

Name \_\_\_\_\_ Date \_\_\_\_\_ Class \_\_\_\_\_

## Practice Problems

1a

1. How many protons and electrons are present in a vanadium atom?
2. How many protons and electrons are present in a nitrogen atom?
3. How many protons and electrons are present in an argon atom?
4. How many protons and electrons are present in a potassium atom?
5. How many protons and electrons are present in a platinum atom?
6. What is the name of the element that has atoms that contain 5 protons?
7. What is the name of the element that has atoms that contain 17 protons?
8. What is the name of the element that has atoms that contain 25 protons?
9. What is the name of the element that has atoms that contain 82 protons?
10. What is the name of the element that has atoms that contain 92 protons?
11. Write the chemical symbol for the ion with 12 protons and 10 electrons.
12. Write the chemical symbol for the ion with 74 protons and 68 electrons.
13. Write the chemical symbol for the ion with 95 protons and 89 electrons.
14. Write the chemical symbol for the ion with 33 protons and 36 electrons.

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*Practice Problems (continued)*

15. Write the chemical symbol for the ion with 29 protons and 27 electrons.
16. How many protons, neutrons, and electrons are present in the  ${}_{28}^{59}\text{Ni}^{2+}$  ion?
17. How many protons, neutrons, and electrons are present in the  ${}_{40}^{91}\text{Zr}^{4+}$  ion?
18. How many protons, neutrons, and electrons are present in the  ${}_{58}^{140}\text{Ce}^{3+}$  ion?
19. How many protons, neutrons, and electrons are present in the  ${}_{34}^{79}\text{Se}^{2-}$  ion?
20. How many protons, neutrons, and electrons are present in the  ${}_{21}^{45}\text{Sc}^{3+}$  ion?
21. How many protons, neutrons, and electrons are present in the  ${}^{13}\text{C}^{4-}$  ion?
22. Write the complete chemical symbol for the ion with 84 protons, 125 neutrons, and 80 electrons.
23. Write the complete chemical symbol for the ion with 27 protons, 32 neutrons, and 25 electrons.
24. Write the complete chemical symbol for the ion with 73 protons, 108 neutrons, and 68 electrons.
25. Write the complete chemical symbol for the ion with 31 protons, 39 neutrons, and 28 electrons.

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## Practice Problems

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1. Write a nuclear equation for the alpha decay of  ${}_{91}^{231}\text{Pa}$ .
2. Write a nuclear equation for the beta decay of  ${}_{87}^{223}\text{Fr}$ .
3. Write a nuclear equation for the alpha decay of  ${}_{62}^{149}\text{Sm}$ .
4. Write a nuclear equation for the beta decay of  ${}_{61}^{165}\text{Pm}$ .
5. Write a nuclear equation for the alpha decay of  ${}_{101}^{249}\text{Md}$ .
6. Write a nuclear equation for the alpha decay of  ${}_{62}^{146}\text{Sm}$ .
7. Write a nuclear equation for the beta decay of  ${}_{85}^{198}\text{At}$ .
8. Write a nuclear equation for the alpha decay of  ${}_{64}^{150}\text{Gd}$ .
9. Write a nuclear equation for the beta decay of  ${}_{54}^{152}\text{Xe}$ .
10. Write a nuclear equation for the beta decay of  ${}_{55}^{129}\text{Cs}$ .

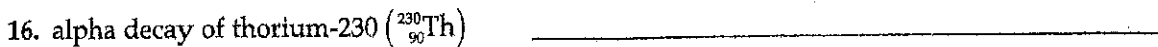
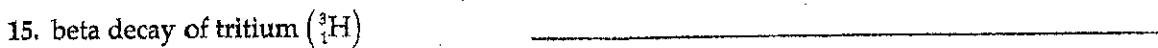
1d

**Review and Reinforcement (continued)**

Complete each of the following nuclear reactions by filling in the blank with the correct particle.



Write the nuclear equations for the following reactions.



On the line at the left, write the letter of the answer that best completes each statement.

- \_\_\_\_\_ 17. In any radioactive decay, the sum of the mass numbers and atomic numbers must be \_\_\_\_\_ before and after the reaction.
- a. greater
  - b. the same
  - c. less
  - d. unpredictable
- \_\_\_\_\_ 18. The most dangerous form of radiation to the human body is
- a. beta radiation.
  - b. gamma radiation.
  - c. alpha radiation.
  - d. They are all equally dangerous.
- \_\_\_\_\_ 19. To be stable, atoms with more than 20 protons need increasingly more
- a. neutrons than protons.
  - b. electrons than protons.
  - c. electrons than neutrons.
  - d. protons than neutrons.
- \_\_\_\_\_ 20. The sun produces energy by means of
- a. gamma radiation.
  - b. beta decay.
  - c. alpha decay.
  - d. nuclear fusion.