

Nuclear Decay WS

Name:

Date:

Per:

Instructions: Fill in the table below and then use it to figure out what is happening during each type of decay- - alpha (α) & beta (β)

Parent Isotope	Particle emitted	New, Daughter isotope	Alpha or Beta Decay?	# of protons lost or gained by "parent"	Change in mass number
a. ${}_{88}^{226} Ra$	\rightarrow ${}_{2}^{4} He$	$+$ ${}_{86}^{222} Rn$	Alpha	Lost 2	minus 4
b. ${}_{84}^{214} Po$	\rightarrow ${}_{2}^{4} He$	$+$ ${}_{82}^{210} Pb$			
c. ${}_{20}^{47} Ca$	\rightarrow ${}_{-1}^{0} e^{-}$	$+$ ${}_{21}^{47} Sc$			
d. ${}_{64}^{148} Gd$	\rightarrow ${}_{2}^{4} He$	$+$ ${}_{62}^{144} Sm$			
e. ${}_{6}^{14} C$	\rightarrow ${}_{-1}^{0} e^{-}$	$+$ ${}_{7}^{14} N$			

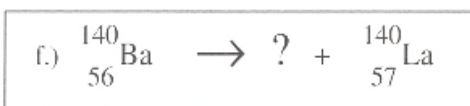
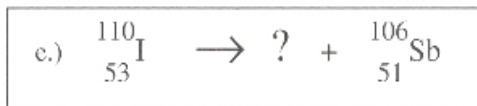
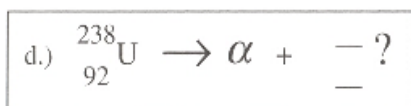
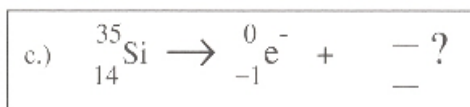
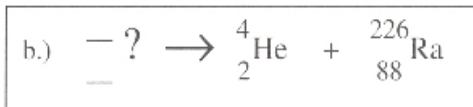
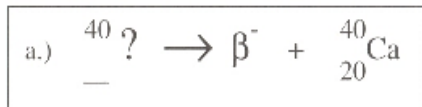
2. What changes take place in the nucleus when an alpha particle is emitted?

3. What is the identity of an alpha particle?

4. What changes take place in the nucleus when a beta particle is emitted?

5. Which particle is associated with beta decay?

6. Fill in the missing parts of these nuclear reactions: (numbers & elements)



7. Show : a) The alpha (α) decay of radon- 198

b) The beta (β)decay of uranium-237

8. Does the identity of an atom change during radioactive decay? Why or why not?

9. What is the primary factor in determining whether or not an isotope is likely to decay?

10. List the 3 types of radiation (α, β, γ) in order from least penetrating to most penetrating.