NUCLEAR DECAY

Name _____

Predict the products of the following nuclear reactions.

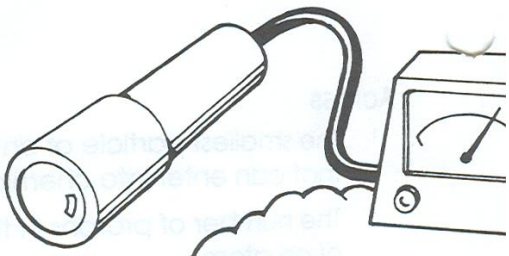
1. $^{42}K \rightarrow {}^{0}_{-1}e +$ _____

2. $^{239}Pu \rightarrow {}^{4}_{2}He +$ _____

3. $^{235}_{92}U \rightarrow$ _____ $+ {}^{231}_{90}Th$

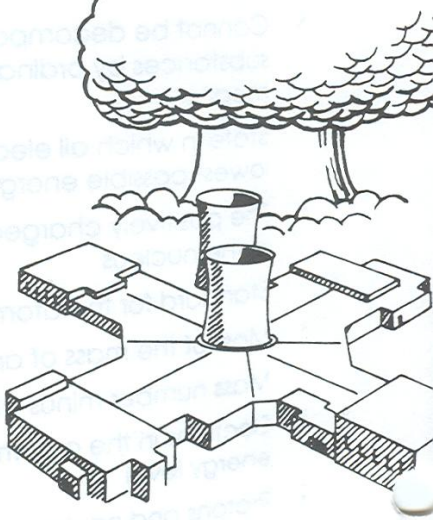
4. $^{1}_{1}H + {}^{3}_{1}H \rightarrow$ _____

5. $^{6}_{3}Li + {}^{1}_{0}n \rightarrow {}^{4}_{2}He +$ _____



6. $^{27}_{13}Al + {}^{4}_{2}He \rightarrow {}^{30}_{15}P +$ _____

7. $^{9}_{4}Be + {}^{1}_{1}H \rightarrow$ _____ $+ {}^{4}_{2}He$



8. $^{37}K \rightarrow {}^{0}_{+1}e +$ _____

9. _____ $+ {}^{1}_{0}n \rightarrow {}^{142}_{56}Ba + {}^{91}_{36}Kr + 3{}^{1}_{0}n$

10. $^{238}_{92}U + {}^{4}_{2}He \rightarrow$ _____ $+ {}^{1}_{0}n$

HALF-LIFE OF RADIOACTIVE ISOTOPES

Name _____

1. How much of a 100.0 g sample of ^{198}Au is left after 8.10 days if its half-life is 2.70 days?

_____

2. A 50.0 g sample of ^{16}N decays to 12.5 g in 14.4 seconds. What is its half-life?

_____

3. The half-life of ^{42}K is 12.4 hours. How much of a 75$\bar{0}$ g sample is left after 62.0 hours?

_____

4. What is the half-life of ^{99}Tc if a 50$\bar{0}$ g sample decays to 62.5 g in 639,000 years?

_____

5. The half-life of ^{232}Th is 1.4×10^{10} years. If there are 25.0 g of the sample left after 2.8×10^{10} years, how many grams were in the original sample?

_____

6. There are 5.0 g of ^{131}I left after 40.35 days. How many grams were in the original sample if its half-life is 8.07 days?

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