

Name _____

Date _____

Use with textbook pages 286–299.

Radioactive decay and nuclear equations

Remember the following two rules when working with nuclear equations:

- I. The sum of the mass numbers does not change.
- II. The sum of the charges in the nucleus does not change.

Identify each nuclear equation as alpha decay, beta decay, or gamma decay, and then complete the nuclear equation.

1. ${}_{15}^{32}\text{P}$ -----> ${}_{16}^{32}\text{S}$ + _____ _____
2. ${}_{84}^{218}\text{Po}$ -----> _____ + ${}_{2}^{4}\text{He}$ _____
3. _____ -----> ${}_{5}^{18}\text{Ar}$ + ${}_{-1}^{0}e$ _____
4. ${}_{12}^{24}\text{Mg}^*$ -----> _____ + ${}_{0}^{0}\gamma$ _____
5. ${}_{91}^{234}\text{Pa}$ -----> _____ + ${}_{2}^{4}\alpha$ _____
6. ${}_{58}^{141}\text{Ce}$ -----> _____ + ${}_{-1}^{0}e$ _____
7. ${}_{84}^{216}\text{Po}$ -----> _____ + ${}_{-1}^{0}\beta$ _____
8. ${}_{9}^{20}\text{F}$ -----> ${}_{10}^{20}\text{Ne}$ + _____ _____
9. ${}_{26}^{58}\text{Fe}^*$ -----> ${}_{26}^{58}\text{Fe}$ + _____ _____
10. _____ -----> ${}_{87}^{221}\text{Fr}$ + ${}_{2}^{4}\alpha$ _____
11. ${}_{64}^{149}\text{Gd}^*$ -----> _____ + ${}_{0}^{0}\gamma$ _____
12. ${}_{86}^{226}\text{Ra}$ -----> ${}_{26}^{222}\text{Rn}$ + _____ _____
13. _____ -----> ${}_{82}^{212}\text{Pb}$ + ${}_{-1}^{0}\beta$ _____
14. ${}_{83}^{214}\text{Bi}$ -----> ${}_{81}^{210}\text{Tl}$ + _____ _____
15. _____ -----> ${}_{98}^{254}\text{Cf}$ + ${}_{0}^{0}\gamma$ _____