Chem 1 Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Wexler/Steinhorst  
Radioactive Decay Practice 2  
Date:

1. Draw the symbol for an alpha particle, including its atomic number and mass number.

2. The beta particle is the same thing as an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. When a beta particle is emitted, a neutron is converted into a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Which type of decay results in a decrease in atomic mass – alpha decay, beta decay, or both?

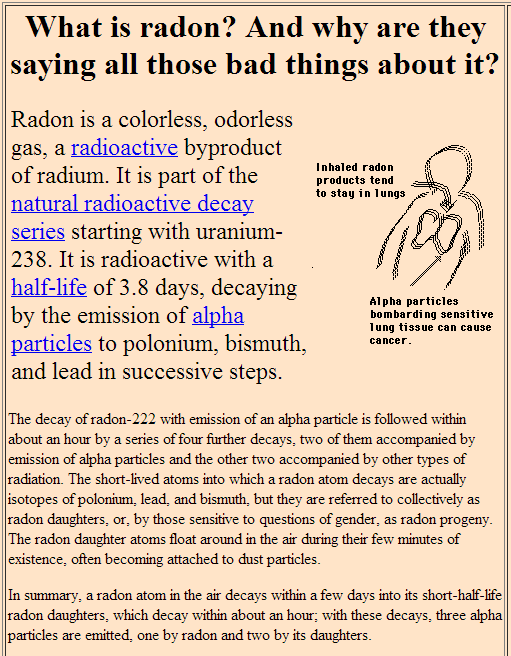
5. Which type of decay results in a decrease in atomic number – alpha decay, beta decay, or both?

6. Which type of decay results in an increase in atomic number – alpha decay, beta decay, or both?

7. Write the nuclear equation for the beta decay of Plutonium-244.

8. Write the nuclear equation for the alpha decay of Americium-241.

9. What is a radon daughter atom? Why are these dangerous even though they are short-lived? (see figure on next page)



10. Write the set of nuclear equations (decay series) for the decay of Rn-222 (at.num. = 86) all the way to nonradioactive Pb-206 (at.num. = 82).

Step 1. alpha decay:

Step 2. alpha decay:

Step 3. beta decay:

Step 4. beta decay:

Step 5. alpha decay:

Step 6. beta decay:

Step 7. beta decay:

Step 8. alpha decay:

* 222Rn, 3.8 days, [alpha decaying](http://en.wikipedia.org/wiki/Alpha_decay) to...  
  218[Po](http://en.wikipedia.org/wiki/Polonium), 3.10 minutes, [alpha decaying](http://en.wikipedia.org/wiki/Alpha_decay) to...
* 214[Pb](http://en.wikipedia.org/wiki/Lead), 26.8 minutes, [beta decaying](http://en.wikipedia.org/wiki/Beta_decay) to...
* 214[Bi](http://en.wikipedia.org/wiki/Bismuth), 19.9 minutes, beta decaying to...
* 214Po, 0.1643 ms, alpha decaying to...
* 210Pb, which has a much longer half-life of 22.3 years, beta decaying to...
* 210Bi, 5.013 days, beta decaying to...
* 210Po, 138.376 days, alpha decaying to...
* 206Pb, stable.