

Name: KEY Date: _____ Period: _____

Radioactivity Worksheet

1. State the number of neutrons and protons in each of the following nuclei:

- a. ${}^2_1\text{H}$: $p=1$ $n=2-1=1$
- b. ${}^{12}_6\text{C}$: $p=6$ $n=12-6=6$
- c. ${}^{56}_{26}\text{Fe}$: $p=26$ $n=56-26=30$
- d. ${}^{197}_{79}\text{Au}$: $p=79$ $n=197-79=118$

2. The three types of radioactive emissions are called alpha (α), beta (β) and gamma (γ) radiation. Complete the table below with the correct information about each type.

	Charge	Atomic Symbol	Can Be Stopped By
Alpha	+2	${}^4_2\text{He}$	few inches air, skin, paper
Beta minus	-1	${}^0_{-1}\text{e}$	bulky clothing, aluminum foil
Gamma	0	γ	very thick lead or concrete

3. Which of the three radioactive emissions (α , β , γ) best fit the following statements? Write the correct symbol/s on the lines.

- a) These emissions are charged. α β
- b) This emission is the most massive (heaviest). α
- c) This emission is the most charged. α
- d) This emission is most dangerous outside of the body. γ
- e) This emission is stopped by thin paper or a few centimeters of air. α
- f) This emission can travel through paper, but is stopped by aluminum. β
- g) This emission can travel through fairly thick lead. γ

4. Which type of radiation – alpha, beta, or gamma:

a. Results in the greatest change in atomic number? Why?

alpha, changes by 2

b. Results in the least change in atomic number? Why?

gamma, no change

c. Produces the greatest change in mass number? Why?

alpha, changes by 4

d. Produces the least change in mass number? Why?

beta + gamma, no change