

Nuclear Decay

Name: _____ Per. ____

Parent Isotope	Particle Emitted	Daughter Isotope	Change in atomic number	Number of protons lost or gained	Number of neutrons lost or gained	Change in mass number	Alpha or beta decay?
${}_{88}^{226}\text{Ra} \rightarrow$	${}_{2}^{4}\text{He}$	$+ {}_{86}^{222}\text{Rn}$		Two lost			
${}_{20}^{47}\text{Ca} \rightarrow$	${}_{-1}^{0}\text{e}^{-}$	$+ {}_{21}^{47}\text{Sc}$					

1. What changes take place in the nucleus when an alpha particle is emitted?
2. What is the identity of an alpha particle?
3. What changes take place in the nucleus when a beta particle is emitted?
4. Which particle is associated with beta decay?
5. When an alpha particle is lost from an atom where on the periodic table would you look to find the product?
6. Does the identity of the atom change during radioactive decay? Why or why not?
7. If an atom of element number 85, astatine, undergoes alpha decay, what atom will be produced?
8. If an atom of element number 87, francium, undergoes beta decay, what atom will be produced?

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Decay of Uranium-238

Below is the decay series for a Uranium-238 nucleus, showing all of the steps of decay that occur before it finally reaches a stable state. Fill in all the blanks of either the type of decay that occurs to get from one step to another or with the name of the isotope produced at a certain step.

