Honors Chemistry Hour\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Dr. Wexler  
Radioactive Decay Worksheet 1  
Date assigned:

Reference: Glencoe Ch. 4.4 pp. 105-107

Answer the following questions:

1. What determines an atom’s stability?
2. How do unstable atoms gain stability?
3. Construct a table indicating the symbol, mass and charge of alpha, beta, and gamma radiation. (see table 4-3)

3. When Polonium 209 undergoes alpha decay, what nonradioactive element does it become? Explain why this is the case based on your knowledge of alpha decay.

4. When thorium-233 undergoes beta minus decay, what radioactive element does it become? Explain why this is the case based on your knowledge of beta minus decay.

5. For beta-minus decay of thorium-233, what changes? Indicate yes or no to each of the following:

1. Atomic number \_\_\_\_\_\_
2. Atomic mass \_\_\_\_\_\_
3. Charge of the nucleus \_\_\_\_\_\_
4. The number of protons \_\_\_\_\_\_
5. The number of neutrons \_\_\_\_\_\_

6. What change in mass number (sum of the masses of the protons and neutrons) occurs when a radioactive atom emits:

1. An alpha particle?
2. A beta-minus particle?
3. A gamma ray?

7. What change in atomic number (number of protons) occurs when a radioactive atom emits:   
   
 A. An alpha particle?

B. A beta-minus particle?

C. A gamma ray?