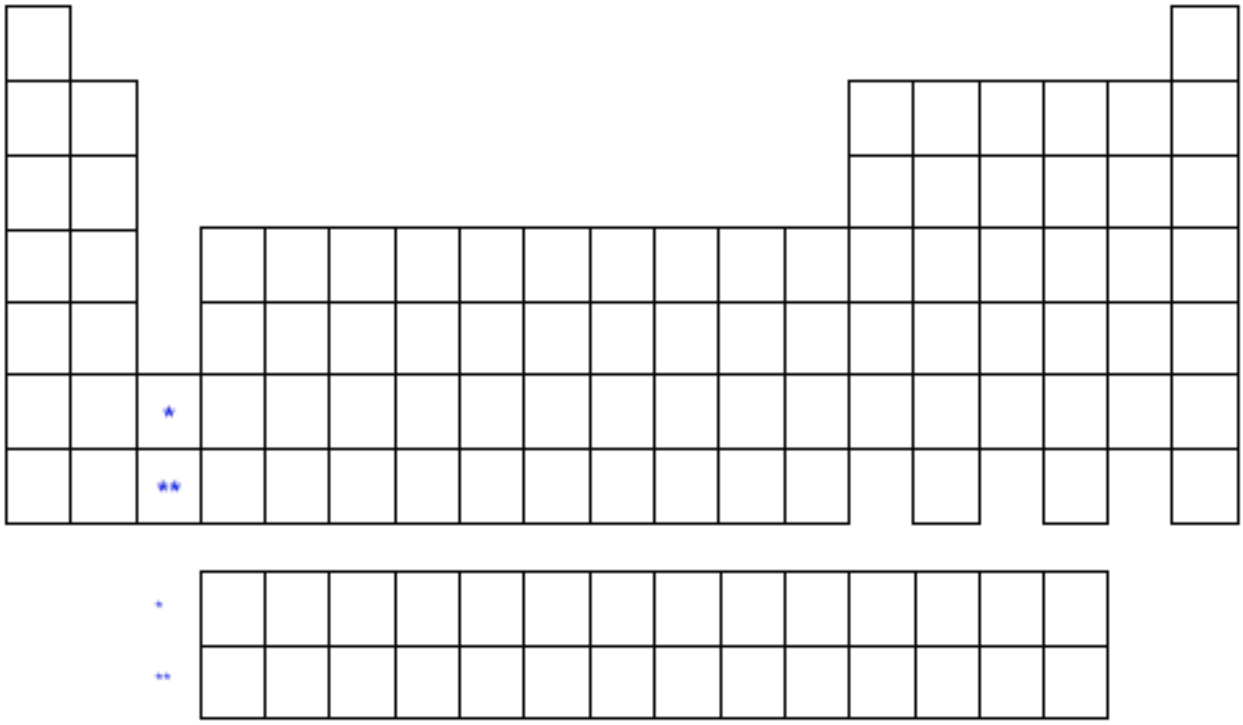
   lead _____ mercury _____ potassium _____ silver _____

   sodium _____ tin _____

   Any others you might have a hard time remembering:

Note: You WILL be given a periodic table with the names on it for the test. It's just a good idea to know these for the sake of speed.

6. Label the following on the periodic chart:
metalloids, metals, non-metals, noble gases, alkali metals, alkaline earth metals, halogens, lanthanoids, actinoids, hydrogen, transition metals



7. Make a quick sketch of the set-up for the distillation of ethyl alcohol:

8. What physical changes did you use to separate the heterogeneous mixture in the Mixture Separation lab?

_____

_____

_____

9. Nuclear Chemistry: Matching. Answers may be used once, more than once, or not at all.

a. protons	k. beta particles
b. neutrons	m. fusion
c. electrons	n. fission
d. protons + electrons	o. ton
e. protons + neutrons	p. kiloton
f. neutrons + electrons	q. microton
g. gamma rays	r. megaton
h. delta particles	s. gigaton
i. alpha particles	t. carbon-12
j. epsilon rays	u. carbon-14

_____ 1. In the symbol $^{11}_{5}\mathrm{B}$, the 11 represents the number of...

_____ 2. In the symbol $^{11}_{5}\mathrm{B}$, the 5 represents the number of...

_____ 3. It would take 1836 ____ to weigh the same as one proton.

_____ 4. Radiation products with this symbol: $^{1}_{0}\mathrm{n}$ are known as....

_____ 5. Radiation products with this symbol: $^{0}_{-1}\mathrm{e}$ are known as....

_____ 6. Radiation products with this symbol: $^{4}_{2}\mathrm{He}$ are known as....

_____ 7. Radiation products with this symbol: α are known as....

_____ 8. Radiation products with this symbol: γ are known as....

_____ 9. Radiation products with this symbol: β are known as....

_____ 10. Radiation products that can be stopped by your skin are known as ...

_____ 11. Have a neutral charge. (Another possible answer is _____.)

_____ 12. Have a +1 charge.

_____ 13. Have a +2 charge.

_____ 14. Have a -1 charge. (Another possible answer is _____)

_____ 15. Means “coming together”.

_____ 16. Means “splitting apart”.

_____ 17. Which produces more radioactive waste: fission or fusion?

10. What are isotopes? _____

_____

11. Use a periodic table to complete the following table (assume all the atoms are neutral):

Symbol	# of protons	# of neutrons	# of electrons
As			
	78		
		0	
			57

.

12. Carbon-12 would have ____ protons, _____ neutrons, and _____ electrons.

13. Carbon-14 would have ____ protons, _____ neutrons, and _____ electrons.

14. Calculate the average atomic mass of a sample of copper that is 45.17% copper-63 (62.930 amu) and 54.83% copper 65 (64.928 amu). Show your set-up.

15. If a naturally occurring sample of barium was 35.22% Ba-136, which had a mass of 135.86 amu and the rest was Ba-139, which had a mass of 138.95 amu, what would be the average atomic mass of the barium? Show your set-up.

16. If the average atomic mass of rutherfordium was 260.392 amu and it consisted of Rf-260, which had a mass of 260.00 amu and Rf-262, which had a mass of 262.00 amu, what would be the percentages of the Rf-260 and the Rf-262?

17. Explain the difference between fission and fusion:

Fission is _____

Fusion is _____

18. What is radioactive fallout? _____

_____

19. What's a half life? _____

_____

20. In the hydrogen bomb, nuclear fission/ fusion (circle one) was used to get the temperature high enough to get nuclear fission / fusion (circle one) going.

21. What does the term "critical mass" mean? _____

_____

_____

22. Use a periodic table to complete the following equations:

a. $^{238}_{92}U \text{ --->} {}^{234}_{90}Th + {}^{4}_{2}\text{\_\_\_}$

b. $^{234}_{90}\text{\_\_\_} \text{ --->} {}^{234}_{91}\text{\_\_\_} + {}^{0}_{-1}\text{\_\_\_}$

c. $^{234}_{91}Pa \text{ --->} \text{\_\_\_\_} + {}^{4}_{2}\text{\_\_\_}$

d. $\text{\_\_\_\_\_} \text{ --->} {}^{216}_{84}Po + {}^{4}_{2}\text{\_\_\_}$

e. $^{1}_{0}n + {}^{235}_{92}U \text{ --->} {}^{143}_{54}Xe + \text{\_\_\_\_\_} + {}^{1}_{0}n + {}^{1}_{0}n$

f. $^{1}_{0}n + {}^{239}_{94}Pu \text{ --->} \text{\_\_\_\_} + {}^{97}_{40}Zr + {}^{1}_{0}n + {}^{1}_{0}n$

g. $^{239}_{93}Np \text{ --->} \text{\_\_\_\_} + {}^{0}_{-1}e$

h. $^{2}_{1}H + {}^{2}_{1}H \text{ --->} {}^{3}_{2}He + \text{\_\_\_\_}$

23. What element will be remaining if... (include the mass number, like U-235)

a. Ir-200 lets off an alpha particle? _____

b. Ds- 281 lets off a beta particle? _____

c. Tb-156 lets off first an alpha, then a beta? _____

d. Lr-262 lets off two alphas? _____

e. Ru-105 lets off two betas and then an alpha? _____