

Name _____

Class Pd. _____

Honors Chemistry: Nuclear Chemistry Test Review

1. Define the following terms:

Radiation:

radioactive decay:

transmutation:

nuclear reaction:

2. How are mass number and the atomic number affected by the loss of a:

a. beta particle -

b. alpha particle -

c. gamma ray -

3. What is the difference between bombardment and emission?

4. What causes atoms to be radioactive?

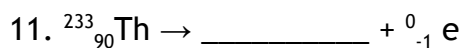
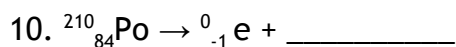
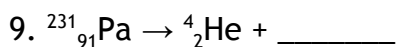
5. What are the three most common types of radiation? What is the symbol, mass, charge, and penetrating power of each?

6. How are nuclear fission and fusion different?

7. What is half-life? What does it measure?

8. What are some uses of nuclear chemistry?

Nuclear Equations: Fill in the blanks with the appropriate answer.



Write the nuclear equations:

12. Uranium-235 decomposes naturally. As a result it produces a new element and an alpha particle.

13. Europium-152 undergoes beta decay.

14. Holmium-165 undergoes alpha bombardment.

15. Einsteinium captures an electron.

Half-Life Problems:

16. Rh-111 has a half-life of 25.0 minutes. You have a sample of Rh-111 with a mass of 150.0g. The Rh-111 undergoes alpha decay.

a. Write the balanced nuclear equation.

b. How many grams of Rh-111 will remain after 200.0 min have passed?

17. A sample of a radioactive isotope has a half-life of 14.6 days. If your sample has a mass of 4.75g, how much would remain after 82.4 days?

18. The half life of Cs-137 is 30.2 years. If the initial mass of the sample is 1.00kg, how much will remain after 151 years?

19. Carbon-14 has a half life of 5730 years. Consider a sample of fossilized wood that when alive would have contained 24g of C-14. It now contains 1.5g. How old is the sample?

20. A 64g sample of Germanium-66 is left undisturbed for 12.5 hours. At the end of that period, only 2.0g remain. What is the half-life of this material?

