Exam #2 Practice Problems

1) Identify which Exam topic each question refers to – they may not be in perfect order.
2) Show all work or a written explanation. All means ALL! Pretend you are showing it on your quiz!
3) Highlight each question number on your binder paper, and highlight each numerical answer.

Q #	Topic #	Practice Problems
1		Sketch a graph of a nuclear decay – include actual numbers (like the m&m lab)
2		Using your graph, tell me what the half life is. Also show me on the graph how you figured this out.
3		What are the symbols for alpha particles, beta particles, and gamma particles?
4		What *IS* an alpha particle? A beta particle? A gamma particle?
5		What are the masses of alpha, beta, and gamma particles?
6		What are the charges of alpha, beta, and gamma particles?
7		If Plutonium-244 undergoes beta decay, what's the product? (Write an equation to help you)
8		If Bismuth-210 undergoes alpha decay, what is the product? (Write an equation to help you)
9		What is the *official* definition of half life?
10		Using your *own* words, what is the definition of half life?
11		A 380 gram sample has a half life of 18 years. How much do you have left after 240 years?
12		You start with 25 grams of a radioactive substance. How much is left after 3.5 half lives?
13		A 40gram sample of radioactive material has a half life of 3 weeks. What percent will be left after 15 weeks?
14		Based on the number of electrons, why would Li, Na, and Rb behave in similar ways?
15		Out of the following list of elements, pick the ones that will behave similarly: S, Ca, P, Cl, Ti, Se, Te
16		How many valence electrons does potassium have?
17		How many valence electrons do the halogens have?
18		Sketch a periodic table and label all the groups with their names.
19		What group are the 2A elements? What group are the 7A elements?
20		Sketch a rectangle representing the periodic table. Sketch arrows on the rectangle that represent the direction in which atomic radius increases.
21		Which would be larger, chlorine or iodine?
22		Sketch a rectangle representing the periodic table. Sketch arrows on it that represent the direction electronegativity incr.
23		Which would be more electronegative, chlorine or iodine?
24		Sketch a rectangle representing the periodic table. Sketch arrows on the rectangle that represent the direction in which ionization energy increases.
25		Which would have the higher ionization energy, chlorine or iodine?
26		Rank the following from largest to smallest radius: oxygen, radium, tungsten, aluminum
27		Rank the following from largest to smallest ionization energy: oxygen, radium, tungsten, aluminum
28		Rank the following from most to least electronegativity: oxygen, radium, tungsten, aluminum
29		How do you use the periodic table to determine how many electrons an atom needs to gain/lose in order to achieve a noble gas configuration?
30		How many electrons does each atom need to gain/lose in order to achieve a noble gas configuration? Mg, Ar, Al, Br, As
31		Explain why electronegativity increases as you go from the LEFT to the RIGHT on the periodic table, and why it increases as you go from the bottom to the top in a group:
32		Explain why ionization energy increases as you go from LEFT to RIGHT on the periodic table, and why it increases as you go from the bottom to the top in a group:
33		Explain why atomic radius increases the way it does going DOWN a group and from LEFT to RIGHT ?
34		Does reactivity of metals increase as you go up or down a column?
35		Does reactivity of non-metals increase as you go up or down a column?
36		What are the three classes of elements and what are some characteristics of each?
37		What is strong force? How is it involved in radioactivity?
38		How do you stop each type of radioactive particle?
39		If you start with Uranium-235 and it undergoes an alpha decay, then a beta decay, then two alpha decays, and one more beta decay, which element are you left with?
40		Describe some things that nuclear chemistry is used for (think about your research topics and the PhET simulations)
41		How did Mendeleev organize his periodic table? How did Moseley organize his table?
42		A radioactive element has a half-life of 10min. How many minutes will it take for the number of atoms present to decay to 1/64th (or 1.5625%) of the initial value?
43		A living creature was been dead for 12,378 years, what amount the of original carbon-14 is **still present** if you started with 1200grams? (half-life of carbon-14 = 5730 years)
44+		Ask Mrs. Farmer for extra problems if you need them!!!

PLEASE make the most of these study problems. Doing them, thinking about them, correcting them, and remembering them will help you get ready for the benchmarks! Do not do them on autopilot…THINK about them. Where do you think I come up with them??? It's almost like I know what's on the exam, huh??? ☺