

Types of Radiation Homework – Student Edition

1. Place the symbols α , β or γ next to the following sentences to identify the properties of each type of decay:

- a) Is represented as a helium atom. _____
- b) Can pass through thin paper but not aluminium sheet. _____
- c) Are high energy waves. _____
- d) The type of decay which occurs when the nucleus has too many protons. _____
- e) Occurs when there are too many neutrons in the nucleus. _____
- f) Does not cause a change in element. _____
- g) Occurs with nearly all radioactive decay. _____
- h) The result of a neutron being converted to a proton, an electron and a neutrino. _____

2. Predict the products of the following nuclear reactions:

- a) ${}_{19}^{42}K \rightarrow {}_{-1}^0e +$
- b) ${}_{94}^{239}Pu \rightarrow {}_2^4He +$
- c) ${}_{19}^{37}K \rightarrow {}_{+1}^0e +$
- d) ${}_{88}^{226}Ra \rightarrow \gamma$

3. Determine the type of particle emission for the following nuclear reactions.

- a) ${}_{94}^{239}Pu \rightarrow \text{_____} + {}_{92}^{235}U$
- b) ${}_{6}^{14}C \rightarrow \text{_____} + {}_{7}^{14}N$
- c) ${}_{79}^{201}Au \rightarrow \text{_____} + {}_{80}^{201}Hg$
- d) ${}_{79}^{185}Au \rightarrow \text{_____} + {}_{77}^{181}Ir$

4. Determine the parent isotope for the following nuclear reactions.

- a) $\text{_____} \rightarrow {}_2^4He + {}_{90}^{231}Th$
- b) $\text{_____} \rightarrow {}_{-1}^0e + {}_{53}^{130}I$
- c) $\text{_____} \rightarrow {}_2^4He + {}_{81}^{207}Ti$
- d) $\text{_____} \rightarrow {}_{-1}^0e + {}_2^3He$