

Radioactivity Review

- 1.) What is radiation?

- 2.)
 - a.) Lists three kinds of radioactive decay.

 - b.) State what kind of particle or ray is produced by each type.

 - c.) State the electric charge of each of the three kinds of radioactive decay.

- 3.) Write the two different symbols used to represent an alpha particle.

- 4.)
 - a.) How are the atoms of *magnesium – 24* and *magnesium – 26* similar?

 - b.) how are they different?

- 5.) Which subatomic particle determines the identity of the element?

- 6.) What subatomic particles are present in an alpha particle?

- 7.) Why does a beta particle have a negative charge?

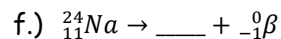
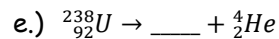
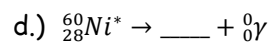
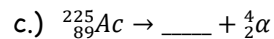
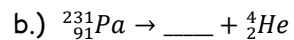
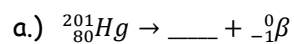
- 8.) How does the release of an alpha particle by an atom change that atom into a different element?

- 9.) A sample of rock contains 128 g of a radioisotope. State how much of the radioisotope will remain after:
 - a.) Two half-lives
 - b.) Four half-lives

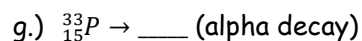
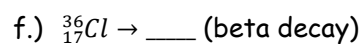
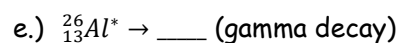
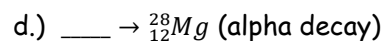
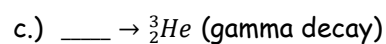
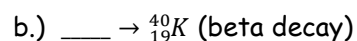
- 10.) How does a nuclear reaction differ from a chemical reaction?

- 11.) How is it possible to induce (start) a nuclear reaction?

12.) Provide the nuclear symbol for each daughter nucleus in the following list.



13.) Complete the following radioactive decay equations.



14.) If $100 \mu\text{g}$ (0.000001 gram) of *carbon* – 14 were present in a sample of bone, state how many grams would be left after:

a.) 5730 years

b.) 11460 years

c.) 17190 years

15.) For each of the following items, decide whether it applies mainly to fusion, fission, or both.

a.) Used to produce electrical energy.

b.) Used in atomic weapons.

c.) Reactions produce radioactive daughter products.

d.) Happens at the core of the sun.