Name: Period:

Nuclear Decay

Nuclear Decay Watch this video from Physics Fuse School to learn about Alpha and Beta decay. Fill in the table below for each type of decay– alpha (α) or beta (β)

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

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

$^{40}_{}K \rightarrow {}^{0}_{-1}e + {}^{40}_{20}Ca$	$\rightarrow {}^{4}_{2}He + {}^{226}_{88}Ra$	$^{35}_{14}Si \rightarrow {}^{0}_{-1}e +$
$^{238}_{92}U \rightarrow {}^{4}_{2}He +$	$^{110}_{53}I \rightarrow \quad + {}^{106}_{51}Sb$	$^{140}_{56}Ba \rightarrow \quad + {}^{140}_{57}La$

Write equations for: a) The alpha (α) decay of radon- 198: $\rightarrow \quad +$

b) The beta (β) decay of uranium-237: $\rightarrow \quad +$

1. How does the "Law of Conservation of Matter" apply to how you write nuclear equations?

_____ applies when _____ by…

Watch this video from Engineering Technology Simulation Learning Videos to learn about the effects of α, β, γ radiation.

2. When passed through a magnetic field, what happens to α, β, & γ rays?

   _____ and _____ go in _____ because _____ while _____ since…

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

   Least penetrating: _____, _____, _____ Most penetrating

4. Why would you expect alpha particles to be less able to penetrate materials than beta?

   Due to _____, this causes _____ to…