

Key

Radioactivity & Nuclear Reactions Review

I can use correct terminology to describe radioactivity and nuclear reactions.

List three facts about alpha radiation.

particle symbol α ${}^4_2\text{He}$

\rightarrow made of 2p & 2n ; can be stopped easily with paper

List three facts about beta radiation.

particle symbol β ${}^0_{-1}\text{e}$

made of an electron ; can be stopped by foil

List three facts about gamma radiation.

energy γ

\rightarrow caused by nucleus rearrangement ; hard to stop

What is background radiation? What is the largest source of background radiation?

\rightarrow most common rad in go

\rightarrow low level radiation NOT produced by humans

How can you tell if an element is radioactive?

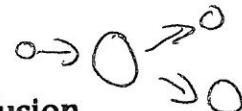
all elements with atomic # > 84

What happens when the nuclear strong force is NOT strong enough to hold the nucleus together?

it becomes unstable ; emits radiation

List three facts about nuclear fission.

\rightarrow splits a large nucleus

\rightarrow bombs & power plants \rightarrow 

List three facts about nuclear fusion.

\rightarrow pits 2 small atoms together

$\text{H} + \text{H} \rightarrow \text{He}$ occurs in stars $\text{O} + \text{O} \rightarrow \text{Q}$

When does a chain reaction occur?

in fission

I can use half-life to determine information about a radioactive element.

Element P has a half-life of 10 minutes. You will start with 100 g and create a "decay" diagram showing its decay over 5 half lives and then use the diagram to answer the following questions.

Decay Diagram

$$100\text{g} \xrightarrow{10} 50\text{g} \xrightarrow{10} 25\text{g} \xrightarrow{10} 12.5\text{g} \xrightarrow{10} 6.25\text{g} \xrightarrow{10} 3.125\text{g}$$

a. How much is left after one half life?

50g

b. How many grams remain after 5 half lives?

3.125g

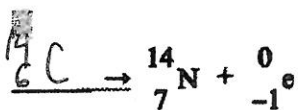
c. How many minutes does it take to go through 5 half lives?

50min

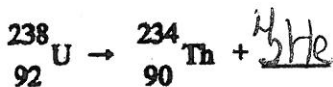
d. Would any of Element P remain after 200 minutes? Approximately how much?

yes - very little but some

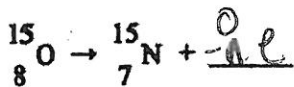
I can solve nuclear equations.



Type: beta



Type: alpha



Type: beta