

**CHAPTER 4 STUDY GUIDE FOR CONTENT MASTERY**

**Section 4.4 Changes to the Nucleus—Nuclear Reactions**

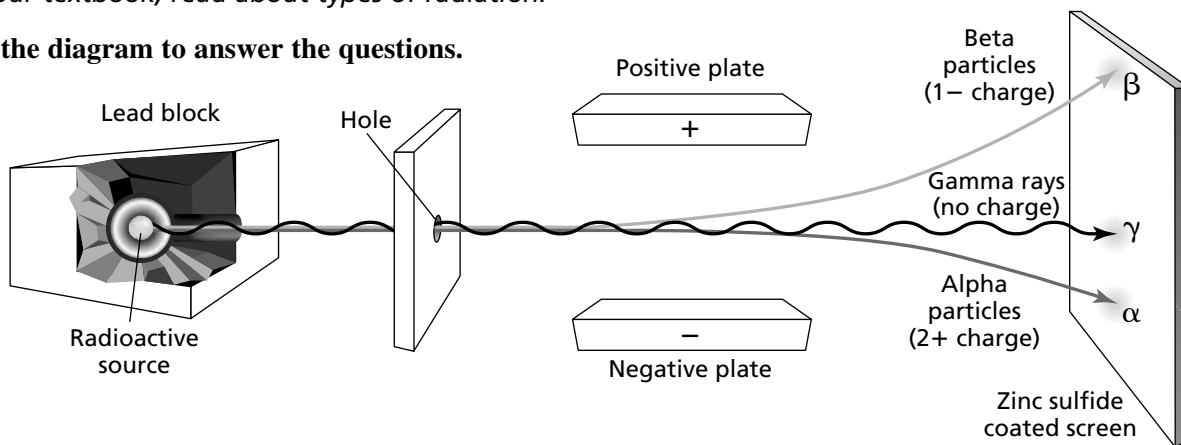
*In your textbook, read about radioactivity.*

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

- | Column A   | Column B                    |
|--|-----------------------------|
| _____ 1. The rays and particles that are emitted by a radioactive material   | <b>a.</b> nuclear reaction  |
| _____ 2. A reaction that involves a change in an atom’s nucleus              | <b>b.</b> beta radiation    |
| _____ 3. The process in which an unstable nucleus loses energy spontaneously | <b>c.</b> radiation         |
| _____ 4. Fast-moving electrons   | <b>d.</b> 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.  
\_\_\_\_\_  
\_\_\_\_\_

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

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