

Period _____

Name KEY

Nuclear Reaction Worksheet

Write a balanced equation for the following nuclear reactions.

1. Krypton-87 decays by beta emission.	${}_{36}^{87}\text{Kr} \rightarrow {}_{-1}^0\text{e} + {}_{37}^{87}\text{Rb}$
2. Curium-240 decays by alpha emission	${}_{96}^{240}\text{Cm} \rightarrow {}_2^4\text{He} + {}_{94}^{236}\text{Pu}$
3. Uranium-232 decays by alpha emission.	${}_{92}^{232}\text{U} \rightarrow {}_2^4\text{He} + {}_{90}^{228}\text{Th}$
4. Silicon-32 decays by beta emission.	${}_{14}^{32}\text{Si} \rightarrow {}_{-1}^0\text{e} + {}_{15}^{32}\text{P}$
5. Zinc-71 decays by beta emission.	${}_{30}^{71}\text{Zn} \rightarrow {}_{-1}^0\text{e} + {}_{31}^{71}\text{Ga}$
6. Americium-243 decays by alpha emission	${}_{95}^{243}\text{Am} \rightarrow {}_2^4\text{He} + {}_{93}^{239}\text{Np}$
7. Cobalt-60 decays by beta emission	${}_{27}^{60}\text{Co} \rightarrow {}_{-1}^0\text{e} + {}_{28}^{60}\text{Ni}$
8. Phosphorus-32 decays by beta emission	${}_{15}^{32}\text{P} \rightarrow {}_{-1}^0\text{e} + {}_{16}^{32}\text{S}$
9. Gadolinium-150 decays by alpha emission.	${}_{64}^{150}\text{Gd} \rightarrow {}_2^4\text{He} + {}_{62}^{146}\text{Sm}$
10. Lead-210 decays by emitting both a beta and an alpha particle.	${}_{82}^{210}\text{Pb} \rightarrow {}_{-1}^0\text{e} + {}_2^4\text{He} + {}_{81}^{206}\text{Tl}$
11. Boron-10 plus a neutron results in the formation of another element and the release of an alpha particle.	${}_{5}^{10}\text{B} + {}_0^1\text{n} \rightarrow {}_2^4\text{He} + {}_{3}^7\text{Li}$
12. Beryllium-9 plus a proton results in the formation of another element and the release of an alpha particle.	${}_{4}^9\text{Be} + {}_1^1\text{p} \rightarrow {}_2^4\text{He} + {}_{3}^6\text{Li}$
13. Einsteinium-253 plus an alpha particle results in the formation of another element and the release of a neutron.	${}_{99}^{253}\text{Es} + {}_2^4\text{He} \rightarrow {}_0^1\text{n} + {}_{101}^{256}\text{Md}$
14. Lithium-7 plus a proton results in the formation of another element and the release of a neutron.	${}_{3}^7\text{Li} + {}_1^1\text{p} \rightarrow {}_0^1\text{n} + {}_{4}^7\text{Be}$
15. Pu-241 plus another particle results in the formation of Pu-242 and the release of gamma rays.	${}_{94}^{241}\text{Pu} + {}_0^1\text{n} \rightarrow {}_{94}^{242}\text{Pu} + \gamma$
16. Ar-40 plus an alpha particle produces another element and the release of a neutron.	${}_{18}^{40}\text{Ar} + {}_2^4\text{He} \rightarrow {}_0^1\text{n} + {}_{20}^{43}\text{Ca}$
17. Es-252 was bombarded by a Be-9 atom, producing a new element plus 3 neutrons.	${}_{99}^{252}\text{Es} + {}_4^9\text{Be} \rightarrow 3 {}_0^1\text{n} + {}_{103}^{258}\text{Lr}$
18. Pu-239 can be produced by bombarding U-238 with an alpha particle. Some neutrons are released.	${}_{92}^{238}\text{U} + {}_2^4\text{He} \rightarrow {}_{94}^{239}\text{Pu} + 3 {}_0^1\text{n}$

$$\begin{aligned}
 15 - 18 &= 3 \\
 9 - 14 &= 2 \\
 3 - 8 &= 1 \\
 0 - 2 &= 0
 \end{aligned}$$