

# General Chemistry 4.4 Worksheet

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Date: \_\_\_\_\_

## Section 4.4 Unstable Nuclei and Radioactive Decay

*In your textbook, read about radioactivity.*

For each item in Column A, write the letter of the matching item in Column B.

### Column A

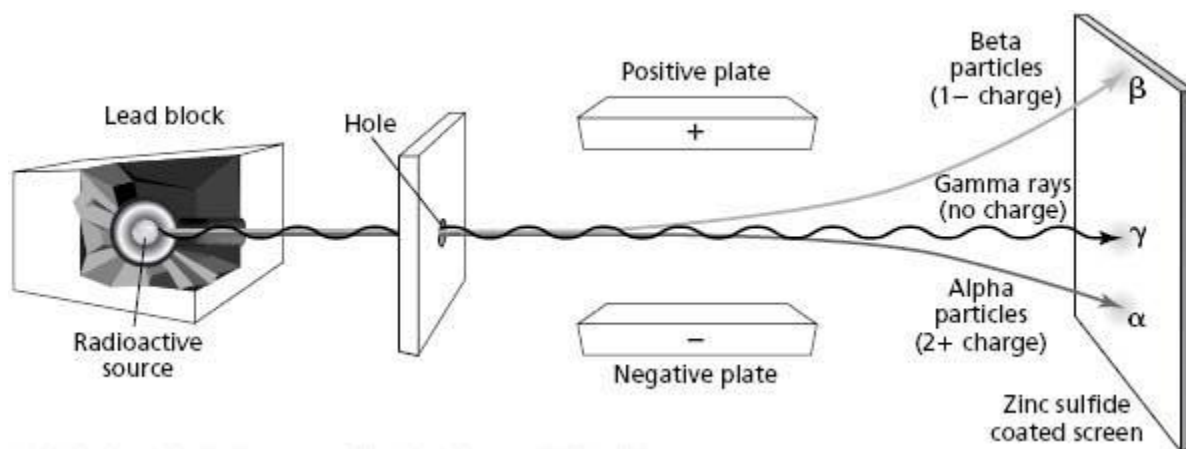
- \_\_\_\_\_ 1. The rays and particles that are emitted by a radioactive material
- \_\_\_\_\_ 2. A reaction that involves a change in an atom's nucleus
- \_\_\_\_\_ 3. The process in which an unstable nucleus loses energy spontaneously
- \_\_\_\_\_ 4. Fast-moving electrons

### Column B

- a. nuclear reaction
- b. beta radiation
- c. radiation
- d. radioactive decay

*In your textbook, read about types of radiation.*

Use the diagram to answer the questions.



5. Which plate do the beta particles bend toward? Explain.

\_\_\_\_\_

6. Explain why the gamma rays do not bend.

\_\_\_\_\_

7. Explain why the path of the beta particles bends more than the path of the alpha particles.

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Complete the following table of the characteristics of alpha, beta, and gamma radiation.

Radiation Type	Composition	Symbol	Mass (amu)	Charge
8. Alpha				
9.			1/1840	
10.	High-energy electromagnetic radiation			

Explain *radioactivity by completing the paragraph below using the following words.*

Nuclear reactions	different element	rearranged	affects	nuclei
radiation	radioactive decay	radiation	identities	Unstable nuclei
unstable nuclei	changes			

In chemical reactions, atoms may be **11.** \_\_\_\_\_, but their **12.** \_\_\_\_\_ do not change. The rearrangement **13.** \_\_\_\_\_ only the **14.** \_\_\_\_\_ of the atoms, not the **15.** \_\_\_\_\_. **16.** \_\_\_\_\_ are different. In nuclear reactions, **17.** \_\_\_\_\_ gain stability by emitting **18.** \_\_\_\_\_. As a result of **19.** \_\_\_\_\_ in the nuclei, the atoms' **20.** \_\_\_\_\_ change. **21.** \_\_\_\_\_ will continue emitting **22.** \_\_\_\_\_, in a process called **23.** \_\_\_\_\_, until stable nuclei, often of a **24.** \_\_\_\_\_, are formed.